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SITE REMEDIATION AND CLOSURE REPORT

PHELPS DODGE REFINING CORP.

GAVILAN NATURAL GAS PROCESSING PLANT

GAVILAN, NEW MEXICO

For
Mr. Mike McElrath

Part A

December 1992

Project: 92194

**SITE REMEDIATION AND CLOSURE REPORT
PHELPS DODGE REFINING CORPORATION
GAVILAN NATURAL GAS PROCESSING PLANT
W/2, SE/4, SECTION 11, T25N, R2W, NMPM
GAVILAN, RIO ARriba COUNTY, NEW MEXICO**

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PROJECT NO: 92194

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GAVILAN NATURAL GAS PROCESSING PLANT**

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INTRODUCTION

Phelps Dodge Refining Company (PDRC) has retained Envirotech, Inc. to provide site remediation and final site closure of the Gavilan Natural Gas Processing Plant. The goal of the site remediation was to abate soil contamination at the subject site.

No recent spill events have occurred at the subject site. However, hydrocarbon contaminated soils were present at the site due to minor leakage during the operating history of the facility and posed a potential for ground water or surface water contamination from off-site migration.

The site remediation followed the approved Remedial Action Plan (RAP) developed for the site and approved by New Mexico Oil Conservation Division (NMOCD). The RAP specified abatement of the highly contaminated soils by excavation for removal off-site and restoration by replacement with clean backfill soils. In this report, highly contaminated soils are defined as those soils which tested above current regulatory action levels for hydrocarbons. The regulatory action levels were outlined in the NMOCD current guidelines for surface impoundment closures and in the approved RAP (Appendix D).

The Gavilan Natural Gas Processing Plant is located in the West 1/2 of the Southeast 1/4, of Section 11, Township 25N, Range 2W, NMPM, Rio Arriba County, New Mexico. The site is generally described as north of Lindrith, New Mexico, off State Highway 595. Refer to the attached Vicinity Map [Appendix A].

The operations at the site include collection, compression, and transfer of extracted natural gas and condensate from numerous production wells. Most of the surface equipment at the site was removed prior to the abatement operations. However, the compressor building, two (2) liquid petroleum gas storage tanks, fencing, transfer pumps, and buried piping associated with utilities and product flow lines remain on site. Wherever possible, the existing infrastructure of the facility was left in place during the abatement.

Enclosed is a copy of the NMOCD's letter of approval of the RAP of

the proposed site.

This report is submitted to document and outline the site remediation of hydrocarbon contaminated soils for abatement and the field assessment conducted during the abatement of the subject facility.

PURPOSE & SCOPE OF SERVICES

The purpose of this remedial action/closure was to abate the highly contaminated soils in the plumes identified in the environmental audit performed in August 1992 and specified in the proposed Remedial Action Plan (RAP).

The NMOCD guidelines and protocol (Appendix D) for surface impoundment closures were followed. The scope of work that Envirotech, Inc. was retained to provide for the remedial action included the following:

- A. Coordination with and notification of the NMOCD and other appropriate regulatory authorities of the intent to address the apparent contamination problem at the referenced site.
- B. Excavate and dispose of highly contaminated soil to abate the areas of concern.
- C. Provide acceptable fill materials sufficient to backfill the excavations.
- D. Field assessment of the site concurrent with the abatement operations, including both field screening and laboratory analysis of selected samples, to verify the extent of contamination.
- E. Document the abatement operations and site assessment findings for closure.

SITE HISTORY

The Gavilan facility was reportedly constructed in the early 1980's, and has received production from numerous gas wells in the area since its construction. PDRC acquired ownership and operated the facility since 1986, until the facility was shut down in April 1992.

PDRC retained Envirotech to conduct a Phase II Environmental Audit of the facility in August of 1992. The findings of the audit identified seven plume areas that had highly contaminated soils. The contamination was suspected to have occurred during normal operation of the facility. A RAP was developed to address the areas of contamination, submitted to the NMOCD, and subsequently approved. A copy of the letter verifying the NMOCD's approval and requested sampling is attached in Appendix D.

No asbestos containing materials were found during the audit.

The site remediation was initiated in October 13, 1992, and completed on December 23, 1992, with the final backfilling to restore the site.

Mr. Denny Foust, Environmental Inspector with the NMOCD, inspected the site periodically and gave approval for closure of all areas of concern.

ABATEMENT AND FIELD ASSESSMENT

As indicated previously, PDRC elected to abate the gas plant facility site by excavating highly contaminated soils in the source areas for removal off site and treatment. Seven plumes were identified in the environmental audit referred to as Plume A - G.

This remedial addresses all of the plume areas except Plume B which was located along a drainage extending off the plant site and on to the Fred Davis Ranch. Additionally, the south edge of Plumes A and C extended under the access road adjacent to the site. Mr. Davis did not allow excavation to disturb the referenced areas on the ranch. Therefore, he did not give permission to abate the mentioned off site areas and legally released PDRC and Envirotech of any liability associated with contamination off site. A copy of the release is attached in Appendix D.

PDRC instructed Envirotech to remove soils in all areas that tested above the clean-up standards, where possible. Excavations were advanced vertically to "clean" soil or bedrock refusal. Laterally, all excavations were advanced to the edge of contamination. Minor areas under the building foundation, permanent foundations and around some piping were left in place where impractical to remove.

Mr. Denny Foust of the NMOCD was notified of the off site areas and those areas to be left in place. Mr. Foust concurred with and approved of the no action/in place alternative.

Field assessment was coordinated by Mr. Michael Lane and conducted by Mr. Ray Bennaly and Mr. Jack Dewey of Envirotech, during the excavation operations to monitor the cleanup effort.

The abatement was initiated on October 13, 1992 and completed on December 23, 1992.

Soil Sampling and Analysis:

Grab soil samples were taken from the sidewalls and bottom at various intervals from the ground surface to the bedrock interface. Recovered soil samples were placed in a 475 ml glass container and sealed with aluminum foil for field analysis of hydrocarbon vapors by the Field Headspace Method (FHM). The FHM is outlined in the NMOCD "Guidelines For Surface Impoundment Closure (October 29, 1991)" (Appendix D). An Organic Vapor Meter (OVM) with a photoionization detector (PID) Model 580-B manufacture by Thermo Environmental Instruments, Inc. was used after calibration. Daily log book of calibration is included (Appendix D).

Selectively, split soil samples were collected, placed in 4 oz. laboratory supplied glass containers with teflon closures, placed

on ice, and delivered to Envirotech's Laboratory for hydrocarbon analysis. The laboratory analyses consisted of analysis for Aromatic Volatile Organics [specifically: benzene, toluene, ethylbenzene and total xylene (BTEX)] per USEPA Method 8020 and analysis for Total Petroleum Hydrocarbons (TPH) per USEPA Method 418.1.

The grab soil samples were classified in accordance with the Unified Soil Classification System (ASTM: D-2488).

Excavation Operations & Field Assessment:

Plume A was located in the southeast corner of the site and was associated with the crude storage tank and waste water impoundment. Excavation of Plume A was started on the southwest side at the edge of the road and progressed north and east. The plume extended over an outcrop of sandstone bedrock and was very shallow over most of the plume ($\pm$ one foot). The excavation ranged in depth from six inches (6") to seven feet (7') in the southeast corner and five feet (5') in the southwest corner of the plume.

Contamination along the west and south edges was limited to a thin six inch (6") sand stringer at five feet (5') below the ground surface at the fence line. The excavation was terminated on the south at the access road and on the west at the stairway and natural gas loading facility. Table 1 and Table 1A, on pages 13-15, summarize the field screening and laboratory analytical results for the Plume A abatement. The entire excavation was to bedrock. Refer to Sheet 2 Appendix B for a detail of the approximate sample locations.

Plume C was located along the south fence and in the area of the previous barrel storage rack. Excavation of this plume was to a depth of two (2') to five feet (5'). The contamination appeared to be limited to the area north of the fence and appeared to be shallow and associated with heavy petroleum lubricating oils. A test hole C3 was located west of the Plume C excavation to determine the extent of Plume C and Plume G, east of the LPG tanks. Table 2 and Table 2A on pages 16 and 17 summarize the field screening and laboratory analytical results for the Plume C abatement. Refer to Sheet 3 Appendix B for a detail of the approximate sample locations.

Plume D was projected to extend across the northeast portion of the site. This plume was associated with leakage from piping and process equipment in the area. Abatement of this plume was separated into four main excavation areas; the refrigerator skid, the process skid, the dec skid, and the glycol plume. The refrigerator skid and process skid joined during the excavation. The dec skid and the glycol plume also interfaced as we proceeded with the excavation was completed.

The **refrigerator skid** area excavation was located east of the compressor building. The excavation was approximately 40 foot north/south, 10 feet wide and extended from 1.5 feet to 3.5 feet in depth. All FHM samples were below the action levels. The TPH sample tested also tested below the 100 ppm action level. Additional soil was removed during the process skid excavation adjoining the refrigerator skid at a lower level that followed piping in the area north and west sides of the plume. Table 3 and Table 3A on pages 18 and 19 summarize the field screening and laboratory analytical results for the refrigerator skid abatement. Refer to Sheet 4 Appendix B for a detail of the approximate sample locations.

The **process skid** area excavation was located east of the refrigerator skid. This excavation extended for the piping corridor south 35 feet to the edge of the main entrance drive. The excavation ranged from 15 feet in width at the south to over 25 feet at the north end where buried and overhead piping was encountered. Contamination at the north end appeared to migrate along the piping corridor. The excavation extended to a depth of 5.5 feet at bedrock. A concrete foundation used to support the process skid tower was left in place and a small amount of contaminated soil around the foundation were not removed. Table 4 and Table 4A on pages 20-22 summarize the field screening and laboratory analytical results for the process skid abatement. Refer to Sheet 4 Appendix B for a detail of the approximate sample locations.

The **dec skid** area excavation was located east of the process skid and extended east into the glycol area. This excavation extended 20 feet north/south and was five feet wide. Overall the excavation did not extend over 2.5 feet. Table 5 and Table 5A on pages 23 and 24 summarize the field screening and laboratory analytical results for the dec skid area abatement. Refer to Sheet 4 Appendix B for a detail of the approximate sample locations.

The **glycol plume** is suspected as having been partly caused by periodic imbalance with the glycol regenerator. Glycol reportedly spit from the tower into the air, and was carried by wind in all directions and by gravity flow along the ground to the east. Therefore the plume was a surface spill from the tower that only penetrated a maximum of 2 feet and a blow down plume that infiltrated in the unconsolidated soil down gradient to approximately 8.5 feet or bedrock near the skid and shallower as the exposure time decreased with distance from the skid.

Aerially, the **glycol plume** was approximately 75 feet in diameter and extended from the dec skid east 50 feet beyond the east fence. The depth of the contamination ranged from 2 feet to 8.5 feet. The contamination appeared to migrate laterally east following the buried electrical piping corridor. Vertically, the contamination migrated to bedrock in the general area of the fence and above

ground glycol storage tank.

Table 6 and Table 6A on pages 25-29 summarize the field screening and laboratory analytical results for the glycol plume abatement. Refer to Sheet 4 Appendix B for a detail of the approximate sample locations.

Plume E involved the compressor building. The abatement was divided into the interior of the building and the area south of the building. Contamination extended in all directions within the building and appeared to be associated with leaks and spillage from the compressor units. The excavation extended to the foundation in all directions and to bedrock at approximately 2 feet. To avoid disassembly of the building, minor amounts of contaminated soil was left in place along the foundation. Mr. Denny Foust of the NMOCD concurred with the recommendation of no further action. Table 7 and Table 7A, on pages 30-32, summarize the field screening and laboratory analytical results for the interior of the compressor building. Refer to Sheet 8 for a detail of the approximate sample locations.

South of the compressor building the plume extended approximately 18 feet and extended to the bedrock at 2.5 feet. A minor amount of contaminated soil was left around piping located 10 feet from the building and under the sidewalk located east of the building. Table 8 and Table 8A, on pages 33-35, summarize the field screening and laboratory analytical results for the area south of the compressor building. Refer to Sheet 9 for a detail of the approximate sample locations.

Plume F was located around the inlet piping and the 15,000 gallon LPG storage tank at the west-northwest portion of the site. The excavation of this plume extended over 110 feet north/south and was approximately 45 feet wide. Contamination appears to have been associated with a spill of condensate type product from the LPG tank and several units north of the tank. It then followed the buried piping from the area of the valve and piping to remove the condensate from the LPG tank south and southeast along said piping into the deep fill in the southwest corner of the site. In most areas the excavation was extended to the bedrock interface which ranged from 6 inches to over 3.5 feet. Plume F appears to have commingled with Plume G to the south. Table 9 and Table 9A, on pages 36-39, summarize the field screening and laboratory analytical results for Plume F. Refer to Sheet 10 for a detail of the approximate sample locations.

Plume G was located at the southeast portion of the site, under and surrounding the three LPG above ground tanks. To accommodate the abatement, the 18,000 gallon tank was removed during the excavation. As with Plume F, contamination appeared to migrate along piping corridors, and into the deeper fill at the southeast corner of the site. This plume involved the entire southeast

corner of the facility, but does not appear to extend significantly beyond the south fence. During the abatement, test holes were advanced along the south fence to verify the southern extent of contamination. In almost all areas, the excavation was extended to the bedrock interface at 5 to 10 feet. Most of the samples monitoring the excavation were taken in the lower 2 feet just above the bedrock as it was found that this was the area of highest concentration of hydrocarbon contamination as confirmed by vertical profile samples (see samples at location 32). Table 10 and Table 10A, on pages 40-44, summarize the field screening and laboratory analytical results for Plume G. Refer to Sheet 10 for a detail of the approximate sample locations.

Both plumes F and G appear to have been caused by similar spills and with similar product. Contaminated soils were left in place around the LPG tank support foundations in sufficient quantity so as not to damage the integrity of the support. Note samples number 22 and 34 in plume G are from under or near tank support foundations.

Plume H was located south of the generator building, east of the fenced compound. The excavation for the plume did not extend over 1 foot and was included with the glycol plume excavation.

The laboratory results for the groundwater BTEX analysis and the Laboratory QC/QA, and Chain-of-Custody are included in Appendix C.

TABLE 1

**FIELD ORGANIC VAPOR METER (OVM)
RESULTS FOR PLUME A
PHELPS DODGE REFINING CORPORATION
GAVILAN NATURAL GAS PROCESSING PLANT
W/2, SE/4 SECTION 11, T25N, R2W, NMPM
GAVILAN, RIO ARriba COUNTY, NEW MEXICO**

DATE	SAMPLE LOC.	DEPTH	SOIL TYPE	OVM (ppm)	TPH (ppm)
11/17/92	1	2.5'	SC	302*	--
11/17/92	2	4'	BR	888	--
11/19/92	3	3'	BR	658	161
11/19/92	4	3'	BR	953	153
11/19/92	5	3'	SC	3.8	ND
11/19/92	6	2'	SC	739*	--
11/19/92	7	2'	SC	3.1	--
11/20/92	8	2'	BR	653	1.65
11/20/92	9	2'	BR	OR	164
11/22/92	10	2'	SC	138*	10.9
11/22/92	11	2'	BR	35.5	107
11/22/92	12	2'	BR	6.4	--
11/22/92	13	3'	BR	621*	--
11/22/92	14	2'	BR	691*	1470
11/25/92	15	3'	SC	739	--
11/25/92	16	7'	SC	2.3	9.9
12/2/92	17	3'	SC	146*	--
12/2/92	18	2'	SC	169*	--
12/23/92	19	0.5'	SC	ND	120
12/23/92	20	0.5'	BR	127	190

- Notes:
- 1) Sample Loc. - Sample location number for plume site plan.
 - 2) OVM - Organic vapor meter.
 - 3) TPH - Total petroleum hydrocarbons.
 - 4) SC - Soil classification of sandy clay.
 - 5) BR - Bedrock.
 - 6) OR - Over range.
 - 7) ND - Parameter not detected at the stated detection limit of 1 ppm.
 - 8) * - Side wall in excavation and later removed.
 - 9) -- No determination made for this parameter.

TABLE 1A

**LABORATORY ANALYSIS FOR TPH AND BTEX
RESULTS FOR PLUME A
PHELPS DODGE REFINING CORPORATION
GAVILAN NATURAL GAS PROCESSING PLANT
W/2, SE/4 SECTION 11, T25N, R2W, NMPM
GAVILAN, RIO ARriba COUNTY, NEW MEXICO**

Note: All analytical values are in parts per million.

DATE	Lab. No.	S. L.	BENZENE	TOLUENE	ETH	TO XYL	TPH
11/19/92	3945	A3	ND	1.81	8.1	101	161
11/19/92	3946	A4	ND	6.3	21.4	206	153
11/19/92	3947	A5	ND	ND	0.168	1.89	ND
11/20/92	3957	A8	ND	0.123	ND	0.191	1.65
11/20/92	3958	A9	ND	5.7	14.5	120	164
11/20/92	3959	A10	ND	ND	ND	0.30	1.09
11/23/92	3978	A11	ND	0.073	0.032	0.0236	10.7
11/23/92	3979	A12	ND	0.073	0.049	0.311	21.4
11/23/92	3975	A14	2.62	78.9	50.3	358	1470
12/2/92	4045	A16	0.068	0.432	0.396	4.23	9.9
12/23/92	4286	A19	--	--	--	--	120
12/23/92	4287	A20	--	--	--	--	190

Notes: 1) L. N. - Laboratory number. 2) S. L. - Sample location. 3) Eth - Ethylbenzene. 4) ND - Parameter not detected at the stated detection limit. 5) TPH - Total Petroleum Hydrocarbons. 6) To Xyl - Total Xylene. 7) -- - No determination made for this parameter.

Refer to Appendix B - Sheet 2 for approximate sample locations for Plume A.

TABLE 2

**FIELD ORGANIC VAPOR METER (OVM)
RESULTS FOR PLUME C
PHELPS DODGE REFINING CORPORATION
GAVILAN NATURAL GAS PROCESSING PLANT
W/2, SE/4 SECTION 11, T25N, R2W, NMPM
GAVILAN, RIO ARriba COUNTY, NEW MEXICO**

DATE	SAMPLE LOC.	DEPTH	SOIL TYPE	OVM (ppm)	TPH (ppm)
11/20/92	1	4.5'	BR	ND	--
11/20/92	2	4.5'	BR	2.9	--
11/20/92	3	6'	BR	111	ND
11/23/92	3	8'	BR	95.6	11.9

- Notes: 1) Sample Loc. - Sample location number for plume site plan.
2) OVM - Organic vapor meter.
3) TPH - Total petroleum hydrocarbons.
4) SC - Soil classification of sandy clay.
5) BR - Bedrock.
6) ND - Parameter not detected at the stated detection limit.
7) -- No determination made for this parameter.

Refer to Appendix B - Sheet 3 for approximate sample locations for Plume C.

TABLE 2A

**LABORATORY ANALYSIS FOR TPH AND BTEX
RESULTS FOR PLUME C
PHELPS DODGE REFINING CORPORATION
GAVILAN NATURAL GAS PROCESSING PLANT
W/2, SE/4 SECTION 11, T25N, R2W, NMPM
GAVILAN, RIO ARriba COUNTY, NEW MEXICO**

Note: All analytical values are in parts per million.

DATE	L. N.	S. L.	BENZENE	TOLUENE	ETH	TO XYL	TPH
11/20/92	3954	C1	ND	0.119	ND	0.131	ND
11/24/92	4044	C3	ND	0.10	ND	0.148	11.9

Notes: 1) L. N. - Laboratory number. 2) S. L. - Sample location. 3) Eth - Ethylbenzene. 4) ND - Parameter not detected at the stated detection limit.
5) TPH - Total Petroleum Hydrocarbons. 6) To Xyl - Total Xylene.

Refer to Appendix B - Sheet 3 for approximate sample locations for Plume C.

TABLE 3

**FIELD ORGANIC VAPOR METER (OVM)
RESULTS FOR PLUME D
(IN THE REFRIGERATOR UNIT AREA)
PHELPS DODGE REFINING CORPORATION
GAVILAN NATURAL GAS PROCESSING PLANT
W/2, SE/4 SECTION 11, T25N, R2W, NMPM
GAVILAN, RIO ARriba COUNTY, NEW MEXICO**

DATE	SAMPLE LOC.	DEPTH	SOIL TYPE	OVM (ppm)	TPH (ppm)
11/3/92	1	1.5'	SC	1.2	--
11/3/92	2	1'-1.5'	SC	3.8	--
11/3/92	3	1.5'	SC	ND	--
11/3/92	4	3.3'	SC/BR	ND	--
11/4/92	5	1'	SC	3.2	18.8
11/4/92	6	1.5'	SC	2.4	--
11/4/92	7	1'	SC/GP	ND	--
11/4/92	8	1.5'	GP/SC	ND	--
12/23/92	ReF1	0.5'	SC	ND	6.8

- Notes: 1) Sample Loc. - Sample location number for plume site plan.
2) OVM - Organic vapor meter.
3) TPH - Total petroleum hydrocarbons.
4) SC - Soil classification of sandy clay.
5) BR - Bedrock.
6) GP - Soil classification of gravel-sand mix.
7) ND - Parameter not detected at the stated detection limit of 1 ppm.
8) -- No determination made for this parameter.

Refer to Appendix B - Sheet 4 for approximate sample locations for Plume D, Refrigerator Skid.

TABLE 3A

LABORATORY ANALYSIS FOR TPH AND BTEX
RESULTS FOR PLUME D
(IN THE REFRIGERATOR UNIT AREA)
PHELPS DODGE REFINING CORPORATION
GAVILAN NATURAL GAS PROCESSING PLANT
W/2, SE/4 SECTION 11, T25N, R2W, NMPM
GAVILAN, RIO ARriba COUNTY, NEW MEXICO

Note: All analytical values are in parts per million.

DATE	L. N.	S. L.	BENZENE	TOLUENE	ETH	TO XYL	TPH
11/4/92	3758	R5	0.042	0.18	0.034	0.289	18.8
12/23/92	4288	Ref1	--	--	--	--	6.8

Notes: 1) L. N. - Laboratory number. 2) S. L. - Sample location. 3) Eth - Ethylbenzene. 4) ND - Parameter not detected at the stated detection limit.
5) TPH - Total Petroleum Hydrocarbons. 6) To Xyl - Total Xylene.
7) ND - Parameter not detected at the stated detection limit of 1 ppm. 8) -- No determination made for this parameter.

Refer to Appendix B - Sheet 4 for approximate sample locations for Plume D, refrigerator skid.

TABLE 4

**FIELD ORGANIC VAPOR METER (OVM)
RESULTS FOR PLUME D
(IN THE PROCESSOR SKID AREA)
PHELPS DODGE REFINING CORPORATION
GAVILAN NATURAL GAS PROCESSING PLANT
W/2, SE/4 SECTION 11, T25N, R2W, NMPM
GAVILAN, RIO ARriba COUNTY, NEW MEXICO**

DATE	SAMPLE LOC.	DEPTH	SOIL TYPE	OVM (ppm)	TPH (ppm)
11/4/92	1	1'	GC/SC	415*	--
11/4/92	2	1'-1.5'	SC	195*	--
11/4/92	3	4'	SC/BR	178	--
11/4/92	4	3'	CL/SC	124*	--
11/4/92	5	4'	SC/BR	31.8	--
11/4/92	6	1'	SC/CL	261*	--
11/4/92	7	1'	GP/SC	738*	--
11/4/92	8	1'	SC	30.1	--
11/4/92	9	1.5'	SC	149*	--
11/5/92	10	2.5'	SC	340*	--
11/5/92	11	2'	SC	96.2*	--
11/5/92	12	2'	GC/SC	236*	--
11/5/92	13	2'	SC	338*	--
11/5/92	14	3.5'	SC	257*	--
11/5/92	15	3.5'	SC	101*	--
11/6/92	16	1.5'	SC	91.2*	--
11/6/92	17	1.5'	SC	96.7*	--
11/6/92	18	2.5'	SC	524*	--
11/6/92	19	5.5'	BR	223*	--
11/6/92	20	2'	SC	540*	--
11/6/92	21	4'	BR	476*	--

11/11/92	22	4'	BR	443*	12.9
11/11/92	23	3'	SC	21.7	--
11/11/92	24	3'	SC	131*	--
11/11/92	25	3'	SC	19.1	--
11/11/92	26	3'	SC	47.4	44.6
11/11/92	27	4.5'	BR	560	--
11/11/92	28	4.5'	BR	589	ND
11/11/92	29	3'	SC	518*	--
11/16/92	30	3'	SC	619*	--
11/16/92	31	3'	SC	306*	--
11/16/92	32	3'	SC	42.8	ND
11/17/92	33	2'	BR	14.5	ND
11/17/92	34	1.5'	BR	20.7	--

- Notes: 1) Sample Loc. - Sample location number for plume site plan.
- 2) OVM - Organic vapor meter.
- 3) TPH - Total petroleum hydrocarbons.
- 4) SC - Soil classification of sandy clay.
- 5) BR - Bedrock.
- 6) GC - Soil classification of gravel-sand-clay mix.
- 7) CL - Soil classification of silty-clay.
- 8) GP - Soil classification of gravel-sand mix.
- 9) ND - Parameter not detected at the stated detection limit of 1 ppm.
- 10) * - Side wall in excavation and later removed.
- 11) -- No determination made for this parameter.

Refer to Appendix B - Sheet 5 for approximate sample locations for Plume D, Processor skid.

TABLE 4A

**LABORATORY ANALYSIS FOR TPH AND BTEX
RESULTS FOR PLUME D
(IN THE PROCESSOR SKID AREA)
PHELPS DODGE REFINING CORPORATION
GAVILAN NATURAL GAS PROCESSING PLANT
W/2, SE/4 SECTION 11, T25N, R2W, NMPM
GAVILAN, RIO ARriba COUNTY, NEW MEXICO**

Note: All analytical values are in parts per million.

DATE	L. N.	S. L.	BENZENE	TOLUENE	ETH	TO XYL	TPH
11/9/92	3851	D22	ND	0.311	0.348	3.69	12.9
11/9/92	3850	D26	ND	0.229	0.21	3.18	44.6
11/16/92	3885	D28	ND	0.108	0.027	0.333	ND
11/16/92	3884	P32	0.256	0.144	ND	ND	ND
11/17/92	3943	P33	ND	ND	ND	0.289	ND

Notes: 1) L. N. - Laboratory number. 2) S. L. - Sample location. 3) Eth - Ethylbenzene. 4) ND - Parameter not detected at the stated detection limit.
5) TPH - Total Petroleum Hydrocarbons. 6) To Xyl - Total Xylene.

Refer to Appendix B - Sheet 5 for approximate sample locations for Plume D, processor skid.

TABLE 5

**FIELD ORGANIC VAPOR METER (OVM)
RESULTS FOR PLUME D
(IN THE DeC₃ SKID AREA)
PHELPS DODGE REFINING CORPORATION
GAVILAN NATURAL GAS PROCESSING PLANT
W/2, SE/4 SECTION 11, T25N, R2W, NMPM
GAVILAN, RIO ARriba COUNTY, NEW MEXICO**

DATE	SAMPLE LOC.	DEPTH	SOIL TYPE	OVM (ppm)	TPH (ppm)
11/4/92	1	1'	GC/SC	20.7	7.9K
11/4/92	2	1'	SC	11.8	--
11/4/92	3	1.5'	SC	20.5	--
11/4/92	4	1.2'	SC	12.8	--
11/4/92	5	1.5'	SC	79.1	--
11/5/92	6	1'	SC	ND	65.0
11/5/92	7	1.5'	SC	36.4	--
11/5/92	8	1.5'	SC	50.8	--
11/5/92	9	2.5'	SC	41.1	--
12/23/92	DeC3NW	0.5'	SC	ND	140

- Notes: 1) Sample Loc. - Sample location number for plume site plan.
2) OVM - Organic vapor meter.
3) TPH - Total petroleum hydrocarbons.
4) SC - Soil classification of sandy clay.
5) BR - Bedrock.
6) GC - Soil classification of gravel-sand-clay mix.
7) K - A factor of 1,000 times.
8) ND - Parameter not detected at the stated detection limit of 1 ppm.
9) -- No determination made for this parameter.

Refer to Appendix B - Sheet 6 for approximate sample locations for Plume D, DeC₃ skid.

TABLE 5A

**LABORATORY ANALYSIS FOR TPH AND BTEX
RESULTS FOR PLUME D
(IN THE DeC₃ SKID AREA)
PHELPS DODGE REFINING CORPORATION
GAVILAN NATURAL GAS PROCESSING PLANT
W/2, SE/4 SECTION 11, T25N, R2W, NMPM
GAVILAN, RIO ARriba COUNTY, NEW MEXICO**

Note: All analytical values are in parts per million.

DATE	L. N.	S. L.	BENZENE	TOLUENE	ETH	TO XYL	TPH
11/4/92	3755	D1	0.09	0.154	ND	0.781	7,920
11/5/92	3756	D6	ND	0.143	ND	0.245	65.0
11/5/92	3757	D9	ND	0.11	0.062	0.245	41.1
12/23/92	4285	DsC3 NW	--	--	--	--	140

Notes: 1) L. N. - Laboratory number. 2) S. L. - Sample location. 3) Eth - Ethylbenzene. 4) ND - Parameter not detected at the stated detection limit.
5) TPH - Total Petroleum Hydrocarbons. 6) To Xyl - Total Xylene. 7) -- No determination made for this parameter.

Refer to Appendix B - Sheet 6 for approximate sample locations for Plume D, DeC₃ skid.

TABLE 6

**FIELD ORGANIC VAPOR METER (OVM)
RESULTS FOR PLUME D
(IN THE GLYCOL SKID AREA)
PHELPS DODGE REFINING CORPORATION
GAVILAN NATURAL GAS PROCESSING PLANT
W/2, SE/4 SECTION 11, T25N, R2W, NMPM
GAVILAN, RIO ARriba COUNTY, NEW MEXICO**

DATE	SAMPLE LOC.	DEPTH	SOIL TYPE	OVM (ppm)	TPH (ppm)
11/4/92	1	1.5'	SC	134*	--
11/4/92	2(G2)	1'	SC	65.2*	33.7
11/4/92	3	3'	SC	123*	--
11/4/92	4	1'	CL/SC	124*	--
11/4/92	5	1'-1.5'	SC	85.6*	--
11/4/92	6(G6)	1'	GC/SC	62.4*	39.3
11/4/92	7	0.5'-1'	GC	313*	--
11/4/92	8	4'	SC	99.5*	--
11/4/92	9	1'-1.5'	GC/SC	65.0*	--
11/4/92	10	1'-1.5'	SP/SC	182*	--
11/4/92	11	2'-2.5'	SC	334*	--
11/4/92	12	2.5'	SC	143*	--
11/4/92	13	3.5'	SC	227*	--
11/4/92	14	1.5'	SC	187*	--
11/5/92	15	1.5'	SC	40.9*	--
11/5/92	16(G16)	1.5'	SC	38.4*	60
11/5/92	17	1.5'	SC	ND*	--
11/5/92	18	1.5'	SC	ND*	--
11/5/92	19(G19)	1.5'	SC	ND	13.0
11/5/92	20(G20)	2.5'	SC	ND*	26.6
11/5/92	21	2.5'	SC	121*	--

11/5/92	22	2'	SC	55.1*	--
11/5/92	23	1.5'	SC	43.2*	--
11/5/92	24	2.5'	SC	ND*	--
11/5/92	25 (G25)	2.5'	SC	40.2*	73
11/5/92	26 (G26)	2'	SC	ND*	23.8
11/5/92	27	5'	SC	160*	--
11/5/92	28	5'	SC	209*	--
11/5/92	29 (G29)	4.5'	SC	38.5*	30.2
11/5/92	30	4'	SC	47.9*	--
11/16/92	28	5.5'	SC	34.5*	--
11/20/92	31 (GY1)	8.5'	BR	20.8	ND
11/20/92	32 (GY2)	6'	SC	60.6	ND
11/20/92	33 (GY3)	7'	SC	6.4	5.9
11/20/92	34	6'	SC	1.8	--
12/2/92	35	6'	SC	31.5*	--
12/2/92	36	7'	SC	15.4	--
12/2/92	37 (GY7)	4'	SC	1.7	11.4
12/3/92	38	5'	SC	60.2*	--
12/3/92	39	4'	SC	4.7	--
12/3/92	40 (GY10)	5'	SC	0.9	ND
12/4/92	41 (GY11)	5'	SC	35.7	ND
12/4/92	42 (GY12.1)	1.5'	SC	1.2*	138
12/16/92	43 (GY12.3)	3'	SC	ND	ND
12/16/92	44 (GY13.1)	1.5'	SC	1.2	ND
12/16/92	45 (GY13.3)	2.5'	SC	ND	ND
12/17/92	46 (GY14)	5'	SC	ND	ND
12/18/92	47 (GY15)	1'	SC	ND	ND
12/18/92	48 (GY16)	1'	SC	ND	ND
12/23/92	49 (GY49)	1.5'	SC	ND	6.5

Notes: 1) Sample Loc. - Sample location number for plume site plan.

- 2) OVM - Organic vapor meter.
- 3) TPH - Total petroleum hydrocarbons.
- 4) SC - Soil classification of sandy clay.
- 5) BR - Bedrock.
- 6) GL - Soil classification of silty clay.
- 7) GC - Soil classification of gravel-sand-clay mix.
- 8) SP - Soil classification of poorly graded sands.
- 9) ND - Parameter not detected at the stated detection limit of 1 ppm.
- 10) * - Side wall in excavation and later removed.
- 11) -- No determination made for this parameter.

Refer to Appendix B - Sheet 7 for approximate sample locations for Plume D, Glycol skid.

TABLE 6A

**LABORATORY ANALYSIS FOR TPH AND BTEX
RESULTS FOR PLUME D
(IN THE GLYCOL SKID AREA)
PHELPS DODGE REFINING CORPORATION
GAVILAN NATURAL GAS PROCESSING PLANT
W/2, SE/4 SECTION 11, T25N, R2W, NMPM
GAVILAN, RIO ARriba COUNTY, NEW MEXICO**

Note: All analytical values are in parts per million.

DATE	L. N.	S. L.	BENZENE	TOLUENE	ETH	TO XYL	TPH
11/6/92	3778	G2	ND	0.104	ND	0.172	33.7
11/6/92	3779	G6	ND	0.148	ND	0.239	39.3
11/5/92	3759	G16	ND	0.103	ND	0.262	60
11/5/92	3760	G19	ND	0.135	ND	0.268	13.0
11/5/92	3761	G23	ND	0.134	0.04	0.483	19.3
11/6/92	3780	G20	ND	0.122	ND	0.234	26.6
11/6/92	3781	G25	0.089	0.133	0.03	0.315	73
11/6/92	3782	G26	0.063	0.276	0.064	0.946	23.8
11/6/92	3783	G29	0.066	0.129	0.034	0.277	30.2
11/20/92	3955	GY1	ND	ND	ND	0.373	ND
11/20/92	3956	GY2	ND	0.805	0.510	12.1	ND
11/23/92	3976	GY3	ND	0.09	0.054	0.964	5.9
12/2/92	4046	GY7	ND	ND	ND	ND	11.4

12/16/92	4216	GY12.1	ND	ND	ND	ND	134
12/16/92	4217	GY12.3	ND	ND	ND	ND	ND
12/16/92	4218	GY13.1	ND	ND	ND	ND	ND
12/16/92	4219	GY13.2	ND	ND	ND	ND	ND
12/17/92	4237	GY14	0.141	0.343	ND	5.71	30.5
12/18/92	4256	GY15	ND	0.85	ND	0.267	ND
12/18/92	4257	GY16	ND	0.065	ND	ND	ND
12/23/92	4289	GY49	--	--	--	--	6.5

Notes: 1) L. N. - Laboratory number. 2) S. L. - Sample location. 3) Eth - Ethylbenzene. 4) ND - Parameter not detected at the stated detection limit.
5) TPH - Total Petroleum Hydrocarbons. 6) To Xyl - Total Xylene. 7) -- No determination made for this parameter.

Refer to Appendix B - Sheet 7 for approximate sample locations for Plume D, glycol skid.

TABLE 7

FIELD ORGANIC VAPOR METER (OVM)
RESULTS FOR PLUME E
(IN THE COMPRESSOR BUILDING)
PHELPS DODGE REFINING CORPORATION
GAVILAN NATURAL GAS PROCESSING PLANT
W/2, SE/4 SECTION 11, T25N, R2W, NMPM
GAVILAN, RIO ARriba COUNTY, NEW MEXICO

DATE	SAMPLE LOC.	DEPTH	SOIL TYPE	OVM (ppm)	TPH (ppm)
10/15/92	1	2'	GC/SC	415	--
10/15/92	2	2.7'	SC	195	--
10/15/92	3	4'	SC/BR	178	--
10/15/92	4	2'	CL/SC	124	--
10/15/92	5	1'	SC/BR	31.8	--
10/15/92	6	1.5'	SC/CL	261	--
10/16/92	7	2'	GP/SC	738	--
10/16/92	8	2'	SC	30.1	--
10/16/92	9	1'	SC	149	--
10/19/92	10	2'	SC	340	--
10/22/92	11	2'	SC	96.2	--
10/22/92	CB1	2'	BR	236	327
10/22/92	CB2	2'	BR	338	75.0
10/22/92	CB3	1'	SC	257	ND
10/22/92	CB4	1'	SC	101	ND
10/22/92	CB5	0.5'	SC	91.2	ND

- Notes: 1) Sample Loc. - Sample location number for plume site plan.
2) OVM - Organic vapor meter.
3) TPH - Total petroleum hydrocarbons.
4) SC - Soil classification of sandy clay.
5) BR - Bedrock.
6) GC - Soil classification of gravel-sand-clay mix.
7) CL - Soil classification of silty clay.

- 8) GP - Soil classification of gravel-sand mix.
- 9) CB - Laboratory number for this plume.
- 10) ND - Parameter not detected at the stated detection limit of 1 ppm.
- 11) -- No determination made for this parameter.

Refer to Appendix B - Sheet 8 for approximate sample locations for Plume E, in the Compressor Building.

TABLE 7A

**LABORATORY ANALYSIS FOR TPH AND BTEX
RESULTS FOR PLUME E
(IN THE COMPRESSOR BUILDING)
PHELPS DODGE REFINING CORPORATION
GAVILAN NATURAL GAS PROCESSING PLANT
W/2, SE/4 SECTION 11, T25N, R2W, NMPM
GAVILAN, RIO ARriba COUNTY, NEW MEXICO**

Note: All analytical values are in parts per million.

DATE	L. N.	S. L.	BENZENE	TOLUENE	ETH	TO XYL	TPH
10/20/92	3557	CB1	ND	0.168	0.033	0.306	327
10/20/92	3558	CB2	ND	0.178	ND	0.327	75.0
10/22/92	3585	CB3	ND	0.196	0.422	9.75	ND
10/22/92	3586	CB4	ND	0.086	0.027	0.325	ND
10/22/92	3587	CB5	ND	0.88	0.026	0.353	ND

Notes: 1) L. N. - Laboratory number. 2) S. L. - Sample location. 3) Eth - Ethylbenzene. 4) ND - Parameter not detected at the stated detection limit.
5) TPH - Total Petroleum Hydrocarbons. 6) To Xyl - Total Xylene.

Refer to Appendix B - Sheet 8 for approximate sample locations for Plume E, in the compressor building.

TABLE 8

**FIELD ORGANIC VAPOR METER (OVM)
RESULTS FOR PLUME E
(SOUTH OF THE COMPRESSOR BUILDING)
PHELPS DODGE REFINING CORPORATION
GAVILAN NATURAL GAS PROCESSING PLANT
W/2, SE/4 SECTION 11, T25N, R2W, NMPM
GAVILAN, RIO ARriba COUNTY, NEW MEXICO**

DATE	SAMPLE LOC.	DEPTH	SOIL TYPE	OVM (ppm)	TPH (ppm)
11/4/92	1	1.2'	SC/BR	ND	--
11/4/92	2	1.5'	SC	15.1	11.4
11/4/92	3	1'	GP	ND	--
11/4/92	4	2.5'	BR	ND	11.7
11/4/92	5	1'	SC	44.6	--
11/4/92	6	0.5'-1'	SC/GP	1.2	--
11/4/92	7	2.5'	BR	0.4	--
11/4/92	8	2.5'	BR	1.2	17.4
11/4/92	9	1'	SC/BR	7.3	49.5
11/4/92	10	1'	SC/BR	1.2	--
11/4/92	11	2'	BR	9.9	--
11/4/92	12	1.5'	SC/BR	ND	--
11/4/92	13	1.5'	SC/BR	516	148
11/16/92	14	1.5'	BR	24.6	ND
10/22/92	CB4	1'	SC	101	--
10/22/92	CB5	0.5'	SC	91.2	--

- Notes: 1) Sample Loc. - Sample location number for plume site plan.
- 2) OVM - Organic vapor meter.
 - 3) TPH - Total petroleum hydrocarbons.
 - 4) SC - Soil classification of sandy clay.
 - 5) BR - Bedrock.
 - 6) GP - Soil classification of gravel-sand mix.
 - 7) CB - Laboratory number for this plume.
 - 8) ND - Parameter not detected at the stated detection limit of 1 ppm.
 - 9) -- No determination made for this parameter.

Refer to Appendix B - Sheet 9 for approximate sample locations for Plume E, south of the Compressor Building.

TABLE 8A

**LABORATORY ANALYSIS FOR TPH AND BTEX
RESULTS FOR PLUME E
(SOUTH OF THE COMPRESSOR BUILDING)
PHELPS DODGE REFINING CORPORATION
GAVILAN NATURAL GAS PROCESSING PLANT
W/2, SE/4 SECTION 11, T25N, R2W, NMPM
GAVILAN, RIO ARriba COUNTY, NEW MEXICO**

Note: All analytical values are in parts per million.

DATE	L. N.	S. L.	BENZENE	TOLUENE	ETH	TO XYL	TPH
11/3/92	3750	E2	ND	ND	ND	0.127	11.4
11/3/92	3751	E4	0.071	0.301	0.069	0.716	11.7
11/3/92	3752	E8	ND	0.202	0.186	4.09	17.4
11/3/92	3753	E9	0.092	0.379	0.107	3.27	49.5
11/3/92	3754	E13	0.105	0.204	0.124	2.05	148
12/16/92	4215	E14	ND	ND	ND	ND	ND

Notes: 1) L. N. - Laboratory number. 2) S. L. - Sample location. 3) Eth - Ethylbenzene. 4) ND - Parameter not detected at the stated detection limit.
5) TPH - Total Petroleum Hydrocarbons. 6) To Xyl - Total Xylene.

Refer to Appendix B - Sheet 9 for approximate sample locations for Plume E, south of the compressor building.

TABLE 9

**FIELD ORGANIC VAPOR METER (OVM)
RESULTS FOR PLUME F
PHELPS DODGE REFINING CORPORATION
GAVILAN NATURAL GAS PROCESSING PLANT
W/2, SE/4 SECTION 11, T25N, R2W, NMPM
GAVILAN, RIO ARriba COUNTY, NEW MEXICO**

DATE	SAMPLE LOC.	DEPTH	SOIL TYPE	OVM (ppm)	TPH (ppm)
10/20/92	1	1'	SP	16.3	--
10/20/92	2	2'	CL	OR	--
10/22/92	3	2'	CL	349*	--
10/22/92	4	2.7'	CL	767*	--
10/23/92	5	2'	CL	858*	--
10/26/92	6	2'	CL	316*	--
10/26/92	7	2'	CL	320*	--
10/26/92	8	2'	CL	490*	--
10/27/92	9	1.5'	CL	3.3	--
10/27/92	10	1.5'	CL	93.0	--
10/28/92	11	2'	CL	375*	--
10/28/92	12	2.5'	CL	364*	--
10/28/92	13	2'	CL	44.6	--
10/28/92	14	2'	CL	76.8	--
10/29/92	15	1.5'	SP	77	--
10/30/92	16	1.5'	CL	360*	--
10/30/92	17	2'	CL	56.7	--
10/30/92	FA1	0.5'	CL	--	5.8
10/30/92	FA2	0.5'	CL	--	5.5
10/30/92	FA3	0.5'	BR	--	15.6
10/30/92	FA4	2.5'	BR	--	9.3

10/30/92	FA5	1.5'	BR	--	67.0
11/9/92	18	2'	SC	26.9	--
11/9/92	19	3'	SC	365*	--
11/9/92	20	1.5'	SC	55.2	--
11/9/92	21	1'	SC	383*	ND
11/9/92	21	3'	BR	355	--
11/9/92	22	2.5'	BR	405	--
11/9/92	23	2.5'	BR	189	--
11/10/92	24	2'	BR	639	--
11/10/92	25	3'	BR	466	--
11/10/92	26	3'	BR	346	--
11/10/92	27	2'	SC	407*	--
11/10/92	28	2'	SC	431*	--
11/10/92	29	3'	BR	430	--
11/10/92	30	3'	BR	376	--
11/10/92	31	2'	SC	257*	--
11/10/92	32	2.5'	SC	48.1	--
11/10/92	33	2.5'	SC	484*	--
11/10/92	34	3'	SC	405*	--
11/10/92	35	3'	BR	395	--
11/10/92	36	2.5'	SC	139*	--
11/16/92	37	2.5'	SC	549*	--
11/16/92	38	3'	SC	272*	--
11/16/92	39	3'	SC	31.2	20.4
11/16/92	40	3.5'	BR	53.9	28.9
11/16/92	41	2.5'	SC	584*	--
11/16/92	42	4'	SC	453*	--
12/23/92	43	0.5'	BR	85	13.4

- Notes: 1) Sample Loc. - Sample location number for plume site plan.
- 2) OVM - Organic vapor meter.
 - 3) TPH - Total petroleum hydrocarbons.
 - 4) SC - Soil classification of sandy clay.
 - 5) BR - Bedrock.
 - 6) OR - Over range.
 - 7) CL - Soil classification of silty clays.
 - 8) SP - Soil classification of poorly-graded sands.
 - 9) ND - Parameter not detected at the stated detection limit of 1 ppm.
 - 10) * - Side wall in excavation and later removed.
 - 11) -- No determination made for this parameter.

Refer to Appendix B - Sheet 10 for approximate sample locations for Plume F.

