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**SAMPLING ACTIVITIES AND ANALYTICAL RESULTS REPORT
GOLD HILL TAILINGS
COLORADO SPRINGS, COLORADO
TDD #T08-9501-012**

Prepared for:

**U. S. Environmental Protection Agency
Emergency Response Branch
Waste Management Division
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Date Submitted: April 14, 1995

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TDD #T08-9501-012**

1.0 INTRODUCTION

The Ecology and Environment, Inc., Technical Assistance Team (TAT) was tasked by the Region VIII U.S. Environmental Protection Agency/Emergency Response Branch (EPA/ERB) under Technical Direction Document (TDD) #T08-9501-012, to characterize tailings material in the northwest corner of a tailings pile at the Gold Hill Tailings site, and soil from an adjacent occupied mobile home park. On February 22, 1995, TAT members Kent Alexander and Amy Estey, and EPA representatives Johanna Miller, Chris Weis, and Tim Rehder mobilized to the site, conducted sampling activities, and demobilized from the site.

The TAT and EPA collected 13 interior dust samples and 11 water samples from homes in the mobile home park; 32 soil samples from the tailings pile; and 16 soil samples from the trailer park. The interior dust samples were analyzed for total suspended particulates, arsenic, and lead. All soil samples were screened with a Spectrace 9000 X-Ray Fluorescence (XRF) instrument. Based on XRF results, seven soil samples from the tailings pile and three soil samples from the adjacent trailer park were submitted to an independent laboratory for arsenic, lead, and cyanide analyses. Two soil samples from the tailings pile and one soil sample from the adjacent trailer park were sieved with a 60 mesh sieve to determine particle size. All water samples were analyzed for arsenic and lead.

2.0 DESCRIPTION AND BACKGROUND

The Gold Hill Tailings site is located in Colorado Springs, Colorado. The tailings pile is 170 acres in size and covers most of the eastern half of Section 14, and portions of the western edge of Section 13, Township 14 South, Range 67 West. The site is bounded by Fountain Creek and Highway 24 on the north, 21st Street on the west, Rio Grand Street and Moreno Avenue on the south, and the A-1 mobile village on the east (Figure 1). The Gold Hill Tailings site was owned by various entities following its initial construction by the Telluride Reduction Company in 1901. In 1903, ownership passed to the General Metals Company of New York, and in 1905, the mill was purchased by the Golden Cycle

Mining Company, which operated at the site from 1905 until 1949, and produced the tailings at the site. Most of the ore processed at the Golden Cycle Mill was silicious or basic ore from the Cripple Creek Mining District. This ore contained very small amounts of antimony, arsenic, copper, lead, mercury, silver, and zinc. Gold recovery processes used at the mill included amalgamation, cyanidation, cyanide sand leaching, and cyanide slime leaching. The mill also processed a variety of complex sulphide ores from other mining districts in Colorado. Mill operations were modified during World War II so that zinc ores could be processed for the war effort. The mill was dismantled in 1950.

During the sampling event on February 22, 1995, the TAT observed positive evidence that the tailings pile is used as a play area for neighboring children and adults. The TAT noted hand and foot prints in the tailings pile, and actually observed several people walking through or around the site.

3.0 SAMPLING ACTIVITIES

There were five individuals involved in the Gold Hill Tailings site sampling effort. TAT member Kent Alexander and EPA representative Johanna Miller collected 32 soil samples from the tailings pile. These samples were collected from four grid lines across the slope of the pile. Each location was sampled in a 5-point cross pattern. Most of the soil samples were collected from the bottom of on-site ravines. To help characterize the entire pile and degree of erosion, samples were collected from two locations at the bottom of the ravine, two locations midway up the ravine embankment, and two locations at the top of the ravine embankment. These locations from bottom to top were designated GH-SO-24, GH-SO-25, GH-SO-26, GH-SO-31, GH-SO-30, and GH-SO-29. For quality control purposes, sample locations GH-SO-18 and GH-SO-19; and GH-SO-31 and GH-SO-32 were collocated. To provide an accurate sample location map, all samples were surveyed with a total station.

TAT member Amy Estey, and EPA toxicologist Chris Weis and EPA On-scene Coordinator Tim Rehder, collected interior dust samples, soil samples and water samples from 12 residences at the A-1 Mobile Village. Occupants of each residence sampled were also asked to complete a sample questionnaire. The dust samples were collected with a high-volume sampler that was modified to vacuum a premeasured area. A 1/3 square meter

template was used in three locations, resulting in a total vacuumed area of 1 square meter. One residence, sample location GH-DU-007, was vacuumed in six locations for a total vacuumed area of 2 square meters. One home, sample location GH-DU-013, was designated a blank filter for quality control purposes. A water sample was collected concurrent with each home that was dust sampled, with the exception of sample location GH-WA-004. All water samples were preserved with hydrochloric acid to a pH of less than 2. One or two soil samples were collected from the yards of each participating resident. Sample GH-SO-114 was collocated for quality control (GH-SO-114A). All soil samples locations are depicted on Figure 2.

4.0 ANALYTICAL RESULTS

Interior dust samples were analyzed for total suspended particulates, arsenic, and lead; analytical results are presented in Table 3. Water samples were analyzed for arsenic and lead; Table 4 contains analytical results. All water arsenic results were below one-half the drinking water regulations and health advisory limit of 0.05 mg/L. Two of the lead water results (GH-WA-011 and GH-WA-012) failed the drinking water regulations and health advisory limit of 0.015 mg/L.

Ten soil samples were analyzed for arsenic, lead, and cyanide; all three elements were detected. The highest arsenic value was 204 parts per million (ppm); the highest lead value was 1,570 ppm, and the highest cyanide value was 10.1 ppm. All laboratory soil results are presented in Table 5. Three soil samples were completely dried and sieved through a 60-mesh sieve. The soil was weighed before sieving; the soil that did not pass through the 60-mesh sieve was also weighed. Table 6 presents sieving results.

All soil samples were screened with the XRF, the results of which are presented in Table 7. The collocated quality control samples correlated well for most elements; however, arsenic, mercury, molybdenum, and thorium did not meet the relative percent difference (RPD) criteria on one of three samples. The internal quality control samples also performed well; however, copper, mercury, and zinc did not meet the RPD criteria for one of the three samples, and cobalt, manganese, molybdenum, and uranium did not meet the RPD criteria for two of the three internal QC samples. The RPD criteria does not mean the data is

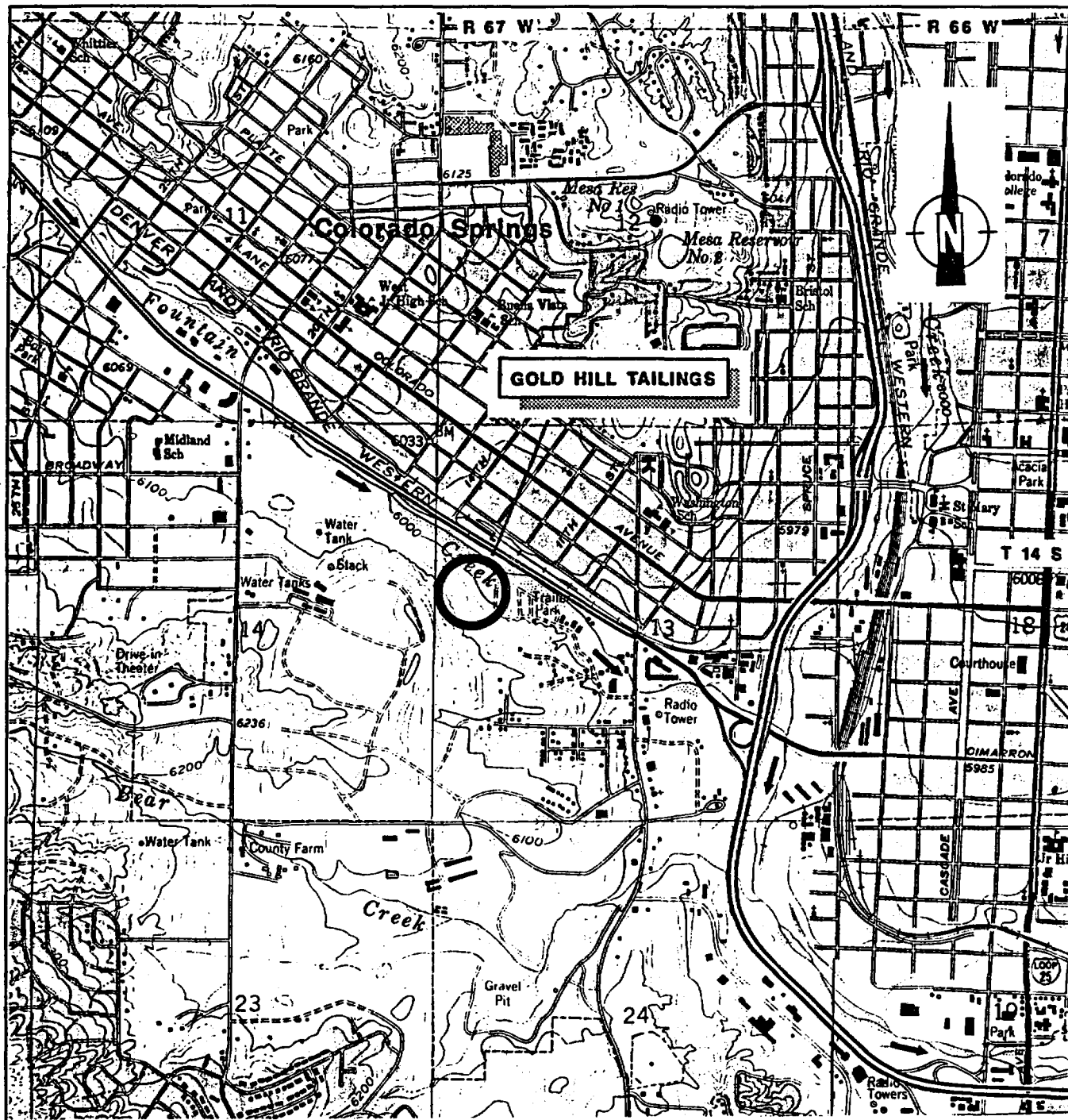
invalid, but does indicate that results should be used with caution because the quantitation may not be accurate.