TABLE 9A

**LABORATORY ANALYSIS FOR TPH AND BTEX
RESULTS FOR PLUME F
PHELPS DODGE REFINING CORPORATION
GAVILAN NATURAL GAS PROCESSING PLANT
W/2, SE/4 SECTION 11, T25N, R2W, NMPM
GAVILAN, RIO ARriba COUNTY, NEW MEXICO**

Note: All analytical values are in parts per million.

DATE	L. N.	S. L.	BENZENE	TOLUENE	ETH	TO XYL	TPH
10/28/92	3665	FA1	0.030	0.132	0.042	0.617	5.8
10/28/92	3666	FA2	ND	0.079	ND	0.210	5.5
10/28/92	3667	FA3	ND	0.119	0.04	1.44	15.6
10/29/92	3670	FA4	ND	0.07	ND	0.202	9.3
10/29/92	3671	FA5	ND	0.154	0.117	1.29	67.0
11/16/92	3881	F21	0.062	0.64	0.56	11.71	ND
11/16/92	3883	F39	0.07	0.201	ND	0.365	20.4
11/16/92	3882	F40	0.101	0.377	0.163	1.81	28.9
21/23/92	4291	F43	--	--	--	--	13.4

Notes: 1) L. N. - Laboratory number. 2) S. L. - Sample location. 3) Eth - Ethylbenzene. 4) ND - Parameter not detected at the stated detection limit.
5) TPH - Total Petroleum Hydrocarbons. 6) To Xyl - Total Xylene. 7) -- No determination made for this parameter.

Refer to Appendix B - Sheet 10 for approximate sample locations for Plume F.

TABLE 10

**FIELD ORGANIC VAPOR METER (OVM)
RESULTS FOR PLUME G
PHELPS DODGE REFINING CORPORATION
GAVILAN NATURAL GAS PROCESSING PLANT
W/2, SE/4 SECTION 11, T25N, R2W, NMPM
GAVILAN, RIO ARriba COUNTY, NEW MEXICO**

DATE	SAMPLE LOC.	DEPTH/BR	SOIL TYPE	OVM (ppm)	TPH (ppm)
11/23/92	1	5.5'/6'	SC	420*	--
11/23/92	2	4'	BR	94.1	7.1
11/23/92	3	3'/3.5'	SC	460*	--
11/23/92	4	3.5'/4'	SC	501*	--
11/23/92	5	1.5'/8'	SC	9.2*	--
11/23/92	6	5.5'/6'	SC	650*	--
11/23/92	7	4'/4.5'	SC	315*	--
11/24/92	5	5'/8'	SC	452*	--
11/24/92	8	7'/9'	SC	494*	--
11/24/92	9	8'/10'	SC	383*	--
11/24/92	10	5'/7'	SC	523*	--
11/24/92	11	5'/7'	SC	474*	--
11/24/92	12	5'/7'	SC	545*	--
11/24/92	5	8'	BR	325	--
11/25/92	13	4'	BR	2.4	--
12/2/92	14	8'/10'	SC	308*	--
12/2/92	15	8'/9'	SC	309*	--
12/2/92	16	6'/7'	SC	715*	--
12/3/92	17	8'/10'	SC	442*	--
12/3/92	18	5'/5.5'	SC	35.2	ND
12/3/92	19	7'/7.5'	SC	3.1	ND

12/3/92	20	10'/10'	SC	120*	ND
12/10/92	21	7'/8'	SC	1100*	--
12/10/92	22	7'/8'	SC	1500	70
12/10/92	23	7'/8'	SC	1200*	--
12/10/92	24	7'/8'	SC	1200*	--
12/11/92	25	7'/8'	SC	365*	--
12/11/92	26	7'/8'	SC	594*	--
12/11/92	27	7'/10'	SC	487*	--
12/11/92	28	8'/10'	SC	91.9	ND
12/11/92	29	9'/10'	SC	89.7	ND
12/14/92	30	7'/9'	SC	219*	--
12/14/92	31	8'/9'	SC	129*	ND
12/14/92	32	9'	BR	21.3	ND
12/14/92	32	7'	SC	57.7	ND
12/14/92	32	5'	SC	1.2	ND
12/14/92	32	3'	FM	ND	ND
12/14/92	33	7'/8'	SC	48.7	ND
12/14/92	34	7'/8'	SC	1100	11.3
12/14/92	28	4'/10'	FM	4.4	193
12/17/92	35	4'/4.1'	SC	OR	--
12/17/92	36	3'/3.1	SC	486*	--
12/17/92	37	3'	BR	75.5	ND
12/17/92	38	4'/4.1'	SC	1705*	--
12/17/92	39	4'/4.1'	SC	513*	--
12/18/92	40	3'/3.1	SC	42.4	ND
12/18/92	41	4'/4.1	SC	254*	--
12/18/92	42	3'/4.5'	SC	579*	--
12/18/92	43	5'/5.1'	SC	256*	--
12/18/92	44	5'/5.1'	SC	452*	--
12/18/92	45	5'/5.1'	SC	489*	--

12/18/92	46	3'/3.1'	SC	103	ND
12/18/92	47	3'/3.1'	SC	105	ND
12/18/92	48	7'/10'	SC	5.4	ND
12/18/92	49	3'/10'	SC	0.9	ND
12/18/92	50	1'/10'	SC	ND	ND
12/18/92	51	3'	FM	ND	ND
12/18/92	52	1'	FM	ND	ND
12/18/92	53	3'	FM	ND	ND
12/18/92	54	1'	FM	ND	ND

- Notes: 1) Sample Loc. - Sample location number for plume site plan.
- 2) OVM - Organic vapor meter.
- 3) TPH - Total petroleum hydrocarbons.
- 4) SC - Soil classification of sandy clay.
- 5) BR - Bedrock.
- 6) FM - Fill mix, consists of decomposed sand stone bedrock, sand stone blocks, and silty clay soil mixed.
- 7) ND - Parameter not detected at the stated detection limit of 1 ppm.
- 8) * - Side wall in excavation and later removed.
- 9) -- No determination made for this parameter.

Refer to Appendix B - Sheet 11 for approximate sample locations for Plume G.

TABLE 10A

**LABORATORY ANALYSIS FOR TPH AND BTEX
RESULTS FOR PLUME G
PHELPS DODGE REFINING CORPORATION
GAVILAN NATURAL GAS PROCESSING PLANT
W/2, SE/4 SECTION 11, T25N, R2W, NMPM
GAVILAN, RIO ARriba COUNTY, NEW MEXICO**

Note: All analytical values are in parts per million.

DATE	L. N.	S. L.	BENZENE	TOLUENE	ETH	TO XYL	TPH
11/17/92	3944	G2	0.091	ND	ND	0.178	0.71
12/8/92	4109	G18	ND	ND	ND	ND	ND
12/8/92	4110	G19	ND	0.168	ND	0.374	ND
12/8/92	4111	G20	ND	0.167	ND	0.234	ND
12/10/92	4153	G22	8.5	34.0	2.82	19.9	70
12/11/92	4154	G28.8	ND	ND	ND	ND	ND
12/11/92	4155	G29	ND	ND	ND	ND	ND
12/14/92	4165	G31	ND	0.152	ND	0.582	ND
12/16/92	4208	G32.9	ND	0.101	0.058	0.252	ND
12/16/92	4209	G32.7	ND	0.105	0.043	0.228	ND
12/16/92	4210	G32.5	ND	0.141	0.154	0.596	ND
12/16/92	4211	G32.3	ND	0.097	ND	0.177	ND
12/16/92	4212	G33	ND	0.127	0.319	0.69	ND
12/16/92	4213	G34	ND	0.23	0.062	0.487	1.13

12/16/92	4214	G28.4	ND	ND	ND	0.065	19.3
12/18/92	4258	G46	ND	0.072	ND	0.124	ND
12/18/92	4259	G47	ND	0.085	ND	0.147	ND
12/18/92	4248	G48	ND	0.143	0.122	0.75	ND
12/18/92	4249	G49	ND	0.074	0.088	0.28	ND
12/18/92	4250	G50	ND	0.089	ND	0.078	ND
12/18/92	4251	G51	ND	0.08	ND	0.066	ND
12/18/92	4252	G52	ND	0.08	ND	0.061	ND
12/18/92	4252	G53	ND	0.086	ND	0.083	ND
12/18/92	4253	G54	0.464	2.13	1.03	14.8	ND
12/18/92	4255	G40	0.61	2.67	2.22	30.5	ND

Notes: 1) L. N. - Laboratory number. 2) S. L. - Sample location. 3) Eth - Ethylbenzene. 4) ND - Parameter not detected at the stated detection limit.
5) TPH - Total Petroleum Hydrocarbons. 6) To Xyl - Total Xylene.

Refer to Appendix B - Sheet 11 for approximate sample locations for Plume G.

Abatement Summary:

A total of 3500 cubic yards (yd³) of highly contaminated soil were remove from the PDRC Gavilan Plant and replaced with clean backfill. The contaminated soils were transported for treatment to Envirotech's Soil Remediation Facility (ESRF) located at Hilltop, New Mexico. This facility is permitted on August 1, 1990 (expanded area permitted September 29, 1992) by the NMOCD and all materials received are authorized by the NMOCD prior to receipt. PDRC Gavilan Plant soils were received at the expanded facility and a copy of the **Permit Approval Letter** is enclosed in Appendix D. Bills of Lading are attached manifesting all of the removed contaminated soils. Based on the testing conducted during the environmental audit, soils at the subject site are classified as non-hazardous.

The site was restored as close as possible to the original grade with the overall drainage diverted off and around the plant compound. The backfill material consisted of virgin silty sand soil from a site near the ESRF, NE/2 , NW/4, Section 6, T26N, R10W, NMPM, San Juan County, New Mexico.

Prior to the complete backfill of the compressor building, Mr. Joe H. Cox, Jr., Petroleum Engineer, Mallon Oil Company requested the installation of a plastic liner under the west compressor setting to minimize the effect of any future leakage of motor/engine oils from future operations to the subsurface soils.

DISCUSSION AND CONCLUSION

Based on the remediation/field testing, it appears that all of the highly contaminated soil identified during the environmental audit and field assessment have been removed, except for those minor areas noted in this report. Additionally, the NMOCD's representative has inspected and/or been appraised of all areas that were not removed, and has concurred with a no action recommendation.

The remedial action initially focused on those areas identified in the audit and RAP, but as the abatement progressed all areas testing over cleanup standards were also included. The primary sources and extent of contamination appears to have been as outlined in the audit relatively well except for Plume F and G. The contamination for Plume F and G appears to be from condensate spills near the north end of Plume F which then followed piping corridors into the fill area in the southwest corner of the site. The original audit avoided those areas identified by the Plant Manager as probably containing buried piping and the migration along piping corridors was not found until the abatement of the plumes was initiated.

Except along the southeast areas of Plume A, on the Fred Davis Ranch, the lateral extent of the hydrocarbon contaminated soils appears to be limited to the general site area. It does not appear that previous contamination and the remaining insitu contamination will significantly impact groundwater and the surface water off the site.

Based on the findings of the environmental audit, this remediation and the findings of the field assessment conducted during the remediation, it is recommended that the file for this RAP be closed for this site.

LIMITATIONS AND CLOSURE

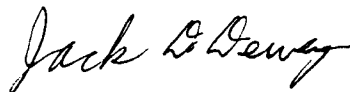
This site remediation and closure is based on the preliminary site assessment, the laboratory test result, field observations, and information provided by PDRC and the NMOCD.

All soil contamination is believed to be caused by petroleum discharges associated with hydrocarbons products at typical natural gas processing plant facilities. No hazardous wastes are believed to be present as defined per RCRA (40 CFR 261). A toxicity characteristic leaching procedure (TCLP) analysis was preformed as part of the original assessment. The results of the TCLP analysis have previously been submitted to NMOCD. A copy of the letter is in (Appendix D).

This site remediation and closure report has been prepared for the exclusive use of PDRC as it pertains to their Gavilan Plant facility located on the West $\frac{1}{2}$ of the Southeast $\frac{1}{4}$ of Section 11, Township 25N, Range 2W, NMPM, Gavilan, Rio Arriba County, New Mexico.

I certify that I am personally familiar with the investigation work at the site, the site conditions as reported and this report.

Respectfully Submitted,
ENVIROTECH, INC.



Jack D. Dewey
Hydrologist

Reviewed By:



Mr. Michael K. Lane, P.E.
Geological Engineer

APPENDICES

MKL/JD:jd

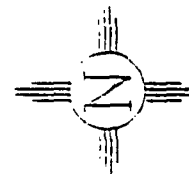
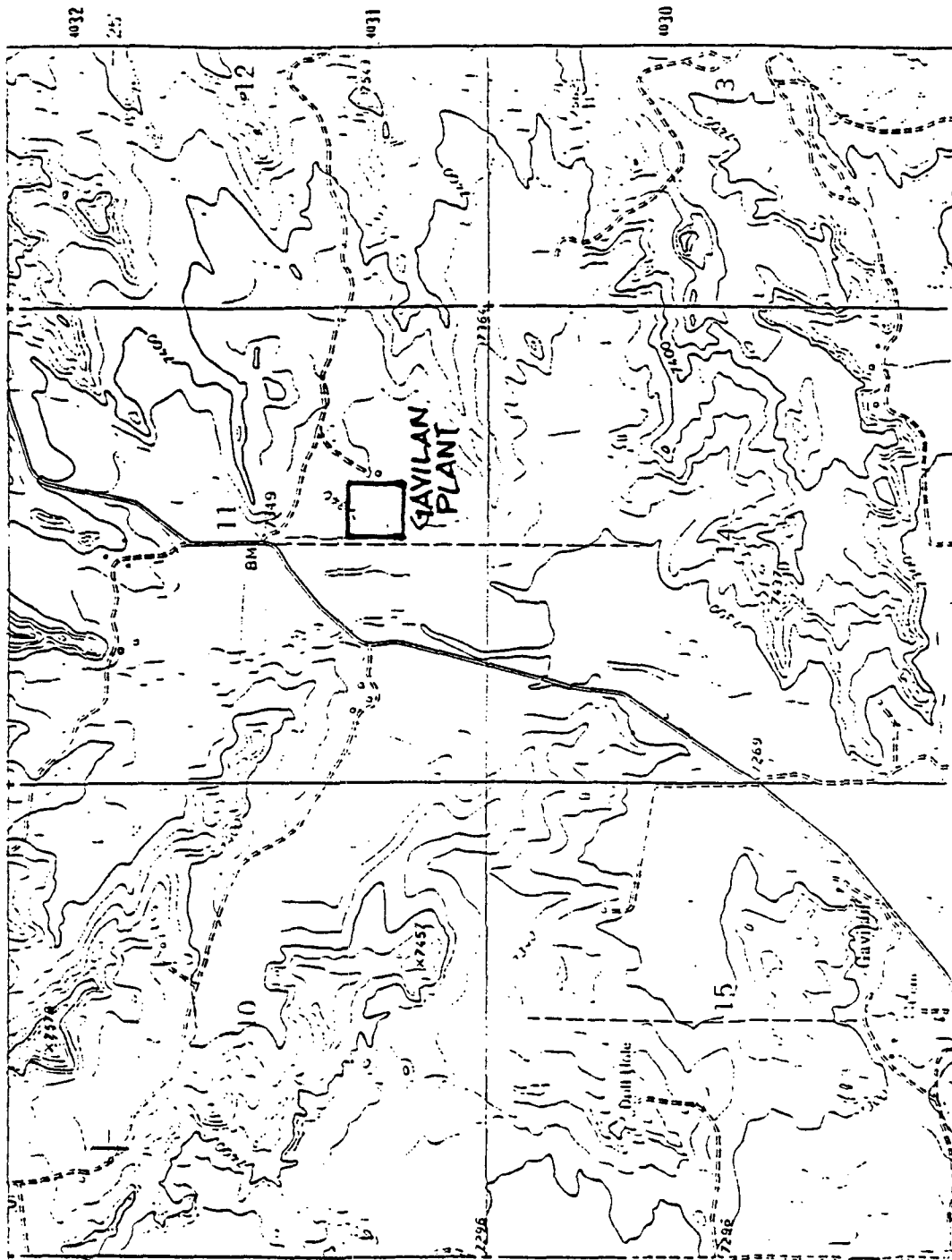
92194EC.RPT

APPENDICES

APPENDIX A

Vicinity Map

Site Plan with Test Hole Locations



FULLER HUBBARD
 CIVIL ENGINEERING & ARCHITECTS, P.C.
 5796 U.S. HIGHWAY 6A, SUITE 300
 GAVILAN, FERNANDO COUNTY, NEW MEXICO
 PROJECT # 92194

FULLER HUBBARD
 CIVIL ENGINEERING & ARCHITECTS, P.C.
 5796 U.S. HIGHWAY 6A, SUITE 300
 GAVILAN, FERNANDO COUNTY, NEW MEXICO
 PHONE (505) 632-0615

AREA VICINITY MAP

SHEET 1

DRAWN: SEP '92

DRAWN BY: RB

PRJ MGR: RB

APPENDIX B

Site Plan with Plume Locations

Plume A

Plume C

Plume D, Refrigerator Skid

Plume D, Processor Skid

Plume D, DeC₃ Skid

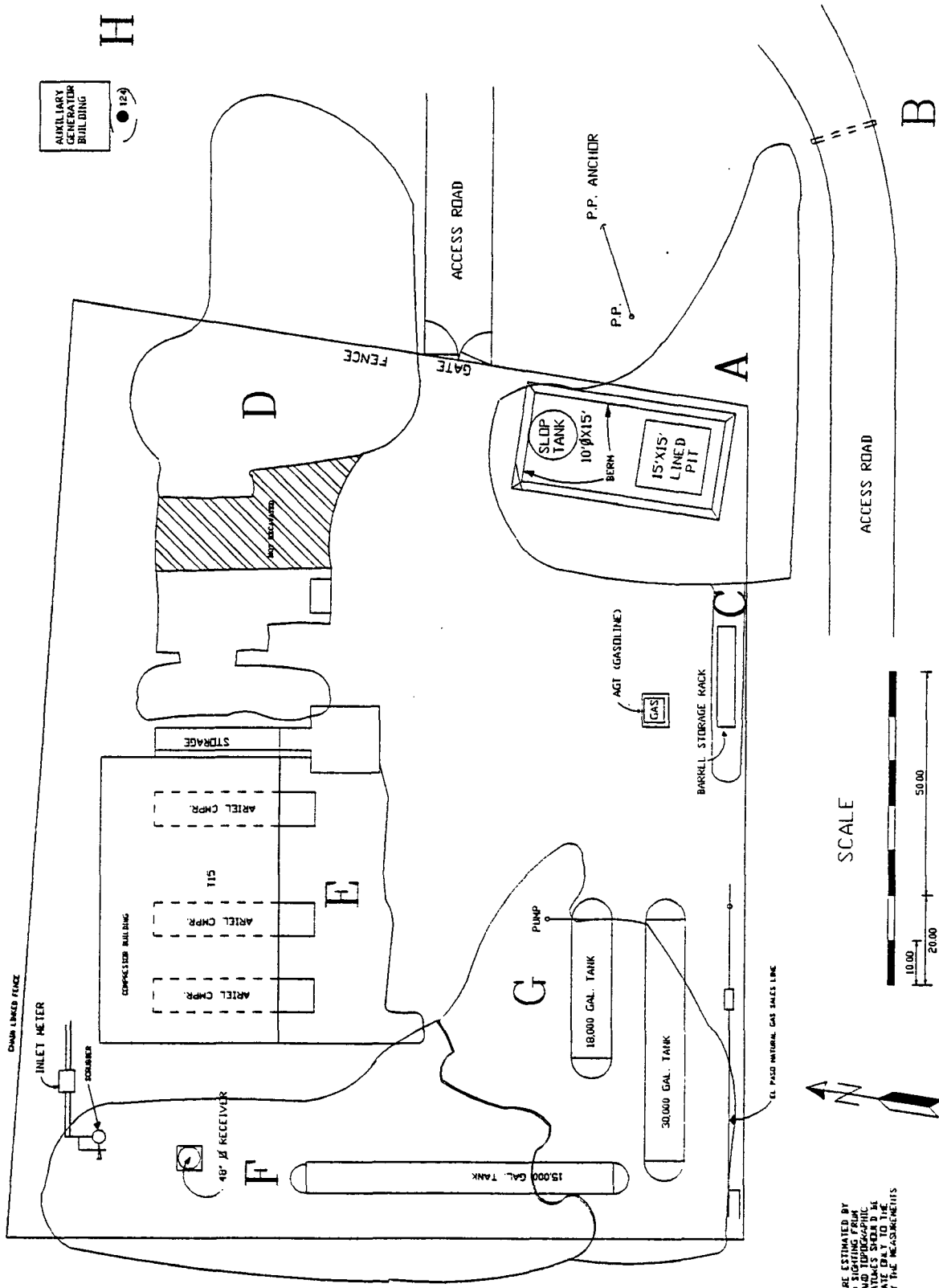
Plume D, Glycol Skid

Plume E, Compressor Building

Plume E, South of Compressor Building

Plume F

Plume G



SITE FEATURES WERE ESTIMATED BY PHOTORECONNAISSANCE OF AERIAL PHOTOGRAPHS, EXISTING PLANS AND TOPOGRAPHIC FEATURES. ALL FEATURES SHOWN IN THIS PLAN ARE CONSIDERED ACCURATE ONLY TO THE EXTENT IMPLIED BY THE MEASUREMENTS USED.



SCALE



PHELPS DODGE,
GAVILAN NATURAL GAS PROCESSING PLANT
W/2, SE/4, SECTION 11, T25N, R2W, NMPM
GAVILAN, RIO ARriba COUNTY, NEW MEXICO

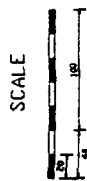
PROJECT # 92194

ENVIROTECH INC.

ENVIRONMENTAL SCIENTISTS & ENGINEERS
5796 U.S. HIGHWAY 64-3014
FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615

SITE REMEDIATION
SITE PLAN
SHEET 1
DECEMBER 21, 1992

ACCESS ROAD



KEY
 O6 SAMPLE LOCATION
 ●11 TPH & BTEX ALSO

PREVIOUS
 AGT (GASOLINE)

GAS

REMOVED BARREL
 STORAGE RACK

SITE FEATURES WERE ESTIMATED BY TAPING
 PACING AND SIGHTING FROM EXISTING
 STRUCTURES AND TOPOGRAPHICAL FEATURES.
 ALL FEATURES SHOULD BE CONSIDERED
 ACCURATE ONLY TO THE DEGREE IMPLIED
 BY THE METHODS USED

ACCESS ROAD

EXCAVATION BOUNDARY
 ALL AREA WITHIN THE
 BOUNDARY EXCAVATED
 TO BEDROCK.

P.P. ANCHOR

P.P.

BEDROCK
 OUTCROP

A

LESS THAN
 6" TO BEDROCK

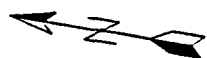
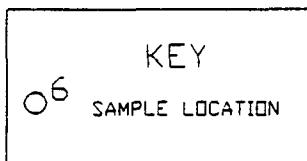
PHELPS DODGE,
 GAVILAN PLANT
 LINDRITH, NEW MEXICO

PROJECT #92194

ENVIROTECH INC.

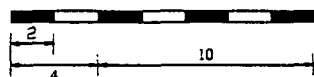
ENVIRONMENTAL
 SCIENTISTS & ENGINEERS
 5796 U.S. HIGHWAY 64-3014
 FARMINGTON, NEW MEXICO 87401
 PHONE: (505) 632-0615

SITE REMEDIATION
 PLUME A
 SAMPLE DETAIL
 SHEET 2
 DECEMBER 21, 1992



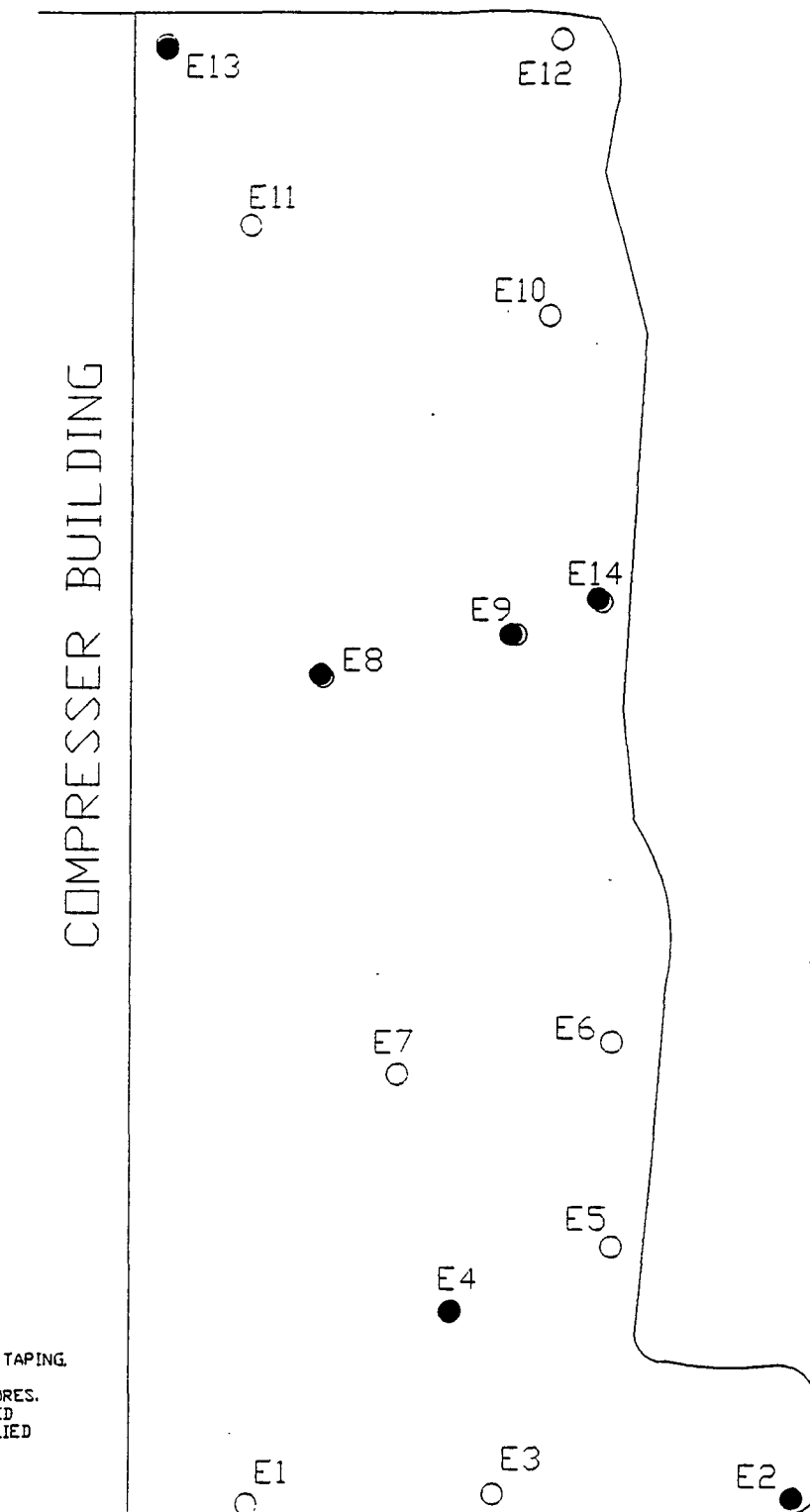
TOTAL PLUME
EXCAVATED
TO BEDROCK

SCALE



SITE FEATURES WERE ESTIMATED BY TAPING,
PACING AND SIGHTING FROM EXISTING
STRUCTURES AND TOPOGRAPHIC FEATURES.
ALL FEATURES SHOULD BE CONSIDERED
ACCURATE ONLY TO THE DEGREE IMPLIED
BY THE METHODS USED.

COMPRESSOR BUILDING



PHELPS DODGE,
GAVILAN PLANT
LINDRITH, NEW MEXICO

ENVIROTECH INC.

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FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615

SITE REMEDIATION
PLUME E
SOUTH OF
COMPRESSOR BUILDING
SAMPLE DETAIL
SHEET 8

DECEMBER 21, 1992

SCALE



KEY
O6 SAMPLE LOCATION

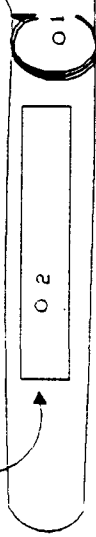
AGT (GASOLINE)

GAS

ALL THREE SAMPLES ARE
FOR OVM, TPH & BTEX

3

BARREL STORAGE RACK



SITE FEATURES WERE ESTIMATED BY TAPING,
PACING AND SIGHTING FROM EXISTING
STRUCTURES AND TOPOGRAPHIC FEATURES.
ALL FEATURES SHOULD BE CONSIDERED
ACCURATE ONLY TO THE DEGREE IMPLIED
BY THE METHODS USED.

FENCE

PLUME A

PHELPS DODGE,
GAVILAN PLANT
LINDRITH, NEW MEXICO
OLD PIT AREA
(PLUME A)

PROJECT #92194

ENVIROTECH INC.

ENVIRONMENTAL
SCIENTISTS & ENGINEERS
5796 U.S. HIGHWAY 64-3014
FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615

SITE REMEDIATION
PLUME A
SITE PLAN
SHEET 3
DECEMBER 21, 1992

APPROXIMATE
EXCAVATION
BOUNDARY

STORAGE

SITE FEATURES WERE ESTIMATED BY
TAPING, PACING, AND SIGHTING FROM
EXISTING FENCES AND TOPOGRAPHIC
FEATURES. ALL FEATURES SHOULD BE
CONSIDERED ACCURATE ONLY TO THE
DEGREE IMPLIED BY THE MEASUREMENTS
USED.

NORTH BOUNDARY OF PLUME A

440 ELECTRIC LINE IN 2.5' PLASTIC PIPE

ACCESS ROAD

SCALE

10.00
20.00
50.00

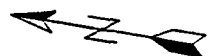
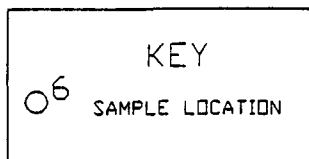
PHELPS DODGE,
GAVILAN PLANT
LINDRITH, NEW MEXICO

PROJECT #92194

ENVIROTECH INC.

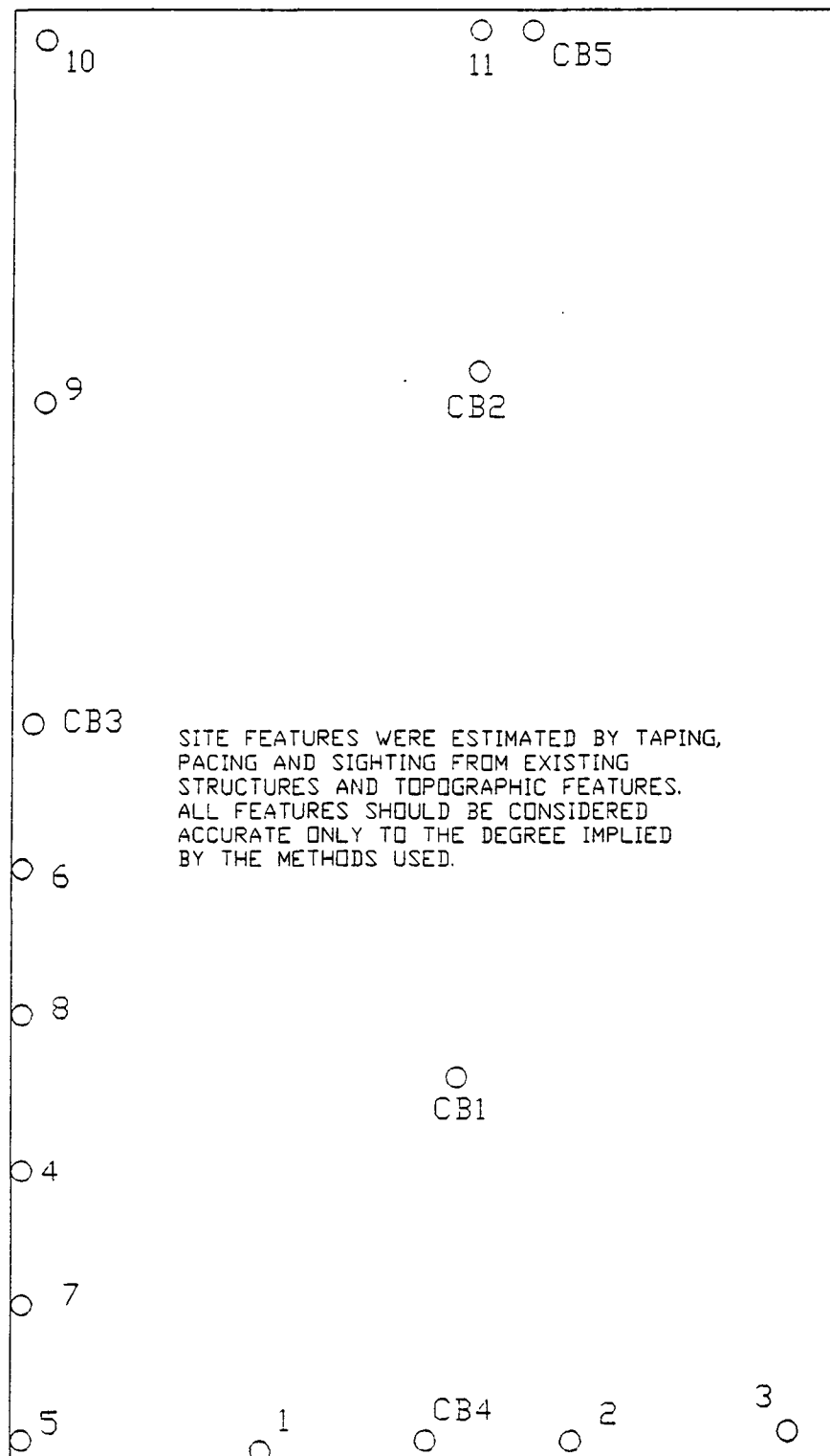
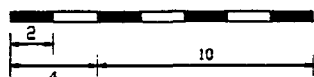
ENVIRONMENTAL
SCIENTISTS & ENGINEERS
5796 U.S. HIGHWAY 64-3014
FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615

SITE REMEDIATION
PLUME D
SAMPLE DETAIL
SHEET 4
DECEMBER 21, 1992



EXCAVATION AND
BUILDING BOUNDARY

SCALE

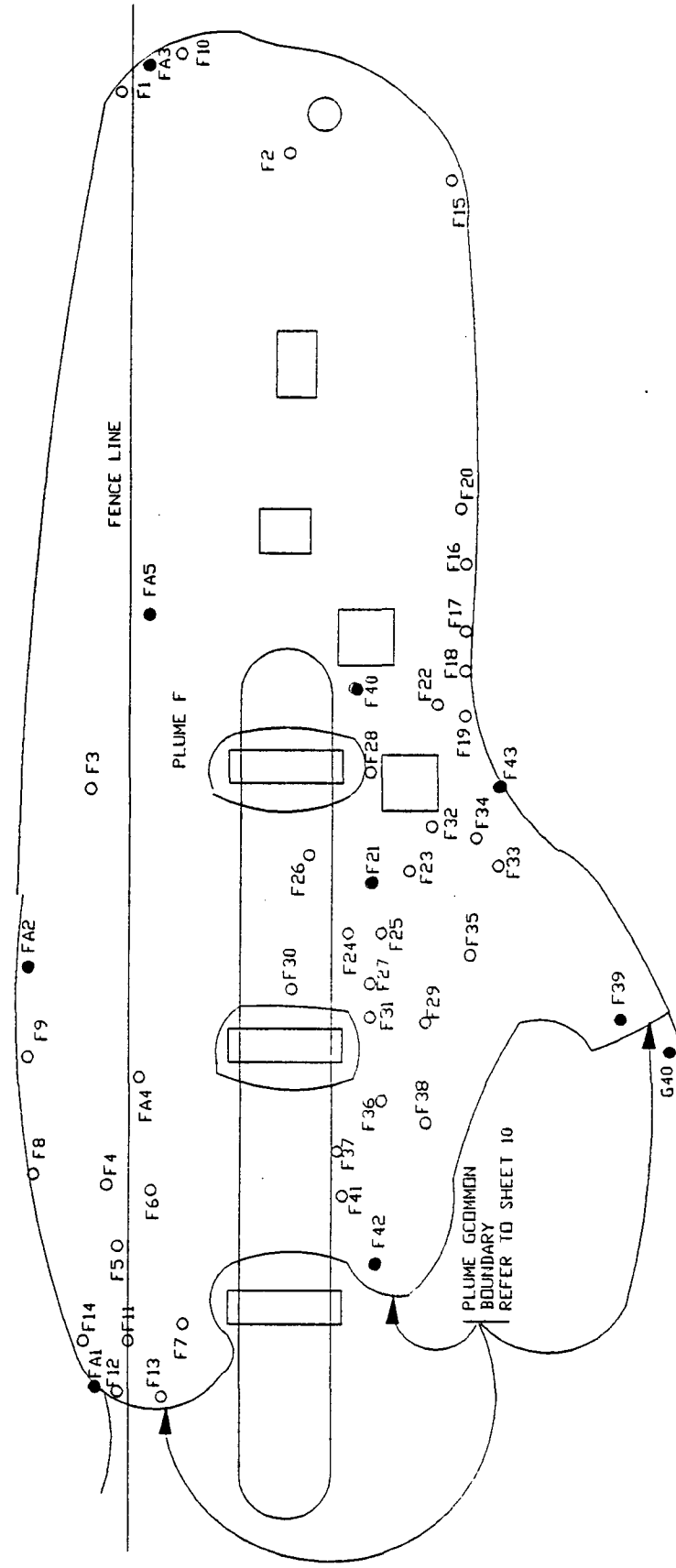
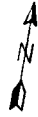
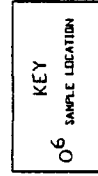


PHELPS DODGE,
GAVILAN PLANT
LINDRITH, NEW MEXICO
COMPRESSOR BUILDING
PORTION OF (PLUME E)

ENVIROTECH INC.

ENVIRONMENTAL
SCIENTISTS & ENGINEERS
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FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615

SITE REMEDIATION
PLUME E
COMPRESSOR BUILDING
SAMPLE DETAIL
SHEET 7
DECEMBER 21, 1992



SITE FEATURES WERE ESTIMATED BY TAPING, PACTING AND SIGHTING FROM EXISTING STRUCTURES AND TOPOGRAPHIC FEATURES. ALL FEATURES SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHODS USED.

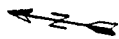
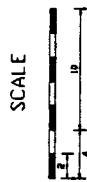
SITE REMEDIATION
PLUME F
SAMPLE DETAIL
SHEET 9

DECEMBER 21, 1992

ENVIROTECH INC.

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SCIENTISTS & ENGINEERS
5796 U.S. HIGHWAY 64-3014
FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615

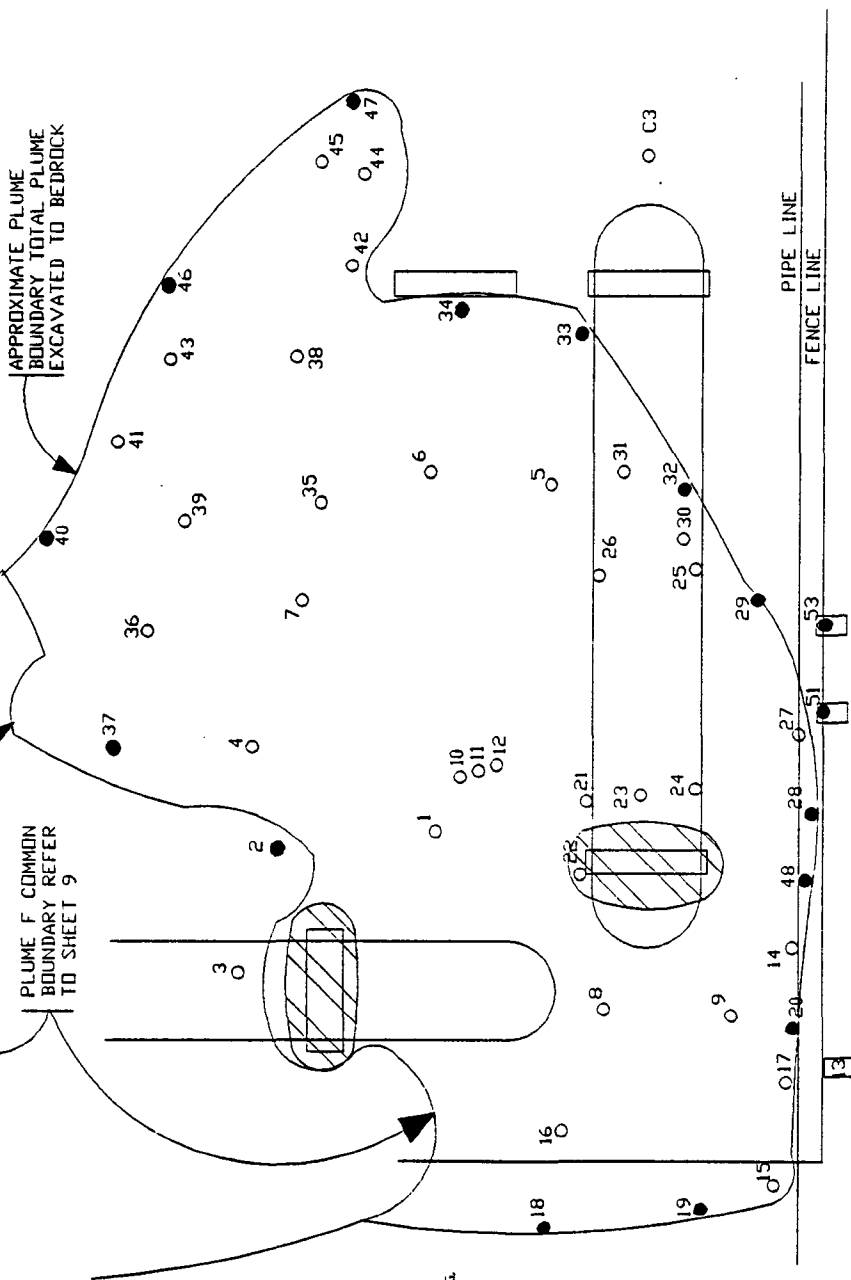
PHELPS DODGE,
GAVILAN PLANT
LINDRITH, NEW MEXICO



KEY

- SAMPLE LOCATION
- DVM AND TPH
- ▨ NOT EXCAVATED

SITE FEATURES WERE ESTIMATED BY TAPING, PACING AND SIGHTING FROM EXISTING FEATURES. ALL FEATURES SHOULD BE CONSIDERED APPROXIMATE. ACCURACY IS LIMITED BY THE METHODS USED.



PHELPS DODGE,
GAVILAN PLANT
LINDRITH, NEW MEXICO

ENVIROTECH INC.

ENVIRONMENTAL

SCIENTISTS & ENGINEERS
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FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615

SITE REMEDIATION
PLUME G
SAMPLE DETAIL
SHEET 10

DECEMBER 21, 1992

ENVIROTECH INC.

SITE REMEDIATION AND CLOSURE REPORT

PHELPS DODGE REFINING CORP.

**GAVILAN NATURAL GAS PROCESSING
PLANT**

GAVILAN, NEW MEXICO

**FOR
MR. MIKE MCELRATH**

Part B

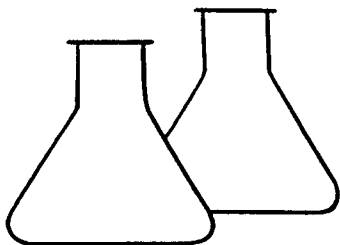
December 1992

Project: 92194

APPENDIX C

Laboratory Analysis

Chain-of-Custody



ENVIROTECH LABS

5796 US HIGHWAY 64-3014 • FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	A 3	Date Reported:	12-01-92
Laboratory Number:	3945	Date Sampled:	11-17-92
Sample Matrix:	Soil	Date Received:	11-17-92
Preservative:	Cool	Date Extracted:	11-24-92
Condition:	Cool & Intact	Date Analyzed:	11-30-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	118
Toluene	1,810	138
Ethylbenzene	8,100	39.4
p,m-Xylene	59,000	98
o-Xylene	42,100	59

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	110 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

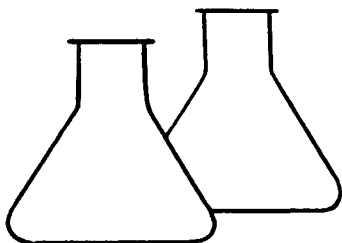
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

Analyst

Review



ENVIROTECH LABS

5796 US HIGHWAY 64-3014 • FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	A3	Date Reported:	11-24-92
Laboratory Number:	3945	Date Sampled:	11-19-92
Sample Matrix:	Soil	Date Received:	11-19-92
Preservative:	Cool	Date Analyzed:	11-24-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter -----	Concentration (mg/kg) -----	Det. Limit (mg/kg) -----
Total Petroleum Hydrocarbons	1,610	5.0

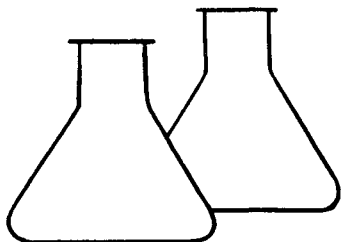
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

OK Ferrell
Analyst

Morris D. Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	A 4	Date Reported:	12-01-92
Laboratory Number:	3946	Date Sampled:	11-19-92
Sample Matrix:	Soil	Date Received:	11-19-92
Preservative:	Cool	Date Extracted:	11-24-92
Condition:	Cool & Intact	Date Analyzed:	11-30-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	116
Toluene	6,300	135
Ethylbenzene	21,400	38.6
p,m-Xylene	118,100	97
o-Xylene	88,400	58

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	116 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

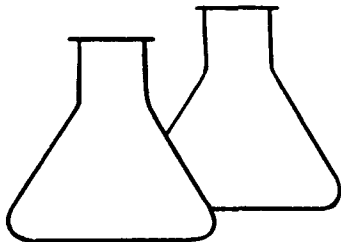
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

Analyst

Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	A4	Date Reported:	11-24-92
Laboratory Number:	3946	Date Sampled:	11-19-92
Sample Matrix:	Soil	Date Received:	11-19-92
Preservative:	Cool	Date Analyzed:	11-24-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	1,530	5.0

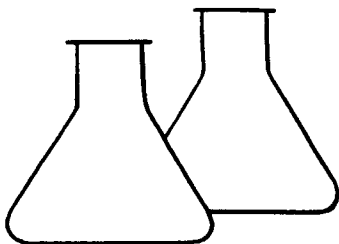
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA French
Analyst

Marion Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	A 5	Date Reported:	12-01-92
Laboratory Number:	3947	Date Sampled:	11-19-92
Sample Matrix:	Soil	Date Received:	11-19-92
Preservative:	Cool	Date Extracted:	11-24-92
Condition:	Cool & Intact	Date Analyzed:	11-30-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	119
Toluene	ND	138
Ethylbenzene	168	39.5
p,m-Xylene	1,190	99
o-Xylene	700	59

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	84 %
	Bromfluorobenzene	100 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

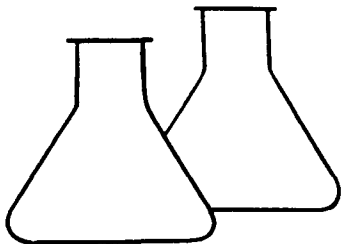
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

Lee Chandra
Analyst

Maris D. Young
Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	A5	Date Reported:	11-24-92
Laboratory Number:	3947	Date Sampled:	11-19-92
Sample Matrix:	Soil	Date Received:	11-19-92
Preservative:	Cool	Date Analyzed:	11-24-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	ND	5.0

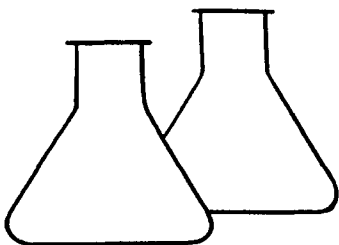
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

C. J. Fernandez
Analyst

M. J. Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	A 8	Date Reported:	12-02-92
Laboratory Number:	3957	Date Sampled:	11-20-92
Sample Matrix:	Soil	Date Received:	11-20-92
Preservative:	Cool	Date Extracted:	11-24-92
Condition:	Cool & Intact	Date Analyzed:	12-01-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	78
Toluene	123	117
Ethylbenzene	ND	58
p,m-Xylene	191	117
o-Xylene	ND	78

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	88 %
	Bromfluorobenzene	98 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

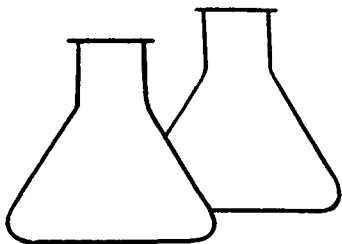
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

Al Chabert
Analyst

Marion D. Young
Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	A8	Date Reported:	11-24-92
Laboratory Number:	3957	Date Sampled:	11-20-92
Sample Matrix:	Soil	Date Received:	11-20-92
Preservative:	Cool	Date Analyzed:	11-24-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	16.5	5.0

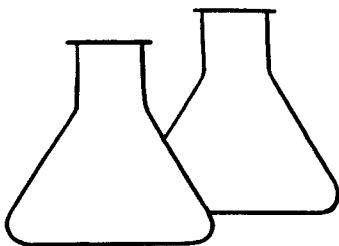
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

Analyst

Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	A 9	Date Reported:	12-02-92
Laboratory Number:	3958	Date Sampled:	11-20-92
Sample Matrix:	Soil	Date Received:	11-20-92
Preservative:	Cool	Date Extracted:	11-24-92
Condition:	Cool & Intact	Date Analyzed:	12-01-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	76
Toluene	5,700	115
Ethylbenzene	14,500	57
p,m-Xylene	71,700	115
o-Xylene	48,200	76

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	108 %
	Bromfluorobenzene	104 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

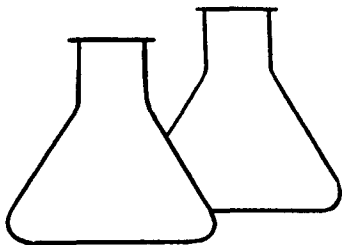
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

Analyst

Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	A9	Date Reported:	11-24-92
Laboratory Number:	3958	Date Sampled:	11-20-92
Sample Matrix:	Soil	Date Received:	11-20-92
Preservative:	Cool	Date Analyzed:	11-24-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	1,640	5.0

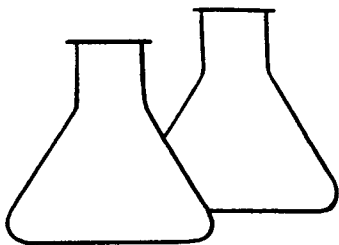
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Fernandez
Analyst

Morris D. Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	A 10	Date Reported:	12-02-92
Laboratory Number:	3959	Date Sampled:	11-20-92
Sample Matrix:	Soil	Date Received:	11-20-92
Preservative:	Cool	Date Extracted:	11-25-92
Condition:	Cool & Intact	Date Analyzed:	12-01-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	80
Toluene	ND	120
Ethylbenzene	ND	60
p,m-Xylene	165	120
o-Xylene	137	80

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	84 %
	Bromfluorobenzene	98 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

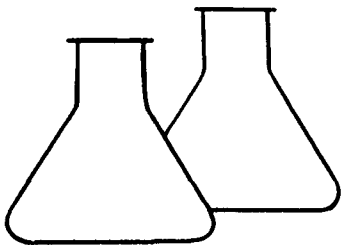
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

Alvin Chabinsky
Analyst

Morris D. Young
Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	A10	Date Reported:	11-30-92
Laboratory Number:	3959	Date Sampled:	11-20-92
Sample Matrix:	Soil	Date Received:	11-20-92
Preservative:	Cool	Date Analyzed:	11-25-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	10.9	5.0

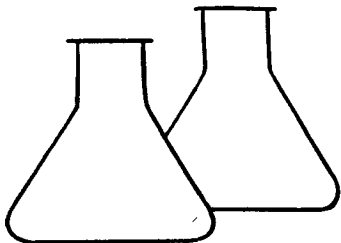
Method: Method 418.1, Petroleum Hydrocarbons, Total
Recoverable, Chemical Analysis of Water and
Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Ferencik
Analyst

Maria D. Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	A 11	Date Reported:	12-03-92
Laboratory Number:	3978	Date Sampled:	11-23-92
Sample Matrix:	Soil	Date Received:	11-24-92
Preservative:	Cool	Date Extracted:	11-25-92
Condition:	Cool & Intact	Date Analyzed:	12-01-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	29.3
Toluene	73	39.1
Ethylbenzene	32.1	29.3
p,m-Xylene	153	88
o-Xylene	83	19.5

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	100 %
	Bromfluorobenzene	103 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

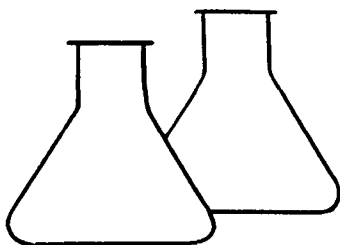
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

Tim Chabert
Analyst

Maris D Young
Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	All	Date Reported:	11-30-92
Laboratory Number:	3978	Date Sampled:	11-23-92
Sample Matrix:	Soil	Date Received:	11-23-92
Preservative:	Cool	Date Analyzed:	11-25-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	107	5.0

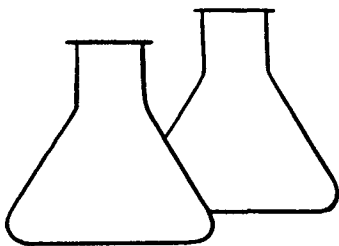
Method: Method 418.1, Petroleum Hydrocarbons, Total
Recoverable, Chemical Analysis of Water and
Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Ferencik
Analyst

Morris D. Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	A 12	Date Reported:	12-03-92
Laboratory Number:	3979	Date Sampled:	11-23-92
Sample Matrix:	Soil	Date Received:	11-24-92
Preservative:	Cool	Date Extracted:	11-25-92
Condition:	Cool & Intact	Date Analyzed:	12-01-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	29.6
Toluene	73	39.5
Ethylbenzene	49.0	29.6
p,m-Xylene	311	89
o-Xylene	ND	19.8

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	95 %
	Bromfluorobenzene	100 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

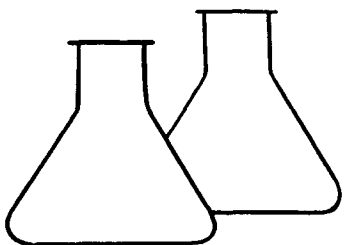
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

Lee Chubert
Analyst

Maris Young
Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	A12	Date Reported:	11-30-92
Laboratory Number:	3979	Date Sampled:	11-23-92
Sample Matrix:	Soil	Date Received:	11-23-92
Preservative:	Cool	Date Analyzed:	11-25-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	21.4	5.0

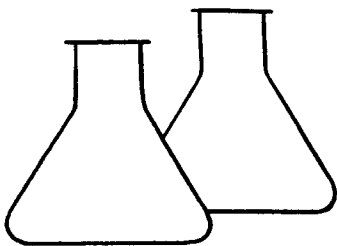
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CE Ferrell
Analyst

Morris D. Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	A 14	Date Reported:	12-09-92
Laboratory Number:	3975	Date Sampled:	11-23-92
Sample Matrix:	Soil	Date Received:	11-24-92
Preservative:	Cool	Date Extracted:	11-25-92
Condition:	Cool & Intact	Date Analyzed:	12-08-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	2,620	116
Toluene	78,900	155
Ethylbenzene	50,300	193
p,m-Xylene	237,700	155
o-Xylene	120,200	116

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	153 %
	Bromfluorobenzene	133 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

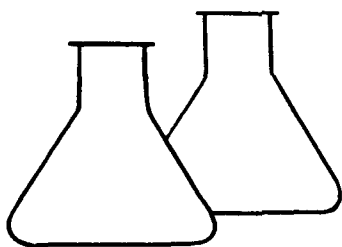
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant. High surrogate recoveries due to
coelution with hydrocarbon.

Ac Chabalar
Analyst

Maria D Young
Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	A14	Date Reported:	11-30-92
Laboratory Number:	3975	Date Sampled:	11-23-92
Sample Matrix:	Soil	Date Received:	11-23-92
Preservative:	Cool	Date Analyzed:	11-25-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	1,470	5.0

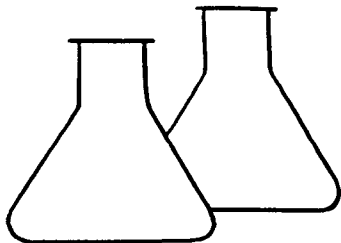
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Fenwick
Analyst

Morris D. Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	A 16 @ 7'	Date Reported:	12-09-92
Laboratory Number:	4045	Date Sampled:	12-02-92
Sample Matrix:	Soil	Date Received:	12-02-92
Preservative:	Cool	Date Extracted:	12-07-92
Condition:	Cool & Intact	Date Analyzed:	12-08-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	68	60
Toluene	432	140
Ethylbenzene	396	60
p,m-Xylene	2,840	280
o-Xylene	1,390	140

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	100 %
	Bromfluorobenzene	111 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

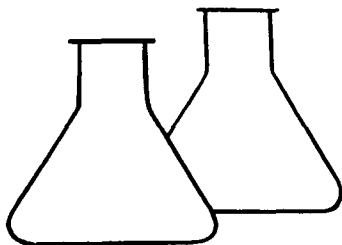
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant.

A. Chaharlang
Analyst

Maria D. Young
Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	A16@7'	Date Reported:	12-07-92
Laboratory Number:	4045	Date Sampled:	12-02-92
Sample Matrix:	Soil	Date Received:	12-02-92
Preservative:	Cool	Date Analyzed:	12-07-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	9.9	5.0

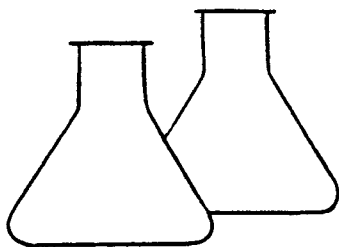
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Fernandez
Analyst

Maria D Young
Review



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PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	A19 0.5'bgs	Date Reported:	12-24-92
Laboratory Number:	4286	Date Sampled:	12-23-92
Sample Matrix:	Soil	Date Received:	12-23-92
Preservative:	Cool	Date Analyzed:	12-24-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	120	5.0

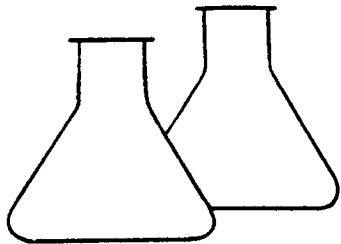
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

Vanessa Ransom
Analyst

Maris S. Young
Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	A20 0.5'bgs	Date Reported:	12-24-92
Laboratory Number:	4287	Date Sampled:	12-23-92
Sample Matrix:	Soil	Date Received:	12-23-92
Preservative:	Cool	Date Analyzed:	12-24-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter -----	Concentration (mg/kg) -----	Det. Limit (mg/kg) -----
Total Petroleum Hydrocarbons	190	5.0

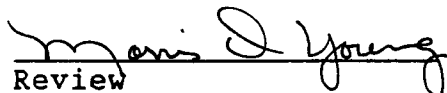
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

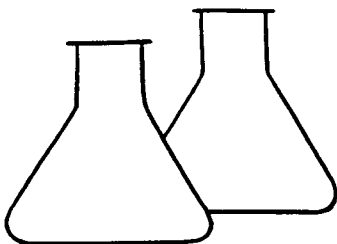
Comments: Gavilan Plant



Analyst



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	C 1	Date Reported:	12-02-92
Laboratory Number:	3954	Date Sampled:	11-20-92
Sample Matrix:	Soil	Date Received:	11-20-92
Preservative:	Cool	Date Extracted:	11-24-92
Condition:	Cool & Intact	Date Analyzed:	12-01-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	79
Toluene	119	119
Ethylbenzene	ND	59
p,m-Xylene	131	119
o-Xylene	ND	79

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	102 %
	Bromfluorobenzene	100 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

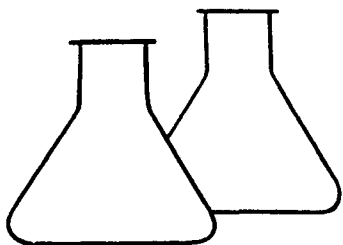
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

Analyst

Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	C1	Date Reported:	11-24-92
Laboratory Number:	3954	Date Sampled:	11-20-92
Sample Matrix:	Soil	Date Received:	11-20-92
Preservative:	Cool	Date Analyzed:	11-24-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	ND	5.0

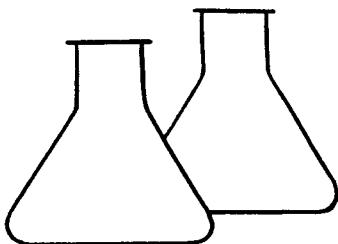
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Ferencik
Analyst

Morris D. Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	C3 @ 8'	Date Reported:	12-11-92
Laboratory Number:	4044	Date Sampled:	11-24-92
Sample Matrix:	Soil	Date Received:	12-02-92
Preservative:	Cool	Date Extracted:	12-10-92
Condition:	Cool & Intact	Date Analyzed:	12-11-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	29.6
Toluene	100	19.7
Ethylbenzene	ND	19.7
p,m-Xylene	106	39.4
o-Xylene	41.9	29.6

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	77 %
	Bromfluorobenzene	96 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

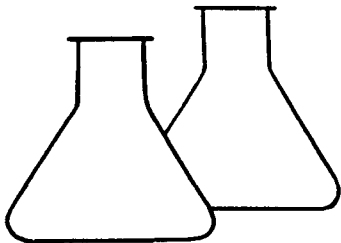
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant.

Lee Chhabalung
Analyst

Maris D. Young
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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	C3@8'	Date Reported:	12-07-92
Laboratory Number:	4044	Date Sampled:	11-24-92
Sample Matrix:	Soil	Date Received:	11-24-92
Preservative:	Cool	Date Analyzed:	12-07-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	11.9	5.0

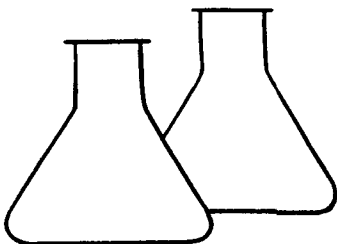
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551. 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Finander
Analyst

Morris D. Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	R # 5 @ 18-24"	Date Reported:	11-16-92
Laboratory Number:	3758	Date Sampled:	11-04-92
Sample Matrix:	Soil	Date Received:	11-05-92
Preservative:	Cool	Date Extracted:	11-09-92
Condition:	Cool & Intact	Date Analyzed:	11-13-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	42.0	40.2
Toluene	180	70
Ethylbenzene	34.1	30.1
p,m-Xylene	197	60
o-Xylene	92	40.2

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	98 %
	Bromfluorobenzene	102 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

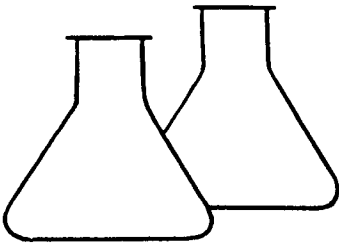
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Phelps Dodge, R #5 @ 18-24", Gavilan Plant, 92194

Analyst

Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	R#5@18"-24"	Date Reported:	11-09-92
Laboratory Number:	3758	Date Sampled:	11-04-92
Sample Matrix:	Soil	Date Received:	11-06-92
Preservative:	Cool	Date Analyzed:	11-09-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	18.8	5.0

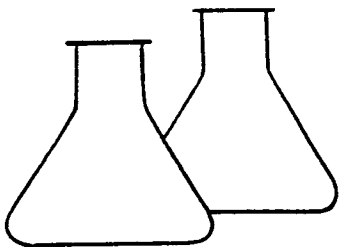
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

Sam L. Givens
Analyst

Samuel D. Young
Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	ReFl N 0.5'bgs	Date Reported:	12-24-92
Laboratory Number:	4288	Date Sampled:	12-23-92
Sample Matrix:	Soil	Date Received:	12-23-92
Preservative:	Cool	Date Analyzed:	12-24-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	6.8	5.0

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

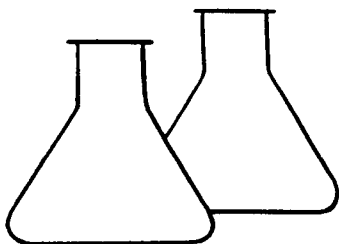
Comments: Gavilan Plant



Analyst



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	D 22	Date Reported:	11-18-92
Laboratory Number:	3851	Date Sampled:	11-09-92
Sample Matrix:	Soil	Date Received:	11-09-92
Preservative:	Cool	Date Extracted:	11-14-92
Condition:	Cool & Intact	Date Analyzed:	11-16-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	46.3
Toluene	311	93
Ethylbenzene	348	27.8
p,m-Xylene	2,590	93
o-Xylene	1,100	18.5

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	86 %
	Bromfluorobenzene	80 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

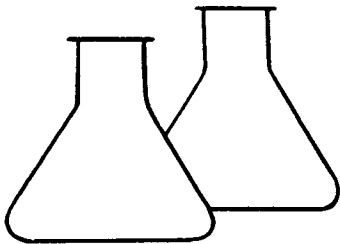
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Phelps Dodge, Gavilan Plant

Analyst

Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

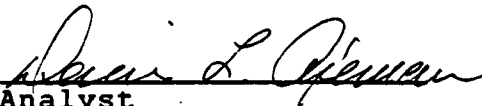
Client:	Phelps-Dodge	Project #:	92194
Sample ID:	D22	Date Reported:	11-16-92
Laboratory Number:	3851	Date Sampled:	11-09-92
Sample Matrix:	Soil	Date Received:	11-09-92
Preservative:	Cool	Date Analyzed:	11-14-92
Condition:	Cool & Intact	Analysis Needed:	TPH

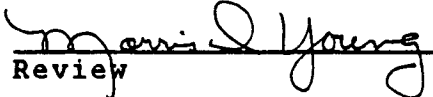
Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	12.9	5.0

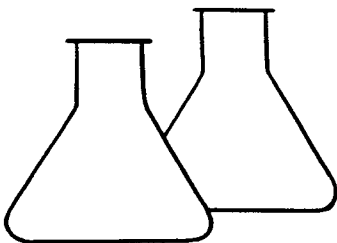
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant


Analyst


Review



ENVIROTECH LABS

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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	D 26	Date Reported:	11-18-92
Laboratory Number:	3850	Date Sampled:	11-09-92
Sample Matrix:	Soil	Date Received:	11-09-92
Preservative:	Cool	Date Extracted:	11-14-92
Condition:	Cool & Intact	Date Analyzed:	11-16-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	48.7
Toluene	229	97
Ethylbenzene	210	29.2
p,m-Xylene	2,180	97
o-Xylene	1,000	19.5

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	85 %
	Bromfluorobenzene	83 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

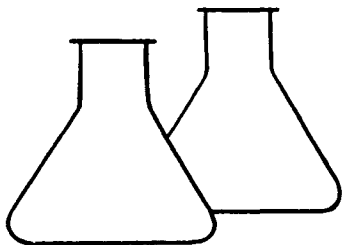
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Phelps Dodge, Gavilan Plant

Christina
Analyst

Maria Young
Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

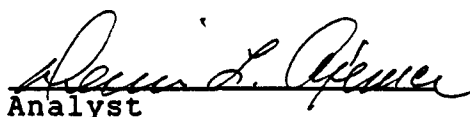
Client:	Phelps-Dodge	Project #:	92194
Sample ID:	D26	Date Reported:	11-16-92
Laboratory Number:	3850	Date Sampled:	11-09-92
Sample Matrix:	Soil	Date Received:	11-09-92
Preservative:	Cool	Date Analyzed:	11-14-92
Condition:	Cool & Intact	Analysis Needed:	TPH

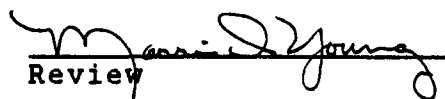
Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	44.6	5.0

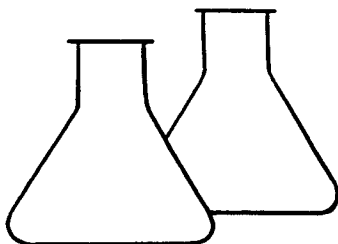
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant


Analyst


Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	D 28	Date Reported:	12-01-92
Laboratory Number:	3885	Date Sampled:	11-16-92
Sample Matrix:	Soil	Date Received:	11-16-92
Preservative:	Cool	Date Extracted:	11-18-92
Condition:	Cool & Intact	Date Analyzed:	11-30-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	60
Toluene	108	69
Ethylbenzene	27.4	19.8
p,m-Xylene	228	49.6
o-Xylene	105	29.8

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	104 %
	Bromfluorobenzene	98 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

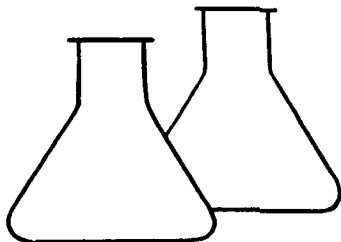
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

Analyst

Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	D28	Date Reported:	11-18-92
Laboratory Number:	3885	Date Sampled:	11-16-92
Sample Matrix:	Soil	Date Received:	11-16-92
Preservative:	Cool	Date Analyzed:	11-18-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	ND	5.0

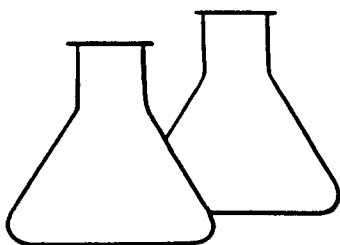
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Finelli
Analyst

Morris D. Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	P 32	Date Reported:	11-30-92
Laboratory Number:	3884	Date Sampled:	11-16-92
Sample Matrix:	Soil	Date Received:	11-16-92
Preservative:	Cool	Date Extracted:	11-18-92
Condition:	Cool & Intact	Date Analyzed:	11-26-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	256	56
Toluene	144	103
Ethylbenzene	ND	85
p,m-Xylene	ND	348
o-Xylene	ND	197

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Bromfluorobenzene	107 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

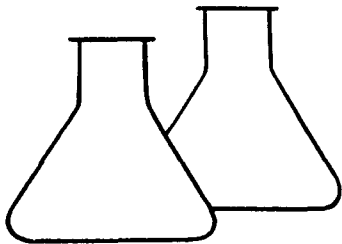
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

Analyst

Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	P32	Date Reported:	11-18-92
Laboratory Number:	3884	Date Sampled:	11-16-92
Sample Matrix:	Soil	Date Received:	11-16-92
Preservative:	Cool	Date Analyzed:	11-18-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter -----	Concentration (mg/kg) -----	Det. Limit (mg/kg) -----
Total Petroleum Hydrocarbons	ND	5.0

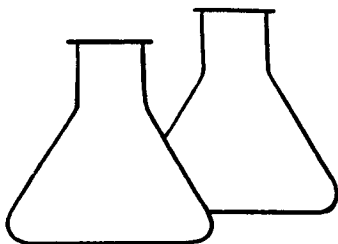
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Farnwell
Analyst

Marisa D. Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	P 33	Date Reported:	12-01-92
Laboratory Number:	3943	Date Sampled:	11-17-92
Sample Matrix:	Soil	Date Received:	11-17-92
Preservative:	Cool	Date Extracted:	11-24-92
Condition:	Cool & Intact	Date Analyzed:	12-01-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	60
Toluene	ND	180
Ethylbenzene	ND	60
p,m-Xylene	167	160
o-Xylene	122	80

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	90 %
	Bromfluorobenzene	92 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

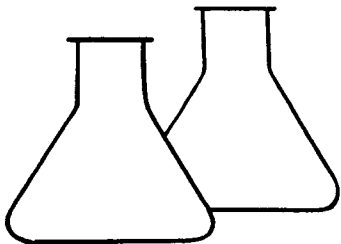
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

Analyst

Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	P33	Date Reported:	11-24-92
Laboratory Number:	3943	Date Sampled:	11-17-92
Sample Matrix:	Soil	Date Received:	11-17-92
Preservative:	Cool	Date Analyzed:	11-24-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	ND	5.0

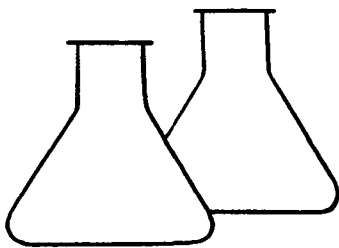
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Foreman
Analyst

Morris D. Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	D #1 @ 12"	Date Reported:	11-16-92
Laboratory Number:	3755	Date Sampled:	11-04-92
Sample Matrix:	Soil	Date Received:	11-05-92
Preservative:	Cool	Date Extracted:	11-09-92
Condition:	Cool & Intact	Date Analyzed:	11-13-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	90	59
Toluene	154	147
Ethylbenzene	ND	39.3
p,m-Xylene	388	88
o-Xylene	393	59

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	95 %
	Bromfluorobenzene	115 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

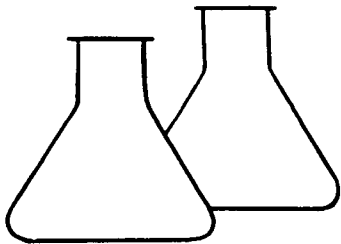
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Phelps Dodge, D #1 @ 12", Gavilan Plant, 92194

Ch. Chabran
Analyst

Maria J. Young
Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

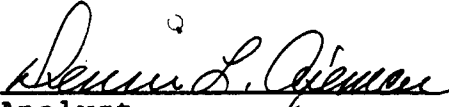
Client:	Phelps-Dodge	Project #:	92194
Sample ID:	D#1@12"	Date Reported:	11-09-92
Laboratory Number:	3755	Date Sampled:	11-04-92
Sample Matrix:	Soil	Date Received:	11-06-92
Preservative:	Cool	Date Analyzed:	11-09-92
Condition:	Cool & Intact	Analysis Needed:	TPH

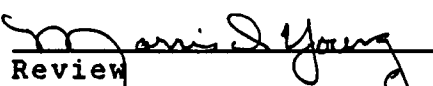
Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	7,900	50.0

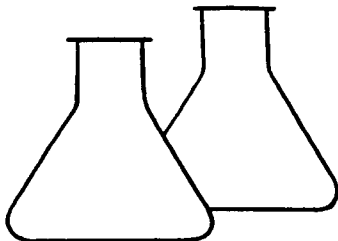
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant


Analyst


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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	D # 6 @ 12"	Date Reported:	11-16-92
Laboratory Number:	3756	Date Sampled:	11-05-92
Sample Matrix:	Soil	Date Received:	11-05-92
Preservative:	Cool	Date Extracted:	11-09-92
Condition:	Cool & Intact	Date Analyzed:	11-13-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	40.0
Toluene	143	70
Ethylbenzene	ND	30.0
p,m-Xylene	173	60
o-Xylene	72	40.0

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	91 %
	Bromfluorobenzene	100 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Phelps Dodge, D #6 @ 12", Gavilan Plant, 92194

Analyst

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EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	D # 9 @ 30"	Date Reported:	11-16-92
Laboratory Number:	3757	Date Sampled:	11-05-92
Sample Matrix:	Soil	Date Received:	11-05-92
Preservative:	Cool	Date Extracted:	11-09-92
Condition:	Cool & Intact	Date Analyzed:	11-13-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	39.7
Toluene	110	69
Ethylbenzene	62	29.8
p,m-Xylene	188	60
o-Xylene	57	39.7

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	-----	-----
	Trifluorotoluene	113 %
	Bromfluorobenzene	99 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

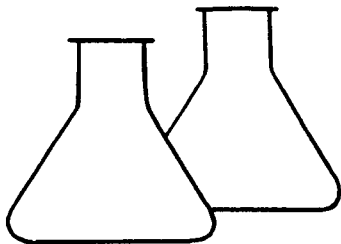
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Phelps Dodge, D #9 @ 30", Gavilan Plant, 92194

Ch. L. L. L.
Analyst ✓

Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	D#9@30"	Date Reported:	11-09-92
Laboratory Number:	3757	Date Sampled:	11-05-92
Sample Matrix:	Soil	Date Received:	11-06-92
Preservative:	Cool	Date Analyzed:	11-09-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	41.1	5.0

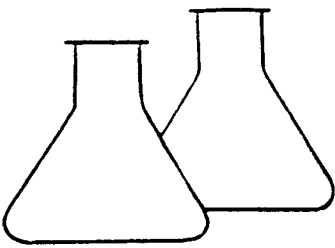
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

Kevin L. O'Quinn
Analyst

Morris D. Young
Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	DeC3 NW 0.5'bgs	Date Reported:	12-24-92
Laboratory Number:	4285	Date Sampled:	12-23-92
Sample Matrix:	Soil	Date Received:	12-23-92
Preservative:	Cool	Date Analyzed:	12-24-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	140	5.0

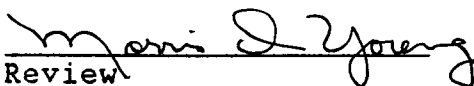
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant



Analyst



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EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	G2	Date Reported:	11-17-92
Laboratory Number:	3778	Date Sampled:	11-06-92
Sample Matrix:	Soil	Date Received:	11-06-92
Preservative:	Cool	Date Extracted:	11-10-92
Condition:	Cool & Intact	Date Analyzed:	11-14-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	40.0
Toluene	104	100
Ethylbenzene	ND	30.0
p,m-Xylene	105	80
o-Xylene	67	50

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	-----	-----
	Trifluorotoluene	86 %
	Bromfluorobenzene	107 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

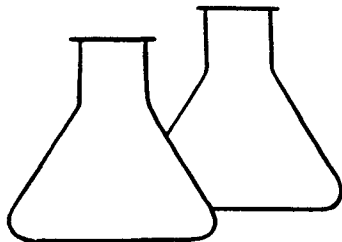
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Phelps Dodge, Gavilan Plant

Analyst *W. H. H. H.*

Maris L Young
Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	G2	Date Reported:	11-10-92
Laboratory Number:	3778	Date Sampled:	11-06-92
Sample Matrix:	Soil	Date Received:	11-09-92
Preservative:	Cool	Date Analyzed:	11-10-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter -----	Concentration (mg/kg) -----	Det. Limit (mg/kg) -----
Total Petroleum Hydrocarbons	33.7	5.0

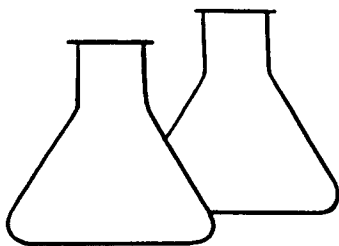
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant nr Lindrith

Dennis L. Spencer
Analyst

Married Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	G6	Date Reported:	11-17-92
Laboratory Number:	3779	Date Sampled:	11-06-92
Sample Matrix:	Soil	Date Received:	11-06-92
Preservative:	Cool	Date Extracted:	11-10-92
Condition:	Cool & Intact	Date Analyzed:	11-14-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	40.1
Toluene	148	100
Ethylbenzene	ND	30.1
p,m-Xylene	165	80
o-Xylene	74	50

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	90 %
	Bromfluorobenzene	106 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

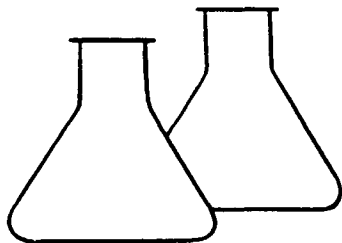
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Phelps Dodge, Gavilan Plant

11.11.11
Analyst

Monica D. Young
Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	G6	Date Reported:	11-10-92
Laboratory Number:	3779	Date Sampled:	11-06-92
Sample Matrix:	Soil	Date Received:	11-09-92
Preservative:	Cool	Date Analyzed:	11-10-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	39.3	5.0

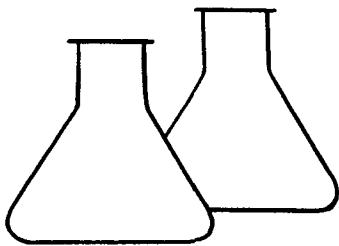
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant nr Lindrith

Shawn P. Jensen
Analyst

Marissa D. Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	G # 16 @ 18"	Date Reported:	11-16-92
Laboratory Number:	3759	Date Sampled:	11-05-92
Sample Matrix:	Soil	Date Received:	11-05-92
Preservative:	Cool	Date Extracted:	11-09-92
Condition:	Cool & Intact	Date Analyzed:	11-13-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	39.8
Toluene	103	70
Ethylbenzene	ND	29.8
p,m-Xylene	183	60
o-Xylene	79	39.8

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	97 %
	Bromfluorobenzene	98 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

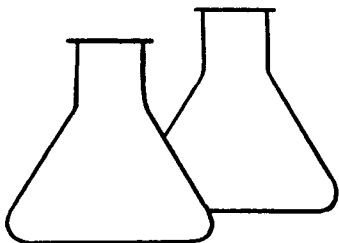
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Phelps Dodge, G #16 @ 18", Gavilan Plant, 92194

Analyst

Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	G # 19 @ 18"	Date Reported:	11-16-92
Laboratory Number:	3760	Date Sampled:	11-05-92
Sample Matrix:	Soil	Date Received:	11-05-92
Preservative:	Cool	Date Extracted:	11-09-92
Condition:	Cool & Intact	Date Analyzed:	11-13-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	39.6
Toluene	135	69
Ethylbenzene	ND	29.7
p,m-Xylene	174	59
o-Xylene	94	39.6

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	114 %
	Bromfluorobenzene	103 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

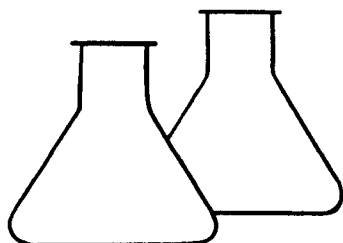
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Phelps Dodge, G #19 @ 18", Gavilan Plant, 92194

Analyst

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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	G#19@18"	Date Reported:	11-09-92
Laboratory Number:	3760	Date Sampled:	11-05-92
Sample Matrix:	Soil	Date Received:	11-06-92
Preservative:	Cool	Date Analyzed:	11-09-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	13.0	5.0

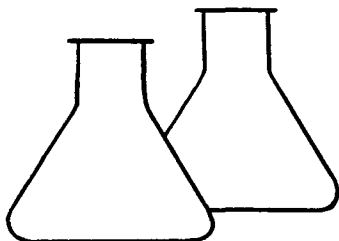
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

Kevin L. Spencer
Analyst

Morris D. Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	G20	Date Reported:	11-17-92
Laboratory Number:	3780	Date Sampled:	11-06-92
Sample Matrix:	Soil	Date Received:	11-06-92
Preservative:	Cool	Date Extracted:	11-10-92
Condition:	Cool & Intact	Date Analyzed:	11-14-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	39.6
Toluene	122	99
Ethylbenzene	ND	29.7
p,m-Xylene	165	79
o-Xylene	69	50

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	103 %
	Bromfluorobenzene	113 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

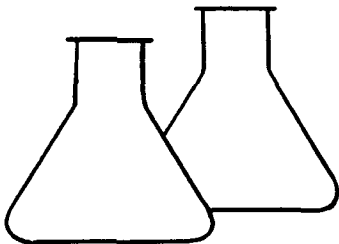
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Phelps Dodge, Gavilan Plant

Analyst

Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

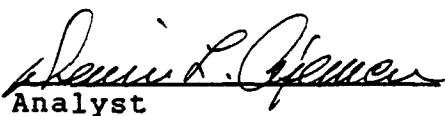
Client:	Phelps-Dodge	Project #:	92194
Sample ID:	G20	Date Reported:	11-10-92
Laboratory Number:	3780	Date Sampled:	11-06-92
Sample Matrix:	Soil	Date Received:	11-09-92
Preservative:	Cool	Date Analyzed:	11-10-92
Condition:	Cool & Intact	Analysis Needed:	TPH

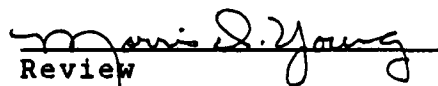
Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	26.6	5.0

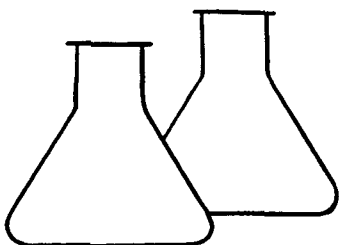
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant nr Lindrith


Analyst


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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	G 22 @ 7' bgs	Date Reported:	12-16-92
Laboratory Number:	4153	Date Sampled:	12-10-92
Sample Matrix:	Soil	Date Received:	12-11-92
Preservative:	Cool	Date Extracted:	12-14-92
Condition:	Cool & Intact	Date Analyzed:	12-15-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	8,500	96
Toluene	34,000	76
Ethylbenzene	2,820	76
p,m-Xylene	15,600	287
o-Xylene	4,320	96

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Bromfluorobenzene	95 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

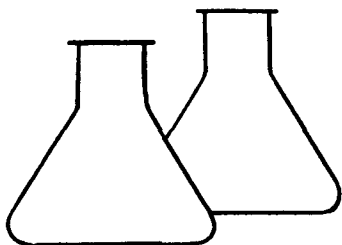
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant.

C. Chabalar
Analyst

M. D. Young
Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	G22 7'bgs	Date Reported:	12-16-92
Laboratory Number:	4153	Date Sampled:	12-10-92
Sample Matrix:	Soil	Date Received:	12-10-92
Preservative:	Cool	Date Analyzed:	12-16-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter -----	Concentration (mg/kg) -----	Det. Limit (mg/kg) -----
Total Petroleum Hydrocarbons	70	5.0

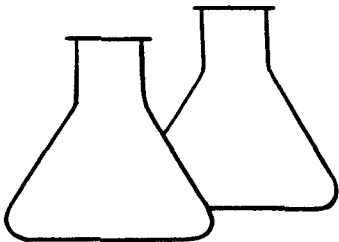
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Funder
Analyst

Morris D. Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	G # 24 @ 18"	Date Reported:	11-16-92
Laboratory Number:	3761	Date Sampled:	11-05-92
Sample Matrix:	Soil	Date Received:	11-05-92
Preservative:	Cool	Date Extracted:	11-09-92
Condition:	Cool & Intact	Date Analyzed:	11-13-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	39.2
Toluene	134	69
Ethylbenzene	40.3	29.4
p,m-Xylene	327	59
o-Xylene	156	39.2

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	84 %
	Bromfluorobenzene	98 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

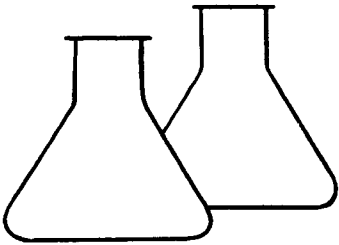
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Phelps Dodge, G #23 @ 18", Gavilan Plant, 92194

Analyst

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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	G#24@18"	Date Reported:	11-09-92
Laboratory Number:	3761	Date Sampled:	11-05-92
Sample Matrix:	Soil	Date Received:	11-06-92
Preservative:	Cool	Date Analyzed:	11-09-92
Condition:	Cool & Intact	Analysis Needed:	TPH

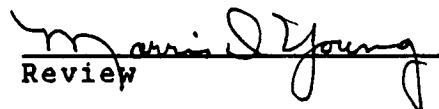
Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	19.3	5.0

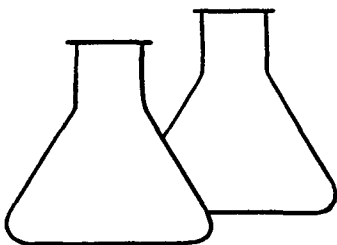
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant


Analyst


Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	G25	Date Reported:	11-17-92
Laboratory Number:	3781	Date Sampled:	11-06-92
Sample Matrix:	Soil	Date Received:	11-06-92
Preservative:	Cool	Date Extracted:	11-10-92
Condition:	Cool & Intact	Date Analyzed:	11-14-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	89	39.4
Toluene	133	98
Ethylbenzene	30.1	29.5
p,m-Xylene	193	79
o-Xylene	122	49

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	97 %
	Bromfluorobenzene	108 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

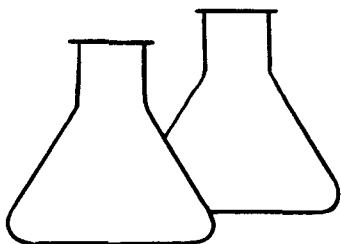
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Phelps Dodge, Gavilan Plant

Analyst

Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	G25	Date Reported:	11-10-92
Laboratory Number:	3781	Date Sampled:	11-06-92
Sample Matrix:	Soil	Date Received:	11-09-92
Preservative:	Cool	Date Analyzed:	11-10-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	73	5.0

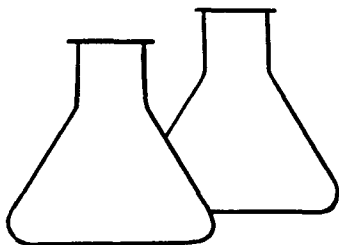
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant nr Lindrith

Shirley L. Cramer
Analyst

Marissa Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client: Phelps Dodge
Sample ID: G26
Laboratory Number: 3782
Sample Matrix: Soil
Preservative: Cool
Condition: Cool & Intact

Project #: 92194
Date Reported: 11-17-92
Date Sampled: 11-06-92
Date Received: 11-06-92
Date Extracted: 11-10-92
Date Analyzed: 11-14-92
Analysis Requested: BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	63	39.5
Toluene	276	99
Ethylbenzene	64	29.6
p,m-Xylene	782	79
o-Xylene	164	49

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	89 %
	Bromfluorobenzene	112 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

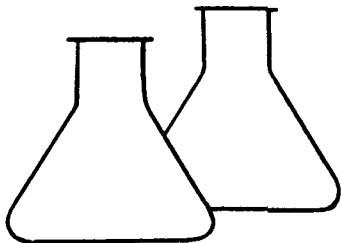
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Phelps Dodge, Gavilan Plant

Analyst

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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

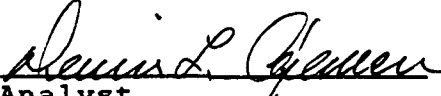
Client:	Phelps-Dodge	Project #:	92194
Sample ID:	G26	Date Reported:	11-10-92
Laboratory Number:	3782	Date Sampled:	11-06-92
Sample Matrix:	Soil	Date Received:	11-09-92
Preservative:	Cool	Date Analyzed:	11-10-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	23.8	5.0

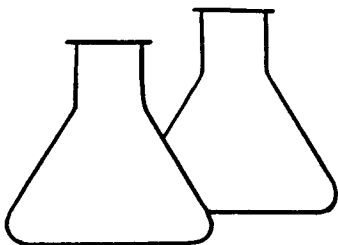
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant nr Lindrith


Analyst


Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	G 28 @ 8' bgs	Date Reported:	12-16-92
Laboratory Number:	4154	Date Sampled:	12-11-92
Sample Matrix:	Soil	Date Received:	12-11-92
Preservative:	Cool	Date Extracted:	12-14-92
Condition:	Cool & Intact	Date Analyzed:	12-15-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	100
Toluene	ND	80
Ethylbenzene	ND	80
p,m-Xylene	ND	301
o-Xylene	ND	100

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	95 %
	Bromfluorobenzene	96 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

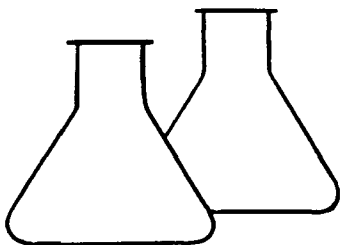
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant.

Lu Chahang
Analyst

Marisa Young
Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	G28 8'bgs	Date Reported:	12-16-92
Laboratory Number:	4154	Date Sampled:	12-11-92
Sample Matrix:	Soil	Date Received:	12-11-92
Preservative:	Cool	Date Analyzed:	12-16-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	ND	5.0

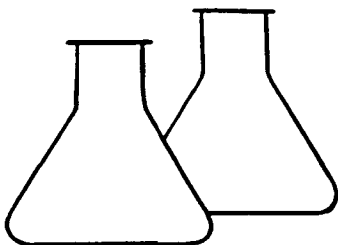
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Fenwick
Analyst

Morris D. Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	G 29 @ 9' bgs	Date Reported:	12-16-92
Laboratory Number:	4155	Date Sampled:	12-11-92
Sample Matrix:	Soil	Date Received:	12-11-92
Preservative:	Cool	Date Extracted:	12-14-92
Condition:	Cool & Intact	Date Analyzed:	12-15-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	99
Toluene	ND	80
Ethylbenzene	ND	80
p,m-Xylene	ND	298
o-Xylene	ND	99

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	93 %
	Bromfluorobenzene	103 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

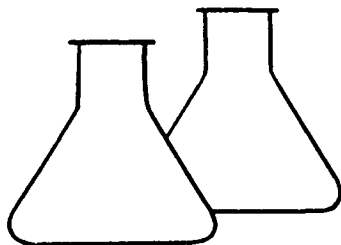
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant.