A comparison was made between XRF soil data results and laboratory soil data results. Table 8 presents comparison results. The lead data corresponded well with a correlation factor of 0.983. All XRF data is biased a little high, which is evident because the slope is at 0.727. Arsenic results did not correspond well. For this reason, and because the XRF did have one RPD value for arsenic out, the XRF arsenic data is questionable.

5.0 SUMMARY

The TAT collected 13 interior dust samples, and 11 water samples, from homes in a mobile home park adjacent to the site, 16 soil samples from the mobile home park, and 32 soil samples from the Gold Hill Tailings pile. The interior dust samples were analyzed for total suspended particulates, arsenic, and lead. All soil samples were screened with a Spectrace 9000 XRF. Ten soil samples were submitted to an independent laboratory for arsenic, lead, and cyanide analyses. Three soil samples were also sieved with a 60 mesh sieve to determine particle size. All water samples were analyzed for arsenic and lead.

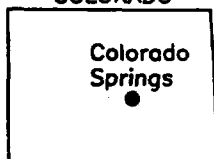
Lead was detected in water taken from two homes at levels above the drinking water regulations and health advisory limits. Arsenic was not detected at above one-half the drinking water regulations and health advisory limits in any home. All dust and soil sample results are presented in report tables. The XRF arsenic results are questionable and should not be used.



Source: Colorado Springs Quadrangle, Colorado. USGS, 1975

0 1/2 1 MILE

LOCATION MAP
COLORADO



LEGEND



Site location

TECHNICAL ASSISTANCE TEAM FOR EMERGENCY
RESPONSE, REMOVAL AND PREVENTION
EPA CONTRACT 68-WO-0037

TITLE:

GOLD HILL TAILINGS
Colorado Springs, Colorado
SITE LOCATION MAP

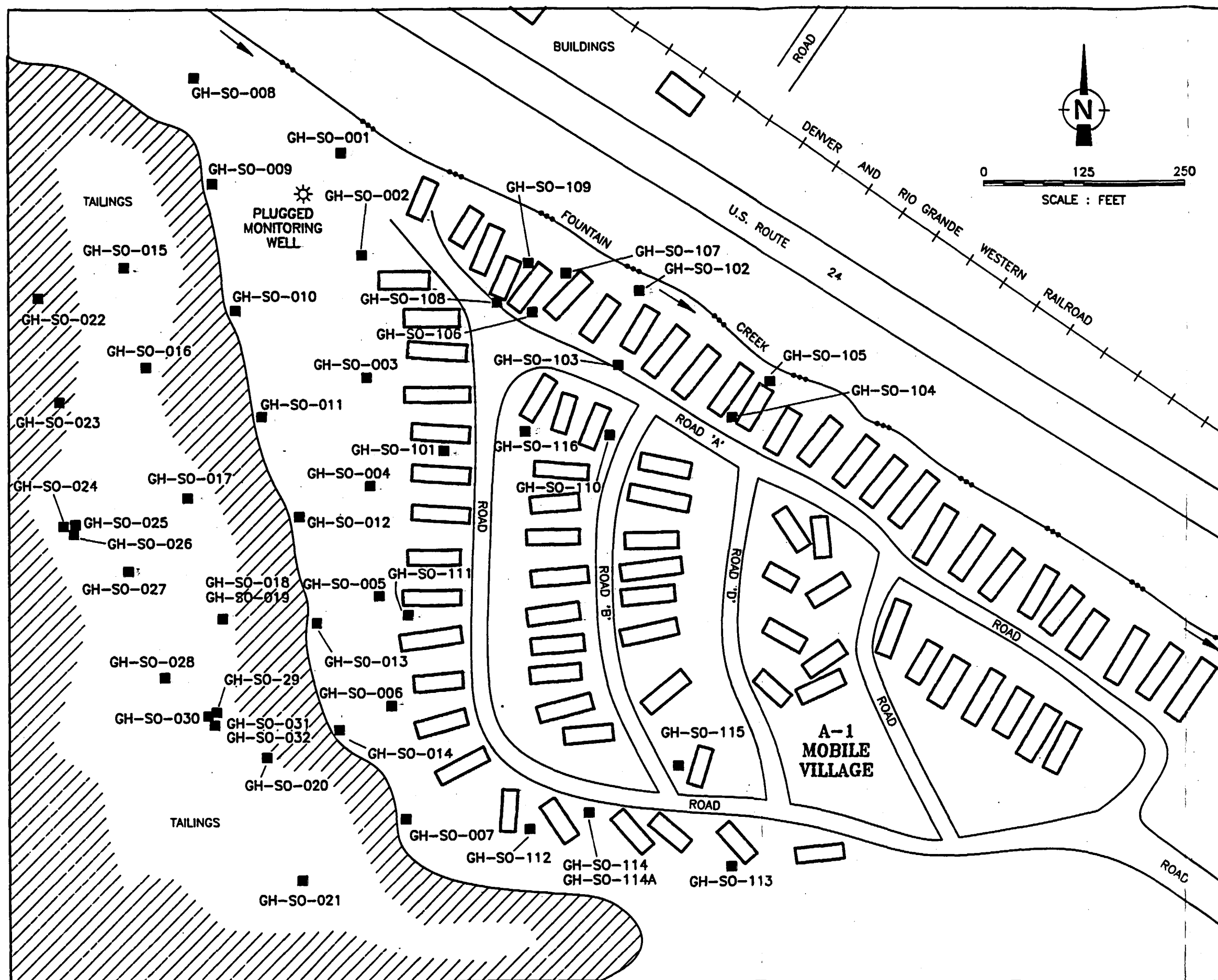
T.D.D. T08-9501-012

ZTGOLDH3

ecology & environment, inc.
DENVER, COLORADO

FIG. 1

Date: 04/14/95 Drawn by: KA Scale:



LEGEND

- Plugged monitoring well
- Soil sample location

TECHNICAL ASSISTANCE TEAM FOR EMERGENCY
RESPONSE, REMOVAL AND PREVENTION
EPA CONTRACT 68-WO-0037

TITLE:
GOLD HILL TAILINGS
Colorado Springs, Colorado
SAMPLE LOCATION MAP

T.D.D. T08-9501-012 ZTGOLDH2

ecology & environment, inc.
DENVER, COLORADO

FIG. 2

Date: 04/12/95 Drawn by: KA Scale:

TABLE 1 (page 1 of 2)
SAMPLE DOCUMENT INFORMATION
GOLD HILL TAILINGS
T08-9501-012

Sample Number	Date	Time	Analyses / Filer #	Sample Tag Number	COC Number
GH-DU-001	02/22/95	1005	As, Pb & TSP / W-039	8-123672	8-21315
GH-DU-002	02/22/95	1100	As, Pb & TSP / W-038	8-123673	8-21315
GH-DU-003	02/22/95	1116	As, Pb & TSP / W-037	8-123674	8-21315
GH-DU-004	02/22/95	1155	As, Pb & TSP / W-036	8-123675	8-21315
GH-DU-005	02/22/95	1210	As, Pb & TSP / W-030	8-123676	8-21315
GH-DU-006	02/22/95	1336	As, Pb & TSP / W-042	8-123677	8-21315
GH-DU-007	02/22/95	1400	As, Pb & TSP / W-041	8-123678	8-21315
GH-DU-008	02/22/95	1420	As, Pb & TSP / W-040	8-123679	8-21315
GH-DU-009	02/22/95	1445	As, Pb & TSP / W-035	8-123680	8-21315
GH-DU-010	02/22/95	1515	As, Pb & TSP / W-033	8-123681	8-21315
GH-DU-011	02/22/95	1535	As, Pb & TSP / W-032	8-123682	8-21315
GH-DU-012	02/22/95	1600	As, Pb & TSP / W-031	8-123683	8-21315
GH-DU-013	02/22/95	1620	As, Pb & TSP / N/A	8-123684	8-21315
GH-SO-001	02/22/95	1050	XRF	N/A	N/A
GH-SO-002	02/22/95	1054	XRF	N/A	N/A
GH-SO-003	02/22/95	1057	XRF	N/A	N/A
GH-SO-004	02/22/95	1100	XRF	N/A	N/A
GH-SO-005	02/22/95	1102	XRF	N/A	N/A
GH-SO-006	02/22/95	1106	XRF	N/A	N/A
GH-SO-007	02/22/95	1109	XRF, As, Pb & CN	8-123651	8-21314
GH-SO-008	02/22/95	1115	XRF	N/A	N/A
GH-SO-009	02/22/95	1120	XRF	N/A	N/A
GH-SO-010	02/22/95	1124	XRF	N/A	N/A
GH-SO-011	02/22/95	1128	XRF	N/A	N/A
GH-SO-012	02/22/95	1135	XRF	N/A	N/A
GH-SO-013	02/22/95	1139	XRF	N/A	N/A
GH-SO-014	02/22/95	1143	XRF, As, Pb & CN	8-123652	8-21314
GH-SO-015	02/22/95	1155	XRF	N/A	N/A
GH-SO-016	02/22/95	1159	XRF	N/A	N/A
GH-SO-017	02/22/95	1203	XRF, As, Pb & CN	8-123653	8-21314
GH-SO-018	02/22/95	1208	XRF	N/A	N/A
GH-SO-019	02/22/95	1208	XRF	N/A	N/A
GH-SO-020	02/22/95	1213	XRF	N/A	N/A
GH-SO-021	02/22/95	1219	XRF	N/A	N/A
GH-SO-022	02/22/95	1355	XRF	N/A	N/A
GH-SO-023	02/22/95	1403	XRF	N/A	N/A
GH-SO-024	02/22/95	1412	XRF, As, Pb & CN	8-123654	8-21314
GH-SO-025	02/22/95	1419	XRF, As, Pb & CN	8-123655	8-21314
GH-SO-026	02/22/95	1426	XRF, As, Pb & CN	8-123656	8-21314
GH-SO-027	02/22/95	1434	XRF	N/A	N/A
GH-SO-028	02/22/95	1443	XRF, As, Pb & CN	8-123657	8-21314
GH-SO-029	02/22/95	1450	XRF	N/A	N/A
GH-SO-030	02/22/95	1453	XRF	N/A	N/A

TABLE 1 (page 2 of 2)
SAMPLE DOCUMENT INFORMATION
GOLD HILL TAILINGS
T08-9501-012

Sample Number	Date	Time	Analyses / Filer #	Sample Tag Number	COC Number
GH-SO-031	02/22/95	1456	XRF	N/A	N/A
GH-SO-032	02/22/95	1458	XRF	N/A	N/A
GH-SO-101	02/22/95	1010	XRF	N/A	N/A
GH-SO-102	02/22/95	1055	XRF	N/A	N/A
GH-SO-103	02/22/95	1100	XRF	N/A	N/A
GH-SO-104	02/22/95	1122	XRF	N/A	N/A
GH-SO-105	02/22/95	1125	XRF, As, Pb & CN	8-123658	8-21314
GH-SO-106	02/22/95	1140	XRF	N/A	N/A
GH-SO-107	02/22/95	1145	XRF, As, Pb & CN	8-123659	8-21314
GH-SO-108	02/22/95	1205	XRF, As, Pb & CN	8-123660	8-21314
GH-SO-109	02/22/95	1210	XRF	N/A	N/A
GH-SO-110	02/22/95	1405	XRF	N/A	N/A
GH-SO-111	02/22/95	1425	XRF	N/A	N/A
GH-SO-112	02/22/95	1450	XRF	N/A	N/A
GH-SO-113	02/22/95	1520	XRF	N/A	N/A
GH-SO-114	02/22/95	1535	XRF	N/A	N/A
GH-SO-114A	02/22/95	1535	XRF	N/A	N/A
GH-SO-115	02/22/95	1600	XRF	N/A	N/A
GH-SO-116	02/22/95	1335	XRF	N/A	N/A
GH-WA-001	02/22/95	1005	As & Pb	8-123661	8-21313
GH-WA-002	02/22/95	1050	As & Pb	8-123662	8-21313
GH-WA-003	02/22/95	1120	As & Pb	8-123663	8-21313
GH-WA-005	02/22/95	1200	As & Pb	8-123664	8-21313
GH-WA-006	02/22/95	1330	As & Pb	8-123665	8-21313
GH-WA-007	02/22/95	1400	As & Pb	8-123666	8-21313
GH-WA-008	02/22/95	1440	As & Pb	8-123667	8-21313
GH-WA-009	02/22/95	1445	As & Pb	8-123668	8-21313
GH-WA-010	02/22/95	1510	As & Pb	8-123669	8-21313
GH-WA-011	02/22/95	1530	As & Pb	8-123670	8-21313
GH-WA-012	02/22/95	1555	As & Pb	8-123671	8-21313

TABLE 2
TOTAL STATION RESULTS
GOLD HILL TAILINGS
T08-9501-012

Location	VD Feet	HA ° ' "	HD Feet	Rod Feet	Tripod Inches	E - W Coord.	N - S Coord.	Elev Feet
Top of red/white tower to N	--	0 0 0	--	--	--	--	--	--
GH-SO-022	26.15	256 28 40	300.20	6.0	56.75	-291.9	-70.2	15.4
GH-SO-015	8.48	270 12 0	210.22	6.0	56.75	-210.2	0.7	-2.2
GH-SO-016	11.63	235 30 20	175.90	6.0	56.75	-145.0	-99.6	0.9
GH-SO-023	26.00	232 4 20	285.04	6.0	56.75	-224.8	-175.2	15.3
GH-SO-024	35.49	208 18 40	350.37	6.0	56.75	-166.2	-308.5	24.8
GH-SO-025	41.59	207 43 0	346.81	7.0	56.75	-161.3	-307.0	29.9
GH-SO-026	53.76	206 33 20	350.21	6.0	56.75	-156.6	-313.3	43.0
GH-SO-027	44.68	193 33 40	339.85	6.0	56.75	-79.7	-330.4	34.0
GH-SO-028	55.52	179 40 0	430.43	8.4	56.75	2.5	-430.4	42.4
GH-SO-029	55.36	170 46 40	467.71	6.0	56.75	75.0	-461.7	44.6
GH-SO-030	50.85	171 24 0	464.31	7.0	56.75	69.4	-459.1	39.1
GH-SO-031 & 032	49.67	170 45 20	456.77	14.4	56.75	73.4	-450.8	30.5
GH-SO-013	20.32	154 19 40	342.01	8.0	56.75	148.2	-308.2	7.6
GH-SO-014	33.97	152 21 0	471.38	8.0	56.75	218.8	-417.5	21.2
GH-SO-020	44.80	162 47 20	501.40	8.4	56.75	148.4	-478.9	31.7
GH-SO-018 & 019	39.22	173 4 0	346.05	8.4	56.75	41.8	-343.5	26.1
GH-SO-007	45.96	145 53 0	586.10	6.0	56.75	328.7	-485.2	35.2
GH-SO-006	33.28	144 17 40	453.15	6.0	56.75	264.5	-368.0	22.6
GH-SO-005	16.61	140 45 0	328.45	6.0	56.75	207.8	-254.3	5.9
GH-SO-004	7.60	131 45 20	206.26	6.0	56.75	153.9	-137.4	-3.1
GH-SO-003	1.82	100 25 20	105.00	6.0	56.75	103.3	-19.0	-8.9
GH-SO-002	-4.02	23 27 20	122.12	6.0	56.75	48.6	112.0	-14.7
Plugged monitoring well	-2.93	344 27 0	160.72	6.0	56.75	-43.1	154.8	-13.7
GH-SO-001	-7.98	355 13 20	216.46	6.0	56.75	-18.0	215.7	-18.7
GH-SO-008	-6.04	317 46 40	315.96	6.0	56.75	-212.3	234.0	-16.8
GH-SO-009	-2.25	310 50 40	194.84	6.0	56.75	-147.4	127.4	-13.0
GH-SO-010	3.06	270 57 40	70.32	6.0	56.75	-70.3	1.2	-7.7
GH-SO-011	7.44	178 16 20	108.04	6.0	56.75	3.3	-108.0	-3.3
GH-SO-012	9.02	157 1 20	217.20	6.0	56.75	84.8	-200.0	-1.7
GH-SO-017	24.27	191 10 0	230.44	8.0	56.75	-44.6	-226.1	11.5
GH-SO-021	53.74	158 14 0	642.96	14.4	56.75	238.4	-597.1	34.6
Top of tower to E	--	102 15 0	--	--	--	--	--	--
SW corner of 1st trailer	-8.34	24 18 20	193.95	5.0	56.75	79.8	176.8	-18.1
SE corner of 1st trailer	-8.75	27 1 0	196.40	5.0	56.75	89.2	175.0	-18.5
SW corner of pavement	-8.32	28 40 20	162.71	5.0	56.75	78.1	142.8	-18.0
NW corner of 2nd trailer	-7.94	38 18 0	121.85	5.0	56.75	75.5	95.6	-17.7
SW corner of 2nd trailer	-7.45	42 23 0	117.03	5.0	56.75	78.9	86.4	-17.2
NW corner of 4th trailer	-6.70	75 16 0	140.84	5.0	56.75	136.2	35.8	-16.4
SW corner of 4th trailer	-6.66	80 0 0	142.10	5.0	56.75	139.9	24.7	-16.4
NW corner of 5th trailer	-4.28	96 0 20	150.70	5.0	56.75	149.9	-15.8	-14.0
SW corner of 5th trailer	-3.88	100 22 40	157.40	5.0	56.75	154.8	-28.4	-13.6

Note: The two locations that have a rod height of 14.4 feet are approximate values.