A. Chaharlang
Analyst

Thomas D. Young
Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	G29 9'bgs	Date Reported:	12-16-92
Laboratory Number:	4155	Date Sampled:	12-11-92
Sample Matrix:	Soil	Date Received:	12-11-92
Preservative:	Cool	Date Analyzed:	12-16-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter -----	Concentration (mg/kg) -----	Det. Limit (mg/kg) -----
Total Petroleum Hydrocarbons	ND	5.0

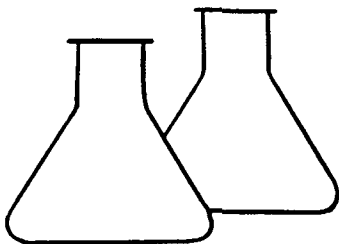
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Fernandez
Analyst

Mavis D. Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	G29	Date Reported:	11-17-92
Laboratory Number:	3783	Date Sampled:	11-06-92
Sample Matrix:	Soil	Date Received:	11-06-92
Preservative:	Cool	Date Extracted:	11-10-92
Condition:	Cool & Intact	Date Analyzed:	11-14-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	66	40.2
Toluene	129	100
Ethylbenzene	33.9	30.1
p,m-Xylene	203	80
o-Xylene	74	50

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	96 %
	Bromfluorobenzene	109 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

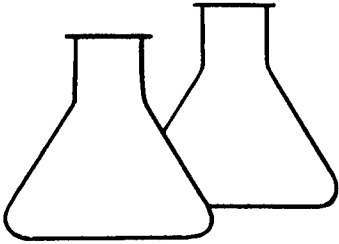
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Phelps Dodge, Gavilan Plant

Analyst

Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

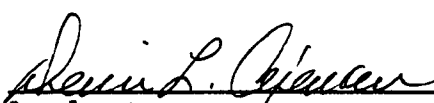
Client:	Phelps-Dodge	Project #:	92194
Sample ID:	G29	Date Reported:	11-10-92
Laboratory Number:	3783	Date Sampled:	11-06-92
Sample Matrix:	Soil	Date Received:	11-09-92
Preservative:	Cool	Date Analyzed:	11-10-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	30.2	5.0

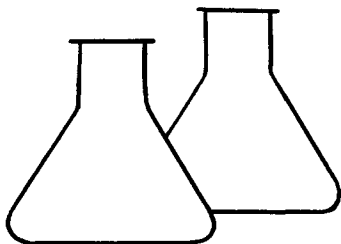
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant nr Lindrith


Analyst


Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	G 31 8' bgs	Date Reported:	12-16-92
Laboratory Number:	4165	Date Sampled:	12-14-92
Sample Matrix:	Soil	Date Received:	12-14-92
Preservative:	Cool	Date Extracted:	12-15-92
Condition:	Cool & Intact	Date Analyzed:	12-15-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	97
Toluene	152	78
Ethylbenzene	ND	78
p,m-Xylene	465	292
o-Xylene	117	97

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	104 %
	Bromfluorobenzene	102 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

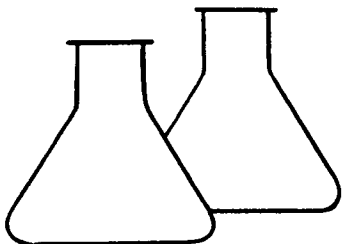
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant.

A. Chhabra
Analyst

M. D. Young
Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	G31 8'bgs	Date Reported:	12-16-92
Laboratory Number:	4165	Date Sampled:	12-14-92
Sample Matrix:	Soil	Date Received:	12-14-92
Preservative:	Cool	Date Analyzed:	12-16-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter -----	Concentration (mg/kg) -----	Det. Limit (mg/kg) -----
Total Petroleum Hydrocarbons	ND	5.0

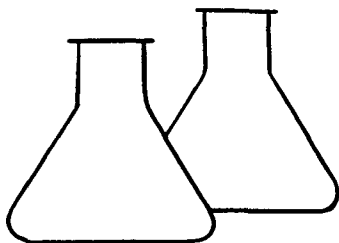
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Jurendak
Analyst

M. Davis Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	12-16-92
Laboratory Number:	BTLB1215pm	Date Sampled:	NA
Sample Matrix:	Water	Date Received:	NA
Preservative:	NA	Date Analyzed:	12-15-92
Condition:	NA	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	0.5
Toluene	ND	0.4
Ethylbenzene	ND	0.4
p,m-Xylene	ND	1.5
o-Xylene	ND	0.5

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	95 %
	Bromfluorobenzene	96 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating
Solid Waste, SW-846, USEPA, Sept. 1986

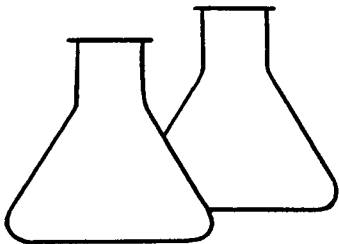
Method 8020, Aromatic Volatile Organics, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments:

Al Chabalar
Analyst

Margaret D. Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client: Phelps Dodge
Sample ID: GY 1
Laboratory Number: 3955
Sample Matrix: Soil
Preservative: Cool
Condition: Cool & Intact

Project #: 92194
Date Reported: 12-02-92
Date Sampled: 11-20-92
Date Received: 11-20-92
Date Extracted: 11-24-92
Date Analyzed: 12-01-92
Analysis Requested: BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	79
Toluene	ND	119
Ethylbenzene	ND	60
p,m-Xylene	206	119
o-Xylene	167	79

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	100 %
	Bromfluorobenzene	99 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

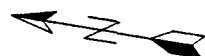
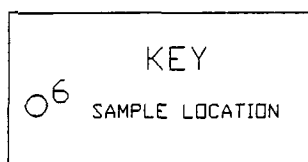
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

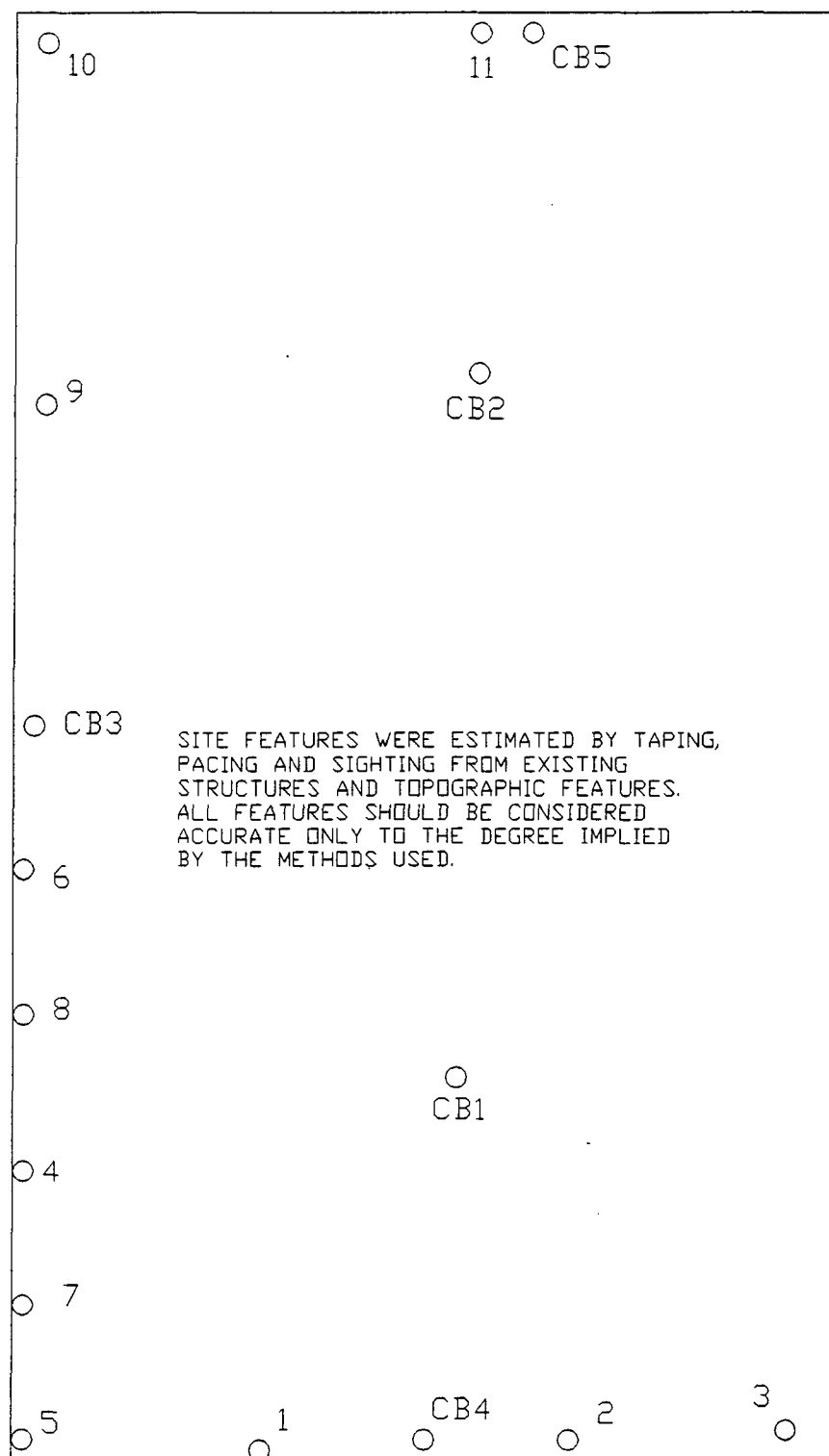
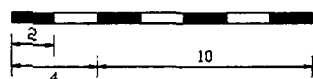
Analyst

Review



EXCAVATION AND
BUILDING BOUNDARY

SCALE



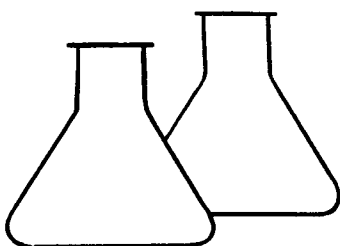
SITE FEATURES WERE ESTIMATED BY TAPING,
PACING AND SIGHTING FROM EXISTING
STRUCTURES AND TOPOGRAPHIC FEATURES.
ALL FEATURES SHOULD BE CONSIDERED
ACCURATE ONLY TO THE DEGREE IMPLIED
BY THE METHODS USED.

PHELPS DODGE,
GAVILAN PLANT
LINDRITH, NEW MEXICO
COMPRESSOR BUILDING
PORTION OF (PLUME E)

ENVIROTECH INC.

ENVIRONMENTAL
SCIENTISTS & ENGINEERS
5796 U.S. HIGHWAY 64-3014
FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615

SITE REMEDIATION
PLUME E
COMPRESSOR BUILDING
SAMPLE DETAIL
SHEET 7
DECEMBER 21, 1992



ENVIROTECH LABS

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PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	Gyl	Date Reported:	11-24-92
Laboratory Number:	3955	Date Sampled:	11-20-92
Sample Matrix:	Soil	Date Received:	11-20-92
Preservative:	Cool	Date Analyzed:	11-24-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	ND	5.0

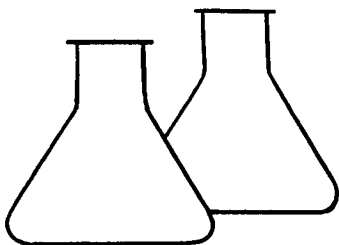
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Fernandez
Analyst

Morris D Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	GY 2	Date Reported:	12-02-92
Laboratory Number:	3956	Date Sampled:	11-20-92
Sample Matrix:	Soil	Date Received:	11-20-92
Preservative:	Cool	Date Extracted:	11-24-92
Condition:	Cool & Intact	Date Analyzed:	12-01-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	80
Toluene	805	120
Ethylbenzene	510	60
p,m-Xylene	8,400	120
o-Xylene	3,700	80

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	121 %
	Bromfluorobenzene	77 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

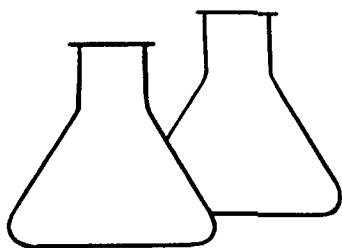
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

Analyst

Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	Gy2	Date Reported:	11-24-92
Laboratory Number:	3956	Date Sampled:	11-20-92
Sample Matrix:	Soil	Date Received:	11-20-92
Preservative:	Cool	Date Analyzed:	11-24-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	ND	5.0

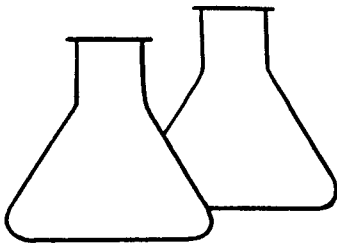
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Fernandez
Analyst

Monica Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	GY 3	Date Reported:	12-03-92
Laboratory Number:	3976	Date Sampled:	11-23-92
Sample Matrix:	Soil	Date Received:	11-24-92
Preservative:	Cool	Date Extracted:	11-25-92
Condition:	Cool & Intact	Date Analyzed:	12-01-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	29.0
Toluene	90	38.7
Ethylbenzene	54	29.0
p,m-Xylene	670	87
o-Xylene	294	19.3

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	99 %
	Bromfluorobenzene	106 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

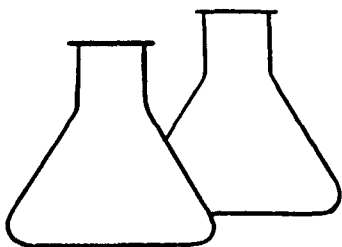
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

Analyst

Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	Gy3	Date Reported:	11-30-92
Laboratory Number:	3976	Date Sampled:	11-23-92
Sample Matrix:	Soil	Date Received:	11-23-92
Preservative:	Cool	Date Analyzed:	11-25-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	5.9	5.0

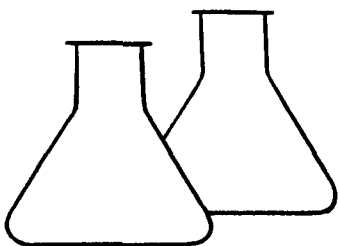
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

Al Lencucha
Analyst

Maris D. Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	GY 4	Date Reported:	12-03-92
Laboratory Number:	3977	Date Sampled:	11-23-92
Sample Matrix:	Soil	Date Received:	11-24-92
Preservative:	Cool	Date Extracted:	11-25-92
Condition:	Cool & Intact	Date Analyzed:	12-01-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	30.1
Toluene	48.8	40.1
Ethylbenzene	540	30.1
p,m-Xylene	ND	90
o-Xylene	332	20.0

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	93 %
	Bromfluorobenzene	100 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

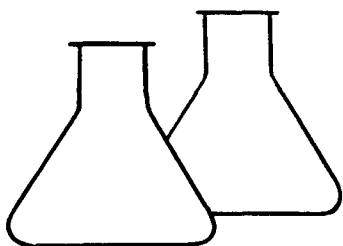
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

Analyst

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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	Gy4	Date Reported:	11-30-92
Laboratory Number:	3977	Date Sampled:	11-23-92
Sample Matrix:	Soil	Date Received:	11-23-92
Preservative:	Cool	Date Analyzed:	11-25-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	ND	5.0

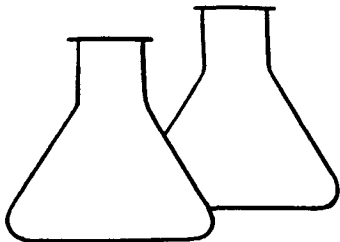
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Fenwick
Analyst

Monis D Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	GY 6 @ 7'	Date Reported:	12-09-92
Laboratory Number:	4054	Date Sampled:	12-03-92
Sample Matrix:	Soil	Date Received:	12-03-92
Preservative:	Cool	Date Extracted:	12-07-92
Condition:	Cool & Intact	Date Analyzed:	12-08-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	115	57
Toluene	212	132
Ethylbenzene	ND	57
p,m-Xylene	323	265
o-Xylene	141	132

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	83 %
	Bromfluorobenzene	99 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

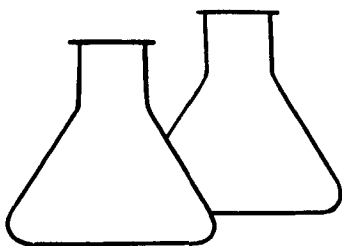
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant.

Ch. Chabaling
Analyst

Marissa Young
Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	Gy6@7'	Date Reported:	12-07-92
Laboratory Number:	4054	Date Sampled:	12-03-92
Sample Matrix:	Soil	Date Received:	12-03-92
Preservative:	Cool	Date Analyzed:	12-07-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	34.1	5.0

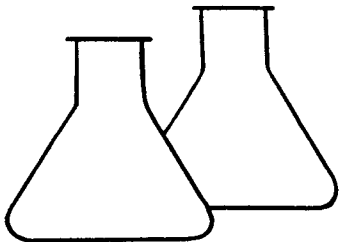
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Fernandez
Analyst

Morris D Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	GY 7 @ 4'	Date Reported:	12-09-92
Laboratory Number:	4046	Date Sampled:	12-02-92
Sample Matrix:	Soil	Date Received:	12-02-92
Preservative:	Cool	Date Extracted:	12-07-92
Condition:	Cool & Intact	Date Analyzed:	12-08-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	60
Toluene	ND	140
Ethylbenzene	ND	60
p,m-Xylene	ND	280
o-Xylene	ND	140

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Bromfluorobenzene	100 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

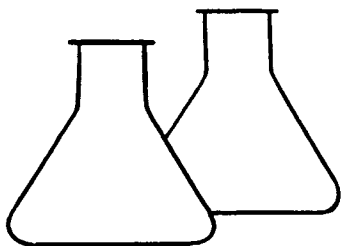
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant.

An Chokalingam
Analyst

Marissa D Young
Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	Gy7@4'	Date Reported:	12-07-92
Laboratory Number:	4046	Date Sampled:	12-02-92
Sample Matrix:	Soil	Date Received:	12-02-92
Preservative:	Cool	Date Analyzed:	12-07-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	11.4	5.0

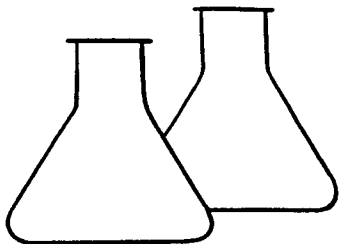
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Fernandez
Analyst

Morris D. Young
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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	GY 9 @ 4'	Date Reported:	12-09-92
Laboratory Number:	4055	Date Sampled:	12-03-92
Sample Matrix:	Soil	Date Received:	12-03-92
Preservative:	Cool	Date Extracted:	12-07-92
Condition:	Cool & Intact	Date Analyzed:	12-08-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	93	59
Toluene	830	137
Ethylbenzene	434	59
p,m-Xylene	4,180	273
o-Xylene	1,940	137

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	101 %
	Bromfluorobenzene	79 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

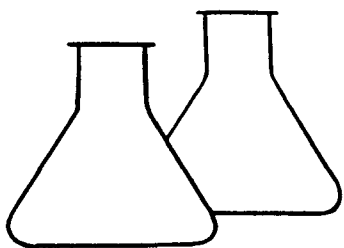
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant.

Ar Checharang
Analyst

Morris D. Young
Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	Gy9@4'	Date Reported:	12-07-92
Laboratory Number:	4055	Date Sampled:	12-03-92
Sample Matrix:	Soil	Date Received:	12-03-92
Preservative:	Cool	Date Analyzed:	12-07-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	15.5	5.0

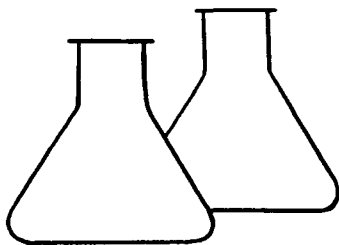
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551. 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Fernandez
Analyst

Maris D. Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	GY 10 5' bgs	Date Reported:	12-14-92
Laboratory Number:	4107	Date Sampled:	12-04-92
Sample Matrix:	Soil	Date Received:	12-08-92
Preservative:	Cool	Date Extracted:	12-11-92
Condition:	Cool & Intact	Date Analyzed:	12-11-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	76
Toluene	196	152
Ethylbenzene	ND	57
p,m-Xylene	450	152
o-Xylene	201	114

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	95 %
	Bromfluorobenzene	95 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

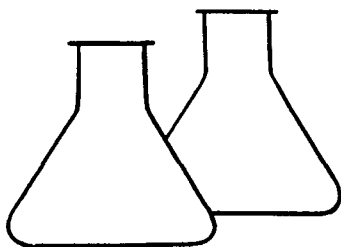
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant.

A. Chahalang
Analyst

M. J. Young
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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	Gyl0 5'bgs	Date Reported:	12-15-92
Laboratory Number:	4107	Date Sampled:	12-04-92
Sample Matrix:	Soil	Date Received:	12-04-92
Preservative:	Cool	Date Analyzed:	12-15-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter -----	Concentration (mg/kg) -----	Det. Limit (mg/kg) -----
Total Petroleum Hydrocarbons	ND	5.0

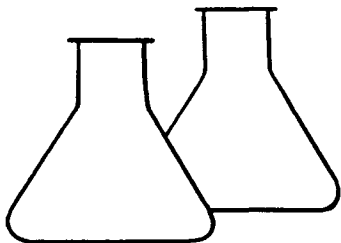
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Fenech
Analyst

Morris D Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	GY 11 5' bgs	Date Reported:	12-14-92
Laboratory Number:	4108	Date Sampled:	12-04-92
Sample Matrix:	Soil	Date Received:	12-08-92
Preservative:	Cool	Date Extracted:	12-11-92
Condition:	Cool & Intact	Date Analyzed:	12-11-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	79
Toluene	294	159
Ethylbenzene	75	60
p,m-Xylene	500	159
o-Xylene	156	119

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Bromfluorobenzene	88 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

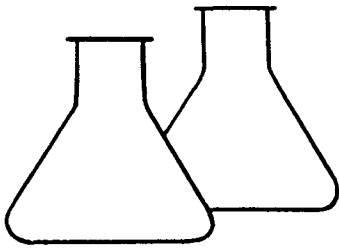
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant.

A. Chahalang
Analyst

Morris D. Young
Review



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PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	Gyll 5'bgs	Date Reported:	12-15-92
Laboratory Number:	4108	Date Sampled:	12-04-92
Sample Matrix:	Soil	Date Received:	12-04-92
Preservative:	Cool	Date Analyzed:	12-15-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter -----	Concentration (mg/kg) -----	Det. Limit (mg/kg) -----
Total Petroleum Hydrocarbons	ND	5.0

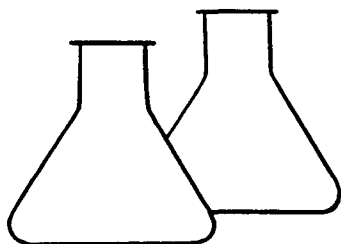
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Linnick
Analyst

Morris D. Young
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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	GY 12 1.5' bgs	Date Reported:	12-21-92
Laboratory Number:	4216	Date Sampled:	12-16-92
Sample Matrix:	Soil	Date Received:	12-16-92
Preservative:	Cool	Date Extracted:	12-17-92
Condition:	Cool & Intact	Date Analyzed:	12-18-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	117
Toluene	ND	117
Ethylbenzene	ND	155
p,m-Xylene	ND	291
o-Xylene	ND	136

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	105 %
	Bromfluorobenzene	98 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

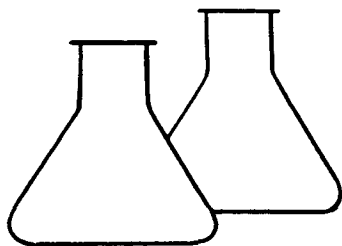
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant.

A. Chhabra
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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	Gyl2 @ 1.5'bgs	Date Reported:	12-17-92
Laboratory Number:	4216	Date Sampled:	12-16-92
Sample Matrix:	Soil	Date Received:	12-16-92
Preservative:	Cool	Date Analyzed:	12-17-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	134	5.0

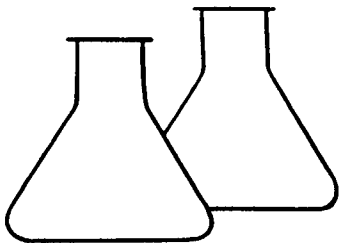
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Fenandez
Analyst

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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	GY 12 3' bgs	Date Reported:	12-21-92
Laboratory Number:	4217	Date Sampled:	12-16-92
Sample Matrix:	Soil	Date Received:	12-16-92
Preservative:	Cool	Date Extracted:	12-17-92
Condition:	Cool & Intact	Date Analyzed:	12-18-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	117
Toluene	ND	117
Ethylbenzene	ND	156
p,m-Xylene	ND	292
o-Xylene	ND	136

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	102 %
	Bromfluorobenzene	99 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

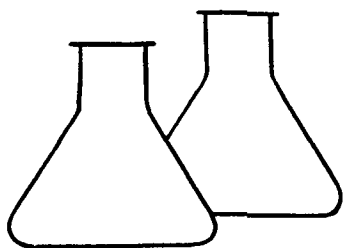
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant.

A. Chabaling
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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	Gyl2 @ 3'bgs	Date Reported:	12-17-92
Laboratory Number:	4217	Date Sampled:	12-16-92
Sample Matrix:	Soil	Date Received:	12-16-92
Preservative:	Cool	Date Analyzed:	12-17-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	ND	5.0

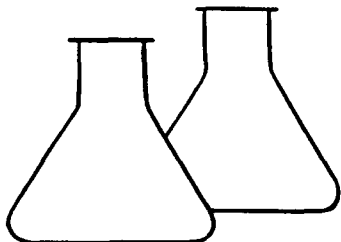
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	GY 13 1.5' bgs	Date Reported:	12-21-92
Laboratory Number:	4218	Date Sampled:	12-16-92
Sample Matrix:	Soil	Date Received:	12-16-92
Preservative:	Cool	Date Extracted:	12-17-92
Condition:	Cool & Intact	Date Analyzed:	12-18-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	116
Toluene	ND	116
Ethylbenzene	ND	155
p,m-Xylene	ND	290
o-Xylene	ND	135

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	100 %
	Bromfluorobenzene	97 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

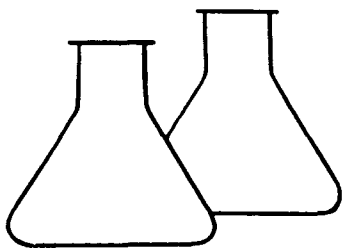
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant.

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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	Gyl3 @ 1.5'bgs	Date Reported:	12-17-92
Laboratory Number:	4218	Date Sampled:	12-16-92
Sample Matrix:	Soil	Date Received:	12-16-92
Preservative:	Cool	Date Analyzed:	12-17-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	ND	5.0

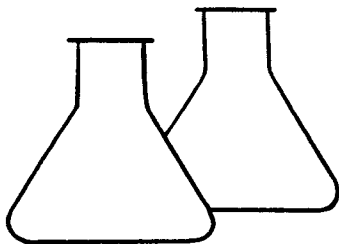
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	GY 13 2.5' bgs	Date Reported:	12-21-92
Laboratory Number:	4219	Date Sampled:	12-16-92
Sample Matrix:	Soil	Date Received:	12-16-92
Preservative:	Cool	Date Extracted:	12-17-92
Condition:	Cool & Intact	Date Analyzed:	12-18-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	119
Toluene	ND	119
Ethylbenzene	ND	158
p,m-Xylene	ND	296
o-Xylene	ND	138

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	105 %
	Bromfluorobenzene	95 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

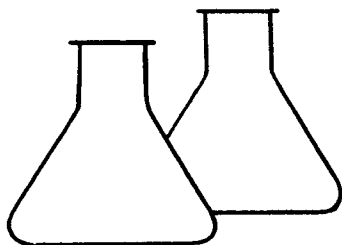
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant.

Al Chabaling
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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	Gyl3 @ 2.5'bgs	Date Reported:	12-17-92
Laboratory Number:	4219	Date Sampled:	12-16-92
Sample Matrix:	Soil	Date Received:	12-16-92
Preservative:	Cool	Date Analyzed:	12-17-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter -----	Concentration (mg/kg) -----	Det. Limit (mg/kg) -----
Total Petroleum Hydrocarbons	ND	5.0

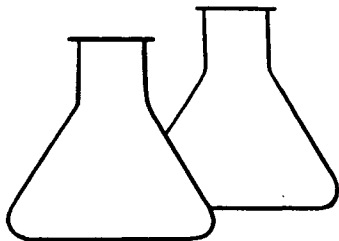
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Pheleps Dodge	Project #:	92194
Sample ID:	GY 14 @ 5' bgs	Date Reported:	12-21-92
Laboratory Number:	4237	Date Sampled:	12-17-92
Sample Matrix:	Soil	Date Received:	12-17-92
Preservative:	Cool	Date Extracted:	12-18-92
Condition:	Cool & Intact	Date Analyzed:	12-19-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	141	119
Toluene	343	119
Ethylbenzene	ND	159
p,m-Xylene	4,600	298
o-Xylene	1,110	139

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Bromfluorobenzene	88 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

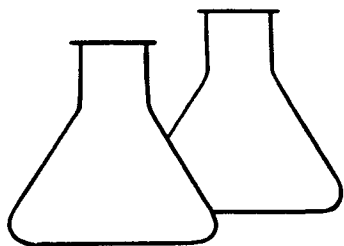
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant.

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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	Gyl4 @ 5'bgs	Date Reported:	12-22-92
Laboratory Number:	4237	Date Sampled:	12-17-92
Sample Matrix:	Soil	Date Received:	12-17-92
Preservative:	Cool	Date Analyzed:	12-22-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter -----	Concentration (mg/kg) -----	Det. Limit (mg/kg) -----
Total Petroleum Hydrocarbons	30.5	5.0

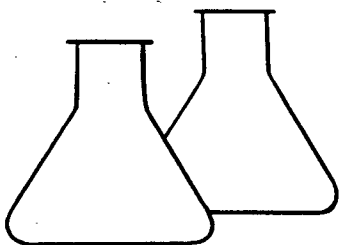
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Fenwick
Analyst

Maria D Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	GY 15 1' bgs	Date Reported:	12-22-92
Laboratory Number:	4256	Date Sampled:	12-18-92
Sample Matrix:	Soil	Date Received:	12-18-92
Preservative:	Cool	Date Extracted:	12-21-92
Condition:	Cool & Intact	Date Analyzed:	12-22-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	81
Toluene	85	61
Ethylbenzene	ND	40.7
p,m-Xylene	193	61
o-Xylene	74	61

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	114 %
	Bromfluorobenzene	100 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

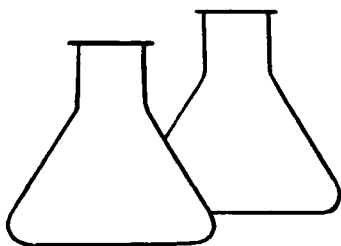
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant.

Ch Chaharlang
Analyst

Mavis D. Young
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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	Gyl5 @ 1'bgs	Date Reported:	12-21-92
Laboratory Number:	4256	Date Sampled:	12-18-92
Sample Matrix:	Soil	Date Received:	12-18-92
Preservative:	Cool	Date Analyzed:	12-21-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	ND	5.0

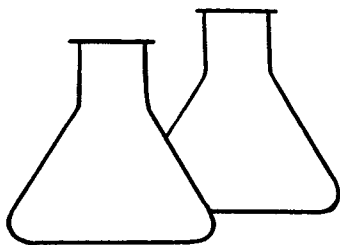
Method: Method 418.1, Petroleum Hydrocarbons, Total
Recoverable, Chemical Analysis of Water and
Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Ferencik
Analyst

Morris D. Young
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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	GY 16 1' bgs	Date Reported:	12-22-92
Laboratory Number:	4257	Date Sampled:	12-18-92
Sample Matrix:	Soil	Date Received:	12-18-92
Preservative:	Cool	Date Extracted:	12-21-92
Condition:	Cool & Intact	Date Analyzed:	12-22-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	76
Toluene	65	57
Ethylbenzene	ND	38.2
p,m-Xylene	ND	57
o-Xylene	ND	57

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	110 %
	Bromfluorobenzene	95 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

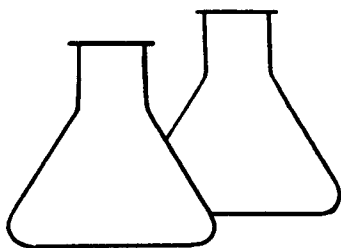
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant.

A. Chaharlang
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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	Gyl6 @ 1'bgs	Date Reported:	12-21-92
Laboratory Number:	4257	Date Sampled:	12-18-92
Sample Matrix:	Soil	Date Received:	12-18-92
Preservative:	Cool	Date Analyzed:	12-21-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter -----	Concentration (mg/kg) -----	Det. Limit (mg/kg) -----
Total Petroleum Hydrocarbons	ND	5.0

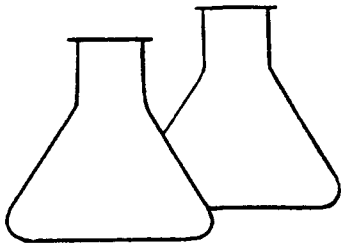
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Fernandez
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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	Gy49 1.5'bgs	Date Reported:	12-24-92
Laboratory Number:	4289	Date Sampled:	12-23-92
Sample Matrix:	Soil	Date Received:	12-23-92
Preservative:	Cool	Date Analyzed:	12-24-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter -----	Concentration (mg/kg) -----	Det. Limit (mg/kg) -----
Total Petroleum Hydrocarbons	6.5	5.0

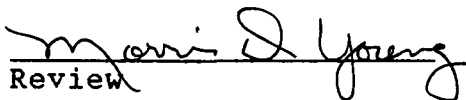
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

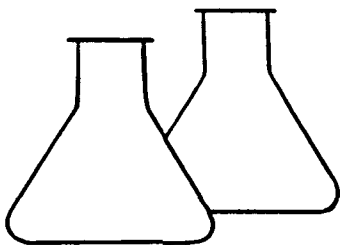
Comments: Gavilan Plant



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	CB - 1	Date Reported:	11-16-92
Laboratory Number:	3557	Date Sampled:	10-20-92
Sample Matrix:	Soil	Date Received:	10-20-92
Preservative:	Cool	Date Extracted:	10-30-92
Condition:	Cool & Intact	Date Analyzed:	11-13-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	39.7
Toluene	168	69
Ethylbenzene	33.4	29.8
p,m-Xylene	226	60
o-Xylene	80	39.7

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	100 %
	Bromfluorobenzene	95 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

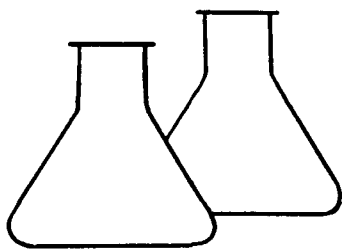
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Phelps Dodge, CB - 1, Gavilan Gas Plant, 92194

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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

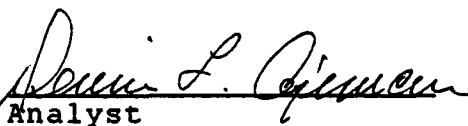
Client:	Phelps-Dodge	Project #:	92194
Sample ID:	CB-1	Date Reported:	11-03-92
Laboratory Number:	3557	Date Sampled:	10-20-92
Sample Matrix:	Soil	Date Received:	10-20-92
Preservative:	Cool	Date Analyzed:	10-30-92
Condition:	Cool & Intact	Analysis Needed:	TPH

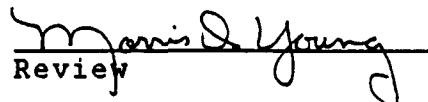
Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	327	5.0

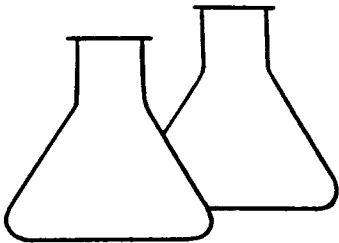
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Gas Plant---Comp. Bldg.


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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	CB - 2	Date Reported:	11-16-92
Laboratory Number:	3558	Date Sampled:	10-20-92
Sample Matrix:	Soil	Date Received:	10-20-92
Preservative:	Cool	Date Extracted:	10-30-92
Condition:	Cool & Intact	Date Analyzed:	11-13-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	40.0
Toluene	178	70
Ethylbenzene	ND	30.0
p,m-Xylene	219	60
o-Xylene	108	40.0

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	93 %
	Bromfluorobenzene	101 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

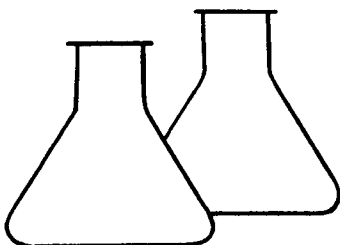
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Phelps Dodge, CB - 2, Gavilan Gas Plant, 92194

Analyst

Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	CB-2	Date Reported:	11-03-92
Laboratory Number:	3558	Date Sampled:	10-20-92
Sample Matrix:	Soil	Date Received:	10-20-92
Preservative:	Cool	Date Analyzed:	10-30-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	75	5.0

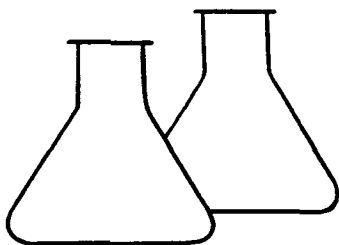
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Gas Plant---Comp. Bldg.

Shawn L. Jensen
Analyst

Marion D. Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	CB-3	Date Reported:	11-11-92
Laboratory Number:	3585	Date Sampled:	10-22-92
Sample Matrix:	Soil	Date Received:	10-22-92
Preservative:	Cool	Date Extracted:	10-28-92
Condition:	Cool & Intact	Date Analyzed:	11-10-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	49.7
Toluene	196	49.7
Ethylbenzene	422	19.9
p,m-Xylene	7,300	39.8
o-Xylene	2,450	29.8

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	107 %
	Bromfluorobenzene	98 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

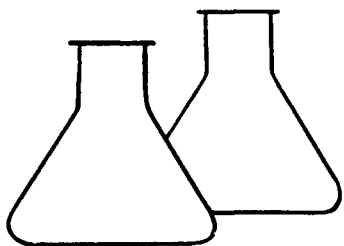
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND ~ Parameter not detected at the stated detection limit.

Comments: Phelps Dodge, CB-3, 92194

Chris Strickland
Analyst

Tony Tristano
Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	CB-3	Date Reported:	11-03-92
Laboratory Number:	3585	Date Sampled:	10-22-92
Sample Matrix:	Soil	Date Received:	10-22-92
Preservative:	Cool	Date Analyzed:	10-28-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter -----	Concentration (mg/kg) -----	Det. Limit (mg/kg) -----
Total Petroleum Hydrocarbons	ND	5.0

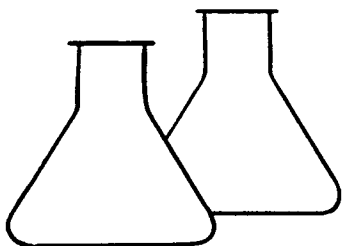
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Gas Plant---Comp. Bldg.

CA Fennell
Analyst

Morris D. Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	CB-4	Date Reported:	11-11-92
Laboratory Number:	3586	Date Sampled:	10-22-92
Sample Matrix:	Soil	Date Received:	10-22-92
Preservative:	Cool	Date Extracted:	10-28-92
Condition:	Cool & Intact	Date Analyzed:	11-10-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	50
Toluene	86	50
Ethylbenzene	27.1	20.2
p,m-Xylene	254	40.3
o-Xylene	71	30.2

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	94 %
	Bromfluorobenzene	95 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

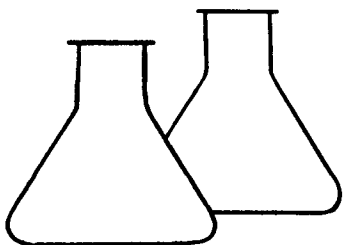
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Phelps Dodge, CB-4, 92194

T. Chaback
Analyst

Tony Tristone
Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	CB-4	Date Reported:	11-03-92
Laboratory Number:	3586	Date Sampled:	10-22-92
Sample Matrix:	Soil	Date Received:	10-22-92
Preservative:	Cool	Date Analyzed:	10-28-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	ND	5.0

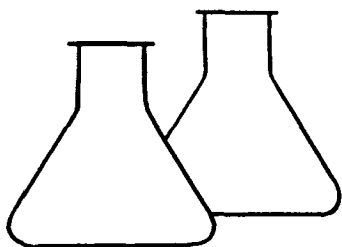
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Gas Plant---Comp. Bldg.

CA Fernandez
Analyst

Marisa Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	CB-5	Date Reported:	11-11-92
Laboratory Number:	3587	Date Sampled:	10-22-92
Sample Matrix:	Soil	Date Received:	10-22-92
Preservative:	Cool	Date Extracted:	10-28-92
Condition:	Cool & Intact	Date Analyzed:	11-10-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	50
Toluene	88	50
Ethylbenzene	25.6	20.0
p,m-Xylene	276	40.1
o-Xylene	77	30.1

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	102 %
	Bromfluorobenzene	96 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

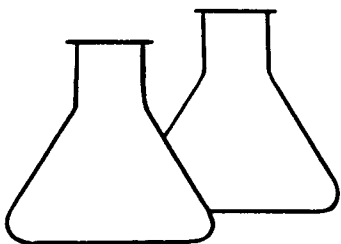
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Phelps Dodge, CB-5, 92194

Analyst

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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	CB-5	Date Reported:	11-03-92
Laboratory Number:	3587	Date Sampled:	10-22-92
Sample Matrix:	Soil	Date Received:	10-22-92
Preservative:	Cool	Date Analyzed:	10-28-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	ND	5.0

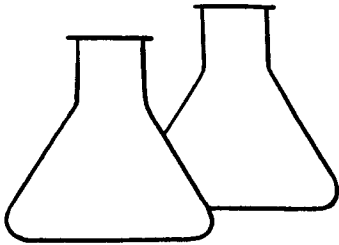
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Gas Plant---Comp. Bldg.

CA J. J. J.
Analyst

Monis D. Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	E #2 @ 18"	Date Reported:	11-16-92
Laboratory Number:	3750	Date Sampled:	11-03-92
Sample Matrix:	Soil	Date Received:	11-05-92
Preservative:	Cool	Date Extracted:	11-09-92
Condition:	Cool & Intact	Date Analyzed:	11-13-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	59
Toluene	ND	148
Ethylbenzene	ND	39.4
p,m-Xylene	127	89
o-Xylene	ND	59

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	91 %
	Bromfluorobenzene	104 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

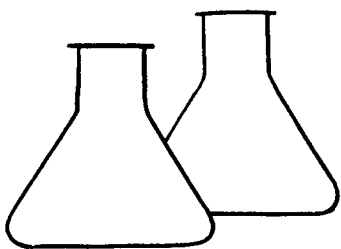
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Phelps Dodge, E #2 @ 18", Gavilan Plant, 92194

Analyst

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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	E#2@18"	Date Reported:	11-09-92
Laboratory Number:	3750	Date Sampled:	11-03-92
Sample Matrix:	Soil	Date Received:	11-06-92
Preservative:	Cool	Date Analyzed:	11-09-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	11.4	5.0

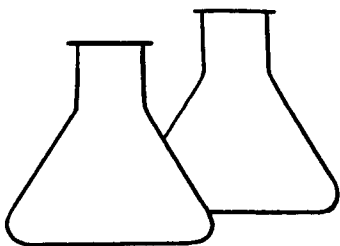
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant


Analyst


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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	E # 4 @ 30"	Date Reported:	11-16-92
Laboratory Number:	3751	Date Sampled:	11-03-92
Sample Matrix:	Soil	Date Received:	11-05-92
Preservative:	Cool	Date Extracted:	11-09-92
Condition:	Cool & Intact	Date Analyzed:	11-13-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	71	60
Toluene	301	149
Ethylbenzene	69	39.7
p,m-Xylene	550	89
o-Xylene	166	60

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	94 %
	Bromfluorobenzene	106 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

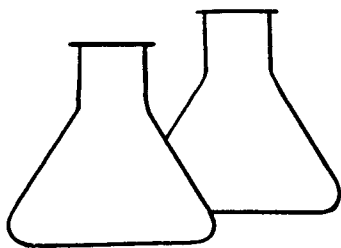
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Phelps Dodge, E #4 @ 30", Gavilan Plant, 92194

Analyst

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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

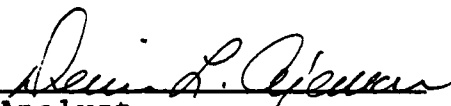
Client:	Phelps-Dodge	Project #:	92194
Sample ID:	E#4@20"	Date Reported:	11-09-92
Laboratory Number:	3751	Date Sampled:	11-03-92
Sample Matrix:	Soil	Date Received:	11-06-92
Preservative:	Cool	Date Analyzed:	11-09-92
Condition:	Cool & Intact	Analysis Needed:	TPH

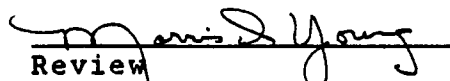
Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	11.7	5.0

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant


Analyst


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EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	E #8 @ 30"	Date Reported:	11-16-92
Laboratory Number:	3752	Date Sampled:	11-03-92
Sample Matrix:	Soil	Date Received:	11-05-92
Preservative:	Cool	Date Extracted:	11-09-92
Condition:	Cool & Intact	Date Analyzed:	11-13-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	60
Toluene	202	150
Ethylbenzene	186	40.0
p,m-Xylene	2,670	90
o-Xylene	1,420	60

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	-----	-----
	Trifluorotoluene	107 %
	Bromfluorobenzene	112 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

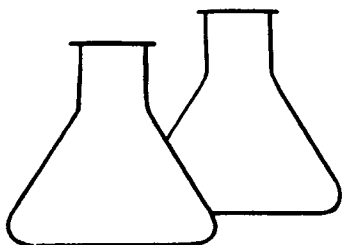
Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Phelps Dodge, E #8 @ 30", Gavilan Plant, 92194

Analyst

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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	E#8@30"	Date Reported:	11-09-92
Laboratory Number:	3752	Date Sampled:	11-03-92
Sample Matrix:	Soil	Date Received:	11-06-92
Preservative:	Cool	Date Analyzed:	11-09-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	17.3	5.0

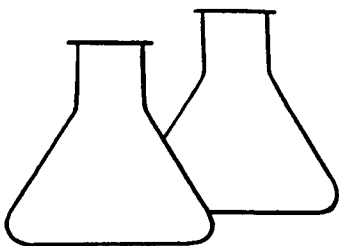
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

Dennis L. Grewer
Analyst

Marissa Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	E #9 @ 12"	Date Reported:	11-16-92
Laboratory Number:	3753	Date Sampled:	11-03-92
Sample Matrix:	Soil	Date Received:	11-05-92
Preservative:	Cool	Date Extracted:	11-09-92
Condition:	Cool & Intact	Date Analyzed:	11-13-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	92	59
Toluene	379	148
Ethylbenzene	107	39.4
p,m-Xylene	1,870	89
o-Xylene	1,400	59

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	119 %
	Bromfluorobenzene	106 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

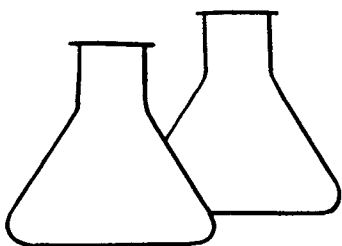
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Phelps Dodge, E #9 @ 12", Gavilan Plant, 92194

Analyst

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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

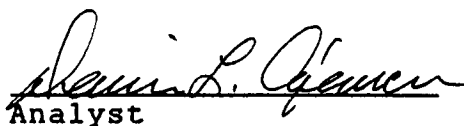
Client:	Phelps-Dodge	Project #:	92194
Sample ID:	E#9@12"	Date Reported:	11-09-92
Laboratory Number:	3753	Date Sampled:	11-03-92
Sample Matrix:	Soil	Date Received:	11-06-92
Preservative:	Cool	Date Analyzed:	11-09-92
Condition:	Cool & Intact	Analysis Needed:	TPH

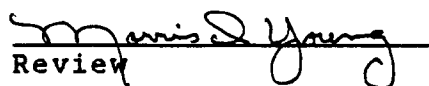
Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	49.5	5.0

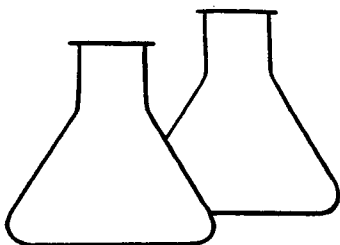
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant


Analyst


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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	E #13 @ 18"	Date Reported:	11-16-92
Laboratory Number:	3754	Date Sampled:	11-03-92
Sample Matrix:	Soil	Date Received:	11-05-92
Preservative:	Cool	Date Extracted:	11-09-92
Condition:	Cool & Intact	Date Analyzed:	11-13-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	105	59
Toluene	204	149
Ethylbenzene	124	39.6
p,m-Xylene	1,440	89
o-Xylene	610	59

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	98 %
	Bromfluorobenzene	113 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

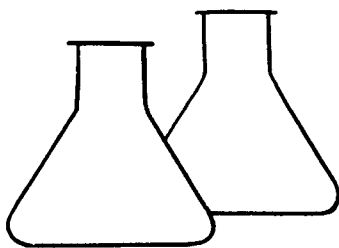
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Phelps Dodge, E #13 @ 18", Gavilan Plant, 92194

Analyst

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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

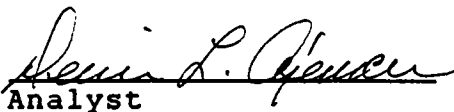
Client:	Phelps-Dodge	Project #:	92194
Sample ID:	E#13@18"	Date Reported:	11-09-92
Laboratory Number:	3754	Date Sampled:	11-03-92
Sample Matrix:	Soil	Date Received:	11-06-92
Preservative:	Cool	Date Analyzed:	11-09-92
Condition:	Cool & Intact	Analysis Needed:	TPH

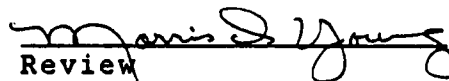
Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	148	5.0

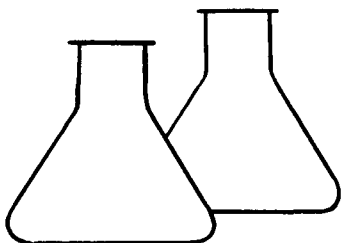
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant


Analyst


Review



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PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	FA-1 @ 24"	Date Reported:	11-12-92
Laboratory Number:	3665	Date Sampled:	10-28-92
Sample Matrix:	Soil	Date Received:	10-28-92
Preservative:	Cool	Date Extracted:	11-02-92
Condition:	Cool & Intact	Date Analyzed:	11-11-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	30.3	30.0
Toluene	132	40.0
Ethylbenzene	42.0	20.0
p,m-Xylene	510	40.0
o-Xylene	107	30.0

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	91 %
	Bromfluorobenzene	93 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

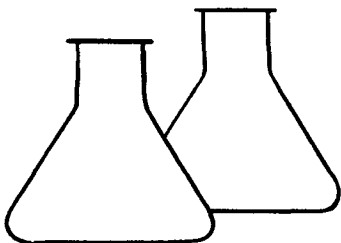
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Natural Gas Plant

Kevin L. O'Brien
Analyst

Tony Tristano
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	FA-2 @ 24"	Date Reported:	11-12-92
Laboratory Number:	3666	Date Sampled:	10-28-92
Sample Matrix:	Soil	Date Received:	10-28-92
Preservative:	Cool	Date Extracted:	11-02-92
Condition:	Cool & Intact	Date Analyzed:	11-11-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	19.9
Toluene	79	39.8
Ethylbenzene	ND	29.9
p,m-Xylene	161	29.9
o-Xylene	49.7	29.9

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	94 %
	Bromfluorobenzene	107 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

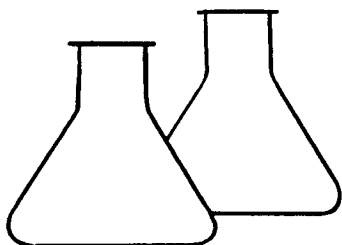
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Natural Gas Plant

Daniel L. Gorman
Analyst

Tony Tristano
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	FA-3 @ 18"	Date Reported:	11-12-92
Laboratory Number:	3667	Date Sampled:	10-28-92
Sample Matrix:	Soil	Date Received:	10-28-92
Preservative:	Cool	Date Extracted:	11-02-92
Condition:	Cool & Intact	Date Analyzed:	11-11-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	20.0
Toluene	119	40.1
Ethylbenzene	40	30.1
p,m-Xylene	1,020	30.1
o-Xylene	425	30.1

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	97 %
	Bromfluorobenzene	108 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

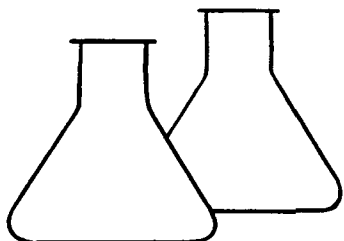
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Natural Gas Plant

Kevin L. O'Brien
Analyst

Tony Tristano
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	FA-4 @ 36"	Date Reported:	11-12-92
Laboratory Number:	3670	Date Sampled:	10-29-92
Sample Matrix:	Soil	Date Received:	10-29-92
Preservative:	Cool	Date Extracted:	11-02-92
Condition:	Cool & Intact	Date Analyzed:	11-11-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	20.0
Toluene	70	39.9
Ethylbenzene	ND	29.9
p,m-Xylene	149	29.9
o-Xylene	53	29.9

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	105 %
	Bromfluorobenzene	103 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

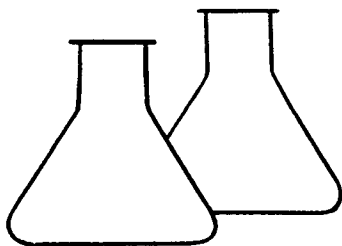
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Natural Gas Plant

David L. Brewer
Analyst

Tony Tristano
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	FA-5 @ 24"	Date Reported:	11-12-92
Laboratory Number:	3671	Date Sampled:	10-29-92
Sample Matrix:	Soil	Date Received:	10-29-92
Preservative:	Cool	Date Extracted:	11-02-92
Condition:	Cool & Intact	Date Analyzed:	11-11-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	20.0
Toluene	154	40.0
Ethylbenzene	117	30.0
p,m-Xylene	1,060	30.0
o-Xylene	228	30.0

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	104 %
	Bromfluorobenzene	112 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

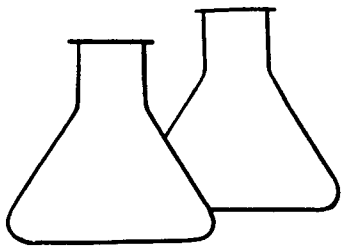
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Natural Gas Plant

Kevin L. Hansen
Analyst

Tony Tristano
Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

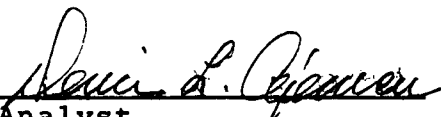
Client:	Phelps-Dodge	Project #:	92194
Sample ID:	FA-3@18"	Date Reported:	11-03-92
Laboratory Number:	3667	Date Sampled:	10-28-92
Sample Matrix:	Soil	Date Received:	10-28-92
Preservative:	Cool	Date Analyzed:	11-02-92
Condition:	Cool & Intact	Analysis Needed:	TPH

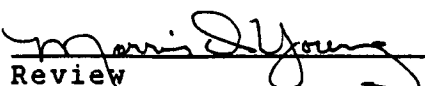
Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	15.6	5.0

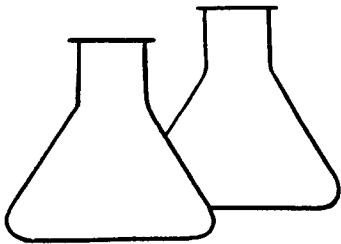
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Nat'l Gas Plant---Plume F (north side)


Analyst


Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	FA-5@24"	Date Reported:	11-03-92
Laboratory Number:	3671	Date Sampled:	10-29-92
Sample Matrix:	Soil	Date Received:	10-29-92
Preservative:	Cool	Date Analyzed:	11-02-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter -----	Concentration (mg/kg) -----	Det. Limit (mg/kg) -----
Total Petroleum Hydrocarbons	67	5.0

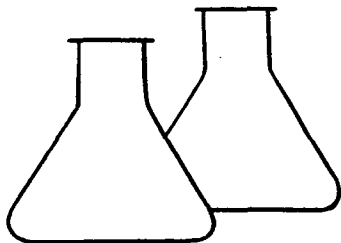
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Nat'l Gas Plant---Plume F (north Bedrock)

Denise L. Giamen
Analyst

Denise D. Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	F 21	Date Reported:	11-30-92
Laboratory Number:	3881	Date Sampled:	11-16-92
Sample Matrix:	Soil	Date Received:	11-16-92
Preservative:	Cool	Date Extracted:	11-18-92
Condition:	Cool & Intact	Date Analyzed:	11-25-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	62	58
Toluene	640	107
Ethylbenzene	560	87
p,m-Xylene	8,500	359
o-Xylene	3,210	204

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	113 %
	Bromfluorobenzene	115 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

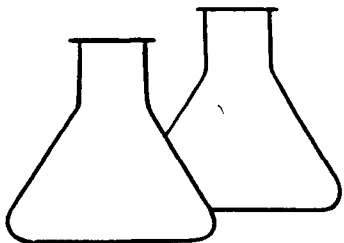
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

Lee Chahua
Analyst

Maris D. Young
Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	F21	Date Reported:	11-18-92
Laboratory Number:	3881	Date Sampled:	11-16-92
Sample Matrix:	Soil	Date Received:	11-16-92
Preservative:	Cool	Date Analyzed:	11-18-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	ND	5.0

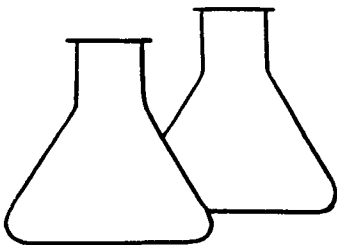
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Fenwick
Analyst

Maria D. Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	F 39	Date Reported:	11-30-92
Laboratory Number:	3883	Date Sampled:	11-16-92
Sample Matrix:	Soil	Date Received:	11-16-92
Preservative:	Cool	Date Extracted:	11-18-92
Condition:	Cool & Intact	Date Analyzed:	11-25-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	70	58
Toluene	201	106
Ethylbenzene	ND	86
p,m-Xylene	365	355
o-Xylene	ND	202

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	82 %
	Bromfluorobenzene	106 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

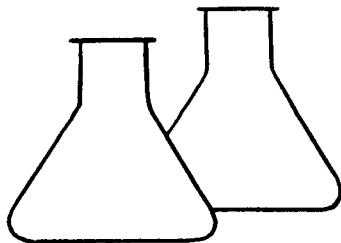
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

Analyst

Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	F40	Date Reported:	11-18-92
Laboratory Number:	3882	Date Sampled:	11-16-92
Sample Matrix:	Soil	Date Received:	11-16-92
Preservative:	Cool	Date Analyzed:	11-18-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter -----	Concentration (mg/kg) -----	Det. Limit (mg/kg) -----
Total Petroleum Hydrocarbons	28.9	5.0

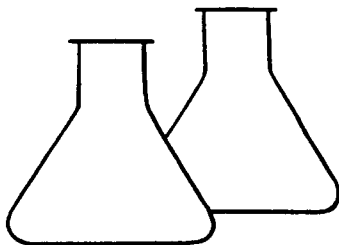
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

Shawn L. O'Quinn
Analyst

Mari D. Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	F 40	Date Reported:	11-30-92
Laboratory Number:	3882	Date Sampled:	11-16-92
Sample Matrix:	Soil	Date Received:	11-16-92
Preservative:	Cool	Date Extracted:	11-18-92
Condition:	Cool & Intact	Date Analyzed:	11-25-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	101	57
Toluene	377	105
Ethylbenzene	163	86
p,m-Xylene	1,290	354
o-Xylene	520	201

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	107 %
	Bromfluorobenzene	107 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

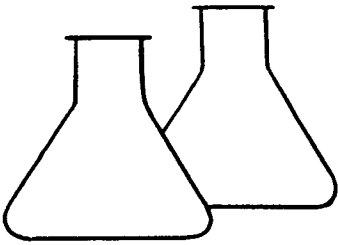
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

Analyst

Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

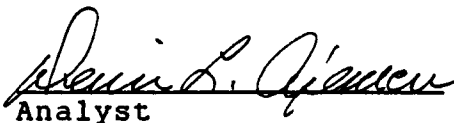
Client:	Phelps-Dodge	Project #:	92194
Sample ID:	F39	Date Reported:	11-18-92
Laboratory Number:	3883	Date Sampled:	11-16-92
Sample Matrix:	Soil	Date Received:	11-16-92
Preservative:	Cool	Date Analyzed:	11-18-92
Condition:	Cool & Intact	Analysis Needed:	TPH

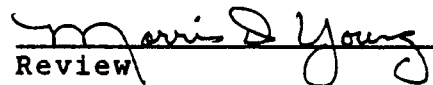
Parameter -----	Concentration (mg/kg) -----	Det. Limit (mg/kg) -----
Total Petroleum Hydrocarbons	20.4	5.0

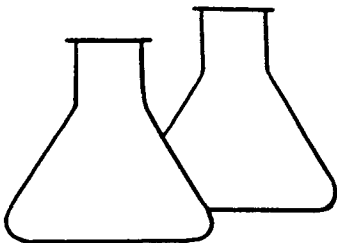
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant


Analyst


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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	G 2	Date Reported:	12-01-92
Laboratory Number:	3944	Date Sampled:	11-17-92
Sample Matrix:	Soil	Date Received:	11-17-92
Preservative:	Cool	Date Extracted:	11-24-92
Condition:	Cool & Intact	Date Analyzed:	12-01-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	91	59
Toluene	ND	177
Ethylbenzene	ND	59
p,m-Xylene	178	157
o-Xylene	ND	79

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	80 %
	Bromfluorobenzene	90 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

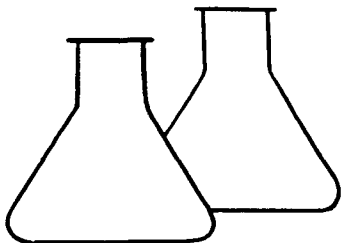
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

Analyst

Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	G2	Date Reported:	11-24-92
Laboratory Number:	3944	Date Sampled:	11-19-92
Sample Matrix:	Soil	Date Received:	11-19-92
Preservative:	Cool	Date Analyzed:	11-24-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	7.1	5.0

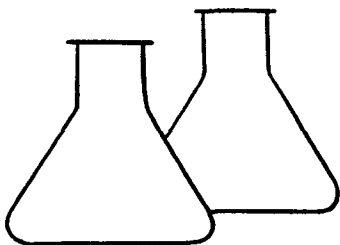
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Ferrell
Analyst

Maris D. Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	G 18 5' bgs	Date Reported:	12-14-92
Laboratory Number:	4109	Date Sampled:	12-08-92
Sample Matrix:	Soil	Date Received:	12-08-92
Preservative:	Cool	Date Extracted:	12-11-92
Condition:	Cool & Intact	Date Analyzed:	12-11-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	80
Toluene	ND	160
Ethylbenzene	ND	60
p,m-Xylene	ND	160
o-Xylene	ND	120

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	94 %
	Bromfluorobenzene	101 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

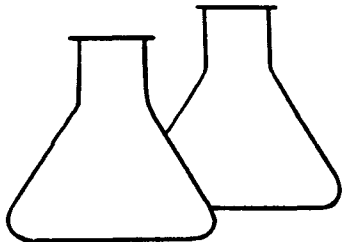
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant.

As Chabaling
Analyst

Imani D Young
Review



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PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	G18 5'bgs	Date Reported:	12-15-92
Laboratory Number:	4109	Date Sampled:	12-07-92
Sample Matrix:	Soil	Date Received:	12-07-92
Preservative:	Cool	Date Analyzed:	12-15-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	ND	5.0

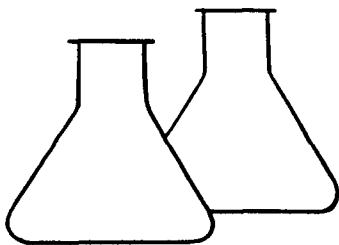
Method: Method 418.1, Petroleum Hydrocarbons, Total
Recoverable, Chemical Analysis of Water and
Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Fernandez
Analyst

Morris D. Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	G 19 7' bgs	Date Reported:	12-14-92
Laboratory Number:	4110	Date Sampled:	12-08-92
Sample Matrix:	Soil	Date Received:	12-08-92
Preservative:	Cool	Date Extracted:	12-11-92
Condition:	Cool & Intact	Date Analyzed:	12-11-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	78
Toluene	168	157
Ethylbenzene	ND	59
p,m-Xylene	246	157
o-Xylene	128	117

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	84 %
	Bromfluorobenzene	97 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

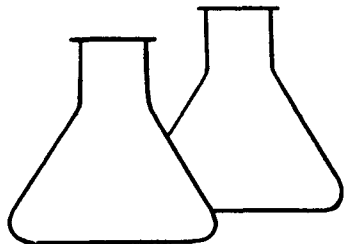
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant.

A. Chaharlang
Analyst

Marissa D. Young
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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	G19 5'bgs	Date Reported:	12-15-92
Laboratory Number:	4110	Date Sampled:	12-08-92
Sample Matrix:	Soil	Date Received:	12-08-92
Preservative:	Cool	Date Analyzed:	12-15-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	ND	5.0

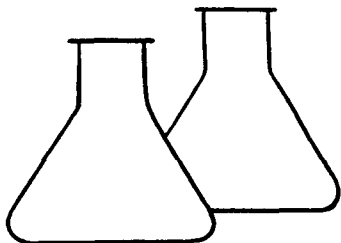
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Fennell
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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	G 20 10' bgs	Date Reported:	12-14-92
Laboratory Number:	4111	Date Sampled:	12-08-92
Sample Matrix:	Soil	Date Received:	12-08-92
Preservative:	Cool	Date Extracted:	12-11-92
Condition:	Cool & Intact.	Date Analyzed:	12-11-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	78
Toluene	167	156
Ethylbenzene	ND	58
p,m-Xylene	234	156
o-Xylene	ND	117

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	99 %
	Bromfluorobenzene	101 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

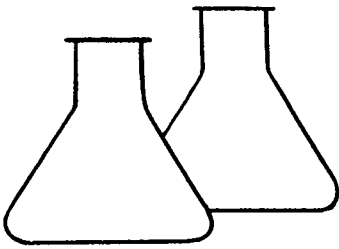
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant.

A. Chaharlang
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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	G20 10'bgs	Date Reported:	12-15-92
Laboratory Number:	4111	Date Sampled:	12-08-92
Sample Matrix:	Soil	Date Received:	12-08-92
Preservative:	Cool	Date Analyzed:	12-15-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	ND	5.0

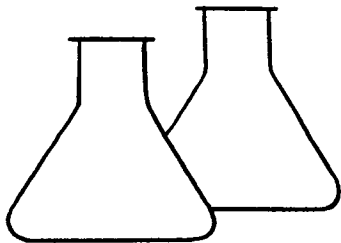
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Fenwick
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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	G 28 @ 4' bgs	Date Reported:	12-18-92
Laboratory Number:	4214	Date Sampled:	12-16-92
Sample Matrix:	Soil	Date Received:	12-16-92
Preservative:	Cool	Date Extracted:	12-17-92
Condition:	Cool & Intact	Date Analyzed:	12-18-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	79
Toluene	ND	79
Ethylbenzene	ND	39.7
p,m-Xylene	65	60
o-Xylene	ND	60

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	88 %
	Bromfluorobenzene	92 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

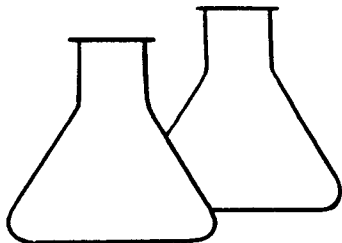
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant.

An Chhabang
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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	G28 @ 4'bgs	Date Reported:	12-17-92
Laboratory Number:	4214	Date Sampled:	12-16-92
Sample Matrix:	Soil	Date Received:	12-16-92
Preservative:	Cool	Date Analyzed:	12-17-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter -----	Concentration (mg/kg) -----	Det. Limit (mg/kg) -----
Total Petroleum Hydrocarbons	193	5.0

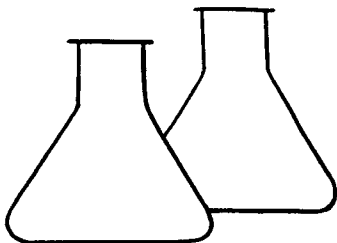
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Finander
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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	G 32 @ 9' bgs	Date Reported:	12-18-92
Laboratory Number:	4208	Date Sampled:	12-16-92
Sample Matrix:	Soil	Date Received:	12-16-92
Preservative:	Cool	Date Extracted:	12-17-92
Condition:	Cool & Intact	Date Analyzed:	12-18-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	80
Toluene	101	80
Ethylbenzene	58	40.0
p,m-Xylene	188	60
o-Xylene	64	60

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	101 %
	Bromfluorobenzene	102 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

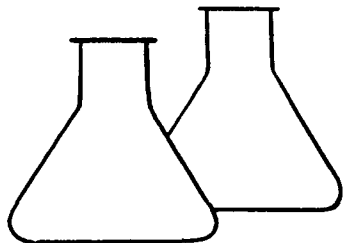
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant.

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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	G32 @ 9'bgs	Date Reported:	12-17-92
Laboratory Number:	4208	Date Sampled:	12-16-92
Sample Matrix:	Soil	Date Received:	12-16-92
Preservative:	Cool	Date Analyzed:	12-17-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	ND	5.0

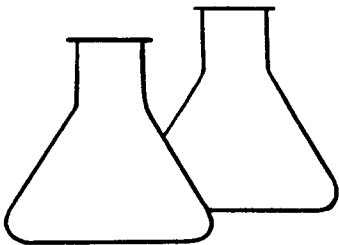
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

Ca Fernandez
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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	G 32 @ 7' bgs	Date Reported:	12-18-92
Laboratory Number:	4209	Date Sampled:	12-16-92
Sample Matrix:	Soil	Date Received:	12-16-92
Preservative:	Cool	Date Extracted:	12-17-92
Condition:	Cool & Intact	Date Analyzed:	12-18-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	77
Toluene	105	77
Ethylbenzene	42.9	38.7
p,m-Xylene	168	58
o-Xylene	60	58

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	95 %
	Bromfluorobenzene	99 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

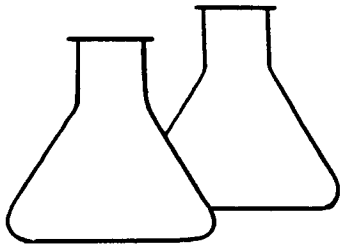
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant.

Ch. Chhabra
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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	G32 @ 7'bgs	Date Reported:	12-17-92
Laboratory Number:	4209	Date Sampled:	12-16-92
Sample Matrix:	Soil	Date Received:	12-16-92
Preservative:	Cool	Date Analyzed:	12-17-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter -----	Concentration (mg/kg) -----	Det. Limit (mg/kg) -----
Total Petroleum Hydrocarbons	ND	5.0

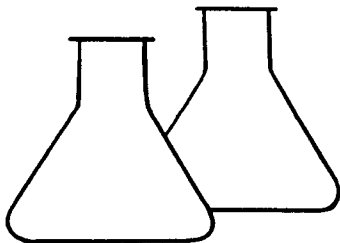
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Fenwick
Analyst

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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	G 32 @ 5' bgs	Date Reported:	12-18-92
Laboratory Number:	4210	Date Sampled:	12-16-92
Sample Matrix:	Soil	Date Received:	12-16-92
Preservative:	Cool	Date Extracted:	12-17-92
Condition:	Cool & Intact	Date Analyzed:	12-18-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	80
Toluene	141	80
Ethylbenzene	154	39.9
p,m-Xylene	453	60
o-Xylene	143	60

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	96 %
	Bromfluorobenzene	99 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

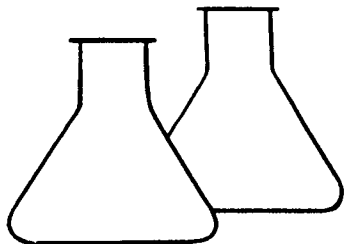
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant.

A. Chahalang
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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	G32 @ 5'bgs	Date Reported:	12-17-92
Laboratory Number:	4210	Date Sampled:	12-16-92
Sample Matrix:	Soil	Date Received:	12-16-92
Preservative:	Cool	Date Analyzed:	12-17-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter -----	Concentration (mg/kg) -----	Det. Limit (mg/kg) -----
Total Petroleum Hydrocarbons	ND	5.0

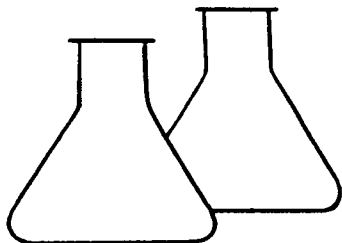
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	G 32 @ 3' bgs	Date Reported:	12-18-92
Laboratory Number:	4211	Date Sampled:	12-16-92
Sample Matrix:	Soil	Date Received:	12-16-92
Preservative:	Cool	Date Extracted:	12-17-92
Condition:	Cool & Intact	Date Analyzed:	12-18-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	80
Toluene	97	80
Ethylbenzene	ND	39.8
p,m-Xylene	91	60
o-Xylene	86	60

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	92 %
	Bromfluorobenzene	93 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

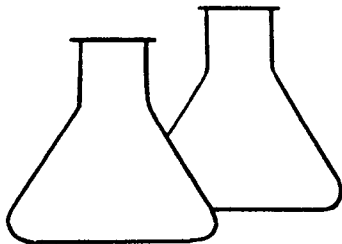
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant.

A. Chaharlang
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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	G32 @ 3'bgs	Date Reported:	12-17-92
Laboratory Number:	4211	Date Sampled:	12-16-92
Sample Matrix:	Soil	Date Received:	12-16-92
Preservative:	Cool	Date Analyzed:	12-17-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter -----	Concentration (mg/kg) -----	Det. Limit (mg/kg) -----
Total Petroleum Hydrocarbons	ND	5.0

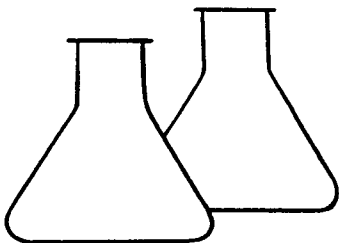
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	G 33 @ 7' bgs	Date Reported:	12-18-92
Laboratory Number:	4212	Date Sampled:	12-16-92
Sample Matrix:	Soil	Date Received:	12-16-92
Preservative:	Cool	Date Extracted:	12-17-92
Condition:	Cool & Intact	Date Analyzed:	12-18-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	80
Toluene	127	80
Ethylbenzene	319	39.8
p,m-Xylene	690	60
o-Xylene	ND	60

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	98 %
	Bromfluorobenzene	92 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

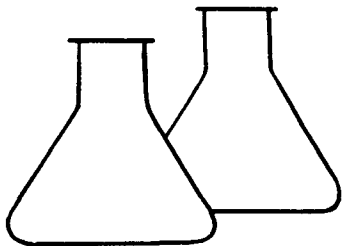
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant.

A. Chaharling
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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	G33 @ 7'bgs	Date Reported:	12-17-92
Laboratory Number:	4212	Date Sampled:	12-16-92
Sample Matrix:	Soil	Date Received:	12-16-92
Preservative:	Cool	Date Analyzed:	12-17-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter -----	Concentration (mg/kg) -----	Det. Limit (mg/kg) -----
Total Petroleum Hydrocarbons	ND	5.0

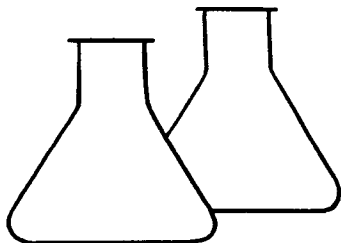
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	G 34 @ 7' bgs	Date Reported:	12-18-92
Laboratory Number:	4213	Date Sampled:	12-16-92
Sample Matrix:	Soil	Date Received:	12-16-92
Preservative:	Cool	Date Extracted:	12-17-92
Condition:	Cool & Intact	Date Analyzed:	12-18-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	80
Toluene	230	80
Ethylbenzene	62	39.8
p,m-Xylene	340	60
o-Xylene	147	60

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	92 %
	Bromfluorobenzene	94 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

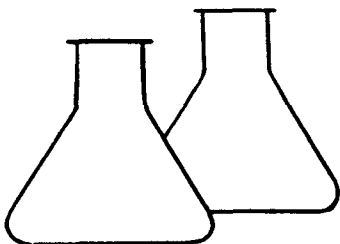
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant.

Ce Chabaling
Analyst

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5796 US HIGHWAY 64-3014 • FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	G34 @ 7'bgs	Date Reported:	12-17-92
Laboratory Number:	4213	Date Sampled:	12-16-92
Sample Matrix:	Soil	Date Received:	12-16-92
Preservative:	Cool	Date Analyzed:	12-17-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter -----	Concentration (mg/kg) -----	Det. Limit (mg/kg) -----
Total Petroleum Hydrocarbons	11.3	5.0

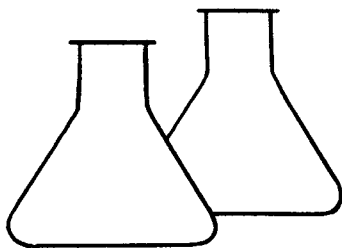
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Finander
Analyst

Marian D. Young
Review



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PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	G37 @ 3'bgs	Date Reported:	12-22-92
Laboratory Number:	4238	Date Sampled:	12-17-92
Sample Matrix:	Soil	Date Received:	12-17-92
Preservative:	Cool	Date Analyzed:	12-22-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	27.3	5.0

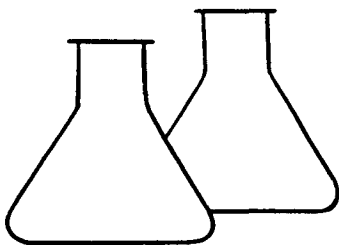
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Fennel
Analyst

Maria D. Young
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PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	G 40 3' bgs	Date Reported:	12-22-92
Laboratory Number:	4255	Date Sampled:	12-18-92
Sample Matrix:	Soil	Date Received:	12-18-92
Preservative:	Cool	Date Extracted:	12-21-92
Condition:	Cool & Intact	Date Analyzed:	12-22-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	610	77
Toluene	2,670	58
Ethylbenzene	2,220	38.4
p,m-Xylene	20,900	58
o-Xylene	9,600	58

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Bromfluorobenzene	105 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

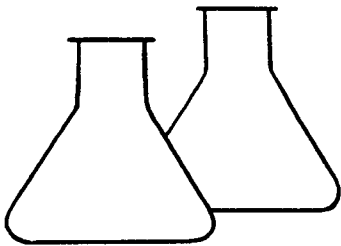
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant.

A. Chabaling
Analyst

M. D. Young
Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	G40 @ 3'bgs	Date Reported:	12-21-92
Laboratory Number:	4255	Date Sampled:	12-18-92
Sample Matrix:	Soil	Date Received:	12-18-92
Preservative:	Cool	Date Analyzed:	12-21-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	ND	5.0

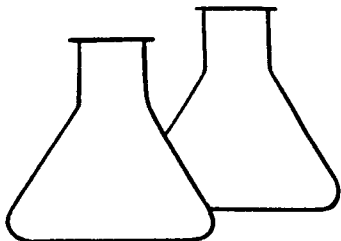
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Fernandez
Analyst

Morris D Young
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PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	G 46 3' bgs	Date Reported:	12-22-92
Laboratory Number:	4258	Date Sampled:	12-18-92
Sample Matrix:	Soil	Date Received:	12-18-92
Preservative:	Cool	Date Extracted:	12-21-92
Condition:	Cool & Intact	Date Analyzed:	12-22-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	76
Toluene	72	57
Ethylbenzene	ND	38.0
p,m-Xylene	66	57
o-Xylene	58	57

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Bromfluorobenzene	91 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

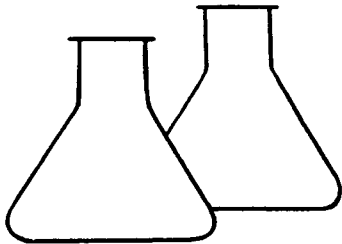
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant.

C. Chhabra
Analyst

Maria D. Young
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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	G46 @ 3'bgs	Date Reported:	12-21-92
Laboratory Number:	4258	Date Sampled:	12-18-92
Sample Matrix:	Soil	Date Received:	12-18-92
Preservative:	Cool	Date Analyzed:	12-21-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter -----	Concentration (mg/kg) -----	Det. Limit (mg/kg) -----
Total Petroleum Hydrocarbons	ND	5.0

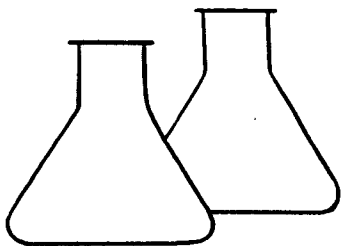
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Finemehl
Analyst

Samuel D. Young
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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	G 47 3' bgs	Date Reported:	12-22-92
Laboratory Number:	4259	Date Sampled:	12-18-92
Sample Matrix:	Soil	Date Received:	12-18-92
Preservative:	Cool	Date Extracted:	12-21-92
Condition:	Cool & Intact	Date Analyzed:	12-22-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	61
Toluene	85	81
Ethylbenzene	ND	40.7
p,m-Xylene	72	61
o-Xylene	75	61

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	105 %
	Bromfluorobenzene	103 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

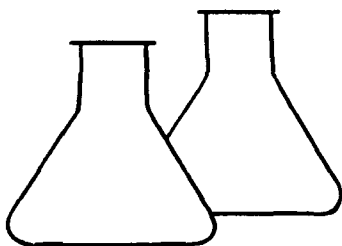
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant.

C. Chabauty
Analyst

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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	G47 @ 3'bgs	Date Reported:	12-21-92
Laboratory Number:	4259	Date Sampled:	12-18-92
Sample Matrix:	Soil	Date Received:	12-18-92
Preservative:	Cool	Date Analyzed:	12-21-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter -----	Concentration (mg/kg) -----	Det. Limit (mg/kg) -----
Total Petroleum Hydrocarbons	ND	5.0

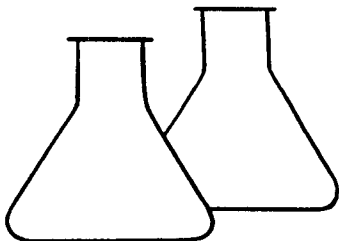
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Fernandez
Analyst

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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	G 48 @ 7' bgs	Date Reported:	12-22-92
Laboratory Number:	4248	Date Sampled:	12-18-92
Sample Matrix:	Soil	Date Received:	12-18-92
Preservative:	Cool	Date Extracted:	12-21-92
Condition:	Cool & Intact	Date Analyzed:	12-21-92
		Analysis Requested:	BTEX

Parameter -----	Concentration (ug/Kg) -----	Det. Limit (ug/Kg) -----
Benzene	ND	78
Toluene	143	58
Ethylbenzene	122	38.8
p,m-Xylene	436	58
o-Xylene	314	58

SURROGATE RECOVERIES:	Parameter -----	Percent Recovery -----
	Trifluorotoluene	116 %
	Bromfluorobenzene	102 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

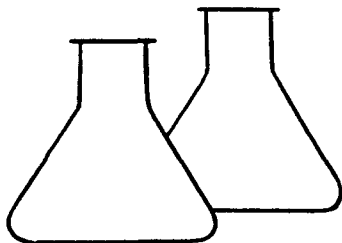
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant.

A. Chaharlang
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M. S. Young
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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	G48 @ 7'bgs	Date Reported:	12-21-92
Laboratory Number:	4248	Date Sampled:	12-18-92
Sample Matrix:	Soil	Date Received:	12-18-92
Preservative:	Cool	Date Analyzed:	12-21-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	ND	5.0

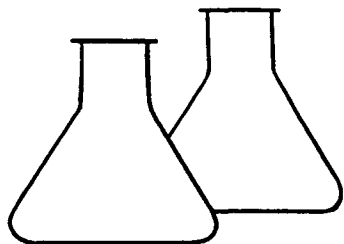
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Fenwick
Analyst

Maris D Young
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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	G 49 @ 3' bgs	Date Reported:	12-22-92
Laboratory Number:	4249	Date Sampled:	12-18-92
Sample Matrix:	Soil	Date Received:	12-18-92
Preservative:	Cool	Date Extracted:	12-21-92
Condition:	Cool & Intact	Date Analyzed:	12-21-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	80
Toluene	74	60
Ethylbenzene	88	40.2
p,m-Xylene	197	60
o-Xylene	83	60

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	104 %
	Bromfluorobenzene	98 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

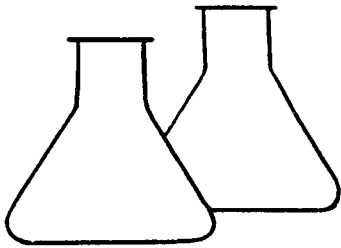
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant.

Al Chaharung
Analyst

Maris D Young
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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	G49 @ 3'bgs	Date Reported:	12-21-92
Laboratory Number:	4249	Date Sampled:	12-18-92
Sample Matrix:	Soil	Date Received:	12-18-92
Preservative:	Cool	Date Analyzed:	12-21-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	ND	5.0

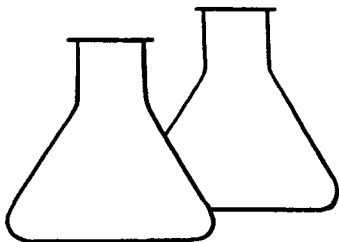
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Linnick
Analyst

Maria D Young
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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	G 50 @ 1' bgs	Date Reported:	12-22-92
Laboratory Number:	4250	Date Sampled:	12-18-92
Sample Matrix:	Soil	Date Received:	12-18-92
Preservative:	Cool	Date Extracted:	12-21-92
Condition:	Cool & Intact	Date Analyzed:	12-21-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	80
Toluene	89	60
Ethylbenzene	ND	40.1
p,m-Xylene	78	60
o-Xylene	ND	60

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	109 %
	Bromfluorobenzene	99 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

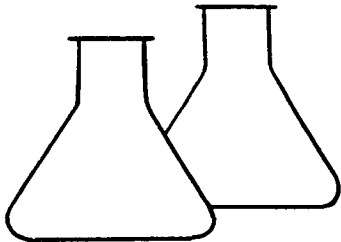
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant.

A. Chahalang
Analyst

Maris D. Young
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PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	G50 @ 1'bgs	Date Reported:	12-21-92
Laboratory Number:	4250	Date Sampled:	12-18-92
Sample Matrix:	Soil	Date Received:	12-18-92
Preservative:	Cool	Date Analyzed:	12-21-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	ND	5.0

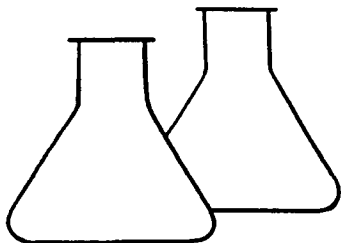
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Linderh
Analyst

Morris D Young
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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	G 51 @ 3' bgs	Date Reported:	12-22-92
Laboratory Number:	4251	Date Sampled:	12-18-92
Sample Matrix:	Soil	Date Received:	12-18-92
Preservative:	Cool	Date Extracted:	12-21-92
Condition:	Cool & Intact	Date Analyzed:	12-21-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	81
Toluene	80	60
Ethylbenzene	ND	40.3
p,m-Xylene	66	60
o-Xylene	ND	60

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	111 %
	Bromfluorobenzene	100 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

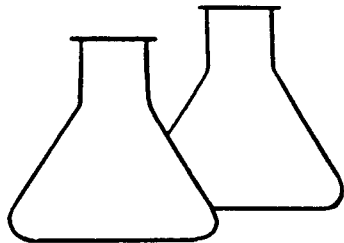
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant.

A. Chaboulay
Analyst

Marion D. Young
Review



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PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	G51 @ 3'bgs	Date Reported:	12-21-92
Laboratory Number:	4251	Date Sampled:	12-18-92
Sample Matrix:	Soil	Date Received:	12-18-92
Preservative:	Cool	Date Analyzed:	12-21-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	ND	5.0

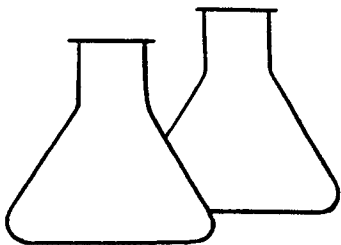
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Fernandez
Analyst

Morris D Young
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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	G 52 @ 1' bgs	Date Reported:	12-22-92
Laboratory Number:	4252	Date Sampled:	12-18-92
Sample Matrix:	Soil	Date Received:	12-18-92
Preservative:	Cool	Date Extracted:	12-21-92
Condition:	Cool & Intact	Date Analyzed:	12-21-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	78
Toluene	80	58
Ethylbenzene	ND	38.8
p,m-Xylene	61	58
o-Xylene	ND	58

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	109 %
	Bromfluorobenzene	96 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

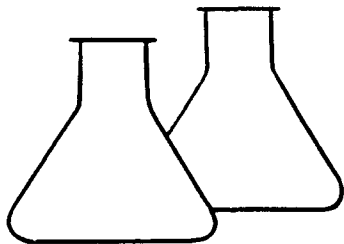
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant.

An Chhabra
Analyst

Morris S. Young
Review



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PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	G52 @ 1'bgs	Date Reported:	12-21-92
Laboratory Number:	4252	Date Sampled:	12-18-92
Sample Matrix:	Soil	Date Received:	12-18-92
Preservative:	Cool	Date Analyzed:	12-21-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter -----	Concentration (mg/kg) -----	Det. Limit (mg/kg) -----
Total Petroleum Hydrocarbons	ND	5.0

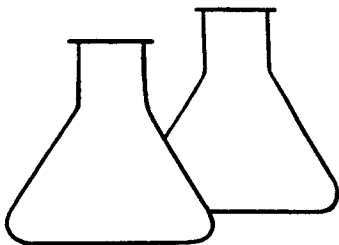
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Linder
Analyst

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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	G 53 @ 3' bgs	Date Reported:	12-22-92
Laboratory Number:	4253	Date Sampled:	12-18-92
Sample Matrix:	Soil	Date Received:	12-18-92
Preservative:	Cool	Date Extracted:	12-21-92
Condition:	Cool & Intact	Date Analyzed:	12-22-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	80
Toluene	86	60
Ethylbenzene	ND	40.1
p,m-Xylene	83	60
o-Xylene	ND	60

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	114 %
	Bromfluorobenzene	98 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

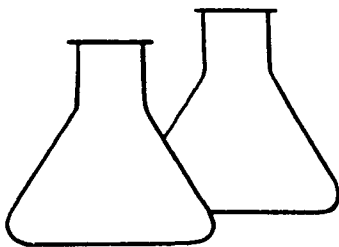
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant.

A. Chahalang
Analyst

Mari S. Young
Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	G53 @ 3'bgs	Date Reported:	12-21-92
Laboratory Number:	4253	Date Sampled:	12-18-92
Sample Matrix:	Soil	Date Received:	12-18-92
Preservative:	Cool	Date Analyzed:	12-21-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	ND	5.0

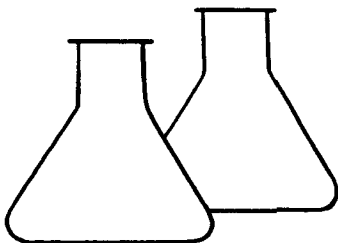
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Fernandez
Analyst

Morris D Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	G 54 @ 1' bgs	Date Reported:	12-22-92
Laboratory Number:	4254	Date Sampled:	12-18-92
Sample Matrix:	Soil	Date Received:	12-18-92
Preservative:	Cool	Date Extracted:	12-21-92
Condition:	Cool & Intact	Date Analyzed:	12-22-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	464	77
Toluene	2,130	58
Ethylbenzene	1,030	38.5
p,m-Xylene	10,400	58
o-Xylene	4,400	58

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Bromfluorobenzene	76 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

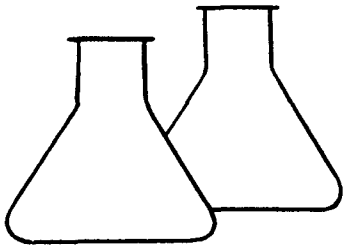
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant.