Note: All of the elevations are relative to a randomly chosen set point.

TABLE 3
PRELIMINARY INORGANIC DUST SAMPLE RESULTS
GOLD HILL TAILINGS
T08-9501-012

Sample Number	Particulate Total (ug)	Arsenic		Lead		Area (m2)
		Total (ug)	(mg/Kg)	Total (ug)	(mg/Kg)	
GH-DU-001	5,200,000	200	38.5	1300	250	1
GH-DU-002	2,800,000	110	39.3	650	232	1
GH-DU-003	20,000,000	830	41.5	430	21.5	1
GH-DU-004	2,400,000	130	54.2	680	283	1
GH-DU-005	8,800,000	580	65.9	3800	432	1
GH-DU-006	12,000,000	640	53.3	3600	300	1
GH-DU-007	4,500,000	85	18.9	450	100	2
GH-DU-008	4,000,000	192	48.0	1500	375	1
GH-DU-009	5,600,000	151	27.0	570	102	1
GH-DU-010	2,700,000	59	21.9	330	122	1
GH-DU-011	8,700,000	230	26.4	780	89.7	1
GH-DU-012	14,000,000	470	33.6	2100	150	1
GH-DU-013	100,000 U	25 U	250 U	25 U	250 U	Blank

U - The element was analyzed for but not detected.
The value reported is the detection limit.

TABLE 4
PRELIMINARY INORGANIC WATER SAMPLE RESULTS (mg/L)
GOLD HILL TAILINGS
T08-9501-012

Sample Number	Arsenic	Lead	Laboratory Number
GH-WA-001	0.023	0.005 U	950588-11
GH-WA-002	0.007	0.006	950588-12
GH-WA-003	0.018	0.005 U	950588-13
GH-WA-005	0.005 U	0.005 U	950588-14
GH-WA-006	0.008	0.005 U	950588-15
GH-WA-007	0.005 U	0.005 U	950588-16
GH-WA-008	0.009	0.005 U	950588-17
GH-WA-009	0.005 U	0.005 U	950588-18
GH-WA-010	0.006	0.009	950588-19
GH-WA-011	0.005 U	0.019	950588-20
GH-WA-012	0.005 U	0.016	950588-21
Regulatory Levels	0.05	0.015	N/A

U - The element was analyzed for but not detected.
The value reported is the detection limit.

TABLE 5
PRELIMINARY INORGANIC SOIL SAMPLE RESULTS (mg/Kg)
GOLD HILL TAILINGS
T08-9501-012

Sample Number	Percent Moisture	Arsenic	Lead	Cyanide	Laboratory Number
GH-SO-007	6.5	21	41	0.2 U	950588-01
GH-SO-014	1.5	97	248	10.1	950588-02
GH-SO-017	12.0	131	627	3.4	950588-03
GH-SO-024	8.9	204	552	13.0	950588-04
GH-SO-025	5.7	180	830	9.2	950588-05
GH-SO-026	6.7	82	1570	4.4	950588-06
GH-SO-028	8.1	272	642	7.7	950588-07
GH-SO-105	7.5	19	94	0.2 U	950588-08
GH-SO-107	1.5	38	198	1.8	950588-09
GH-SO-108	4.9	80	527	1.6	950588-10

U - The element was analyzed for but not detected.
The value reported is the detection limit.

TABLE 6
60 MESH SOIL SAMPLE SIEVING RESULTS
GOLD HILL TAILINGS
T08-9501-012

Sample Number	Intial Weight (g)	Non-Passing Weight (g)	Passing Weight (g)	Percent 60-mesh or smaller
GH-SO-005	449.06	300.73	148.33	33.0
GH-SO-011	433.70	267.84	165.86	38.2
GH-SO-106	344.01	188.82	155.19	45.1

TABLE 7 (page 1 of 3)
QUALIFIED SCREENING XRF DATA RESULTS (mg/Kg)
GOLD HILL TAILINGS
T08-9501-012

ID	TIME	DATE	CrHI	K	Ca	Ti	CrLO	Mn	Fe
GH-SO-001	1418	3/09/95	400 U	53000	10000	1700	530 U	670 U	50000
GH-SO-002	1349	3/09/95	400 U	53000	13000	2800	530 U	1500 J	46000
GH-SO-002D	1358	3/09/95	550 J	52000	13000	2500	530 U	720 J	42000
GH-SO-003	1149	3/09/95	400 U	46000	17000	3100	530 U	1200 J	51000
GH-SO-004	1525	3/09/95	400 U	47000	17000	2300	530 U	1400 J	41000
GH-SO-005	1442	3/09/95	400 U	50000	17000	3100	530 U	700 J	49000
GH-SO-006	1528	3/09/95	400 U	24000	24000	2500	530 U	1300 J	45000
GH-SO-007	1203	3/09/95	640 J	23000	22000	2300	530 U	2200 J	43000
GH-SO-008	1343	3/09/95	400 U	63000	5400	2700	530 U	800 J	42000
GH-SO-009	1141	3/09/95	400 U	54000	12000	3600	530 U	2000 J	46000
GH-SO-010	1549	3/09/95	400 U	48000	23000	2200	530 U	1000 J	56000
GH-SO-011	1412	3/09/95	400 U	52000	21000	2900	530 U	1300 J	63000
GH-SO-012	1508	3/09/95	400 U	53000	9500	2300	530 U	850 J	41000
GH-SO-013	1144	3/09/95	400 U	54000	13000	3100	530 U	950 J	51000
GH-SO-014	1157	3/09/95	400 U	59000	23000	3700	530 U	2300	49000
GH-SO-015	1511	3/09/95	400 U	50000	32000	3700	530 U	1100 J	52000
GH-SO-016	1133	3/09/95	400 U	49000	19000	2700	530 U	1200 J	62000
GH-SO-017	1445	3/09/95	400 U	54000	15000	2700	530 U	2300	47000
GH-SO-018	1114	3/09/95	400 U	55000	19000	2700	530 U	2700	54000
GH-SO-019	1426	3/09/95	400 U	52000	17000	2300	530 U	2300	47000
GH-SO-020	1423	3/09/95	400 U	55000	16000	3000	530 U	930 J	48000
GH-SO-021	1120	3/09/95	400 U	42000	16000	3100	530 U	4600	54000
GH-SO-022	1437	3/09/95	420 J	67000	19000	2900	530 U	3100	28000
GH-SO-023	1538	3/09/95	400 U	62000	16000	2200	530 U	2900	28000
GH-SO-024	1454	3/09/95	400 U	54000	30000	2200	530 U	3000	47000
GH-SO-025	1429	3/09/95	400 U	43000	38000	2200	530 U	4300	46000
GH-SO-026	1448	3/09/95	400 U	39000	22000	1400	530 U	2400	81000
GH-SO-027	1531	3/09/95	670 J	47000	22000	2200	530 U	2500	59000
GH-SO-028	1147	3/09/95	1200 J	54000	20000	2800	530 U	2500	54000
GH-SO-029	1335	3/09/95	890 J	47000	39000	3000	530 U	2600	65000
GH-SO-030	1544	3/09/95	400 U	51000	23000	2900	530 U	670 U	61000
GH-SO-031	1516	3/09/95	600 J	48000	22000	2300	530 U	2300	47000
GH-SO-031D	1519	3/09/95	400 U	51000	23000	3100	530 U	2200 J	53000
GH-SO-032	1502	3/09/95	400 U	39000	26000	1900	530 U	3200	53000
GH-SO-101	1431	3/09/95	520 J	30000	15000	2800	530 U	780 J	43000
GH-SO-102	1420	3/09/95	400 U	34000	16000	1800	530 U	1400 J	20000
GH-SO-103	1514	3/09/95	400 U	58000	5200	1900	530 U	670 U	31000
GH-SO-104	1440	3/09/95	400 U	35000	22000	2800	530 U	2300	29000
GH-SO-105	1117	3/09/95	400 U	34000	14000	2600	530 U	1200 J	26000
GH-SO-106	1340	3/09/95	590 J	52000	12000	3200	530 U	670 U	39000
GH-SO-107	1346	3/09/95	400 U	37000	24000	3500	530 U	2000 J	27000
GH-SO-108	1451	3/09/95	400 U	56000	6300	2000	530 U	770 J	41000
GH-SO-109	1111	3/09/95	840 J	43000	12000	2800	530 U	670 U	36000
GH-SO-110	1559	3/09/95	850 J	38000	19000	3100	530 U	1000 J	46000
GH-SO-110D	1602	3/09/95	920 J	38000	17000	3200	530 U	2700	46000
GH-SO-111	1338	3/09/95	400 U	39000	14000	4100	530 U	2000 J	38000
GH-SO-112	1125	3/09/95	400 U	28000	12000	2500	530 U	1700 J	40000
GH-SO-113	1136	3/09/95	540 J	25000	11000	2800	530 U	1100 J	39000
GH-SO-114	1505	3/09/95	400 U	26000	14000	2700	530 U	1000 J	37000
GH-SO-114A	1541	3/09/95	400 U	25000	14000	2500	530 U	670 U	37000
GH-SO-115	1536	3/09/95	400 U	42000	14000	2400	530 U	1100 J	32000
GH-SO-116	1200	3/09/95	400 U	39000	16000	2800	530 U	980 J	38000

J - The value reported is between 3 and 10 times the standard deviation of a control sample.