A. Chaharlang
Analyst

Maria S. Young
Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	G54 @ 1'bgs	Date Reported:	12-21-92
Laboratory Number:	4254	Date Sampled:	12-18-92
Sample Matrix:	Soil	Date Received:	12-18-92
Preservative:	Cool	Date Analyzed:	12-21-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter -----	Concentration (mg/kg) -----	Det. Limit (mg/kg) -----
Total Petroleum Hydrocarbons	ND	5.0

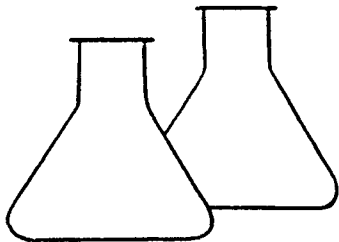
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

CA Fernandez
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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Phelps-Dodge	Project #:	92194
Sample ID:	H1 l'bgs	Date Reported:	12-24-92
Laboratory Number:	4290	Date Sampled:	12-23-92
Sample Matrix:	Soil	Date Received:	12-23-92
Preservative:	Cool	Date Analyzed:	12-24-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	11.1	5.0

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

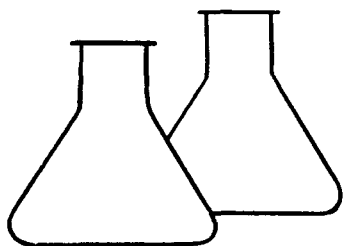
Comments: Gavilan Plant

Vanessa Ranson
Analyst

Review

QUALITY ASSURANCE/QUALITY CONTROL

DOCUMENTATION



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	10-29-92
Laboratory Number:	TPLB1028	Date Sampled:	NA
Sample Matrix:	Soil	Date Received:	NA
Preservative:	NA	Date Analyzed:	10-28-92
Condition:	NA	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	ND	5.0

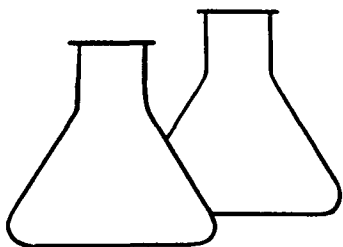
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments:

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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	11-02-92
Laboratory Number:	TPLB1030	Date Sampled:	NA
Sample Matrix:	Soil	Date Received:	NA
Preservative:	NA	Date Analyzed:	10-30-92
Condition:	NA	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	ND	5.0

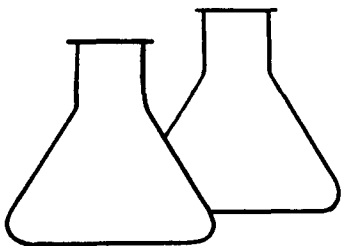
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments:

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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	11-03-92
Laboratory Number:	TPLB1102	Date Sampled:	NA
Sample Matrix:	Soil	Date Received:	NA
Preservative:	NA	Date Analyzed:	11-02-92
Condition:	NA	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	ND	5.0

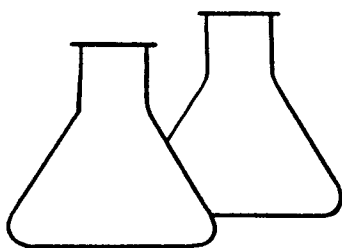
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments:

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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	11-09-92
Laboratory Number:	TPLB1109	Date Sampled:	NA
Sample Matrix:	Soil	Date Received:	NA
Preservative:	NA	Date Analyzed:	11-09-92
Condition:	NA	Analysis Needed:	TPH

Parameter -----	Concentration (mg/kg) -----	Det. Limit (mg/kg) -----
Total Petroleum Hydrocarbons	ND	5.0

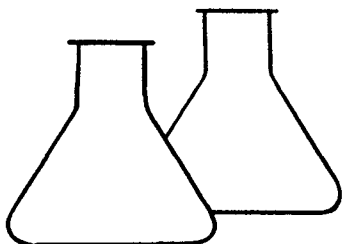
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments:

30 Jenevick
Analyst

Tony Tristano
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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	11-10-92
Laboratory Number:	TPLB1110	Date Sampled:	NA
Sample Matrix:	Soil	Date Received:	NA
Preservative:	NA	Date Analyzed:	11-10-92
Condition:	NA	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	ND	5.0

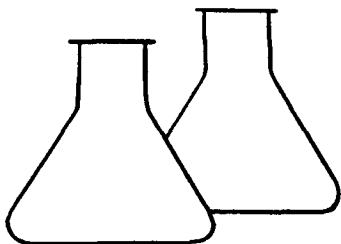
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments:

Vi Fernandez
Analyst

Tony Tristano
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	11-11-92
Laboratory Number:	1109BTLB-pm	Date Sampled:	NA
Sample Matrix:	Water	Date Received:	NA
Preservative:	NA	Date Analyzed:	11-09-92
Condition:	NA	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.2
p,m-Xylene	ND	0.4
o-Xylene	ND	0.3

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Bromfluorobenzene	93.6 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

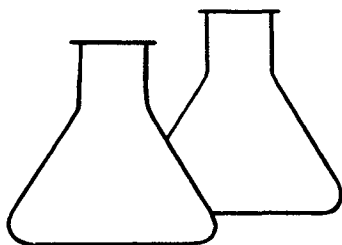
Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments:

Analyst

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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	11-12-92
Laboratory Number:	LB-11-10 pm	Date Sampled:	NA
Sample Matrix:	Water	Date Received:	NA
Preservative:	NA	Date Analyzed:	11-10-92
Condition:	NA	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	0.3
Toluene	ND	0.4
Ethylbenzene	ND	0.2
p,m-Xylene	ND	0.4
o-Xylene	ND	0.3

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	104 %
	Bromfluorobenzene	97 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

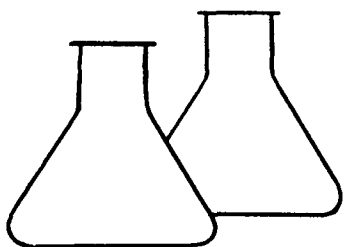
Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments:

Kevin L. Gienow
Analyst

Tony Tristano
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	11-12-92
Laboratory Number:	LB-11-11 pm	Date Sampled:	NA
Sample Matrix:	Water	Date Received:	NA
Preservative:	NA	Date Analyzed:	11-11-92
Condition:	NA	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	0.2
Toluene	ND	0.4
Ethylbenzene	ND	0.3
p,m-Xylene	ND	0.3
o-Xylene	ND	0.3

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	95 %
	Bromfluorobenzene	104 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

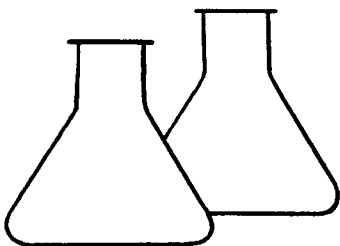
Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments:

Kevin L. O'Leary
Analyst

Tony Tristano
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	11-16-92
Laboratory Number:	BTLB1113pm	Date Sampled:	NA
Sample Matrix:	Water	Date Received:	NA
Preservative:	NA	Date Analyzed:	11-13-92
Condition:	NA	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	0.4
Toluene	ND	0.7
Ethylbenzene	ND	0.3
p,m-Xylene	ND	0.6
o-Xylene	ND	0.4

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	77 %
	Bromfluorobenzene	106 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating
Solid Waste, SW-846, USEPA, Sept. 1986

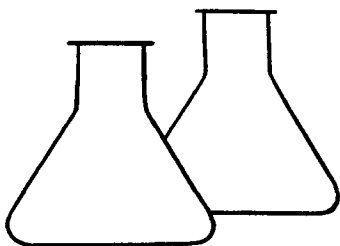
Method 8020, Aromatic Volatile Organics, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments:

Analyst

Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	11-17-92
Laboratory Number:	BTLB1114am	Date Sampled:	NA
Sample Matrix:	Water	Date Received:	NA
Preservative:	NA	Date Analyzed:	11-14-92
Condition:	NA	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	0.4
Toluene	ND	1.0
Ethylbenzene	ND	0.3
p,m-Xylene	ND	0.8
o-Xylene	ND	0.5

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	85 %
	Bromfluorobenzene	104 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments:

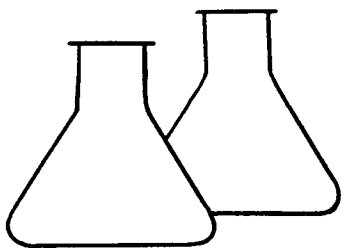
Analyst

Review



EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Maris L Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	11-18-92
Laboratory Number:	BTLB1115pm	Date Sampled:	NA
Sample Matrix:	Water	Date Received:	NA
Preservative:	NA	Date Analyzed:	11-15-92
Condition:	NA	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	0.5
Toluene	ND	1.0
Ethylbenzene	ND	0.3
p,m-Xylene	ND	1.0
o-Xylene	ND	0.2

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Bromfluorobenzene	100 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating
Solid Waste, SW-846, USEPA, Sept. 1986

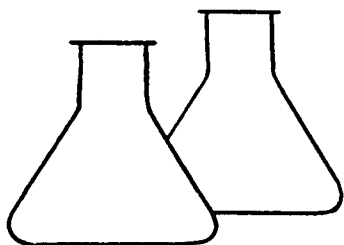
Method 8020, Aromatic Volatile Organics, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments:

Analyst

Review



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EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	11-18-92
Laboratory Number:	TPLB1118	Date Sampled:	NA
Sample Matrix:	Soil	Date Received:	NA
Preservative:	NA	Date Analyzed:	11-18-92
Condition:	NA	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	ND	5.0

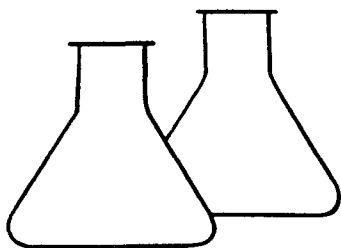
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments:

CA Fernandez
Analyst

Maris D Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	12-01-92
Laboratory Number:	BTLB1130am	Date Sampled:	NA
Sample Matrix:	Water	Date Received:	NA
Preservative:	NA	Date Analyzed:	11-30-92
Condition:	NA	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	0.6
Toluene	ND	0.7
Ethylbenzene	ND	0.2
p,m-Xylene	ND	0.5
o-Xylene	ND	0.3

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	105 %
	Bromfluorobenzene	114 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating
Solid Waste, SW-846, USEPA, Sept. 1986

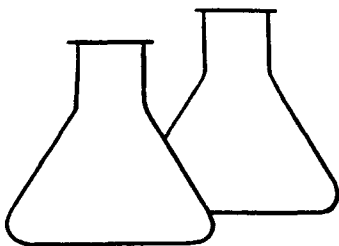
Method 8020, Aromatic Volatile Organics, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments:

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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	12-02-92
Laboratory Number:	BTLB1201am	Date Sampled:	NA
Sample Matrix:	Water	Date Received:	NA
Preservative:	NA	Date Analyzed:	12-01-92
Condition:	NA	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	0.4
Toluene	ND	0.6
Ethylbenzene	ND	0.3
p,m-Xylene	ND	0.6
o-Xylene	ND	0.4

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	98 %
	Bromfluorobenzene	99 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating
Solid Waste, SW-846, USEPA, Sept. 1986

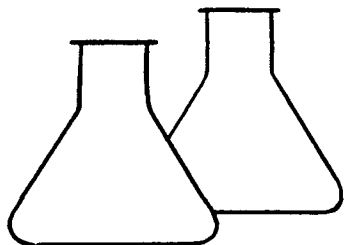
Method 8020, Aromatic Volatile Organics, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments:

Analyst

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PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	12-07-92
Laboratory Number:	TPLB1207	Date Sampled:	NA
Sample Matrix:	Soil	Date Received:	NA
Preservative:	NA	Date Analyzed:	12-07-92
Condition:	NA	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	ND	5.0

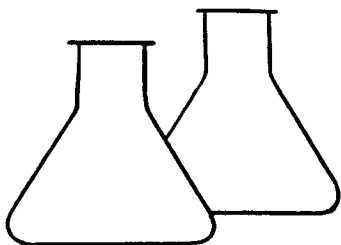
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments:

CA Fernandez
Analyst

Mavis S. Young
Reviewer



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PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	12-09-92
Laboratory Number:	BTLB1208am	Date Sampled:	NA
Sample Matrix:	Water	Date Received:	NA
Preservative:	NA	Date Analyzed:	12-08-92
Condition:	NA	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	0.3
Toluene	ND	0.4
Ethylbenzene	ND	0.5
p,m-Xylene	ND	0.4
o-Xylene	ND	0.3

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	86 %
	Bromfluorobenzene	94 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating
Solid Waste, SW-846, USEPA, Sept. 1986

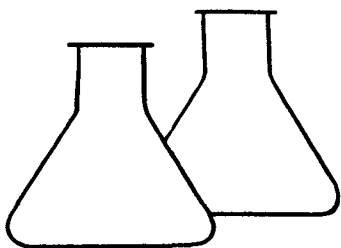
Method 8020, Aromatic Volatile Organics, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments:

Al Chaharley
Analyst

Marissa D. Young
Review



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PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	12-09-92
Laboratory Number:	BTLB1208pm	Date Sampled:	NA
Sample Matrix:	Water	Date Received:	NA
Preservative:	NA	Date Analyzed:	12-08-92
Condition:	NA	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	0.3
Toluene	ND	0.7
Ethylbenzene	ND	0.3
p,m-Xylene	ND	1.4
o-Xylene	ND	0.7

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	89 %
	Bromfluorobenzene	100 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating
Solid Waste, SW-846, USEPA, Sept. 1986

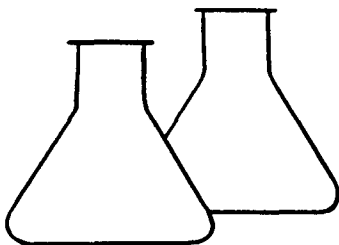
Method 8020, Aromatic Volatile Organics, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments:

A. Chaharlang
Analyst

M. S. Young
Review



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PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	12-11-92
Laboratory Number:	BTLB1210pm	Date Sampled:	NA
Sample Matrix:	Water	Date Received:	NA
Preservative:	NA	Date Analyzed:	12-10-92
Condition:	NA	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	0.3
Toluene	ND	0.2
Ethylbenzene	ND	0.2
p,m-Xylene	ND	0.4
o-Xylene	ND	0.3

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	99 %
	Bromfluorobenzene	120 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating
Solid Waste, SW-846, USEPA, Sept. 1986

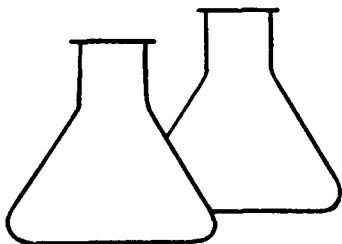
Method 8020, Aromatic Volatile Organics, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments:

Ae Chaharlang
Analyst

Morris D. Young
Review



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PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	12-22-92
Laboratory Number:	TPLB1222	Date Sampled:	NA
Sample Matrix:	Soil	Date Received:	NA
Preservative:	NA	Date Analyzed:	12-22-92
Condition:	NA	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	ND	5.0

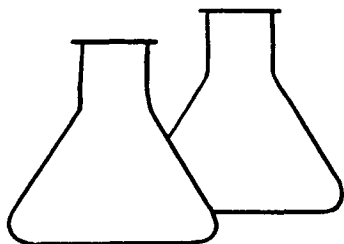
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments:

CA Fernandez
Analyst

Morris D Young
Review



ENVIROTECH LABS

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PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	12-22-92
Laboratory Number:	TPLB1222	Date Sampled:	NA
Sample Matrix:	Soil	Date Received:	NA
Preservative:	NA	Date Analyzed:	12-22-92
Condition:	NA	Analysis Needed:	TPH

Parameter -----	Concentration (mg/kg) -----	Det. Limit (mg/kg) -----
Total Petroleum Hydrocarbons	ND	5.0

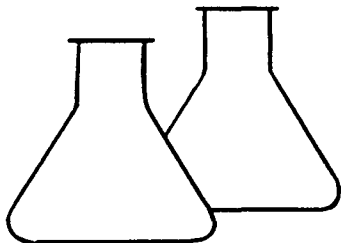
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments:

CA Fenendll
Analyst

Maria D. Young
Review



ENVIROTECH LABS

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PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	12-16-92
Laboratory Number:	TPLB1216	Date Sampled:	NA
Sample Matrix:	Soil	Date Received:	NA
Preservative:	NA	Date Analyzed:	12-16-92
Condition:	NA	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	ND	5.0

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments:

CA Fenwick
Analyst

Morris D. Young
Review

Human Rights Report Form 57A-A1

ENVIROTECH INC.

5796 U.S. Highway 64-3014

Farmington, New Mexico 87401

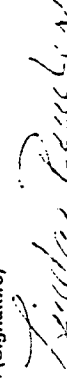
(505) 632-0615

[illegible]

(505) 632-0615

0115

CHAIN OF CUSTODY RECORD

Client/Project Name		Project Location		ANALYSIS/PARAMETERS							Remarks			
PHILIP DODGE 92194 Sampler: (Signature) 		GAVILAN PARK Chain of Custody Tape No.		Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	TPH		418.1	BTEX	8020
E #2 @ 10"	"1/3/92		3750	Soil	1	✓								AREA IN FRONT OF COMPRESSOR Bldg.
E #4 @ 30"	"		3751	"	1	✓								
E #8 @ 30"	"		3752	"	1	✓								
E #9 @ 12"	"		3753	"	1	✓								
E #13 @ 10"	"		3754	"	1	✓								
D #1 @ 12"	"1/4/92		3755	"	1	✓								
Relinquished by: (Signature) 				Date	11/5/92	Time	1800	Received by: (Signature) 		Date		11/5/92	Time	1800
Relinquished by: (Signature)								Received by: (Signature)						
Relinquished by: (Signature)								Received by: (Signature)						

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 5796 U.S. Highway 64-3014
 Farmington, New Mexico 87401
 (505) 632-0615

CHAIN OF CUSTODY RECORD

Client/Project Name			Project Location		ANALYSIS/PARAMETERS													
PHEBO DOGE Sampler: (Signature)			CAVILAN PLANT Chain of Custody Tape No.		No. of Containers	TPH	4HB	BTEX	6000									
Sample Identification	Sample Date	Sample Time	Lab Number	Sample Matrix														
D#6 @ 12"	"1/5/92	1625	3756	Soil	1	✓	✓	✓										
D#9 @ 30"	"1/5/92	1630	3757	"	1	✓	✓	✓										
R#5 @ 18"-24"	"1/4/92	-	3758	"	1	✓	✓	✓										
G#1 @ 18"	"1/5/92	1532	3759	"	1	✓	✓	✓										
G#1A @ 18"	"1/5/92	1531	3760	"	1	✓	✓	✓										
G#2 @ 18"	"	1530	3761	"	1	✓	✓	✓										
Relinquished by: (Signature) <i>[Signature]</i>			Date "1/5/92	Time 1830	Received by: (Signature) <i>[Signature]</i>										Date 11-5-92	Time 1830		
Relinquished by: (Signature) <i>[Signature]</i>			Received by: (Signature)															
Relinquished by: (Signature)			Received by: (Signature)															

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Farmington, New Mexico 87401
(505) 632-0615

Client/Project Name		Project Location		ANALYSIS/PARAMETERS															
Phelps Dodge 92194		Gavilan flent																	
Sampler: (Signature) Jack O'Dewey				Chain of Custody Tape No.				No. of Containers				TPH 418.1 BTX 8020							
Sample No./ Identification		Sample Date		Sample Time		Lab Number		Sample Matrix											
F 21		11/16/92		1125		3881		Soil		1				✓					
F 40		11/16/92		1130		3882		Soil		1				✓					
F 39		11/16/92		1125		3883		Soil		1				✓					
P 32		11/16/92		1410		3884		Soil		1				✓					
D 28		11/16/92		1335		3885		Soil		1				✓					

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Farmington, New Mexico 87401

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CHAIN OF CUSTODY RECORD

Client/Project Name		Project Location		ANALYSIS/PARAMETERS								Remarks	
Phelps Dodge 42194		Gavilan Plant											
Sampler: (Signature) Jack D. Dewey				Chain of Custody Tape No.									
Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	TPH 418.1	BTEX 8020						
C1	11/20/92	1150	3954	Soil	1	✓	✓						
Gy 1	11/20/92	1250	3955	Soil	1	✓	✓						
Gy 2	11/20/92	1250	3956	Soil	1	✓	✓						
A 8	11/20/92	1330	3957	Soil	1	✓	✓						
A 9	11/20/92	1330	3958	Soil	1	✓	✓						
A 10	11/20/92	1400	3959	Soil	1	✓	✓						
Relinquished by: (Signature) Jack D. Dewey				Date	Time	Received by: (Signature) Linda Pender		Date		Time			
Relinquished by: (Signature)					11/20/92 1710			11-20-92		1710			
Relinquished by: (Signature)						Received by: (Signature)							
Relinquished by: (Signature)						Received by: (Signature)							

ENVIROTECH INC.
 5796 U.S. Highway 64-3014
 Farmington, New Mexico 87401
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Client/Project Name			Project Location		ANALYSIS/PARAMETERS														
PHELPS Dodge 92194			Garilan Plant																
Sampler: (Signature)			Chain of Custody Tape No.																
Jack DeDewey																			
Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	TPH	418.1	BTEX	8020										
A 14	11/23/92	1430	3975	Soil	1	✓	✓	✓											
Gy 3	11/23/92	1130	3976	Soil	1	✓	✓	✓											
Gy 4	11/23/92	1430	3977	Soil	1	✓	✓	✓											
A 11	11/23/92	1430	3978	Soil	1	✓	✓	✓											
A 12	11/23/92	1430	3979	Soil	1	✓	✓	✓											
Relinquished by: (Signature)			Date	Time	Received by: (Signature)										Date	Time			
Jack O. Dewey			11/24/92	0712	Linda Pender										11-24-92	0712			
Relinquished by: (Signature)					Received by: (Signature)														
Relinquished by: (Signature)					Received by: (Signature)														

ENVIROTECH INC.
5796 U.S. Highway 64-3014
Farmington, New Mexico 87401
(505) 632-0615

CHAIN OF CUSTODY RECORD

Client/Project Name		Project Location		ANALYSIS/PARAMETERS													
Phelps Dodge 92194		Gavilan Plant															
Sampler: (Signature)		Chain of Custody Tape No.		Sample No./ Identification		Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	TPH	BTEX					Remarks
Jack O'Donoghue				Gy 10 5' bgs	12/4/92	1430	4107	Soil	1	✓	418.1	BTEX 8020					
				Gy 11 5' bgs	12/4/92	1430	4108	Soil	1	✓							
				G 18 5' bgs	12/8/92	1115	4109	Soil	1	✓							
				G 19 7' bgs	12/8/92	1115	4110	Soil	1	✓							
				G 20 10' bgs	12/8/92	1115	4111	Soil	1	✓							
Relinquished by: (Signature)		Date		Time		Received by: (Signature)											
Jack O'Donoghue		12/8/92		1700		Linda Pender											
Relinquished by: (Signature)						Received by: (Signature)											
						Received by: (Signature)											

ENVIROTECH INC.
5796 U.S. Highway 64-3014
Farmington, New Mexico 87401
(505) 632-0615

ENVIROTECH INC.

5796 U.S. Highway 64-3014
Farmington, New Mexico 87401
(505) 632-0615

San Juan Isidro Form 578-81

APPENDIX D

Correspondence:

- 1) Guidelines for Surface Impoundment Closure
- 2) Release
- 3) NMOCD Letter of Approval
- 4) Phelps Dodge Letter Clarifying RAP
- 5) Daily Log Book of Calibration

Bills-of-Lading

ENVIROTECH INC.

UNDERGROUND TANK TESTING • SITE ASSESSMENT • SITE REMEDIATION

5796 U.S. HIGHWAY 64 - 3014
FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615

December 14, 1992

Mike McElrath
2600 North Central Ave.
Phoenix, Arizona 85004-3014

Re: Gavilan Plant Site

Project 92194

Dear Mike:

Our work at the Gavilan Site is nearing completion and I wanted to bring you up to date as to how work was progressing.

I'm sorry that I missed you when you were here prior to Thanksgiving but I hope you had a pleasant holiday.

I would like to bring you up to date on the area around the large holding tanks and the contamination around (under) them. The large 18,000 gallon tank was removed on the 5th of December and excavation was started on the 7th. It appears that this area will generate an extra 800-1000 cy. This area of contamination was not discovered during the investigation, first because there was no visual or operational reason given us to look that deep and 2nd because the surface testing around this area showed levels of contamination that were less than the 100 ppm. As a result no other or deeper investigation was performed.

It appears that this area has been contaminated by product following the piping trenches in the area, originating in the area at North end of the West boundary tank. The main source being the drip discharge located there, that exceeded the containment in place.

The area around the glycol tanks also exceeded the original estimates for that area because of the extent of the contamination caused by product following the piping in that area.

Even with the extra contamination found in this area the over-all total cy for the project would have been less than the original estimate. (Some other areas were not as extensive as first believed).

Gavilan Plant Site
Envirotech Inc.
December 14, 1992

Page 2

The extra costs associated with this extra material will be between \$42,000. and \$52,000.. The on-site work should be complete by the 18th of December and then our report should be in your hands by the end of the year.

If you have any questions please give me a call.

Thank You,



Verl Farnsworth
Vice President

cc: Inter office memorandum
Michael K. Lane

VF/cj93

ENVIROTECH INC.

UNDERGROUND TANK TESTING • SITE ASSESSMENT • SITE REMEDIATION

5796 U.S. HIGHWAY 64 - 3014

FARMINGTON, NEW MEXICO 87401

PHONE: (505) 632-0615

INTEROFFICE MEMORANDUM

December 9, 1992

To: Mr Verl Farnsworth
General Superintendent

From: Michael K. Lane
Chief Engineer

RE: Phelps Dodge
Gavilan Plant Remediation
Updated Quantities

Based on the current bills of lading for the subject project Jack Dewey estimates that 2560 cubic yards have been removed from the site for remediation at the ESRF at Hilltop, New Mexico.

Additionally, Jack estimates there is still an additional 1000 to 1200 cubic yards to be hauled. This will total approximately 3500 to 3700 cubic yards. Our original estimate was 2400 to 2600 cubic yards. We are now projecting approximately 35% increase in the projected quantities.

The reason for the increased quantities are:

- The depth to bedrock has averaged 5 to 6 feet not the 4 feet originally anticipated.

- Soil contamination along the west fence and at the southwest corner of the facility was more extensive than we had anticipated from the audit.

- Soil contamination in the area of the glycol equipment at the northeast corner of the site was more extensive than we had anticipated from the audit.

Contamination in the piping corridors was not detected until the abatement was implemented and the corridors exposed. The contamination in the piping corridors appears to be from condensate and drip. The reasons that this contamination was not detected in the audit included: 1) no as-builts were available and all test holes were located to avoid underground piping, 2) Mr. Olsen, plant manager, did not appraise Envirotech of the waste disposal practices from the LGP tanks until the abatement was initiallized, and 3) based on the surface site conditions and the limited test hole information, hydrocarbon contamination was anticipated to be from heavy oil migration from the compressor building and relatively shallow (ie. within the top one to two feet).

The area of greatest exception was the southwest corner. The condensate followed piping along either side of the tank, migrated south into the deep fill area, and saturated the soil from 2 feet below the surface to bedrock. The contamination from the condensate did not exceed the regulatory limit of 100 ppm in most areas until the level of the pipe (2.5 to 3 feet) near the pipe and nearly 4 feet at the edge of the plume. In the audit, the contamination in the southwest corner was thought to be only shallow surface spills of oils that tie up in the soil. Based on the abatement, the major part appears to be from drip condensate. Fill in the southwest area is an average of 8 to 9 feet. The contaminated soil from the southwest corner is anticipated to be most of the over run from the audit estimate.

Although not as significant, the depth and extent of the hydrocarbon plume in the area of the glycol regenerator is also larger than originally anticipated.

The cleanup in the southwest corner required the removal of an 18,000 gallon tank. A meeting with Phelps Dodge and Envirotech personnel over the contamination in this area was on November 24, 1992 at the Gavilan Plant. Mr. Morris Young, Mr. Mike Lane and Mr. Jack Dewey were there representing Envirotech and Mr. Mike McElrath, and Mr. Bruce Taylor representing Phelps Dodge. The decision was made to take the tank out and excavate the additional contaminated soil. Mr. McElrath requested an estimate of the contaminated soil remaining in the southwest corner and in the glycol area of the site. The estimate of 1000 cubic yards was forwarded to him on about December 1.

Mr. Olsen, plant manager, arranged and had the 18,000 gal tank removed on Saturday, December 5, 1992. Mr. Bruce Taylor was contacted regarding the status of soil contamination in the southwest area and glycol plume during the week of December 1, 1992. Envirotech was instructed to remove all soils exceeding the action levels in both of the remaining plume areas.

The contaminated soil to the south and west of the two remaining tanks has been removed as well as approximately 100 cubic yards from north and east of those two tanks.

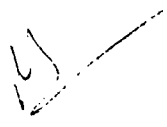
The remaining contaminated soil in the glycol plume is in a strip occupied by a live natural gas line and a live 120 volt electric line that Mr. Olsen said we agreed to work around. There is an estimated 50 cubic yards of contaminated soil in the range of 200 to 300 ppm TPH and less than 50 ppm OVM readings remaining in and around these utility lines.

Please see me if you have any comments or questions.

Attachment: Site Plan (current excavation)

MKL/jdd

pdmemo.ltr



BY MAIL AIR

ENVIROTECH INC.

UNDERGROUND TANK TESTING • SITE ASSESSMENT • SITE REMEDIATION

5796 U.S. HIGHWAY 64 - 3014
FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615

INTEROFFICE MEMORANDUM

December 4, 1992

TO: Mr. Verl Farnsworth
General Superintendent

From: Michael K. Lane
Chief Engineer

RE: Phelps Dodge
Gavilan Plant Remediation
Updated Quantities

Based on the current bills of lading for the subject project Jack Dewey estimates that 1838 cubic yards have been removed for remediation at the ESRF at Hilltop, New Mexico.

Additionally, Jack estimates there will be an additional 1600 to 1900 cubic yards to be hauled. This will total approximately 3400 to 3800 yards. Our original estimate was 2400 to 2600 cubic yards. We are now projecting approximately 35% increase in the projected quantities.

The reason for the increased quantities are:

- the depth to bedrock has average 5 to 6 feet not the 4 feet originally anticipated.
- soil contamination along the west fence and at the southwest corner of the facility was more extensive than we had anticipated from the audit.
- soil contamination in the area of the glycol equipment at the northeast corner of the site was more extensive than we had anticipated from the audit.
- soil contamination in the southwest and the glycol pit appears to have migrated along piping corridors.

It should be noted that the test holes were dug in areas avoiding piping, as no as-builts were available. Contamination in the piping corridors was not detected until the abatement was implemented and the corridors exposed.

Please see me if you have any comments or questions.

Attachment: Site Plan (current excavations)

MKL/mkl

PDUPDATE.MMO

ENVIROTECH INC.

UNDERGROUND TANK TESTING • SITE ASSESSMENT • SITE REMEDIATION

5796 U.S. HIGHWAY 64 - 3014
FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615

September 30, 1992

Mr. Mike McElrath
Phelps Dodge Corporation
2600 North Central Avenue
Phoenix, Arizona 85004-3014

Re: Sampling of clean-up of
Gavilan Plant, New Mexico

Project # 92194

Dear Mr. McElrath:

The New Mexico Oil Conservation Division has requested a confirmation sampling program as a condition of their acceptance of the proposed site remediation of Phelps Dodge's Gavilan Plant, near Lindreth, New Mexico.

As stated in the submitted remediation proposal all excavation will be field screened with an Organic Vapor Meter (OVM). Confirmation that all highly contaminated soils have been removed will be by laboratory analysis for Total Petroleum Hydrocarbon (TPH) by USEPA method 418.1.

Specifically it is purposed to perform confirmation sampling of each separate plume excavation by collecting a minimum of two (2) sidewall samples and one (1) bottom sample at the excavation interface. At least one of the sidewall samples will be from the down-gradient side of the excavation. For larger excavation areas, this sample program will be expanded to perform a minimum of one (1) sample for every Thirty (30) linear feet of sidewall and one (1) bottom sample for every One Thousand (1000) square feet of bottom area.

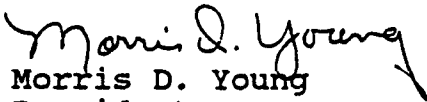
We feel this level of confirmation sampling will provide adequate data to document the clean-up without being an excessive burden to the field operations and creating an excessive sampling cost for Phelps Dodge.

Phelps Dodge Corporation
Envirotech
Sept. 30, 1992

Page 2

We appreciate working with you on this matter. If this plan is acceptable, we can forward it to New Mexico Oil Conservation Division for inclusion in the remediation plan.

Sincerely,


Morris D. Young
President

MDY/CJ92

ENVIROTECH, INC.

UNDERGROUND TANK TESTING • SITE ASSESSMENT • SITE REMEDIATION

5796 U.S. HIGHWAY 64 - 3014
FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615

October 19, 1992

Mr. Denny Foust
Deputy Oil & Gas Inspector
New Mexico Oil Conservation Division
1000 Rio Brazos Road
Aztec, New Mexico 87410

FILE COPY

RE: Request to Receive
Phelps Dodge Gavilan Process Plant
W/2, Se/4 Section 11, Township 25N, Range 2W, NMPM
Rio Arriba County, New Mexico

Project No: 92194

Dear Mr. Foust:

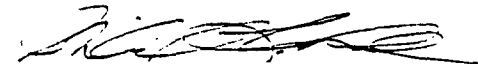
Envirotech Inc. requests approval to receive the hydrocarbon contaminated soils from the reference Phelps Dodge Facility. These soils have been removed as part of the Remedial Action Plan (RAP) approved by the New Mexico Oil Conservation Division earlier in October, 1992.

Approximately 2400 cy of soil will be removed from the site for disposal at Envirotech's Soil Remediation Facility (ESRF). Receipt of the soils should start upon OCD authorization.

A composite soil sample was collected as part of the site audit and development of the RAP. The sample was analyzed for TCLP and indicates that all contaminated soils from the site are classified as non-hazardous per RCRA (40CFR 261).

Thanks for your assistance with this project. If you have any questions regarding our site assessment or the closure operations, please contact us.

Respectfully submitted,
Envirotech, Inc.


Michael K. Lane, P.E.
Project Manager/Geological Engineer

MKL:mkl

VERBAR
Denny
Approved
10/19/92 PM
1410OCD.RQT

**GUIDELINES
FOR
SURFACE IMPOUNDMENT CLOSURE**

(October 29, 1991)

**NEW MEXICO OIL CONSERVATION DIVISION
STATE LAND OFFICE BUILDING
P.O. BOX 2088
SANTA FE, NEW MEXICO 87504-2088**

PREFACE

The following procedures shall be used as a guide for the closure of surface impoundments used for the containment of those wastes regulated by the Oil Conservation Division, individual districts may impose additional requirements. All plans and specifications shall be submitted to and approved by the Oil Conservation Division prior to closure. Procedures may deviate from the following guidelines if it can be shown that the proposed procedure will remove or isolate contaminants in such a manner that ground water, surface water and the environment are protected from future contamination.

If a number of impoundments are to be closed by a single company, one plan detailing the procedures to be followed at all locations may be submitted for approval. The plan must state the specific location of each impoundment that is to be closed under the procedures proposed in the plan.

Constituents and procedures for soil and ground water testing and remediation may vary depending on the site specific conditions.

INTRODUCTION

OCD Surface Impoundment Closure Guidelines are intended to provide guidance to operators and facility owners for closure of surface impoundments in a manner that assures protection of surface waters, ground waters and the environment.

PART 1 EXEMPT IMPOUNDMENTS

I. SITE ASSESSMENT

Prior to final closure of surface impoundments, the operator or facility owner will perform an investigation to determine the extent to which soils and/or ground water have been impacted by the operation of the impoundment using the following procedures:

A. Soil Contamination Assessment

1. Highly Contaminated Soils

Highly contaminated soils are defined as soils which are stained or saturated with any type of petroleum product. These soils can be distinguished by observing the physical properties of the soil for observable free phase petroleum product, gross staining and evidence of a very strong odor. These physical properties are criteria which may be used to determine if the soil is highly contaminated.

2. Other Contaminated Soils

Other contaminated soils are defined as those soils which do not exhibit highly contaminated characteristics as described in Part 1 I.A.1. above. The following field or laboratory procedures may be utilized to determine the degree of contamination:

a. Headspace Method

- i. Fill a 0.5 liter or larger jar half full of sample.
- ii. Seal top tightly with aluminum foil.
- iii. Ensure sample is at 15 to 25 degrees Celsius or approximately 60 to 80 degrees Fahrenheit. A warm water bath should be used if necessary to raise sample temperature to an acceptable range.
- iv. Aromatic hydrocarbon vapor concentrations must be allowed to develop in the headspace of the sample jar for 5 to 10 minutes. During this headspace development period, the sample jar should be shaken vigorously for 1

minute.

- v. Pierce aluminum foil seal with the probe of either a PID or FID organic vapor analyzer, and then record the highest (peak) measurement. The instrument must be calibrated to assume a benzene response factor.

- b. Laboratory Method

- i. Sampling Procedure

- 1. Collect samples in clean air tight jars, preferably jars supplied by the laboratory which will conduct the analysis.
 - 2. Cool and store samples on ice.
 - 3. Promptly ship sample to the lab for analysis following chain of custody procedures as necessary,

ii. Analysis Methods

Below are the OCD required laboratory methods required for the analysis of contaminated soils. Alternate laboratory methods may be used for analyzing soils for contaminant concentrations, if approved in advance by the OCD.

1. Purgeable organic contaminants will be determined using EPA Method 8010 and EPA Method 8020.
2. Total Petroleum Hydrocarbons (TPH) will be determined using the modified EPA Method 8015.

B. Ground Water Contamination Assessment

The installation of monitor wells to determine the impact of the disposal of wastes to surface impoundments may be required depending on the results of the assessment of soil contamination at the site. If monitor wells are required, they are to be installed and sampled using the following guidelines:

1. Monitor Well Installation

- a. Locations

One monitor well should be installed through the center of the impoundment or directly adjacent and downgradient of the impoundment to determine if ground water has been impacted by disposal activities. Additional monitor wells, upgradient and downgradient of the impoundment, to delineate the full extent of ground water contamination may be required if ground water directly underneath the pit has been found to be impacted by disposal activities.

- b. Construction

Monitor wells construction materials shall be selected to be chemically resistant to the contaminants to be monitored and be able to be installed without the use of glues or adhesives.

Monitor wells shall be constructed according to accepted industry standards with a minimum of five feet of well screen above the water table to accommodate seasonal fluctuations in the static water table.

2. Ground Water Sampling

Ground water shall be sampled from monitor wells according to accepted industry standards. Samples shall be analyzed for potential contaminants contained in the wastes disposed of in the impoundment. All laboratory analyses will be conducted pursuant to standard EPA Methods unless OCD has approved the use of alternate laboratory methods.

II. Action Levels

A. Soils

The action levels listed below apply directly for sites where soils are to be remediated in place or removed for treatment on the surface.

1. Highly Contaminated Soils

- a. Soils which are determined to be highly contaminated either by the observation of physical properties must be remediated.

2. Other Contaminated Soils

a. Field Headspace Method

A measurement of 100 parts per million (ppm) or greater of total organic vapor indicates that remedial action is necessary.

b. Laboratory Method

Remedial action is necessary if any of the following contaminant levels are exceeded:

- i. The sum of the concentrations of all detected aromatics is greater than 50 ppm.
- ii. The benzene concentration is greater than 10 ppm.
- iii. The concentration of TPH is greater than 100 ppm.

B. Ground Water

Ground waters found to be contaminated from waste disposal at a surface impoundment with free phase products and dissolved phase constituents in excess of New Mexico Water Quality Control Commission (WQCC) water quality standards will be required to perform remedial actions.

III. REMEDATION

A. Soils

When a contaminated soil requires remediation according to standards set forth in Part 1.II.A., it must be remediated according to the criteria described below.

1. Removal

a. Highly Contaminated Soils

Highly contaminated soils should be excavated from the ground to the maximum depth and horizontal extent practicable.

b. Other Contaminated Soils

Contaminated soil which exceeds the action levels set out in Part 1.II.A.2. must be excavated to the maximum depth and horizontal extent practicable until samples from the walls and bottom of the excavation pass the contaminant specific action level.

2. Disposal/Treatment

Below is a list of options to be used for either the treatment or disposal of contaminated soils.

a. Disposal

Excavated contaminated soils may be disposed of offsite at an OCD approved facility with prior OCD approval.

b. Treatment Of Excavated Soils

i. Thin Spreading

Soil must be spread in a single layer no greater than six inches thick in a bermed area. If the depth to the seasonal

high static water level is less than 100 feet, the soil must be placed in a level bermed area on an impermeable barrier such as hypalon or concrete. All necessary precautions must be taken to prevent runoff of contaminants or the infiltration of contaminants below the ground surface. The soil should be disced to enhance aerobic biodegradation approximately once every two weeks.

ii. Other Methods

The OCD encourages other methods of soil remediation, including but not limited to, active soil aeration, bioremediation and thermal treatment. Alternatives to thin spreading must be proposed to OCD for approval or disapproval prior to commencement of remediation activities. Soils which are temporarily stockpiled prior to treatment or disposal must be kept on an impermeable barrier in a bermed area to prevent runoff or infiltration of contaminants.

c. Residual Contamination

Where contaminated soils remain beyond the horizontal or vertical

extent of practicable excavation, they must be treated in place .In place treatment may be accomplished using vapor venting, bioremediation or some other treatment system. The method to be used must be approved in advance by the OCD and must be capable of reducing contaminant levels in a timely manner.

B. Ground Water

When contaminated ground water requires remediation according to standards set forth in Part 1.II.B., it must be remediated according to the criteria described below.

1. Free Phase Contamination

Free phase products must be removed from ground water. Floating product can be removed from ground water through the use of either skimming type devices or total fluid type pumps. The OCD does not endorse the use of any specific product for the removal of free phase products from ground water.

2. Dissolved Phase Contamination

Ground water contaminated with dissolved phase constituents in excess of WQCC water quality standards can be remediated by either removing and treating the ground water or insitu treatment. The OCD does not require the use of any specific technique or product to remediate contaminated ground water. If treated waters are to be disposed of onto or below the ground surface, a discharge plan must be submitted and approved by OCD.

IV. TERMINATION OF REMEDIAL ACTION

Remedial action may be terminated when the criteria described below have been met:

A. Soils

Soil contamination must be reduced to a concentration which will not contaminate ground water through percolation (aquifer recharge) or as the water table rises and falls with seasonal fluctuations. Analytical testing must be conducted on sites where the seasonal high static water table is 50 feet or less and the ground water contains 10,000 ppm or less of total dissolved solids(TDS). The appropriate,

contaminant specific procedure for soils testing must be conducted on representative samples of the remaining contaminated soils. The results of the analysis of these samples must conform to the standards specified in Part 1.II.A.2.. of the guidelines.

If the soil contaminant standards cannot practicably be attained, a risk assessment may be performed and provided to OCD for approval showing that the remaining contaminants will not pose a threat to beneficial use for the foreseeable future

B. Ground Water

A ground water remedial action may be terminated if all free phase product has been removed from the water and the concentration of dissolved phase contaminants in the ground water does not exceed New Mexico WQCC water quality standards.

If the water quality standards cannot practicably be attained, a risk assessment may be performed and provided to OCD for approval showing that the remaining contaminants will not pose a threat to beneficial use for the foreseeable future

V. Final Closure

Upon completion of any necessary remediation activities the impoundment shall be backfilled with clean materials and mounded to prevent ponding.

RELEASE

JAN - 8 1993

RECITALS:

Phelps Dodge Refining Corporation ("Phelps Dodge"), Envirotech Inc. and The Frederick Harold Davis and Sarah Alma Davis Family Trust agree to Release Phelps Dodge and Envirotech Inc. of all present and future liabilities associated with contaminated soil left in place by Phelps Dodge outside the Gavilan Plant Restated Surface Lease area upon completion of the soil abatement work as approved by the New Mexico Oil Conservation Division.

DEFINITIONS:

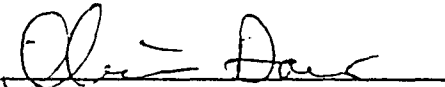
Property: The SE/4 Section 11, Township 25N, Range 2W N.M.P.M., Rio Arriba County, New Mexico including land adjoining the Restated Surface Lease executed by and between Cedar Mountain Petroleum and The Frederick Harold Davis and Sarah Alma Davis Family Trust, effective as of October 23, 1985, as assigned to Phelps Dodge effective December 10, 1986.

Lessor acknowledges that, except as expressly set forth herein, Lessee is making no representation or warranty with respect to the Property (including the improvements and equipment thereon) and that Lessor agrees to accept the Property after termination or assignment of the lease in "as is" condition. Lessor agrees that it is receiving the Property after termination or assignment of the lease based on its own inspection thereof. Lessee shall have no responsibility or liability for the failure of the Property to comply with any applicable laws, rules or regulation (including but not limited to building codes, zoning laws or environmental laws and regulation, including without limitation, the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. Section 6901 et seq, the Federal Water Pollution Control Act, 33 U.S.C. Section 1257 et seq, the Toxic Substances Control Act, 7 U.S.C. Section 136 et seq, the Underground Storage Tank Act. A.R.S. Section 49-1001 et seq, or any other local, state or federal environmental laws and/or regulations) and that Lessee shall have no liability after the termination or assignment of the lease with respect to any condition on or affecting the Property whether or not such condition could be discovered through diligent inspection. Lessor agrees to Indemnify Lessee against all present future claims concerning the Property by government agencies or third parties.

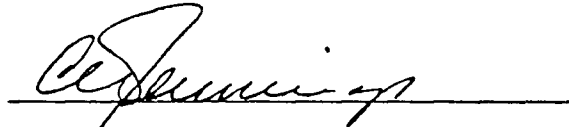
This Release shall be governed and construed in accordance with the laws of the State of New Mexico.

In witness whereof, the parties hereto have caused this Release to be executed as of November 24, 1992.

Lessor:
Frederick Harold Davis and
Sarah Alma Davis Family Trust

By: 

Lessee:
Phelps Dodge Refining Corporation

By: 
Title: Asst. Dir. Materials Mgt.



STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

October 6, 1992

MATERIALS MANAGEMENT
RECEIVED
OCT 12 1992

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-5800

CERTIFIED MAIL
RETURN RECEIPT NO. P-667-242-301

Mr. Mike McElrath
Phelps Dodge Mining Company
2600 N. Central Avenue
Phoenix, Arizona 85004-3014

M.R. Koneuda
J.D. Worsham
Envirotech Inc

RE: SOIL REMEDIATION
GAVILAN PROCESSING PLANT
LINDRITH, NEW MEXICO

Dear Mr. McElrath:

The New Mexico Oil Conservation Division (OCD) has completed a review of Phelps Dodge's September 1992 "PHASE II ENVIRONMENTAL AUDIT AND PROPOSED REMEDIAL ACTION PLAN, GAVILAN PROCESSING PLANT, W/2, SE/4, S/11, T25N, R2W, NMPM, RIO ARRIBA COUNTY, NEW MEXICO" and October 1, 1992 correspondence. These documents detail existing contamination at the Gavilan Gas Processing Plant and Phelps Dodge's proposed remediation plan for these contaminants.

The proposed remedial actions as described in the above documents are hereby approved with the following conditions:

1. Confirmation sampling will include laboratory analysis of soils for benzene, toluene, ethylbenzene and xylene (BTEX) using EPA method 8020.
2. Phelps Dodge will notify Denny Foust of the OCD Aztec Office at (505) 334-6178 prior to initiation of the project such that OCD may have the opportunity to witness the remedial activities and/or split samples.
3. A final remedial report containing the details of actual activities and the results of confirmation sampling will be submitted to OCD within 60 days of completion of the project.

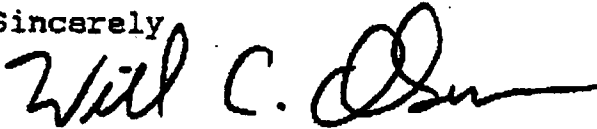
Mr. Mike McElrath
October 6, 1992
Page 2

The OCD commends Phelps Dodge for their initiative in investigating and remediating contamination related to their activities at the Gavilan Gas Processing Plant. The OCD looks forward to working with you on implementation of this project.

Please be advised that OCD approval does not limit you to the work proposed should the remedial activities fail to eliminate potential impacts on ground water. In addition, OCD approval does not relieve Phelps Dodge of liability for compliance with any other laws and/or regulations.

If you have any questions, please contact me at (505) 827-5885.

Sincerely



William C. Olson
Hydrogeologist
Environmental Bureau

xc: Denny Foust, OCD Aztec Office

October 1, 1985

92194

New Mexico Oil Conservation Division
Mr. William Olson
Environment Bureau
P.O. Box 2088
Santa Fe, NM 87504-2088

Re: Gavilan Processing Plant
Lindrith, New Mexico
Proposed Remedial Action Plan

Dear Mr. Olson:

Having visited with you several times over the phone, it was a pleasure to meet you in person at our September 29 meeting. Thank you for making yourself available to visit with us.

Pursuant to our discussions, the following is the proposed Confirmation Sampling Program Envirotech Inc. would perform on behalf of Phelps Dodge at the Gavilan site as a condition of NMOCD acceptance of the proposed site remediation.

As stated in the Envirotech Inc. remediation proposal, Project No. 92194, all excavation will be field screened with an Organic Vapor Meter (OVM). Confirmation that all highly contaminated soils have been removed will be by laboratory analysis for Total Petroleum Hydrocarbon (TPH) by USEPA method 418.1.

Specifically it is purposed to perform confirmation sampling of each separate plume excavation by collecting a minimum of two (2) sidewall samples and one (1) bottom sample at the excavation interface. At least one of the sidewall samples will be from the down-gradient side of the excavation. In larger excavation areas, this sample program will be expanded to perform a minimum of one (1) sample for every thirty (30) linear feet of sidewall and one (1) bottom sample for every one thousand (1000) square feet of bottom area.

Should this level of confirmation sampling provide adequate data to document the Gavilan site clean-up please provide verbal, followed by written, confirmation of NMOCD acceptance and authority to proceed with the Gavilan site remediation as proposed. You may contact me at (602) 234-8361 or by FAX at (602) 234-8010.

Sincerely,



Mike McElrath
Senior Buyer - Fuels

cc: Mr. Morris Young - Envirotech Inc.

DIVISION OF PHELPS DODGE CORPORATION

OVM # 27503

3

11/3 CAL. ISO BUT. 11

11/4 " " ISO BUT. "

11/4 CALIB. ISO BUT. 98.5 91V

11/5 " " 99.5 91.5

11/6 CALIB. ISO BUT. 99.6 91V

11/7 CALIB. ISO BUT. 99.9 91V

11/9 CALIB. ISO BUT. 99.5 91V

11/10/92 Calib/Calib ISO BUT 100.9 Run

11/11/92 Calib ISO BUT 99.7 Run

11/12/92 Calib/Calib ISO BUT 100.4 Run

11/13/92 Calib ISO BUT 97.9 Run

11/19/92 CALIB. ISO BUT. 97.4 91V

11/23/92 Calib. ISO BUT. 97.8 NV

11/24/92 Calib. ISO BUT. 99.7 100

11/25/92 Calib. ISO BUT. 97.7 100

12/1/92 Catch ISO BUT. 96.1 100

CUM = 2+7+8

CALIB. GAS = 98.2 ppm ISO BUTANE

11-20	0745	Calib.	101.5	ISO BUT	REC
11-23	0720	CALIB	100.6	ISO BUT	REC
11-24	0730	CALIB	99.3	ISO BUT	REC
11-30-92	1040	INSTALLED NEW BATTERY			MZC
12-2-92	0730	Calib	98.0	ISO BUT	MZC
12-3-92	0730	Calib	98.0 ppm	ISO BUT	MZC
12-4-92	0710	CALIB	99.5 ppm	ISO BUT	REC
12-7-92	0740	CALIB	98.4 ppm		REC
12-10-92	0935	CALIB	98.2 ppm	ISO BUT	MZC
12-11-92	1003	Calib	98.2 ppm	ISO BUT	MZC
12-12-92	0901	Calib	99.2 ppm	ISO BUT	MZC
12-15-92	0820	Calib	98.2 ppm	ISO BUT	MZC
12-17-92	1345	Calib	99.1 ppm	ISO	REC

OVM # 29779

9-29-92 CALIBRATE 100.1 ppm ISOBUTYLENE MLL
MLL 10-13-92

10-13-92 CALIBRATE 98.8 ppm ISOBUTYLENE MLL

10-14-92 CALIBRATE 98.8 ppm ISOBUTYLENE MLL

10/15/92 CALIB - 99.7 ppm ISOBUT. TVS

11/4/92 CALIB. 100.5 ppm ISOBUT. 91V

11/5/92 CALIB. 100.4 ppm ISOBUT. 922

11/6/92 CALIB. 100.1 ppm ISOBUT. 900

11/9/92 CALIB. 101.3 ppm ISOBUT. 912

11/10/92 CALIB. 98.2 ppm ISOBUT. 902

11/12/92 CALIB. 98.2 ppm ISOBUT. 900

11/13/92 CALIB. 98.2 ppm ISOBUT. 912

11/16/92 CALIB. 98.2 ppm ISOBUT. 912

11/17/92 CALIB. 98.2 ppm ISOBUT. 912

11/19/92 CALIB. 101.3 ppm ISOBUT. 912

11/20/92 CALIB. 100.8 ppm ISOBUT. 91V



STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

September 29, 1992

CERTIFIED MAIL
RETURN RECEIPT NO. P-670-683-590

Mr. Morris D. Young
Envirotech Inc.
5796 U.S. Highway 64 - 3014
Farmington, New Mexico 87401

RE: **Envirotech Inc. Landfarm Application**
OCD Rule 711 Permit Approval

Dear Mr. Morris:

The Oil Conservation Division (OCD) has received your July 7, 1992, request for an expansion of your current soil remediation facility located in Section 25, Township 27 North, Range 11 West, NMPM, San Juan County, New Mexico. Because the proposed landfarm expansion is not contiguous with the current facility (ie. approximately a mile away) the OCD considers the proposed site a new facility. A separate bond for \$25,000 is required for the proposed landfarm since it is a new facility.

The permit application for the **Envirotech Inc. Landfarm** located in the NW/4, Section 6, Township 26 North, Range 10 West, NMPM, San Juan County, New Mexico, is hereby approved in accordance with the OCD Rule 711 under the conditions contained in the enclosed attachment. The application consists of the original application dated July 7, 1992.

The operation, monitoring and reporting shall be as specified in the enclosed attachment. All modifications and alternatives to the approved landfarming methods must receive prior OCD approval. You are required to notify the Director of any facility expansion or process modification and to file the appropriate materials with the Division.

Please be advised approval of this facility does not relieve you of liability should your operation result in actual pollution of surface or ground waters or the environment actionable under other laws and/or regulations.

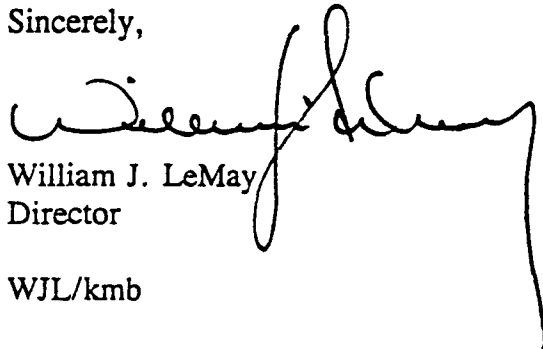
Mr. Morris D. Young
September 29, 1992
Page 2

Please be advised that all tanks exceeding 16 feet in diameter and exposed pits, ponds or lagoons must be screened, netted or otherwise rendered nonhazardous to migratory birds.

This permit approval is for a period of five (5) years. This approval will expire on September 29, 1997 and you should submit an application for renewal in ample time before that date. The Division shall have the authority to administratively change this permit to protect fresh water, human health and the environment.

If you have any questions, please do not hesitate to contact Kathy Brown at (505) 827-5884.

Sincerely,

A handwritten signature in black ink, appearing to read 'William J. LeMay', with a long, sweeping horizontal stroke extending to the right.

William J. LeMay
Director

WJL/kmb

Attachment

xc: Denny Foust, OCD Aztec Office

ATTACHMENT TO OCD 711 PERMIT APPROVAL
ENVIROTECH INC.
COMMERCIAL LANDFARM
(September 29, 1992)

LANDFARM OPERATION

1. All contaminated soils received at the facility will be spread and disked within 72 hours of receipt.
2. Soils will be spread on the surface in six inch lifts or less.
3. Soils will be disked a minimum of one time every two weeks (biweekly) to enhance biodegradation of contaminants.
4. Successive lifts of contaminated soils will not be spread until a laboratory measurement of Total Petroleum Hydrocarbons (TPH) in the previous lift is less than 100 parts per million (ppm), and the sum of all aromatic hydrocarbons (BTEX) is less than 50 ppm, and the benzene is less than 10 ppm. Comprehensive records of the laboratory analyses and the sampling locations will be maintained at the facility. Authorization from the OCD will be obtained prior to application of successive lifts.
5. Only solids which are exempt from the RCRA Subtitle C regulations or non-hazardous by characteristic testing will be accepted at the facility. Solids from operations not currently exempt under RCRA Subtitle C or mixed exempt/non-exempt solids will be tested for appropriate hazardous constituents. Test results must be submitted to the OCD along with a request to receive the non-exempt solids, and a written OCD approval (case specific) must be obtained prior to disposal. Any non-oilfield wastes which are RCRA Subtitle C exempt or are non-hazardous by characteristic testing will only be accepted on a case-by-case basis and with prior OCD approval.
6. Moisture will be added as necessary to control blowing dust and to enhance bioremediation. There will be no ponding, pooling or run-off of water allowed. Any ponding of precipitation will be removed within seventy-two (72) hours of discovery.
7. Enhanced bio-remediation through the application of microbes (bugs) will only be permitted after prior approval from the OCD. Request for application of microbes must include the location of the area designated for the bio-remediation program, composition of additives, and the method, amount and frequency of application.
8. No free liquids or soils with free liquids will be accepted at the facility.
9. Comprehensive records of all material disposed of at the facility will be maintained at the facility. The records for each load will include: 1) the origin, 2) analysis for hazardous constituents if required, 3) transporter, and 4) exact cell location and method of remediation.

TREATMENT ZONE MONITORING

1. One (1) background soil sample will be taken from the center portion of the landfarm two (2) feet below the native ground surface. The sample will be analyzed for total petroleum hydrocarbons (TPH), general chemistry, and heavy metals using approved EPA methods.
2. A treatment zone not to exceed two (2) feet beneath the land farm will be monitored. A minimum of one random soil sample will be taken from each individual cell, with no cell being larger than five (5) acres, six (6) months after the first contaminated soils are received in the cell and then quarterly thereafter. The sample will be taken at two to three (2-3) feet below the native ground surface.
3. The soil samples will be analyzed for TPH, volatile aromatic organics (BTEX) quarterly and general chemistry and heavy metals annually using approved EPA methods.
4. After obtaining the soil samples the boreholes will be filled with an impermeable material such as bentonite cement.

REPORTING

1. Analytical results from the treatment zone monitoring will be submitted to the OCD Santa Fe Office within thirty (30) days of receipt from the laboratory.
2. The OCD will be notified of any break, spill, blow out, or fire or any other circumstance that could constitute a hazard or contamination in accordance with OCD Rule 116.

BOND

Pursuant to OCD Rule 711 a surety or cash bond in the amount of \$25,000, in a form approved by the Division, is required prior to commencing construction of the commercial surface disposal facility.

CLOSURE

When the facility is to be closed no new material will be accepted. Existing soils will be remediated until they meet the OCD standards in effect at the time of closure. The area will then be reseeded with natural grasses and allowed to return to its natural state. Closure will be pursuant to all OCD requirements in effect at the time of closure.

PHONE: (505) 632-0615

Bill of Lading

MONTH OF

[illegible]

PHONE: (505) 632-0615

Bill of Lading

MONTH OF

October 1992

[illegible]

DRIVER SIGNATURE

29

Richard J.

2310

Bill of Lading

PHONE: (505) 632-0615

MONTH OF October 1951

[illegible]

PHONE: (505) 632-0615

Bill of Lading

MONTH OF October

MANIFEST		COMPLETE DESCRIPTION OF SHIPMENT						TRANSPORTING COMPANY		
DATE	No.	POINT OF ORIGIN	DESTINATION	MATERIAL	GRID	YDS	COMPANY	TRK #	DRIVER SIGNATURE	
10-20	1	LandFarm	phelps Dodge	Clean Fill		20	Envirotech	E53	W. Longmeyer	
10-20	2	phelps Dodge	LandFarm	#22 Contaminated (oil/soil)	A-1	20	Envirotech	E53	W. Longmeyer	
10-21	3	LandFarm	phelps Dodge	Clean Fill		20	Envirotech	E53	W. Longmeyer	
10-21	4	phelps Dodge	LandFarm	#22 Contaminated (oil/soil)	A-2	20	Envirotech	E53	W. Longmeyer	
10-22	5	LandFarm	phelps Dodge	Clean Fill		20	Envirotech	E53	W. Longmeyer	
10-22	6	phelps Dodge	LandFarm	#22 Contaminated	A-2	20	Envirotech	E53	W. Longmeyer	
10-23	7	LandFarm	phelps Dodge	Clean Fill		20	Envirotech	E53	W. Longmeyer	
10-23	8	phelps Dodge	LandFarm	#22 Contaminated	A-2	20	Envirotech	E53	W. Longmeyer	
10-23	9	LandFarm	phelps Dodge	Clean Fill		20	Envirotech	E53	W. Longmeyer	
10-23	10	phelps Dodge	LandFarm	#22 Contaminated	A-2	20	Envirotech	E53	W. Longmeyer	
10-24	11	LandFarm	Doyle Stone	rock		20	Envirotech	E53	W. Longmeyer	
10-24	12	phelps Dodge	LandFarm	#22 Contaminated Soil	A-2	20	Envirotech	E53	W. Longmeyer	
10-27	13	LandFarm	phelps Dodge	Clean Fill		20	Envirotech	E53	W. Longmeyer	
10-27	14	phelps Dodge	LandFarm	#22 Contaminated Soil	A-2	20	Envirotech	E53	W. Longmeyer	

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Bill of Lading

MONTH OF CC/2/22

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Bill of Lading

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MONTH OF OCTOBER 1992

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Bill of Lading

MANIFEST

COMPLETE DESCRIPTION OF SHIPMENT

TRANSPORTING COMPANY

DATE / No.

POINT OF ORIGIN

DESTINATION

MATERIAL

YDS

COMPANY

TRK #

DRIVER SIGNATURE

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Robert

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Ernst Leach

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Bill of Lading

MANIFEST

COMPLETE DESCRIPTION OF SHIPMENT

TRANSPORTING COMPANY

DATE

No.

POINT OF ORIGIN

DESTINATION

MATERIAL

GRID YDS

COMPANY

TRK #

DRIVER SIGNATURE

11-2-92 /

Land Farm

Land Farm

Fill Dirt

20

Envirotech

548

Richard

1-2-92 /

Land Farm

Land Farm

A-340

Envirotech

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Richard

PHONE: (505) 632-0615

Bill of Lading

MONTH OF 11-30-92

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PHONE: (505) 632-0615

Bill of Lading

MONTH OF

Oct

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Bill of Lading

PHONE: (505) 632-0615

MONTH OF OCTOBER 1992

MANIFEST			COMPLETE DESCRIPTION OF SHIPMENT				TRANSPORTING COMPANY			
DATE	No.		POINT OF ORIGIN	DESTINATION	MATERIAL	GRID	YDS	COMPANY	TRK #	DRIVER SIGNATURE
0-30	1		LAND FARM	PHELPS DODGE LINDRITH	FILM		20	ENVIROTECH	E-49	Jane L. Hancock
0-30	1		LINDRITH PHELPS DODGE	#2 LAND FARM	CNT'D	A-3	20	ENVIROTECH	E-49	Jane L. Hancock
0-30	1		LAND FARM							

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MONTH OF Oct,

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Bill of Lading

PHONE: (505) 632-0615

MONTH OF

Oct

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PHONE: (505) 632-0615

Bill of Lading

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Bill of Lading

PHONE: (505) 632-0615

MONTH OF

Oct 1992-

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PHONE: (505) 632-0615

Bill of Lading

MONTH OF Oct

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PHONE: (505) 632-0615

Bill of Lading

MONTH OF

November

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PHONE: (505) 632-0615

Bill of Lading

MONTH OF 11-3-92

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Bill of Lading

PHONE: (505) 632-0615

MONTH OF NOVEMBER 1992

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PHONE: (505) 632-0615

Bill of Lading

MONTH OF November

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PHONE: (505) 632-0615

Bill of Lading

MONTH OF

11-592

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Bill of Lading

PHONE: (505) 632-0615

MONTH OF

November[illegible]

11-6-92

MANIFEST

COMPLETE DESCRIPTION OF SHIPMENT

TRANSPORTING COMPANY

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Wm. Lloyd Garrison

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Bill of Lading

PHONE: (505) 632-0615

MONTH OF

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PHONE: (505) 632-0615

Bill of Lading

MONTH OF

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PHONE: (505) 632-0615

Bill of Lading

MONTH OF 11-7-88

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PHONE: (505) 632-0615

Bill of Lading

MONTH OF Nov 1992

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Bill of Lading

PHONE: (505) 632-0615

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PHONE: (505) 632-0615

MONTH OF

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TRANSPORTING COMPANY

DRIVER SIGNATURE

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Richard

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PHONE: (505) 632-0615

Bill of Lading

MONTH OF Nov

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PHONE: (505) 632-0615

Bill of Lading

MONTH OF

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TRANSPORTING COMPANY

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MONTH OF

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PHONE: (505) 632-0615

Bill of Lading

MONTH OF Nov

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PHONE: (505) 632-0615

Bill of Lading

MONTH OF NOVEMBER -

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Bill of Lading

MONTH OF Nov 23 1992

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PHONE: (505) 632-0615

MONTH OF Nov 1977

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PHONE: (505) 632-0615

MONTH OF Dec

MANIFEST		COMPLETE DESCRIPTION OF SHIPMENT					TRANSPORTING COMPANY			
DATE	No.	POINT OF ORIGIN	DESTINATION	MATERIAL	GRID	YDS	COMPANY	TRK #	DRIVER SIGNATURE	
12/1/3	1	Card Farm	Phelps Dodge	fill dirt		20	Cosby	75	L. Green	
12/1/3	2	"	"	"		20	Cosby	88	Robert H. Hargrave	
12/1/3	3	"	"	"		20	Cosby	34	L. Green	
12/1/3	4	"	"	"		20	Cosby	55	Ray	
12/1/3	5	"	"	"		20	Cosby	88	Robert H. Hargrave	
12/1/3	1	Phelps Dodge	Card Farm	Cont.		20	Cosby	75	L. Green	
12/1/3	2	"	"	"		20	Cosby	88	Robert H. Hargrave	
12/1/3	3	"	"	"		20	Cosby	34	L. Green	
12/1/3	4	"	"	"		20	Cosby	55	Ray	
12/1/3	5	"	"	"		20	Cosby	88	Robert H. Hargrave	

PHONE: (505) 632-0615

Bill of Lading

MONTH OF

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MANIFEST

COMPLETE DESCRIPTION OF SHIPMENT

TRANSPORTING COMPANY

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MONTH OF

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Bill of Lading

PHONE: (505) 632-0615

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Bill of Lading

MONTH OF Dec 92

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COMPLETE DESCRIPTION OF SHIPMENT

TRANSPORTING COMPANY

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Bill of Lading

PHONE: (505) 632-0615

MONTH OF DECEMBER 1992

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POINT OF ORIGIN

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PHONE: (505) 632-0615

Bill of Lading

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PHONE: (505) 632-0615

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Bill of Lading

PHONE: (505) 632-0615

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ENVIROTECH INC.

GW-106

**PHASE II ENVIRONMENTAL AUDIT AND
PROPOSED REMEDIAL ACTION PLAN
GAVILAN PROCESSING PLANT**

**W/2, SE/4, S/11, T25N, R2W, NMPM
RIO ARriba COUNTY, NEW MEXICO**

PHELPS DODGE

RECEIVED

SEP 29 1992

**OIL CONSERVATION DIV
SANTA FE**

September 1992

Project: 92194

**PHASE II ENVIRONMENTAL AUDIT
AND PROPOSED REMEDIAL ACTION PLAN
PHELPS DODGE
GAVILAN NATURAL GAS PROCESSING PLANT
W/2, SE/4 SECTION 11, T25N, R2W, NMPM
GAVILAN, RIO ARriba COUNTY, NEW MEXICO**

**PREPARED FOR:
PHELPS DODGE MINING COMPANY**

PROJECT NO. 92194

SEPTEMBER 1992

**ENVIROTECH, INC.
Environmental Scientists & Engineers
5796 U.S. Highway 64-3014
Farmington, New Mexico**

(505) 632-0615

PHASE II ENVIRONMENTAL AUDIT
AND PROPOSED REMEDIAL ACTION PLAN
PHELPS DODGE
GAVILAN NATURAL GAS PROCESSING PLANT
W/2, SE/4, SECTION 11, T25N, R2W, NMPM
GAVILAN, RIO ARriba COUNTY, NEW MEXICO

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SITE DESCRIPTION.....	6
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APPENDIX

APPENDIX A	Area Vicinity Map Site Plan
APPENDIX B	Photographs
APPENDIX C	Results of Laboratory Analysis (Asbestos and Soils) Chain-of-Custody (Asbestos and Soils)
APPENDIX D	Toxicity Characteristic Leachate Procedure Analysis Results (TCLP)

PHASE II ENVIRONMENTAL AUDIT
AND PROPOSED REMEDIAL ACTION PLAN
PHELPS DODGE
GAVILAN NATURAL GAS PROCESSING PLANT
W/2, SE/4, SECTION 11, T25N, R2W, NMPM
GAVILAN, RIO ARriba, NEW MEXICO

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2. SHEET 2 - SITE PLAN AND TEST HOLE LOCATIONS....	APPENDIX A
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PHASE II ENVIRONMENTAL AUDIT
AND PROPOSED REMEDIAL ACTION PLAN
PHELPS DODGE
GAVILAN NATURAL GAS PROCESSING PLANT
W/2, SE/4, SECTION 11, T25N, R2W, NMPM
GAVILAN, RIO ARriba COUNTY, NEW MEXICO

INTRODUCTION

Phelps Dodge has retained Envirotech, Inc. to perform a Phase II Environmental Audit of the Gavilan Natural Gas Recovery Plant facility property. The goal of the environmental audit is to screen those areas previously identified as having possible contamination, estimate the vertical and horizontal extent of the contamination, establish if there are additional areas of concern, characterize the contamination if present, and develop a remedial action plan to successfully abate the site.

Phelps Dodge proposes to remediate soil contamination associated with the operation of the subject Natural Gas Processing Plant located near Gavilan, on the West 1/2 of the Southeast 1/4 of Section 11, Township 25N, Range 2W, NMPM, Rio Arriba County, New Mexico. This Phase II Environmental Audit was performed by Envirotech, Inc. The field portion of audit consists of an on-site reconnaissance conducted in June 1992, and discussions with the on-site Gavilan Plant Manager. Protocol as outlined in the draft "Guidelines to Surface Impoundment Closure" (October 29, 1991), was utilized in performing this audit. State of New Mexico, Oil Conservation Division (NMOCD).

Implementation of the Proposed Remedial Action Plan will be contingent on the approval of NMOCD and Phelps Dodge.

PURPOSE & SCOPE OF SERVICES

This purpose of the audit is to identify site conditions and proposed remediation to abate soil contamination caused by spillage during the normal operation of the subject natural gas process plant.

The scope of work for this audit and proposed remediation and abatement consists of:

- A. Field assessment of the site for a Phase II Environmental Audit to define the extent of the spill impacted areas.

- B. Notification of the NMOCD and any other appropriate regulatory authorities of the intent to remediate the referenced site.
- C. Abatement of the contaminated areas by excavation, removal and treatment of the highly contaminated soils.
- D. Field assessment during the abatement process to assure complete removal of all highly contaminated soils for closure of the site.
- E. Documentation of the abatement and closure.

SITE DESCRIPTION

The Gavilan Natural Gas Processing Plant is located approximately 7 and 1/2 miles north of Lindrith, New Mexico off Highway 595. Refer to the attached vicinity map (Appendix A: Sheet 1).

The site is an active natural gas processing plant with three compressors, several heater treaters/exchangers, a scrubber, crude oil storage tank and associated LPG above ground storage tanks (AGT). The site is enclosed with a secured twelve foot chain link fence. Refer to the attached site plan for the approximate location of the referenced gas processing equipment (Appendix A: Sheet 2).

Access to the site is available by a graveled road off New Mexico State Highway 595.

Site Conditions:

The site was reportedly constructed approximately seven years ago. The site grading reportedly consisted of site leveling by normal cut/fill methods. The entire site appears to be on fill over bedrock. The depth of fill appears to be eighteen inches (18") on the west portion of the site and increasing to eight feet (8') at the south and east portions. The fill soils are clayey to silty sand covered with a thin layer of crushed rock. Bedrock appears to be relatively well lithified sandstone to siltstone. All equipment and the buildings are on temporary foundations and/or skids. Only the three AGTs for LPG storage appear to be on rigid reinforced concrete foundations.

Adjacent areas support a pinon / juniper ecosystem consistent with elevation of 7,400 feet. Other vegetation include sagebrush, rabbit/brush, and annual weeds. The grass community support a warm season variety of species including galleta, sand dropseed, and blue grama. Adjacent land use is open rangeland.

Existing Facilities:

Based on the preliminary site reconnaissance on June 10 and 15, 1992, there appeared to be ten areas of concern where possible soil contamination exists. These areas are as follows:

- 1) The crude oil storage area consisting of a ± 200 barrel (bbl) above ground tank and an overflow pit, presently lined with heavy mil plastic (previously unlined until approximately April 1992). Overfilling has reportedly occurred from the pit and appears to have extended beyond the fenced area. The depth of contamination is approximately four (4) feet deep. Bedrock is approximately four

- (4) feet below the site grade at this location. (Plume A,B)
- 2) The barrel rack and storage area on the south side of the site has minor soil contamination caused by leakage from empty barrels stored in the area. This contamination appears to be minor, shallow (less than two feet). It extended slightly outside of the fenced area. (Plume C)
 - 3) The 500 gallon AGT at the southeast portion of the site storage motor gasoline. There appears to be minor soil contamination from overfilling around the tank. (Plume C)
 - 4) The 300 and 500 gallon AGT's at the east fence stored glycol. Minor soil contamination from overfilling was observed around the tanks. (Plume D)
 - 5) The heater treaters and heat exchange process equipment is located in the northeast area of the site. Significant soil contamination was noted in the immediate areas around each piece of equipment. Contamination is believed to be from equipment maintenance and normal seal and pipe fitting leakage. Contaminates are believed to be primarily engine oils and lubricants, and glycol. (Plume D)
 - 6) The compressor building and compressors are located in the northwest area of the site. Significant soil contamination is evident throughout the area of the building and in the drainage to the south and west of the site. Contamination is believed to result from equipment maintenance practices and normal seal and fitting leakage. Contaminates are believed to be primarily engine oils and lubricants, and glycol. The contamination in this area is projected to have moved from the source area in the building and migrated to the southeast by the movement of surface storm water runoff. (Plume E)
 - 7) The scrubber and main plant inlet is located at the northeast corner of the site. Soil contamination appears to be minor and to have resulted from piping leaks. Contamination is limited to the immediate area of this equipment. (Plume F)

- 8) The service yard has non-contiguous areas of minor soil surface contamination. The contamination appears to be from a variety of sources such as vehicle fluid leaks. (Plume E)
- 9) The delivery pumps located at the east end of the LPG tanks have minor soil contamination. This contamination is believed to consist of engine oil and lubricants, and from drainage off the LPG tanks. (Plume G)
- 10) Auxiliary generator building is located offsite to the east of the site. There is minor soil contamination around the concrete slab. The source of contamination is believed to be diesel, engine oil, and/or lubricants. (Plume H)

No underground storage tanks (UST's) are believed to be on site.

Adjacent Properties:

An El Paso Natural Gas gathering pipeline is located to the south of the plant and runs east to west.

Mallon Gas operates a natural gas well production site adjacent to the subject site consisting of four steel tanks and two pits that appears to have been closed recently. The site is located approximately 300 feet northeast of the Phelps Dodge Gavilan Natural Gas Processing Plant.

The entire plant site is surrounded by the Fred Davis Ranch property.

Water Resources Information:

Based on a preliminary review of available records from the New Mexico State Engineers Office, there are three (3) water supply wells of record within a half mile radius of the Phelps Dodge site. They are listed in Table 1 at the end of Section 2.

All three (3) wells are located over 1000 feet from the site. The wells are located up and cross gradient of the subject site, based on preliminary estimate of the groundwater gradient.

An earthen livestock pond is located approximately 200 feet southwest of the site.

The above referenced surface water course was inspected during the audit. The author observed no superficial evidence of hydrocarbon contamination or any evidence of a spill along the water course.

Thus, it is felt that the surface water courses in the immediate proximity of the site have not been nor are immediately threatened.

TABLE 1

WATER WELL INFORMATION
PHELPS DODGE
GAVILAN NATURAL GAS PROCESSING PLANT
W/4, SE/4/SECTION 11, T25N, R2W, NMPM,
GAVILAN, RIO ARriba COUNTY, NEW MEXICO

<u>LOCATION</u> <u>(T.R.SEC. QUAD)</u>	<u>NAME</u>	<u>WELL NO.</u>	<u>USE</u>	<u>WATER</u> <u>DEPTH</u> <u>(ft)</u>	<u>AQUIFER</u>
25.02.11.341	Fred Davis	NA	Unused	-	Tsj
25.02.11.411	Fred Davis	NA	Unused	50	Tsj (?)
25.02.11.4114	Fred Davis	NA	NA	250	Tsj

Notes: NA - Information not available
 dom - domestic water source
 stk - water source for livestock
 Tsj - Tertiary San Jose Formation

Based on available information from the records
of the State of New Mexico Engineers Office

FIELD AUDIT

The field exploration for this Environmental Assessment was performed by Mr. Michael K. Lane and Mr. Ray Benally of Envirotech Inc, on August 6 and August 11, 1992. It included a thorough visual walk over site inspection of the site, the adjacent properties, exploration test holes, and soil sampling. A preliminary site reconnaissance was performed on June 10 and 15, 1992 that identified the ten areas of concern where soil contamination exists. Those areas are further discussed under site description above.

An asbestos assessment was conducted by Mr. Rex Farnsworth of Envirotech on July 23, 1992. This asbestos assessment consisted of a thorough inspection of the buildings and site improvements and sampling for asbestos containing material (ACM) from piping insulation and related process equipment. Asbestos samples were collected following USEPA protocol (Federal Register/ Vol. 52, No 36-37/ Wednesday, February 25, 1987/ page 5830-5831/ Appendix B to s763.121.)

The laboratory results for the asbestos identification and chain-of-custody are attached. All bulk samples indicated no ACM is present at the plant.

Phelps Dodge reportedly has contacted the New Mexico Environmental Department (NMED) and the New Mexico Oil Conservation Division (NMOCD) with Notice of Intent to remediate the referenced site.

Field Exploration

A total of fifty two (52) test holes were bored in all areas where spills or soil contamination were suspected. A sufficient number of test holes was placed in each area to adequately estimate the vertical and lateral extent of contamination. The spill Remediation Site Plan (Sheet 2) depicts all test holes. Backhoe and hand auger equipment was used to advanced all test borings.

Soil Conditions

The vertical soil profile consists of approximately five layered strata varying from a few inches to depths of eight feet overlying sandstone bedrock. Designation of the soil encountered is as follows:

- o A crushed gravel that had been spread over the access roads and the interior of the plant facilities site ranging in depth from approximately four inches to six inches.
- o B grayish brown to dark brown fine grain clayey sand

- o C reddish brown sandy clay to non-plastic clay intersperse with yellowish orange sandy silt to non-plastic clay
- o D reddish purple to dark reddish brown poorly graded sands with weathered bedrock material
- o E yellow to dark brown, reddish brown medium grain sandstone (bedrock), friable.

SOIL SAMPLING AND ANALYTICAL RESULTS

Soil samples were collected from the test holes following USEPA SW-846 protocol. Samples were collected from all test holes and field tested for volatile hydrocarbon utilizing the Headspace Field Method [Guidelines for Surface Impoundment Closures, New Mexico Oil Conservation Division, Part 1 (IA.2a) October 29, 1991] using a photoionization detector (PID). Additionally, soil samples were submitted to Envirotech's laboratory for analysis of Recoverable Total Petroleum Hydrocarbons (TPH) per USEPA Method 418.1 and/or volatile hydrocarbons [specifically; Benzene, Toulene, Ethyl-Benzene, and Xylenes (BTEX)]. The results of field headspace (OVM Readings) are tabulated in Table 2 and laboratory results are tabulated in Table 3.

In-as-much as the hydrocarbon contamination in the area of the Heat Exchanger and Compressors were from multiple sources, a composite sample was collected for TCLP analysis including: volatiles, semi-volatiles, metals and PCB's. This is to characterize the contaminated soils as per Resources Conservation Recovery Act (RCRA) criteria for toxicity characteristic waste. The TCLP analysis results determined the waste is characterized as non-hazardous. Laboratory results and QA/QC are bound in Appendix C and Appendix D of this report.

TABLE 2

**FIELD ORGANIC VAPOR METER (OVM) RESULTS
PHELPS DODGE
GAVILAN NATURAL GAS PROCESSING PLANT
W/2, SE/4, SECTION 11, T25N, R2W, NMPM
GAVILAN, RIO ARriba COUNTY, NEW MEXICO**

<u>Sample No.</u>	<u>Test Hole</u>	<u>Depth bgs</u>	<u>Soil Type</u>	<u>OVM (PPM)</u>
1	T # 1	6"	A, B	41.3
2	T # 1	2'8"	B	531.0
3	T # 1	3'1"	D, E	739.0
4	T # 2	1'6"	A, B	1352.0
5	T # 2	2'6"	D, E	159.5
6	T # 3	1'2"	B, C	32.6
7	T # 3	5'	B, C	45.6
8	T # 3	6'	E	10.7
9	T # 4	2'	B, C	2.1
10	T # 4	4'6"	E	4.3
11	T # 5	3'	B, C	1469.0
12	T # 5	4'	B, C	1477.0
13	T # 6	4'6"	B, C	1469.0
14	T # 6	6'	B, C	701.0
15	T # 7	1'6"	B, C	4.3
16	T # 7	4'6"	B, C	N/D
17	T # 8	2'	B, C	N/D

TABLE 2 (continued 2/3)
FIELD ORGANIC VAPOR METER (OVM) RESULTS

<u>Sample No.</u>	<u>Test Hole</u>	<u>Depth bgs</u>	<u>Soil Type</u>	<u>OVM (PPM)</u>
18	T # 8	5'6"	B,C	N/D
19	T # 9	1'	B,C	N/D
20	T # 9	4'6"	C	N/D
21	T # 9	10'	C	67.5
22	T # 10	6"	A,B	N/D
23	T # 10	3'	B	102.0
24	T # 11	6"-1'	B	
25	T # 11	4'	B,C	4.3
26	T # 11	5'5"	E	6.5
27	T # 12	6"	A,B	N/D
28	T # 12	4'	B,C	6.5
29	T # 12	6'	C	4.3
30	T # 13	6"	A,B	N/D
31	T # 13	2'	D,E	N/D
32	T # 14	4"	A,B	13.2
33	T # 14	6"-12"	A,B	10.8
34	T # 14	18"	D,E	21.2
35	T # 14	2'	E	2.1
36	T # 15	6"	A	N/D
37	T # 15	18"	A,D	2.1
38	T # 16	1'	A,B	8.6
39	T # 16	2'	E	6.5
40	T # 17	1'	B,C	578.0
41	T # 17	5'	D,E	121.0
42	T # 18	1'	A,B,C	4.3
43	T # 18	3'6"	D,E	4.3
44	T # 19	0-6"	A	N/D
45	T # 19	3'6"	B,C	8.6
46	T # 20	0-6"	A	N/D
47	T # 20	3'6"	B,C	17.3
48	T # 21	1'	B,C	N/D
49	T # 21	3'	D,E	28.6
50	T # 22	4"	A,B	8.6
51	T # 22	1'	D,E	775.0
52	T # 23	2'	C	34.7
53	T # 24	1'	B,C	N/D
54	T # 25	18"	B,C	146.2
55	T # 25	2'	B,C	93.4
56	T # 26	1'	B,C	575.0
57	T # 26	2'	B,C	11.8
58	T # 27	18"	B,C	2.1
59	T # 28	1'	B,C	60.8
60	T # 29	2'	B,C	N/D
61	T # 30	1'	B,C	1050.0
62	T # 30	18"	C	575.0
63	T # 30	2'	C	518.0

TABLE 2 (continued 3/3)
FIELD ORGANIC VAPOR METER (OVM) RESULTS

<u>Sample No.</u>	<u>Test Hole</u>	<u>Depth bgs</u>	<u>Soil Type</u>	<u>OVM (PPM)</u>
64	T # 31	2'	C	N/D
65	T # 32	1'	B,C	
66	T # 32	2'6"	B,C	
67	T # 32	4'	B	
68	T # 33	1'	B	345.0
69	T # 33	2'	B	319.0
70	T # 33	3'	B,C	290.0
71	T # 34	18"	B,C	2.3
72	T # 35	1'	B,C	3.5
73	T # 36	1'	B	1.1
74	T # 37	1'	B	1.0
75	T # 38	1'	B	2.3
76	T # 39	1'	C	N/D
77	T # 39	3'6"-4'	E	1.1
78	T # 40	18"	E	
79	T # 41	1'	B	1.1
80	T # 41	5'	B	1.1
81	T # 41	8'6"	B,C	35.7
82	T # A	18"	C	155.0
83	T # B	1'	C	311.0
84	T # C	18"	C	2.3
85	T # D	1'	C	194.0
86	T # E	8"	E	294.0
87	T # F	1'	B	5.8
88	T # G	1'	B	1.1
89	T # 42	18"	C	564.0
90	T # 42	2'	D,E	562.0
91	T # 43	1'	C	497.0
92	T # 43	2'	C	474.0
93	T # 44	1'	C	3.1
94	T # 44	2'	C	1.1
95	T # 45	1'	C	N/D
96	T # 45	2'	C	N/D

Notes: 1) bgs - Below ground surface.
2) ND - None detected.

TABLE 3

**RESULTS OF LABORATORY SOIL ANALYSIS
 PHELPS DODGE
 GAVILAN NATURAL GAS PROCESSING PLANT
 W/2, SE/4, SECTION 11, T25N, R2W, NMPM
 GAVILAN, RIO ARriba COUNTY, NEW MEXICO**

<u>SAMPLE ID</u>	<u>MATRIX</u>	<u>EPA METHOD</u>	<u>BENZENE (ug/kg)</u>	<u>TOLUENE (ug/kg)</u>	<u>ETHYL- BENZENE (ug/kg)</u>	<u>TOTAL XYLENE (ug/kg)</u>	<u>TPH (mg/kg)</u>
AUGUST 6, 1992 AUDIT							
TH25@18"	SOIL	418.1	-	-	-	-	103.0
TH21@3'	SOIL	418.1	-	-	-	-	65.0
TH19@6"	SOIL	418.1	-	-	-	-	23,900.0
TH15@6"	SOIL	418.1	-	-	-	-	19,000.0
TH19@6"	SOIL	8020	ND	1,280	ND	ND	-
AUGUST 11, 1992 AUDIT							
A @ 18"	SOIL	418.1	-	-	-	-	850.0
T25@12"	SOIL	418.1	-	-	-	-	161.0
A @ 18"	SOIL	8020	ND	1,600	ND	1,560	-
T25@12"	SOIL	8020	ND	1,960	ND	880	-

- Notes: 1) ND - Parameter not detected at method detection limit.
- 2) Total Xylene - summation of m,p-Xylene and o-Xylene.
- 3) ug/kg - equivalent to parts per billion
- 4) mg/kg - equivalent to parts per million

Refer to the Site Plan (Appendix 1: Sheet 2) for the approximate sample locations.

The maximum allowable concentrations for soils as outlined in the New Mexico Conservation Division, Guidelines for Surface Impoundment Closures (October 29, 1991) are summarized in Table 4. The analyses for hydrocarbon contamination of the soil in the areas at the Phelps Dodge facility showed the soil to be above the current regulated limits.

TABLE 4

**HYDROCARBON SOIL CONTAMINATION STANDARDS
STATE OF NEW MEXICO**

<u>Parameters</u>	<u>Maximum Allowable Limits Soils (mg/kg)</u>
Benzene	10
Toluene	-
Ethylbenzene	-
Total Xylene	-
Total Aromatics	50
Total Petroleum Hydrocarbons	100

Notes: 1) mg/kg - equivalent to parts per million

CONCLUSIONS

Based on the site assessment conducted during the Environmental Audit, it appears that the hydrocarbon contamination was limited to areas immediately within the plant compound with limited lateral migration. Exceptions were Plume A, B, D, and F as outlined on the Site Plan (Sheet 2). The vertical extent of the contamination appears to be limited to soils above the bedrock, with minimal penetration of the bedrock interface.

Based on the TCLP analysis, the contaminated soils meet the non-hazardous waste classification per RCRA (40CFR 261)

Groundwater is not suspected. Groundwater is established at a depth of over 200 feet below site grade. Our investigation shows limited extent of migration of the hydrocarbon plumes.

PROPOSED REMEDIAL ACTION PLAN

From review of the field exploration and observation, soil OVM analysis and laboratory soils analysis, the author projects the most cost effective and economically sound remediation action plan will consist of removal of the hydrocarbon contaminated soils for off-site remediation. The New Mexico Oil Conservation Division's guidelines and protocol will be followed. Specifically, the abatement procedure will be to excavate all highly contaminated soils above bedrock that exceed either 100 ppm OVM readings (Field Headspace Method) and/or 100 ppm TPH by laboratory analysis (USEPA Method 418.1). The extent of contamination will be determined by the field screening methods with laboratory confirmation at the excavation interface on each plume excavation.

The current action level for contaminated soil as outlined by the State of New Mexico Oil Conservation Division is as follows:

Field Headspace Method - a measurement of 100 parts per million (ppm) or greater of total organic vapor

Laboratory Method - the sum of the concentration of all

- detected aromatics is greater than 50 ppm
- the benzene concentration is greater than 10 ppm
- the concentration of TPH is greater than 100 ppm

[Guidelines for Surface Impoundment Closures, New Mexico Oil Conservation Division, Part 1, (II.A.2a.b.), October 29, 1991]
Confirmation soil samples will be collected in laboratory supplied 4 OZ. clear glass jar sample containers. These samples will be placed on ice and delivered to Envirotech's laboratory for BTEX and Total Petroleum Hydrocarbons (TPH) analysis. The sampling

procedure would followed the USEPA SW-846 protocol.

The plume areas to be abated as outlined above is delineated on the Site Remediation Site Plan (Appendix A: Sheet 2).

Estimated quantities of contaminated soil requiring treatment are projected in Table 5 below:

TABLE 5

**PLUME DESIGNATION AND QUANTITIES
GAVILAN PLANT REMEDIATION PLAN**

A - Southeast side of plant area by slop tank/pit location	- 868 cu. yds
B - Outside of plant facilities SE drainage site	- 128 cu. yds
C - South side by barrel storage rack	- 131 cu. yds
D - Northeast side by Glycol tanks	- 598 cu. yds
E - North side of plant near compressors	- 341 cu. yds
F - West side of plant area near 15,000 gallon tank	- 317 cu. yds
G - Southwest side by 18,000 and 30,000 gallon tanks	- 134 cu. yds
H - Northeast side by Aux. Generator	- 7 cu. yds
TOTAL.....2,524 cu. yds	

All quantities are estimated based on available soil contamination depths and by an estimated 20% bulking.