U - The element was analyzed for but not detected.

The value reported is equal to 3 times the standard deviation of a control sample.

TABLE 7 (page 2 of 3)
QUALIFIED SCREENING XRF DATA RESULTS (mg/Kg)
GOLD HILL TAILINGS
T08-9501-012

ID	Co	Ni	Cu	Zn	As	Se	Sr	Zr	Mo	Hg
GH-SO-001	350 U	220 U	140 U	460	200 J	55 U	350	420	9 U	80 U
GH-SO-002	350 U	220 U	140 U	190 J	95 U	55 U	370	430	31 J	80 U
GH-SO-002D	1100 J	220 U	140 U	370 J	130 J	55 U	390	450	9 U	80 U
GH-SO-003	540 J	220 U	210 J	410	95 U	55 U	360	480	9 J	110 J
GH-SO-004	560 J	220 U	140 U	370 J	130 J	55 U	330	360	41	80 U
GH-SO-005	350 U	220 U	140 U	450	240 J	55 U	360	380	15 J	80 U
GH-SO-006	350 U	220 U	140 U	330 J	120 J	55 U	360	180	9 U	80 U
GH-SO-007	350 U	220 U	140 U	280 J	95 U	55 U	310	170	9 U	97 J
GH-SO-008	350 U	220 U	140 U	440	95 U	55 U	400	530	9 U	80 U
GH-SO-009	350 U	220 U	140 U	460	130 J	55 U	400	470	41	80 U
GH-SO-010	350 U	220 U	170 J	420	95 U	55 U	410	500	30 J	80 U
GH-SO-011	1000 J	220 U	140 U	650	170 J	55 U	330	620	13 J	80 U
GH-SO-012	520 J	220 U	140 U	270 J	95 U	55 U	320	330	9 U	80 U
GH-SO-013	460 J	220 U	140 U	270 J	95 U	55 U	360	330	23 J	80 U
GH-SO-014	350 U	220 U	140 U	120 U	260 J	55 U	370	400	9 U	130 J
GH-SO-015	420 J	220 U	190 J	270 J	290 J	55 U	470	410	13 J	80 U
GH-SO-016	350 U	250 J	140 U	770	95 U	55 U	370	350	11 J	100 J
GH-SO-017	880 J	260 J	140 U	460	95 U	55 U	370	420	9 U	100 J
GH-SO-018	450 J	220 U	140 U	650	290 J	55 U	360	460	12 J	80 U
GH-SO-019	350 U	220 U	140 U	730	95 U	55 U	340	380	9 U	92 J
GH-SO-020	650 J	220 U	140 U	510	97 J	55 U	350	420	9 U	80 U
GH-SO-021	860 J	220 U	140 U	2900	95 U	55 U	390	360	54	98 J
GH-SO-022	350 U	220 U	180 J	620	180 J	55 U	560	470	25 J	80 U
GH-SO-023	350 U	220 U	140 U	590	250 J	55 U	490	520	20 J	80 U
GH-SO-024	800 J	220 U	140 U	1400	180 J	55 U	560	370	25 J	80 U
GH-SO-025	670 J	220 U	140 U	2300	95 U	55 U	450	340	30 J	80 U
GH-SO-026	390 J	220 U	180 J	1100	95 U	55 U	340	320	9 U	80 U
GH-SO-027	350 U	220 U	140 U	580	250 J	55 U	320	360	35	80 U
GH-SO-028	510 J	220 U	140 U	620	410	55 U	420	310	14 J	80 U
GH-SO-029	350 U	220 U	140 U	990	110 J	55 U	360	360	20 J	80 U
GH-SO-030	400 J	220 U	140 U	560	95 U	55 U	360	350	9 U	80 U
GH-SO-031	350 U	220 U	140 U	830	160 J	55 U	410	330	32	150 J
GH-SO-031D	350 U	220 U	140 U	890	230 J	55 U	470	360	15 J	80 U
GH-SO-032	350 U	220 U	140 U	1200	120 J	55 U	440	280	9 U	80 U
GH-SO-101	350 U	220 U	140 U	360 J	95 U	55 U	310	270	10 J	80 U
GH-SO-102	540 J	220 U	140 U	380 J	95 U	55 U	180	540	9 U	80 U
GH-SO-103	440 J	220 U	140 U	350 J	95 U	55 U	330	300	9 U	80 U
GH-SO-104	350 U	220 U	140 U	610	95 U	55 U	220	450	9 U	80 U
GH-SO-105	570 J	220 U	140 U	370 J	110 J	55 U	330	660	13 J	80 U
GH-SO-106	350 U	220 U	140 U	380 J	120 J	55 U	310	390	27 J	80 U
GH-SO-107	500 J	220 U	140 U	400	95 U	55 U	270	510	26 J	80 U
GH-SO-108	360 J	220 U	140 U	400	95 U	55 U	350	370	9 U	86 J
GH-SO-109	350 U	220 U	140 U	410	95 U	55 U	310	450	9 U	93 J
GH-SO-110	580 J	220 U	230 J	1400	95 U	55 U	330	350	31 J	80 U
GH-SO-110D	350 U	220 U	140 U	1300	120 J	55 U	370	400	39	80 U
GH-SO-111	670 J	220 U	140 U	730	95 U	55 U	340	500	16 J	80 U
GH-SO-112	850 J	220 U	140 U	200 J	95 U	55 U	280	190	9 U	190 J
GH-SO-113	650 J	220 U	140 U	340 J	95 U	55 U	220	280	12 J	85 J
GH-SO-114	890 J	220 U	140 U	390	95 U	55 U	270	220	12 J	80 U
GH-SO-114A	1000 J	220 U	140 U	450	95 U	55 U	220	200	11 J	80 U
GH-SO-115	350 U	220 U	140 U	450	95 U	55 U	290	780	13 J	80 U
GH-SO-116	350 U	220 U	140 U	790	95 U	55 U	250	470	32	86 J

J - The value reported is between 3 and 10 times the standard deviation of a control sample.

U - The element was analyzed for but not detected.

The value reported is equal to 3 times the standard deviation of a control sample.