Upon receipt of approval from NMOCD, the contaminated soils will be transported to Envirotech's Hilltop, New Mexico Soil Remediation Facility for treatment.

A Closure Report will be prepared to document and summarize the final extent of contamination as each plume removed, field and laboratory confirmation analysis and Bill of Lading for all soils removed for remediation.

LIMITATIONS AND CLOSURE

The conclusions expressed in this report are based on visual observation of the site, field assessment of the site, and soil sampling for laboratory analysis during this environmental audit. This report does not reflect subsurface variations which may exist between sampling points.

The scope of our services was limited to the environmental audit and remedial action of soil contamination with respect to hydrocarbon contamination associated with petroleum releases at typical natural gas processing facilities.

This report has been prepared for the exclusive use of Phelps Dodge Mining Company's Gavilan Natural Gas Processing Plant, as it pertains to subject site at W/2, SE/4, Section 11, T25N, R2W, NMPM, Gavilan, Rio Arriba County, New Mexico. All work has been performed in accordance with generally accepted practices in geotechnical / environmental engineering and hydrogeology.

Respectfully submitted,
Envirotech, Inc



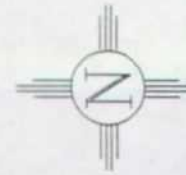
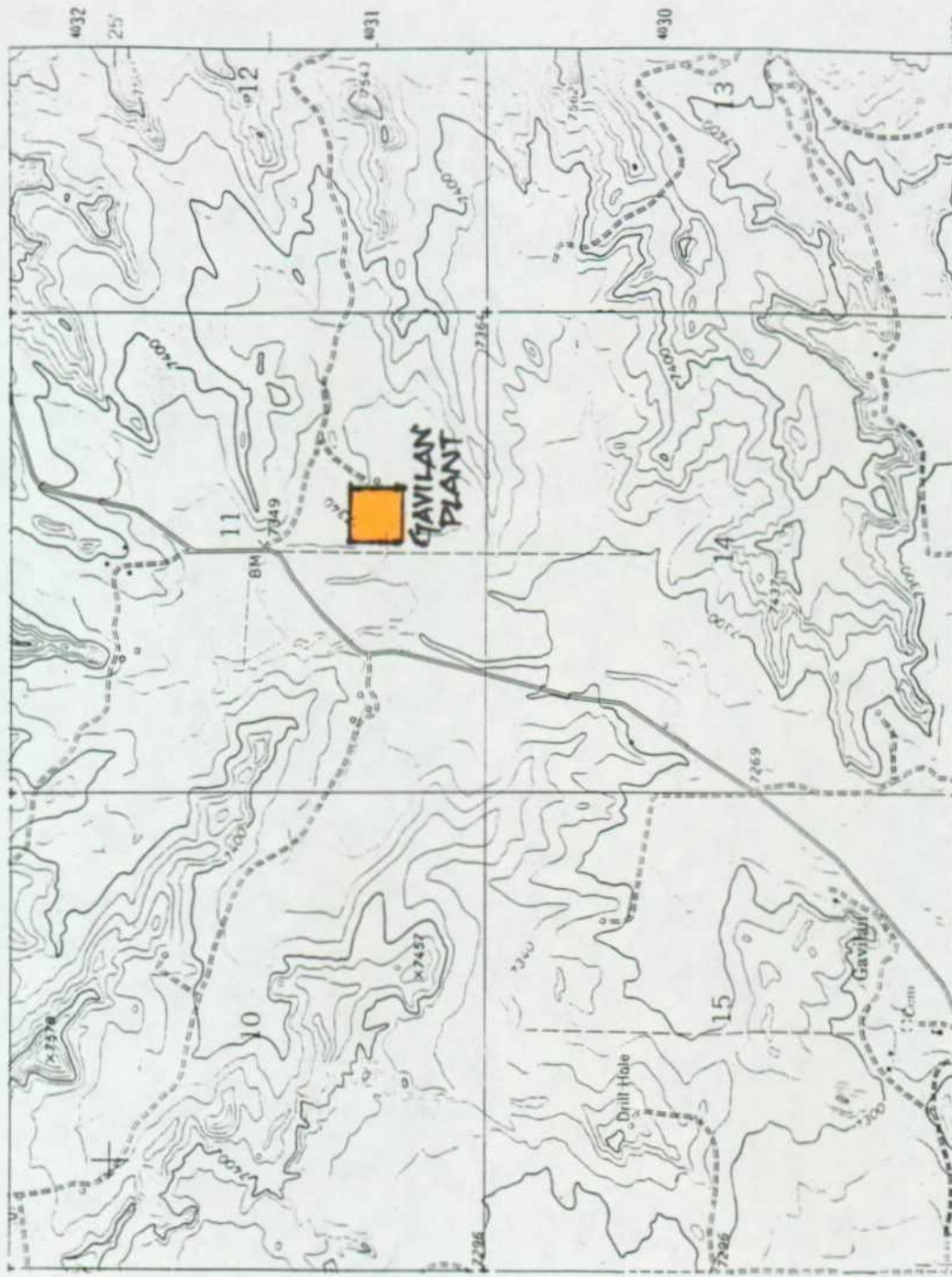
Ray Benally
Environmental Specialist

Reviewed By:



Michael K. Lane, P.E.
Geological Engineer

APPENDICES
PDAUDIT.RPT



PHELPS DODGE,
GAVILAN NATURAL GAS PROCESSING PLANT
W/2, SE/4, SECTION 11, T25N, R2W, NMPM
GAVILAN, RIO ARriba COUNTY, NEW MEXICO

PROJECT # 92194

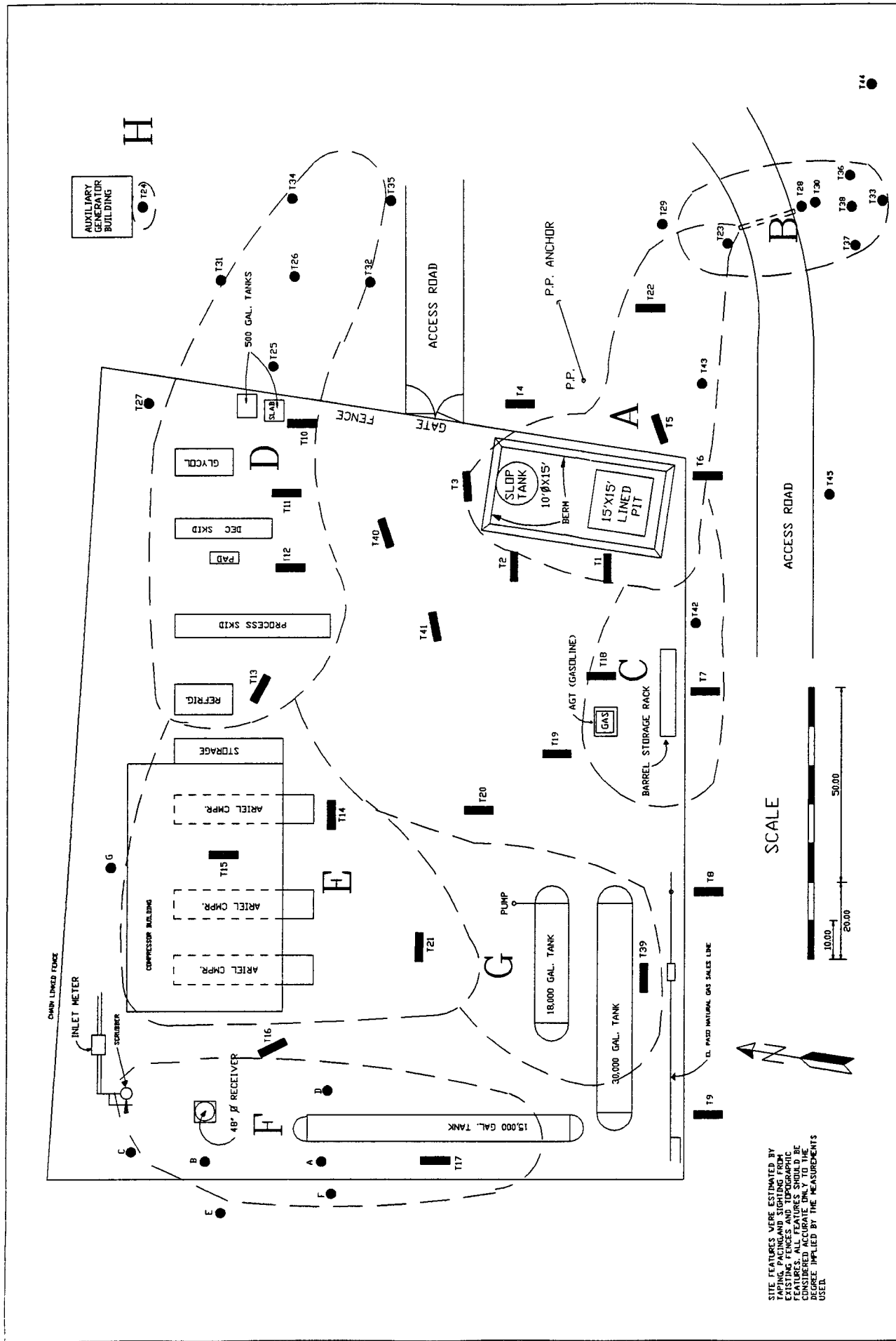
ENVIROTECH INC.

ENVIRONMENTAL SCIENTISTS & ENGINEERS
5796 U.S. HIGHWAY 64-3014
FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615

AREA VICINITY MAP

SHEET: 1 DRAWN: SEP '92

DRAWN BY: RB PRJ MGR: RB



SITE FEATURES WERE ESTIMATED BY TAPING, PACEING AND SIGHTING FROM EXISTING FEATURES. ALL FEATURES SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE MEASUREMENTS USED.

PHELPS DODGE,
GAVILAN NATURAL GAS PROCESSING PLANT
W/2, SE/4, SECTION 11, T25N, R2W, NMPM
GAVILAN, RIO ARRIBA COUNTY, NEW MEXICO

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SITE PLAN
SHEET 2
9/1/92

KEY:
A - H : PLUME DESIGNATIONS
APPROXIMATE TEST HOLE LOCATIONS
BY BACKHIDE
BY HAND AUGER



Gavilan Natural Gas Processing Plant



Southeast Corners of Site (Plume A)

ENVIRONMENTAL AUDIT AND REMEDIAL ACTION PLAN
GAVILAN NATURAL GAS PROCESSING PLANT
PHELPS DODGE
GAVILAN, NEW MEXICO

Envirotech Inc.
September 1992 Project: 92194



Lined Pit Located at Southeast Corner



30,000 Gallon Tank & EPNG Sales

ENVIRONMENTAL AUDIT AND REMEDIAL ACTION PLAN
GAVILAN NATURAL GAS PROCESSING PLANT
PHELPS DODGE
GAVILAN, NEW MEXICO

Envirotech Inc.
September 1992 Project: 92194



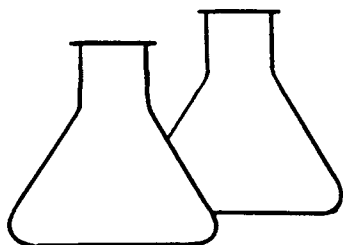
Heater / Treater Equipment



Heat Exchange Process Equipment

ENVIRONMENTAL AUDIT AND REMEDIAL ACTION PLAN
GAVILAN NATURAL GAS PROCESSING PLANT
PHELPS DODGE
GAVILAN, NEW MEXICO

Envirotech Inc.
September 1992 Project: 92194



ENVIROTECH LABS

5796 US HIGHWAY 64-3014 • FARMINGTON, NEW MEXICO 87401

PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client: Phelps Dodge
Sample ID: TH #25 @ 18
Laboratory Number: 2217
Sample Matrix: Soil
Preservative: Cool
Condition: Cool & Intact

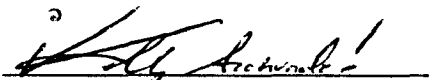
Project #: 92194
Date Reported: 08-11-92
Date Sampled: 08-06-92
Date Received: 08-06-92
Date Analyzed: 08-10-92
Analysis Needed: TPH

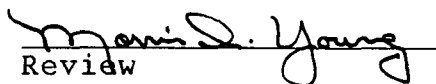
Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	103.0	5.0

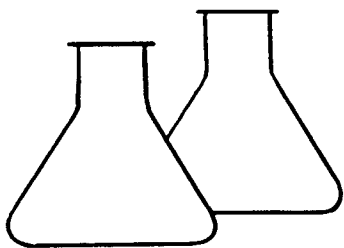
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant Phase II Envir. Audit 1/2


Analyst


Review



ENVIROTECH LABS

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PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client: Phelps Dodge
Sample ID: TH #21 @ 3'
Laboratory Number: 2220
Sample Matrix: Soil
Preservative: Cool
Condition: Cool & Intact

Project #: 92194
Date Reported: 08-11-92
Date Sampled: 08-06-92
Date Received: 08-06-92
Date Analyzed: 08-10-92
Analysis Needed: TPH

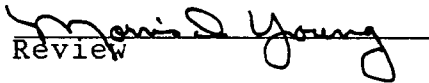
Parameter -----	Concentration (mg/kg) -----	Det. Limit (mg/kg) -----
Total Petroleum Hydrocarbons	65.0	5.0

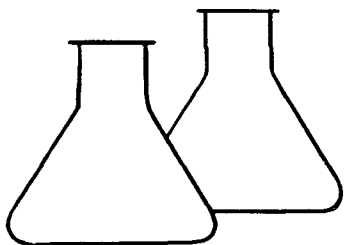
Method: Method 418.1, Petroleum Hydrocarbons, Total
Recoverable, Chemical Analysis of Water and
Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant Phase II Envir. Audit 1/2


Analyst


Review



ENVIROTECH LABS

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PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client: Phelps Dodge
Sample ID: T-19 @ 0-6"
Laboratory Number: 2222
Sample Matrix: Soil
Preservative: Cool
Condition: Cool & Intact

Project #: 92194
Date Reported: 08-11-92
Date Sampled: 08-06-92
Date Received: 08-06-92
Date Analyzed: 08-10-92
Analysis Needed: TPH

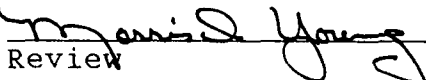
Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	23,900	50.0

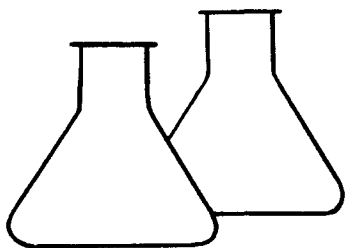
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant Phase II Envir. Audit 1/2


Analyst


Review



ENVIROTECH LABS

5796 US HIGHWAY 64-3014 • FARMINGTON, NEW MEXICO 87401

PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client: Phelps Dodge
Sample ID: TH#15 @ 0-6"
Laboratory Number: 2223
Sample Matrix: Soil
Preservative: Cool
Condition: Cool & Intact

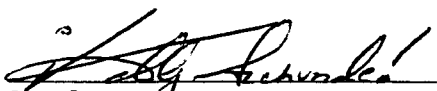
Project #: 92194
Date Reported: 08-20-92
Date Sampled: 08-06-92
Date Received: 08-06-92
Date Analyzed: 08-18-92
Analysis Needed: TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	19,000	50.0

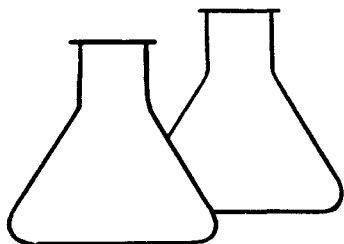
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant Phase II Environmental Audit 1/2


Analyst


Review



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PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	TH#19 @ 0-6"	Date Reported:	09-04-92
Laboratory Number:	2222	Date Sampled:	08-06-92
Sample Matrix:	Soil	Date Received:	08-07-92
Preservative:	NA	Date Analyzed:	09-04-92
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	19.6
Toluene	1,280	19.6
Ethylbenzene	ND	19.6
p,m-Xylene	ND	19.6
o-Xylene	ND	19.6

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	117 %
	Bromfluorobenzene	88 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

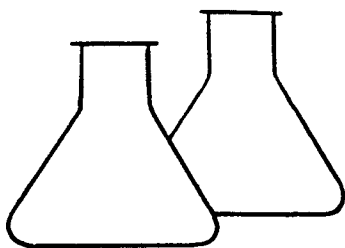
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant---Phase II Environmental Audit.

Robert M Young
Analyst

Moni L Young
Review



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PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client: Phelps Dodge
Sample ID: A @ 18"
Laboratory Number: 2395
Sample Matrix: Soil
Preservative: Cool
Condition: Cool & In

Project #: 92194
Date Reported: 09-09-92
Date Sampled: 08-11-92
Date Received: 08-11-92
Date Analyzed: 09-09-92
Analysis Needed: TPH

Parameter -----	Concentration (mg/kg) -----	Det. Limit (mg/kg) -----
Total Petroleum Hydrocarbons	850	5.0

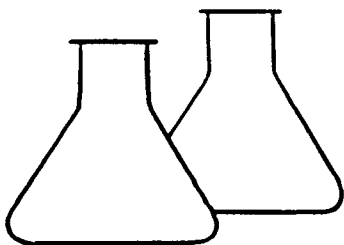
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant.

Robert M. Young
Analyst

Morris D. Young
Review



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PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client: Phelps Dodge
Sample ID: T25 @ 12"
Laboratory Number: 2396
Sample Matrix: Soil
Preservative: Cool
Condition: Cool & In

Project #: 92194
Date Reported: 09-09-92
Date Sampled: 08-11-92
Date Received: 08-11-92
Date Analyzed: 09-09-92
Analysis Needed: TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	161	10.0

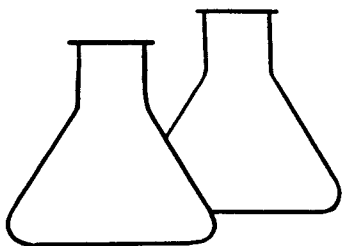
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant.

Robert M. Young
Analyst

Marion D. Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	A @ 18"	Date Reported:	09-04-92
Laboratory Number:	2395	Date Sampled:	08-11-92
Sample Matrix:	Soil	Date Received:	08-21-92
Preservative:	NA	Date Analyzed:	09-04-92
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	20.0
Toluene	1,600	20.0
Ethylbenzene	ND	20.0
p,m-Xylene	1,560	20.0
o-Xylene	ND	20.0

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	107 %
	Bromfluorobenzene	105 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

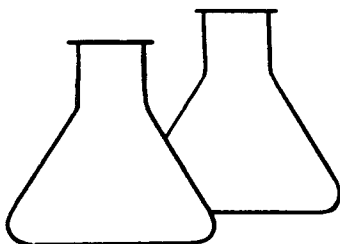
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

Robert M Young
Analyst

Monica Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	T25 @ 12"	Date Reported:	09-04-92
Laboratory Number:	2396	Date Sampled:	08-11-92
Sample Matrix:	Soil	Date Received:	08-21-92
Preservative:	NA	Date Analyzed:	09-04-92
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	19.6
Toluene	1,960	19.6
Ethylbenzene	ND	19.6
p,m-Xylene	880	19.6
o-Xylene	ND	19.6

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	108 %
	Bromfluorobenzene	91 %

Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

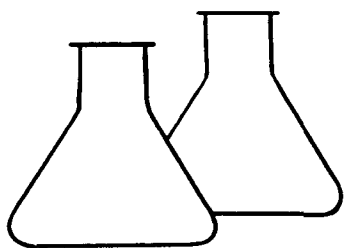
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant

Tony Tristano
Analyst

Marisa Q. Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	09-04-92
Laboratory Number:	BTLB0904	Date Sampled:	NA
Sample Matrix:	Water	Date Received:	NA
Preservative:	NA	Date Analyzed:	09-04-92
Condition:	NA	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	0.2
Toluene	ND	0.2
Ethylbenzene	ND	0.2
p,m-Xylene	ND	0.2
o-Xylene	ND	0.2

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	95.7 %
	Bromfluorobenzene	94.8 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

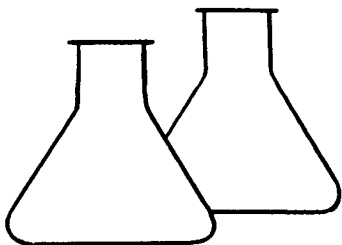
Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments:

Robert M. Young
Analyst

Maris Q. Young
Review



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PHONE: (505) 632-0615 • FAX: (505) 632-1865

** QUALITY ASSURANCE REPORT

METHOD BLANK - TOTAL PETROLEUM HYDROCARBONS

Client: NA
Sample ID: NA
Laboratory Number: Method Blank
Sample Matrix: Soil
Analysis Requested: 418.1 TPH
Condition: Cool & Intact

Project #: NA
Date Reported: 08-11-92
Date Sampled: NA
Date Received: NA
Date Analyzed: 08-10-92

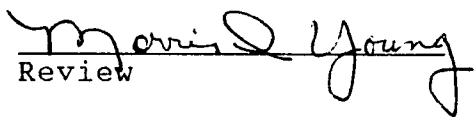
Parameter -----	Concentration (mg/kg) -----	Det. Limit (mg/kg) -----
Total Petroleum Hydrocarbons	ND	10.0

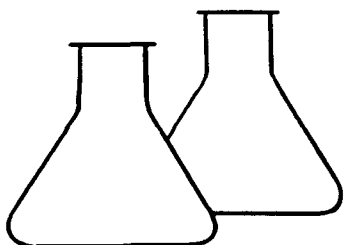
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments:


Analyst


Review



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**** QUALITY ASSURANCE REPORT**
METHOD BLANK - TOTAL PETROLEUM HYDROCARBONS

Client:	NA	Project #:	NA
Sample ID:	NA	Date Reported:	08-20-92
Laboratory Number:	Method Blank	Date Sampled:	NA
Sample Matrix:	Soil	Date Received:	NA
Analysis Requested:	418.1 TPH	Date Analyzed:	08-18-92
Condition:	Cool & Intact		

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	ND	10.0

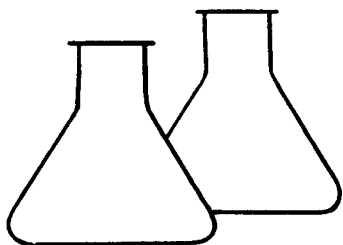
Method: Method 418.1, Petroleum Hydrocarbons, Total
Recoverable, Chemical Analysis of Water and
Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments:

Tony Tristano
Analyst

Marnie D. Young
Review



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**** QUALITY ASSURANCE REPORT**
MATRIX SPIKE - TOTAL PETROLEUM HYDROCARBONS

Client: NA	Project #: NA
Sample ID: NA	Date Reported: 08-20-92
Laboratory Number: NA	Date Sampled: NA
Sample Matrix: Soil Spike	Date Received: NA
Analysis Requested: TPH	Date Analyzed: 08-18-92
Condition: NA	

Parameter	Spike Added (mg/kg)	Sample Result (mg/kg)	Spiked sample Result (mg/kg)	Percent Recovery
Total Petroleum Hydrocarbons	1050.0	ND	662.6	63.1

QA ACCEPTANCE CRITERIA:	Parameter	Acceptance Range %
	TPH	50 - 150

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments:

Tony Tristano
Analyst

Morris D. Young
Review

1728

CHAIN OF CUSTODY RECORD

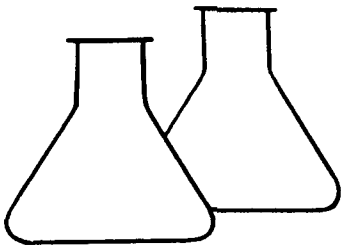
Client/Project Name		Project Location		ANALYSIS/PARAMETERS									
12194-		Phase II Enviz. Audit											
Sampler: (Signature)		Chain of Custody Tape No.											
Sample No./ Identification		Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	TPH	BTEX (8020)	GC10	TCLP % (P4H)	PCB's	Remarks	
TH #25 @ 18"		8/6/92	1745	2217	Soil	1	✓						
TH #24 @ 12"		8/6/92	1740	2218	Soil	1	✓						
TH #23 @ 2'		8/6/92	1735	2219	Soil	1	✓					Heads	
TH #21 @ 3'		8/6/92	1729	2220	Soil	1	✓					Heads	
TH #20 @ 3.5'		8/6/92	1725	2221	Soil	1	✓						
TH #19 @ 0-6"		8/6/92	1720	2222	Soil	1	✓	✓	ADD			Heads	
TH #15 @ 0-6"		8/6/92	1750	2223	Soil	1	✓						
DBL Break		8/6/92	1950	2224	Soil	1	✓					Heads	
			1952				✓						
Relinquished by: (Signature)		Date		Time		Received by: (Signature)		Date		Time			
<i>Michael S. Lee</i>		8/1/92		1200		<i>Vanessa Ransom</i>		08-07-92		1200			
Relinquished by: (Signature)						Received by: (Signature)							
Relinquished by: (Signature)						Received by: (Signature)							

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PHONE: (505) 632-0615 • FAX: (505) 632-1865

ASBESTOS SAMPLE IDENTIFICATION

Client: Phelps Dodge
Sample ID: GGP 022
Lab ID#: 2022
Project #: 92194

Date Reported: 07-24-92
Date Sampled: 07-23-92
Date Received: 07-23-92
Date Analyzed: 07-24-92

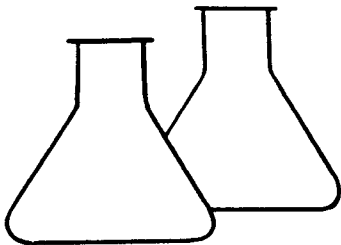
SAMPLE DESCRIPTION	ASBESTOS TYPE AND %	OTHER FIBERS
Insulation	None	Cellulose <1% Synthetic Fibers 5%

Reference: Federal Register/ Vol. 52, No. 36-37/ Wednesday,
February 25, 1987/ page 5830-5831/ Appendix B to S
763.121

Comments: This sample was taken from the Galvin Plant -
Lindrith.

Tony Tristano
Analyst

Neil Samuels
Reviewed



ENVIROTECH LABS

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PHONE: (505) 632-0615 • FAX: (505) 632-1865

ASBESTOS SAMPLE IDENTIFICATION

Client: Phelps Dodge
Sample ID: GGP 021
Lab ID#: 2023
Project #: 92194

Date Reported: 07-24-92
Date Sampled: 07-23-92
Date Received: 07-23-92
Date Analyzed: 07-24-92

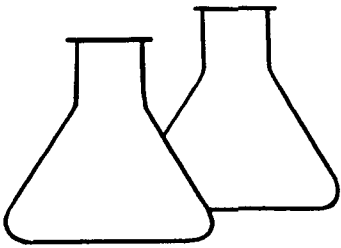
SAMPLE DESCRIPTION	ASBESTOS TYPE AND %	OTHER FIBERS
Insulation	None	Cellulose 5% Synthetic Fibers 10%

Reference: Federal Register/ Vol. 52, No. 36-37/ Wednesday,
February 25, 1987/ page 5830-5831/ Appendix B to §
763.121

Comments: This sample was taken from the Galvin Plant -
Lindrith.

Tony Tristano
Analyst

Neil Lamsworth
Reviewed



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PHONE: (505) 632-0615 • FAX: (505) 632-1865

ASBESTOS SAMPLE IDENTIFICATION

Client: Phelps Dodge
Sample ID: GGP 020
Lab ID#: 2024
Project #: 92194

Date Reported: 07-24-92
Date Sampled: 07-23-92
Date Received: 07-23-92
Date Analyzed: 07-24-92

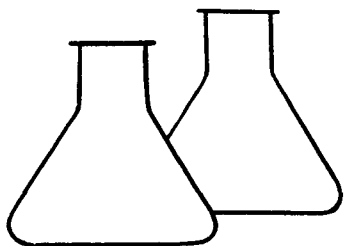
SAMPLE DESCRIPTION	ASBESTOS TYPE AND %	OTHER FIBERS
Insulation	None	Cellulose 10%

Reference: Federal Register/ Vol. 52, No. 36-37/ Wednesday,
February 25, 1987/ page 5830-5831/ Appendix B to S
763.121

Comments: This sample was taken from the Galvin Plant -
Lindrith.

Tony Tristano
Analyst

Neil Ransworth
Reviewed



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PHONE: (505) 632-0615 • FAX: (505) 632-1865

ASBESTOS SAMPLE IDENTIFICATION

Client: Phelps Dodge
Sample ID: GGP 019
Lab ID#: 2025
Project #: 92194

Date Reported: 07-24-92
Date Sampled: 07-23-92
Date Received: 07-23-92
Date Analyzed: 07-24-92

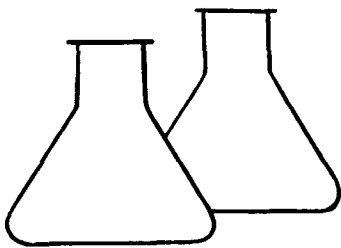
SAMPLE DESCRIPTION	ASBESTOS TYPE AND %	OTHER FIBERS
Insulation	None	Cellulose 10% Synthetic Fibers 5%

Reference: Federal Register/ Vol. 52, No. 36-37/ Wednesday,
February 25, 1987/ page 5830-5831/ Appendix B to §
763.121

Comments: This sample was taken from the Galvin Plant -
Lindrith.

Tony Tristano
Analyst

Verl Ransworth
Reviewed



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PHONE: (505) 632-0615 • FAX: (505) 632-1865

ASBESTOS SAMPLE IDENTIFICATION

Client: Phelps Dodge
Sample ID: GGP 019B
Lab ID#: 2026
Project #: 92194

Date Reported: 07-24-92
Date Sampled: 07-23-92
Date Received: 07-23-92
Date Analyzed: 07-24-92

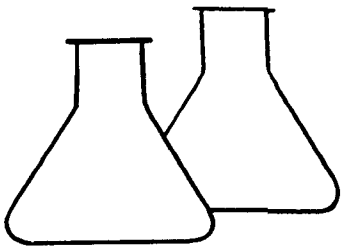
SAMPLE DESCRIPTION	ASBESTOS TYPE AND %	OTHER FIBERS
Insulation	None	Cellulose <1% Synthetic Fibers 5% Fiberglass <1%

Reference: Federal Register/ Vol. 52, No. 36-37/ Wednesday,
February 25, 1987/ page 5830-5831/ Appendix B to S
763.121

Comments: This sample was taken from the Galvin Plant -
Lindrith.

Tony Tristano
Analyst

Neil Linsworth
Reviewed



ENVIROTECH LABS

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ASBESTOS SAMPLE IDENTIFICATION

Client: Phelps Dodge
Sample ID: GGP 018
Lab ID#: 2027
Project #: 92194

Date Reported: 07-24-92
Date Sampled: 07-23-92
Date Received: 07-23-92
Date Analyzed: 07-24-92

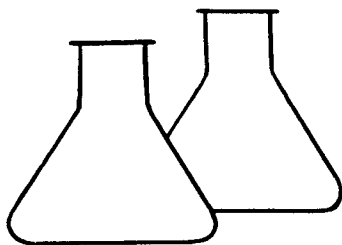
SAMPLE DESCRIPTION	ASBESTOS TYPE AND %	OTHER FIBERS
Insulation	None	Fiberglass 10%

Reference: Federal Register/ Vol. 52, No. 36-37/ Wednesday,
February 25, 1987/ page 5830-5831/ Appendix B to §
763.121

Comments: This sample was taken from the Galvin Plant -
Lindrith.

Tony Tristano
Analyst

Neil Lainsworth
Reviewed



ENVIROTECH LABS

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PHONE: (505) 632-0615 • FAX: (505) 632-1865

ASBESTOS SAMPLE IDENTIFICATION

Client: Phelps Dodge
Sample ID: GGP 017 Boiler Stacks
Lab ID#: 2028
Project #: 92194

Date Reported: 07-24-92
Date Sampled: 07-23-92
Date Received: 07-23-92
Date Analyzed: 07-24-92

SAMPLE DESCRIPTION	ASBESTOS TYPE AND %	OTHER FIBERS
Insulation	None	Glass wool <1%

Reference: Federal Register/ Vol. 52, No. 36-37/ Wednesday,
February 25, 1987/ page 5830-5831/ Appendix B to §
763.121

Comments: This sample was taken from the Galvin Plant -
Lindrith.

Tony Tristano
Analyst

Neil Lumsden
Reviewed

CHAIN OF CUSTODY RECORD

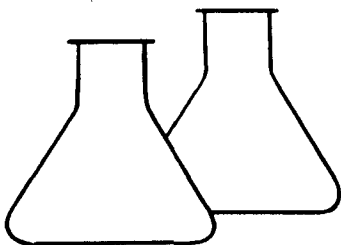
Client/Project Name			Project Location			ANALYSIS/PARAMETERS									
Sample (Signature)			Chain of Custody Tape No.			Remarks									
Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers										
1				Insulation	7										
GGP 023	7-23-92	13:00	2022	Insulation											
2				Insulation	7										
GGP 021	7-23-92	13:00	2023	Insulation											
3				Insulation	7										
GGP 020	7-23-92	13:00	2024	Insulation											
4				Insulation	7										
GGP 019	7-23-92	13:00	2025	Insulation											
5				Insulation	7										
GGP 017B	7-23-92	13:00	2026	Insulation											
6				Insulation	7										
GGP 018	7-23-92	13:00	2027	Insulation											
7				Insulation	7										
GGP 017	7-23-92	13:00	2028	Insulation											
8. In Stacks															
Relinquished by: (Signature)			Date		Time		Received by: (Signature)		Date		Time				
Relinquished by: (Signature)			7-23-92		15:30		Received by: (Signature)		7-23-92		15:30				
Relinquished by: (Signature)							Received by: (Signature)								

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Farmington, New Mexico 87401

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EPA METHODS 8010/8020 AROMATIC VOLATILE ORGANICS/HALOGENATED VOLATILE ORGANICS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	Composite	Date Reported:	09-07-92
Laboratory Number:	2229	Date Sampled:	08-07-92
Sample Matrix:	TCLP Extract	Date Received:	08-07-92
Preservative:	Cool	Date Analyzed:	08-24-92
Condition:	Cool & Intact	Analysis Requested:	TCLP

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Vinyl Chloride		
& 1,1-Dichloroethene	ND	5.0
2-Butanone	94	5.0
Chloroform	ND	5.0
Carbon Tetrachloride	ND	5.0
Benzene &		
1,2-Dichloroethane	ND	5.0
Trichloroethene	ND	5.0
Tetrachloroethene	ND	5.0
Chlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0

Method: Method 1311, Toxicity Characteristic Leaching Procedure
Test Methods for Evaluating Solid Waste, SW-846, USEPA,
Sept. 1986

Method 5030, Purge-and-Trap, Test Methods for Evaluating
Solid Waste, SW-846, USEPA, Sept. 1986

Method 8010, Halogenated Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

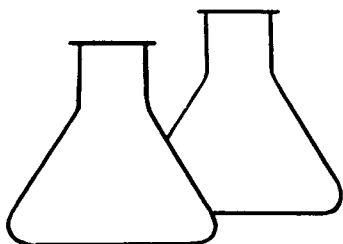
Method 8020, Aromatic Volatile Organics, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments:

Tony Tristano
Analyst

Marianne Young
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EPA METHOD 8040 PHENOLS

Client:	Phelps Dodge	Project #:	92194
Sample ID:	Composite	Date Reported:	09-04-92
Laboratory Number:	2229	Date Sampled:	08-07-92
Sample Matrix:	TCLP Extract	Date Received:	08-07-92
Preservative:	Cool	Date Analyzed:	09-03-92
Condition:	Cool & Intact	Analysis Requested:	TCLP

Parameter	Concentration (mg/L)	Det. Limit (mg/L)
o-Cresol	ND	0.020
p,m-Cresol	ND	0.040
2,4,6-Trichlorophenol & 2,4,5-Trichlorophenol	ND	0.040
Pentachlorophenol	ND	0.020

Method: Method 1311, Toxicity Characteristic Leaching Procedure
Test Methods for Evaluating Solid Waste, SW-846, USEPA,
Sept. 1986.

Method 3510, Separatory Funnel Liquid-Liquid Extraction,
Test Methods for Evaluating Solid Waste, SW-846, USEPA,
Sept. 1986.

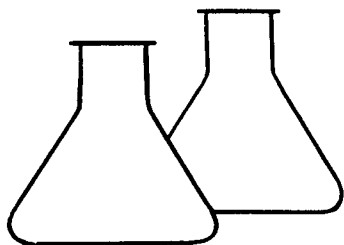
Method 8040, Phenols, Test Methods for Evaluating Solid
Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant Phase II Environmental Audit

Tony Tristano
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EPA METHOD 8080 ORGANOCHLORINE PESTICIDES AND PCBs

Client:	Phelps Dodge	Project #:	92194
Sample ID:	Composite	Date Reported:	09-09-92
Laboratory Number:	2229	Date Sampled:	08-06-92
Sample Matrix:	TCLP Extract	Date Received:	08-06-92
Preservative:	Cool	Date Analyzed:	09-03-92
Condition:	Cool & Intact	Analysis Requested:	PCBs

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
-----	-----	-----
Polychlorinated Biphenyls	ND	10.0

Method: Method 1311, Toxicity Characteristic Leaching Procedure,
Test Methods for Evaluating Solid Waste, SW-846, USEPA,
Sept. 1986

Method 3510, Separatory Funnel Liquid-Liquid Extraction,
Test Methods for Evaluating Solid Waste, SW-846, USEPA,
Sept. 1986

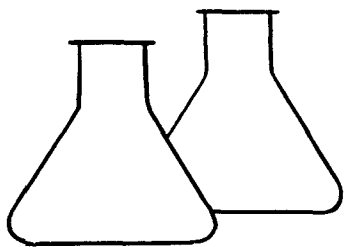
Method 8080, Organochlorine Pesticides and PCBs, Test
Methods for Evaluating Solid Waste, SW-846, USEPA,
Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments:

Tony Tristano
Analyst

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EPA METHOD 8090 NITROAROMATICS AND CYCLIC KETONES

Client:	Phelps Dodge	Project #:	92194
Sample ID:	Composite	Date Reported:	09-04-92
Laboratory Number:	2229	Date Sampled:	08-07-92
Sample Matrix:	TCLP Extract	Date Received:	08-07-92
Preservative:	Cool	Date Analyzed:	09-03-92
Condition:	Cool & Intact	Analysis Requested:	TCLP

Parameter	Concentration (mg/L)	Det. Limit (mg/L)
Pyridine	ND	0.020
Hexachloroethane	ND	0.020
Nitrobenzene	ND	0.010
Hexachlorobutadiene	ND	0.010
2,4-Dinitrotoluene	ND	0.010
Hexachlorobenzene	ND	0.010

Method: Method 1311, Toxicity Characteristic Leaching Procedure,
Test Methods for Evaluating Solid Waste, SW-846, USEPA, S

Method 3510, Separatory Funnel Liquid-Liquid Extraction,
Test Methods for Evaluating Solid Waste, SW-846, USEPA, S

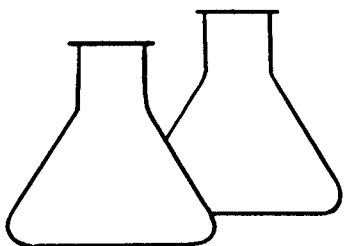
Method 8090, Nitroaromatics and Cyclic Ketones, Test Meth
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: Gavilan Plant Phase II Environmental Audit

Tony Tristano
Analyst

Maria S. Young
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EPA METHODS 8010/8020 AROMATIC VOLATILE ORGANICS/HALOGENATED VOLATILE ORGANICS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	09-07-92
Laboratory Number:	TCV00824	Date Sampled:	NA
Sample Matrix:	Water	Date Received:	NA
Preservative:	NA	Date Analyzed:	08-24-92
Condition:	NA	Analysis Requested:	TCLP

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
-----	-----	-----
Vinyl Chloride	ND	5
& 1,1-Dichloroethene	ND	5
2-Butanone	ND	5
Chloroform	ND	5
Carbon Tetrachloride	ND	5
Benzene &		
1,2-Dichloroethane	ND	5
Trichloroethene	ND	5
Tetrachloroethene	ND	5
Chlorobenzene	ND	5
1,4-Dichlorobenzene	ND	5

Method: Method 1311, Toxicity Characteristic Leaching Procedure
Test Methods for Evaluating Solid Waste, SW-846, USEPA,
Sept. 1986

Method 5030, Purge-and-Trap, Test Methods for Evaluating
Solid Waste, SW-846, USEPA, Sept. 1986

Method 8010, Halogenated Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

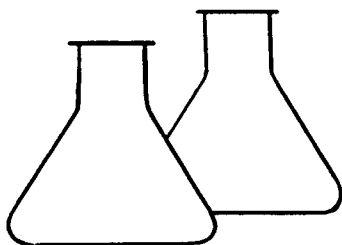
Method 8020, Aromatic Volatile Organics, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

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Comments:

Tony Tristano
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EPA METHOD 8040 PHENOLS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	09-04-92
Laboratory Number:	AELB0902	Date Sampled:	NA
Sample Matrix:	2-Propanol	Date Received:	NA
Preservative:	Cool	Date Analyzed:	09-03-92
Condition:	Cool & Intact	Analysis Requested:	TCLP

Parameter	Concentration (mg/L)	Det. Limit (mg/L)
o-Cresol	ND	0.020
p,m-Cresol	ND	0.040
2,4,6-Trichlorophenol & 2,4,5-Trichlorophenol	ND	0.040
Pentachlorophenol	ND	0.020

Method: Method 1311, Toxicity Characteristic Leaching Procedure
Test Methods for Evaluating Solid Waste, SW-846, USEPA,
Sept. 1986.

Method 3510, Separatory Funnel Liquid-Liquid Extraction,
Test Methods for Evaluating Solid Waste, SW-846, USEPA,
Sept. 1986.

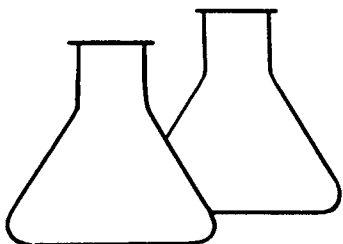
Method 8040, Phenols, Test Methods for Evaluating Solid
Waste, SW-846, USEPA, Sept. 1986.

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Comments:

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Marion D. Young
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EPA METHOD 8040 PHENOLS

Client:	NA	Project #:	NA
Sample ID:	Extraction Blank	Date Reported:	09-04-92
Laboratory Number:	AEEB0902	Date Sampled:	NA
Sample Matrix:	2-Propanol	Date Received:	NA
Preservative:	Cool	Date Analyzed:	09-03-92
Condition:	Cool & Intact	Analysis Requested:	TCLP

Parameter	Concentration (mg/L)	Det. Limit (mg/L)
o-Cresol	ND	0.020
p,m-Cresol	ND	0.040
2,4,6-Trichlorophenol & 2,4,5-Trichlorophenol	ND	0.040
Pentachlorophenol	ND	0.020

Method: Method 1311, Toxicity Characteristic Leaching Procedure
Test Methods for Evaluating Solid Waste, SW-846, USEPA,
Sept. 1986.

Method 3510, Separatory Funnel Liquid-Liquid Extraction,
Test Methods for Evaluating Solid Waste, SW-846, USEPA,
Sept. 1986.

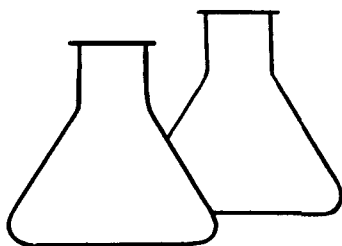
Method 8040, Phenols, Test Methods for Evaluating Solid
Waste, SW-846, USEPA, Sept. 1986.

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Comments:

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EPA METHOD 8090 NITROAROMATICS AND CYCLIC KETONES

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	09-04-92
Laboratory Number:	BNLB0903	Date Sampled:	NA
Sample Matrix:	Hexane	Date Received:	NA
Preservative:	NA	Date Analyzed:	09-03-92
Condition:	NA	Analysis Requested:	TCLP

Parameter	Concentration (mg/L)	Det. Limit (mg/L)
Pyridine	ND	0.020
Hexachloroethane	ND	0.020
Nitrobenzene	ND	0.010
Hexachlorobutadiene	ND	0.010
2,4-Dinitrotoluene	ND	0.010
Hexachlorobenzene	ND	0.010

Method: Method 1311, Toxicity Characteristic Leaching Procedure,
Test Methods for Evaluating Solid Waste, SW-846, USEPA, S

Method 3510, Separatory Funnel Liquid-Liquid Extraction,
Test Methods for Evaluating Solid Waste, SW-846, USEPA, S

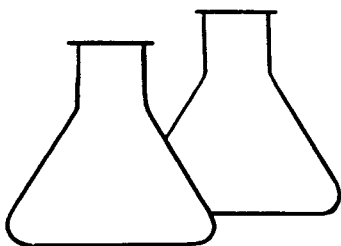
Method 8090, Nitroaromatics and Cyclic Ketones, Test Meth
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

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Comments:

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EPA METHOD 8090 NITROAROMATICS AND CYCLIC KETONES

Client:	NA	Project #:	NA
Sample ID:	Extraction Blank	Date Reported:	09-04-92
Laboratory Number:	BNEB0903	Date Sampled:	NA
Sample Matrix:	Hexane	Date Received:	NA
Preservative:	NA	Date Analyzed:	09-03-92
Condition:	NA	Analysis Requested:	TCLP

Parameter	Concentration (mg/L)	Det. Limit (mg/L)
Pyridine	ND	0.020
Hexachloroethane	ND	0.020
Nitrobenzene	ND	0.010
Hexachlorobutadiene	ND	0.010
2,4-Dinitrotoluene	ND	0.010
Hexachlorobenzene	ND	0.010

Method: Method 1311, Toxicity Characteristic Leaching Procedure,
Test Methods for Evaluating Solid Waste, SW-846, USEPA, S

Method 3510, Separatory Funnel Liquid-Liquid Extraction,
Test Methods for Evaluating Solid Waste, SW-846, USEPA, S

Method 8090, Nitroaromatics and Cyclic Ketones, Test Meth
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

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Comments:

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