TABLE 7 (page 3 of 3)
QUALIFIED SCREENING XRF DATA RESULTS (mg/Kg)
GOLD HILL TAILINGS
T08-9501-012

ID	Pb	Rb	Cd	Sn	Sb	Ba	Ag	U	Th
GH-SO-001	690	170	170 U	120 U	60 U	1200	120 U	37 J	51 J
GH-SO-002	1100	220	170 U	120 U	60 U	1100	120 U	31 J	52 J
GH-SO-002D	890	240	170 U	120 U	60 U	1100	150 J	50 J	35 J
GH-SO-003	880	160	170 U	120 U	60 U	1100	120 U	53 J	43 J
GH-SO-004	770	220	170 U	120 U	60 U	1100	120 U	21 U	42 J
GH-SO-005	690	260	170 U	120 U	60 U	1100	120 U	69	57 J
GH-SO-006	80 U	150	170 U	120 U	60 U	750	120 U	21 U	30 J
GH-SO-007	80 U	150	170 U	120 U	60 U	700	120 U	32 J	27 J
GH-SO-008	840	160	170 U	120 U	60 U	1100	120 U	77	63 J
GH-SO-009	890	280	180 J	120 U	60 U	1100	120 U	32 J	51 J
GH-SO-010	1300	230	170 U	120 U	60 U	1100	120 U	37 J	22 U
GH-SO-011	1200	190	170 U	120 U	60 U	1500	240 J	58 J	47 J
GH-SO-012	740	270	170 U	120 U	60 U	920	120 U	21 U	49 J
GH-SO-013	1400	220	170 U	120 U	60 U	1000	120 U	21 U	41 J
GH-SO-014	500	290	170 U	120 U	60 U	1200	120 U	44 J	55 J
GH-SO-015	870	270	170 U	120 U	60 U	1100	120 U	70	56 J
GH-SO-016	1500	230	170 U	120 U	60 U	930	120 U	22 J	51 J
GH-SO-017	770	250	170 U	120 U	60 U	1100	120 U	45 J	59 J
GH-SO-018	730	290	170 U	120 U	60 U	1100	120 U	37 J	52 J
GH-SO-019	810	300	190 J	120 U	60 U	930	120 U	51 J	64 J
GH-SO-020	1000	260	170 U	120 U	60 U	1100	120 U	65 J	31 J
GH-SO-021	1300	260	170 U	120 U	60 U	890	120 U	21 U	33 J
GH-SO-022	230 J	310	280 J	120 U	60 U	1100	120 U	28 J	56 J
GH-SO-023	200 J	290	170 U	120 U	60 U	1100	120 U	58 J	69 J
GH-SO-024	720	340	170 U	120 U	60 U	1100	120 U	46 J	42 J
GH-SO-025	1200	230	260 J	120 U	60 U	940	120 U	34 J	50 J
GH-SO-026	2200	210	170 U	120 U	60 U	850	160 J	48 J	35 J
GH-SO-027	1400	300	170 U	120 U	60 U	950	120 U	24 J	42 J
GH-SO-028	880	310	170 U	120 U	60 U	1000	120 U	32 J	48 J
GH-SO-029	1200	180	190 J	120 U	60 U	1100	120 U	42 J	37 J
GH-SO-030	1500	260	200 J	120 U	60 U	1100	120 U	43 J	64 J
GH-SO-031	760	280	170 U	120 U	60 U	1000	120 U	36 J	76
GH-SO-031D	760	250	170 U	120 U	60 U	1000	120 U	65 J	53 J
GH-SO-032	1000	230	170 U	120 U	71 J	910	120 U	42 J	22 U
GH-SO-101	440	220	170 U	120 U	60 U	720	120 U	39 J	55 J
GH-SO-102	95 J	200	170 U	120 U	60 U	770	120 U	23 J	28 J
GH-SO-103	670	240	170 U	120 U	60 U	960	120 U	28 J	40 J
GH-SO-104	310	190	170 U	120 U	60 U	630	120 U	43 J	35 J
GH-SO-105	80 U	190	170 U	120 U	60 U	700	120 U	27 J	30 J
GH-SO-106	660	220	190 J	120 U	60 U	1100	120 U	34 J	47 J
GH-SO-107	320	180	170 U	120 U	60 U	780	120 U	21 U	27 J
GH-SO-108	710	240	170 U	120 U	60 U	960	120 U	79	36 J
GH-SO-109	540	210	170 U	120 U	60 U	910	120 U	49 J	48 J
GH-SO-110	550	210	210 J	250 J	83 J	890	120 U	41 J	43 J
GH-SO-110D	500	210	170 U	230 J	60 U	850	120 U	36 J	54 J
GH-SO-111	660	200	170 U	120 U	60 U	780	120 U	29 J	39 J
GH-SO-112	84 J	170	170 U	120 U	60 U	580	120 U	21 U	26 J
GH-SO-113	97 J	130	170 U	120 U	60 U	590	120 U	21 U	22 U
GH-SO-114	140 J	170	170 U	120 U	60 U	590	120 U	22 J	32 J
GH-SO-114A	91 J	160	170 U	120 U	60 U	630	120 U	21 U	29 J
GH-SO-115	240 J	240	170 U	120 U	60 U	810	120 U	29 J	40 J
GH-SO-116	490	200	170 U	120 U	60 U	740	120 U	21 U	43 J

J - The value reported is between 3 and 10 times the standard deviation of a control sample.

U - The element was analyzed for but not detected.

The value reported is equal to 3 times the standard deviation of a control sample.

TABLE 8
XRF vs LABORATORY RESULTS COMPARISON
GOLD HILL TAILINGS
T08-9501-012

Sample Number	Arsenic		Lead	
	XRF	LAB	XRF	LAB
GH-SO-007	95 U	21	80 U	41
GH-SO-014	260 J	97	500	248
GH-SO-017	95 U	131	770	627
GH-SO-024	180 J	204	720	552
GH-SO-025	95 U	180	1200	830
GH-SO-026	95 U	82	2200	1570
GH-SO-028	410	272	880	642
GH-SO-105	110 J	19	80 U	94.3
GH-SO-107	95 U	38	320	198
GH-SO-108	95 U	80	710	527
Corr. Factor	0.596		0.983	
Slope	0.672		0.727	
Intercept	-13.3		-14.4	

Note: The XRF values qualified with a "U" were not included in the data regression analysis

J - The value reported is between 3 and 10 times the standard deviation of a control sample.

U - The element was analyzed for but not detected.
The value reported is the detection limit.



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M E M O R A N D U M

TO: Tim Rehder, On-Scene Coordinator
EPA/ERB, Denver

FROM: Kent Alexander, TAT *KA*
Region VIII

DATE: April 14, 1995

SUBJECT: Sampling Activities and Analytical Results Report, Gold Hill Tailings Site;
TDD #T08-9501-012

This memorandum was written to satisfy the requirements of Technical Direction Document (TDD) T08-9501-012, issued to the Ecology and Environment, Inc., Technical Assistance Team (TAT) by the U. S. Environmental Protection Agency Emergency Response Branch (EPA/ERB).

Enclosed is the Gold Hill Tailings site Sampling Activities and Analytical Results Report. Also enclosed are copies of the survey questionnaire and a separate table identifying the trailer owners. If there are any questions or comments, feel free to give me a call.

KA:sp
Enclosures

MEMORANDUM

TO: Tim Rehder, On-Scene Coordinator
EPA/ERB, Denver

FROM: Kent Alexander, TAT
Region VIII

DATE: April 14, 1995

SUBJECT: Sampling Activities and Analytical Results Report, Gold Hill Tailings Site;
TDD #T08-9501-012

DRAFT

This memorandum was written to satisfy the requirements of Technical Direction Document (TDD) T08-9501-012, issued to the Ecology and Environment, Inc., Technical Assistance Team (TAT) by the U. S. Environmental Protection Agency Emergency Response Branch (EPA/ERB).

Enclosed is the Gold Hill Tailings site Sampling Activities and Analytical Results Report. Also enclosed are copies of the survey questionnaire and a separate table identifying the trailer owners. If there are any questions or comments, feel free to give me a call.

KA:sp
Enclosures

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FILE PLAN
2.09.01

DRAFT

**SAMPLING ACTIVITIES AND ANALYTICAL RESULTS REPORT
GOLD HILL TAILINGS
COLORADO SPRINGS, COLORADO
TDD #T08-9501-012**

Prepared for:

**U. S. Environmental Protection Agency
Emergency Response Branch
Waste Management Division
Tim Rehder, On-Scene Coordinator**

Prepared by:

**Ecology and Environment, Inc.
Technical Assistance Team
Kent Alexander, Project Manager**

Date Submitted: April 14, 1995

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**SAMPLING ACTIVITIES AND ANALYTICAL RESULTS REPORT
GOLD HILL TAILINGS
COLORADO SPRINGS, COLORADO
TDD #T08-9501-012**

1.0 INTRODUCTION

The Ecology and Environment, Inc., Technical Assistance Team (TAT) was tasked by the Region VIII U.S. Environmental Protection Agency/Emergency Response Branch (EPA/ERB) under Technical Direction Document (TDD) #T08-9501-012, to characterize tailings material in the northwest corner of a tailings pile at the Gold Hill Tailings site, and soil from an adjacent occupied mobile home park. On February 22, 1995, TAT members Kent Alexander and Amy Estey, and EPA representatives Johanna Miller, Chris Weis, and Tim Rehder mobilized to the site, conducted sampling activities, and demobilized from the site.

The TAT collected 13 interior dust samples and 11 water samples from homes in the mobile home park; 32 soil samples from the tailings pile; and 16 soil samples from the trailer park. The interior dust samples were analyzed for total suspended particulates, arsenic, and lead. All soil samples were screened with a Spectrace 9000 X-Ray Fluorescence (XRF) instrument. Based on XRF results, seven soil samples from the tailings pile and three soil samples from the adjacent trailer park were submitted to an independent laboratory for arsenic, lead, and cyanide analyses. Two soil samples from the tailings pile and one soil sample from the adjacent trailer park were sieved with a 60 mesh sieve to determine particle size. All water samples were analyzed for arsenic and lead.

2.0 DESCRIPTION AND BACKGROUND

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The Gold Hill Tailings site is located in Colorado Springs, Colorado. The tailings pile is 170 acres in size and covers most of the eastern half of Section 14, and portions of the western edge of Section 13, Township 14 South, Range 67 West. The site is bounded by Fountain Creek and Highway 24 on the north, 21st Street on the west, Rio Grand Street and Moreno Avenue on the south, and the A-1 mobile village on the east (Figure 1). The Gold Hill Tailings site was owned by various entities following its initial construction by the Telluride Reduction Company in 1901. In 1903, ownership passed to the General Metals Company of New York, and in 1905, the mill was purchased by the Golden Cycle

Mining Company, which operated at the site from 1905 until 1949, and produced the tailings at the site. Most of the ore processed at the Golden Cycle Mill was silicious or basic ore from the Cripple Creek Mining District. This ore contained very small amounts of antimony, arsenic, copper, lead, mercury, silver, and zinc. Gold recovery processes used at the mill included amalgamation, cyanidation, cyanide sand leaching, and cyanide slime leaching. The mill also processed a variety of complex sulphide ores from other mining districts in Colorado. Mill operations were modified during World War II so that zinc ores could be processed for the war effort. The mill was dismantled in 1950.

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During the sampling event on February 22, 1995, the TAT observed positive evidence that the tailings pile is used as a play area for neighboring children and adults. The TAT noted hand and foot prints in the tailings pile, and actually observed several people walking through or around the site.

3.0 SAMPLING ACTIVITIES

DRAFT

There were five individuals involved in the Gold Hill Tailings site sampling effort. TAT member Kent Alexander and EPA representative Johanna Miller collected 32 soil samples from the tailings pile. These samples were collected from four grid lines across the slope of the pile. Each location was sampled in a 5-point cross pattern. Most of the soil samples were collected from the bottom of on-site ravines. To help characterize the entire pile and degree of erosion, samples were collected from two locations at the bottom of the ravine, two locations midway up the ravine embankment, and two locations at the top of the ravine embankment. These locations from bottom to top were designated GH-SO-24, GH-SO-25, GH-SO-26, GH-SO-31, GH-SO-30, and GH-SO-29. For quality control purposes, sample locations GH-SO-18 and GH-SO-19; and GH-SO-31 and GH-SO-32 were collocated. To provide an accurate sample location map, all samples were surveyed with a total station.

TAT member Amy Estey, and EPA's Chris Weis and On-scene Coordinator Tim Rehder, collected interior dust samples, soil samples and water samples from 12 residences at the A-1 Mobile Village. The dust samples were collected with a high-volume sampler that was modified to vacuum a premeasured area. A 1/3 square meter template was used in three

locations, resulting in a total vacuumed area of 1 square meter. One residence, sample location GH-DU-007, was vacuumed in six locations for a total vacuumed area of 2 square meters. One home, sample location GH-DU-013, was designated a blank filter for quality control purposes. A water sample was collected concurrent with each home that was dust sampled, with the exception of sample location GH-WA-004. All water samples were preserved with hydrochloric acid to a pH of less than 2. One or two soil samples were collected from the yards of each participating resident. Sample GH-SO-114 was collocated for quality control (GH-SO-114A). All soil samples locations are depicted on Figure 2.

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4.0 ANALYTICAL RESULTS

Interior dust samples were analyzed for total suspended particulates, arsenic, and lead; analytical results are presented in Table 3. Water samples were analyzed for arsenic and lead; Table 4 contains analytical results. All water arsenic results were below one-half the drinking water regulations and health advisory limits. Two of the lead water results (GH-WA-011 and GH-WA-012) failed the drinking water regulations and health advisory limits.

Ten soil samples were analyzed for arsenic, lead, and cyanide; all three elements were detected. The highest arsenic value was 204 parts per million (ppm); the highest lead value was 1,570 ppm, and the highest cyanide value was 10.1 ppm. All laboratory soil results are presented in Table 5. Three soil samples were completely dried and sieved through a 60-mesh sieve. The soil was weighed before sieving; the soil that did not pass through the 60-mesh sieve was also weighed. Table 6 presents sieving results.

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All soil samples were screened with the XRF, the results of which are presented in Table 7. The collocated quality control samples correlated well for most elements; however, arsenic, mercury, molybdenum, and thorium did not meet the relative percent difference (RPD) criteria on one of three samples. The internal quality control samples also performed well; however, copper, mercury, and zinc did not meet the RPD criteria for one of the three samples, and cobalt, manganese, molybdenum, and uranium did not meet the RPD criteria for two of the three internal QC samples. The RPD criteria does not mean the data is invalid, but does indicate that results should be used with caution because the quantitation may not be accurate.

A comparison was made between XRF soil data results and laboratory soil data results. Table 8 presents comparison results. The lead data corresponded well with a correlation factor of 0.983. All XRF data is biased a little high, which is evident because the slope is at 0.727. Arsenic results did not correspond well. For this reason, and because the XRF did have one RPD value for arsenic out, the XRF arsenic data is questionable.

5.0 SUMMARY

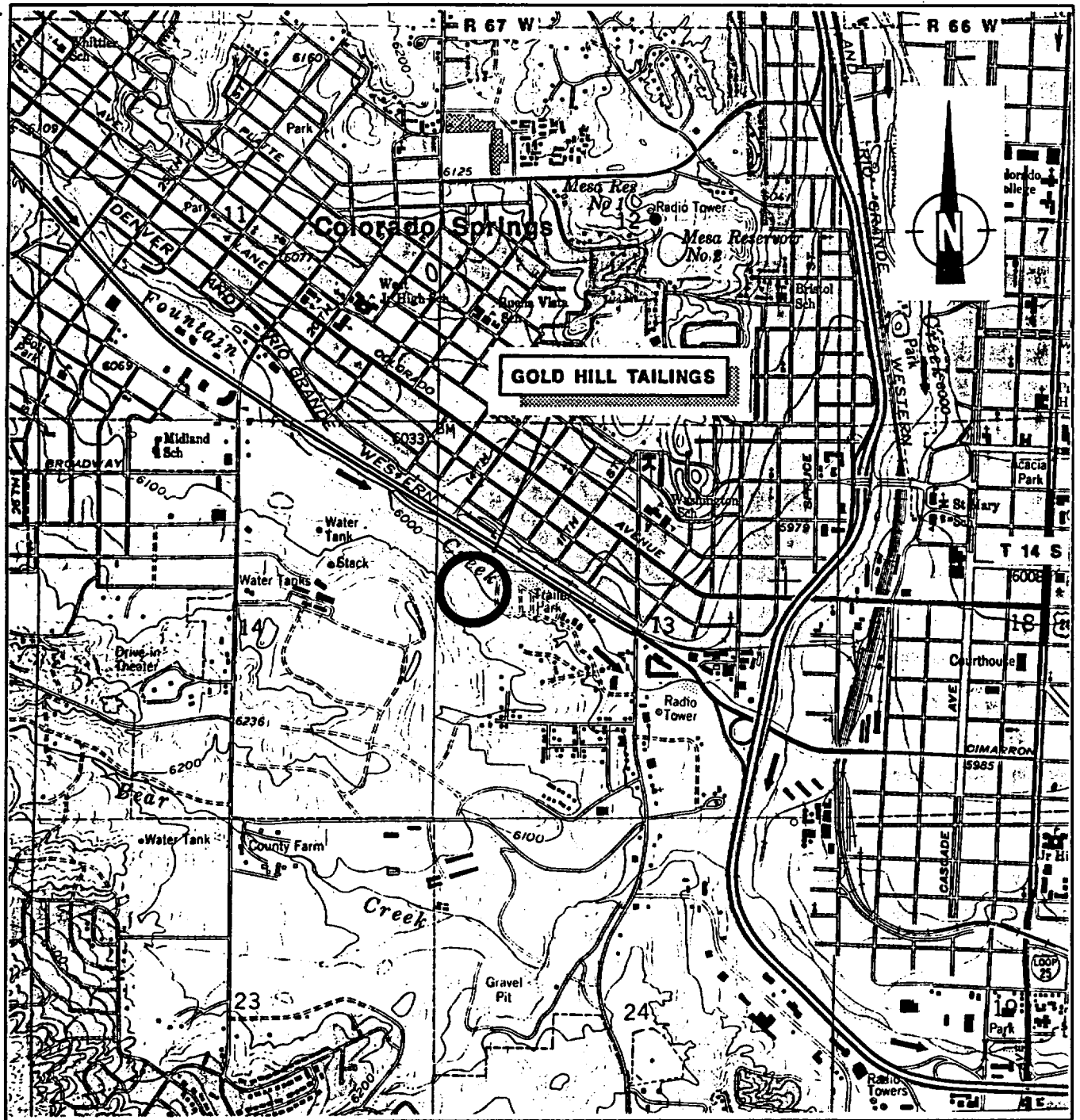
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The TAT collected 13 interior dust samples, and 11 water samples, from homes in a mobile home park adjacent to the site, 16 soil samples from the mobile home park, and 32 soil samples from the Gold Hill Tailings pile. The interior dust samples were analyzed for total suspended particulates, arsenic, and lead. All soil samples were screened with a Spectrace 9000 XRF. Ten soil samples were submitted to an independent laboratory for arsenic, lead, and cyanide analyses. Three soil samples were also sieved with a 60 mesh sieve to determine particle size. All water samples were analyzed for arsenic and lead.

Lead was detected in water taken from two homes at levels above the drinking water regulations and health advisory limits. Arsenic was not detected at above one-half the drinking water regulations and health advisory limits in any home. All dust and soil sample results are presented in report tables. The XRF arsenic results are questionable and should not be used.

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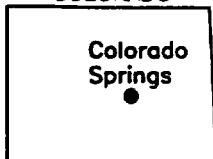
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Source: Colorado Springs Quadrangle, Colorado. USGS, 1975

0 1/2 1 MILE

LOCATION MAP
COLORADO



LEGEND



Site location

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TECHNICAL ASSISTANCE TEAM FOR EMERGENCY
RESPONSE, REMOVAL AND PREVENTION
EPA CONTRACT 68-WO-0037

TITLE:

GOLD HILL TAILINGS
Colorado Springs, Colorado
SITE LOCATION MAP

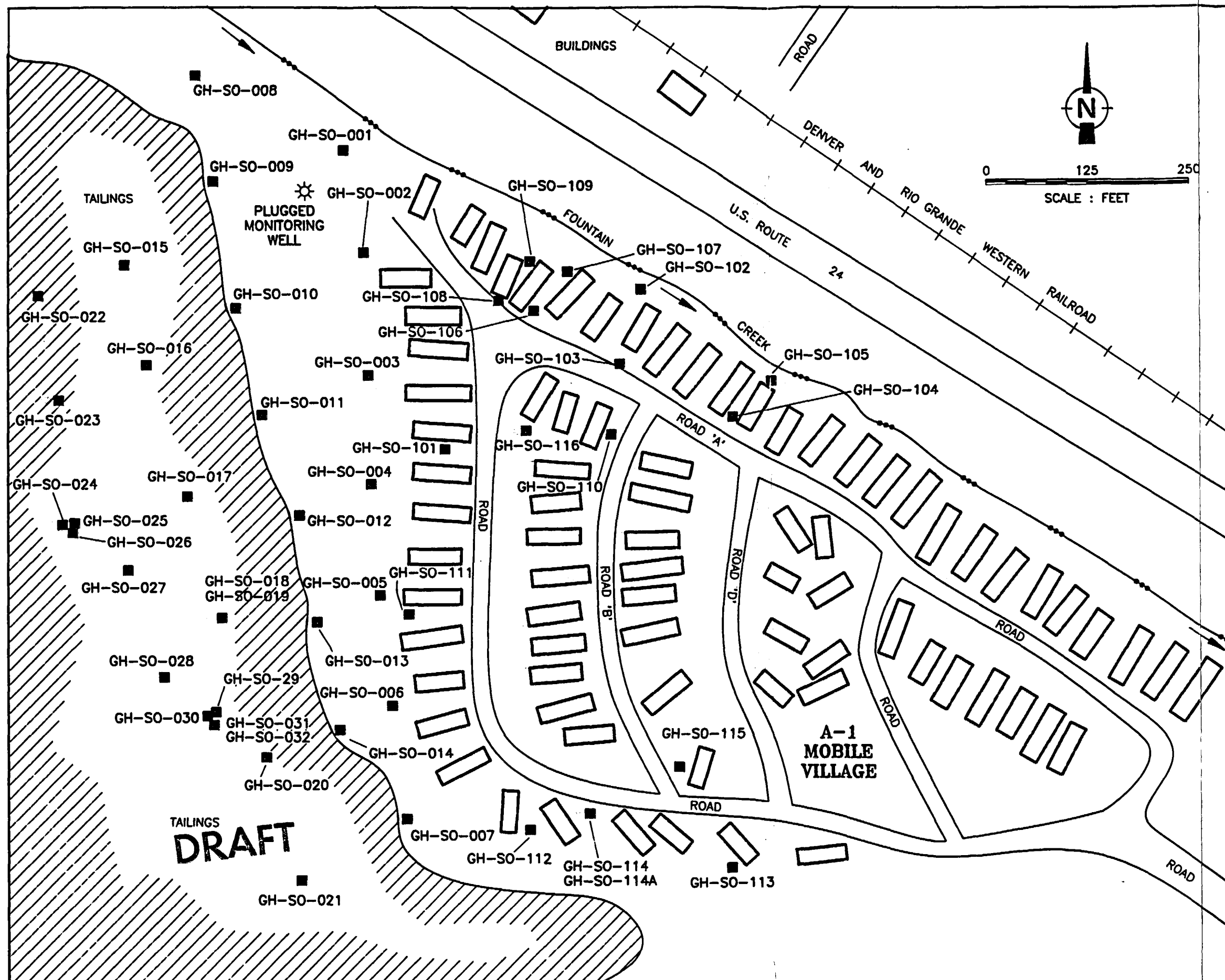
T.D.D. T08-9501-012

ZTGOLDH3

ecology & environment, inc.
DENVER, COLORADO

FIG. 1

Date: 04/14/95 Drawn by: KA Scale: _____



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LEGEND

-  Plugged monitoring well
-  Soil sample location

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TECHNICAL ASSISTANCE TEAM FOR EMERGENCY RESPONSE, REMOVAL AND PREVENTION EPA CONTRACT 68-WO-0037	
TITLE: GOLD HILL TAILINGS Colorado Springs, Colorado SAMPLE LOCATION MAP	
T.D.D. T08-9501-012	ZTGOLDH2
ecology & environment, inc. DENVER, COLORADO	FIG. 2
Date: 04/12/95 Drawn by: KA Scale: _____	

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TABLE 1 (page 1 of 2)
SAMPLE DOCUMENT INFORMATION
GOLD HILL TAILINGS
T08-9501-012

Sample Number	Date	Time	Analyses / Filer #	Sample Tag Number	COC Number
GH-DU-001	02/22/95	1005	As, Pb & TSP / W-039	8-123672	8-21315
GH-DU-002	02/22/95	1100	As, Pb & TSP / W-038	8-123673	8-21315
GH-DU-003	02/22/95	1116	As, Pb & TSP / W-037	8-123674	8-21315
GH-DU-004	02/22/95	1155	As, Pb & TSP / W-036	8-123675	8-21315
GH-DU-005	02/22/95	1210	As, Pb & TSP / W-030	8-123676	8-21315
GH-DU-006	02/22/95	1336	As, Pb & TSP / W-042	8-123677	8-21315
GH-DU-007	02/22/95	1400	As, Pb & TSP / W-041	8-123678	8-21315
GH-DU-008	02/22/95	1420	As, Pb & TSP / W-040	8-123679	8-21315
GH-DU-009	02/22/95	1445	As, Pb & TSP / W-035	8-123680	8-21315
GH-DU-010	02/22/95	1515	As, Pb & TSP / W-033	8-123681	8-21315
GH-DU-011	02/22/95	1535	As, Pb & TSP / W-032	8-123682	8-21315
GH-DU-012	02/22/95	1600	As, Pb & TSP / W-031	8-123683	8-21315
GH-DU-013	02/22/95	1620	As, Pb & TSP / N/A	8-123684	8-21315
GH-SO-001	02/22/95	1050	XRF	N/A	N/A
GH-SO-002	02/22/95	1054	XRF	N/A	N/A
GH-SO-003	02/22/95	1057	XRF	N/A	N/A
GH-SO-004	02/22/95	1100	XRF	N/A	N/A
GH-SO-005	02/22/95	1102	XRF	N/A	N/A
GH-SO-006	02/22/95	1106	XRF	N/A	N/A
GH-SO-007	02/22/95	1109	XRF, As, Pb & CN	8-123651	8-21314
GH-SO-008	02/22/95	1115	XRF	N/A	N/A
GH-SO-009	02/22/95	1120	XRF	N/A	N/A
GH-SO-010	02/22/95	1124	XRF	N/A	N/A
GH-SO-011	02/22/95	1128	XRF	N/A	N/A
GH-SO-012	02/22/95	1135	XRF	N/A	N/A
GH-SO-013	02/22/95	1139	XRF	N/A	N/A
GH-SO-014	02/22/95	1143	XRF, As, Pb & CN	8-123652	8-21314
GH-SO-015	02/22/95	1155	XRF	N/A	N/A
GH-SO-016	02/22/95	1159	XRF	N/A	N/A
GH-SO-017	02/22/95	1203	XRF, As, Pb & CN	8-123653	8-21314
GH-SO-018	02/22/95	1208	XRF	N/A	N/A
GH-SO-019	02/22/95	1208	XRF	N/A	N/A
GH-SO-020	02/22/95	1213	XRF	N/A	N/A
GH-SO-021	02/22/95	1219	XRF	N/A	N/A
GH-SO-022	02/22/95	1355	XRF	N/A	N/A
GH-SO-023	02/22/95	1403	XRF	N/A	N/A
GH-SO-024	02/22/95	1412	XRF, As, Pb & CN	8-123654	8-21314
GH-SO-025	02/22/95	1419	XRF, As, Pb & CN	8-123655	8-21314
GH-SO-026	02/22/95	1426	XRF, As, Pb & CN	8-123656	8-21314
GH-SO-027	02/22/95	1434	XRF	N/A	N/A
GH-SO-028	02/22/95	1443	XRF, As, Pb & CN	8-123657	8-21314
GH-SO-029	02/22/95	1450	XRF	N/A	N/A
GH-SO-030	02/22/95	1453	XRF	N/A	N/A

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TABLE 1 (page 2 of 2)
SAMPLE DOCUMENT INFORMATION
GOLD HILL TAILINGS
T08-9501-012

Sample Number	Date	Time	Analyses / Filer #	Sample Tag Number	COC Number
GH-SO-031	02/22/95	1456	XRF	N/A	N/A
GH-SO-032	02/22/95	1458	XRF	N/A	N/A
GH-SO-101	02/22/95	1010	XRF	N/A	N/A
GH-SO-102	02/22/95	1055	XRF	N/A	N/A
GH-SO-103	02/22/95	1100	XRF	N/A	N/A
GH-SO-104	02/22/95	1122	XRF	N/A	N/A
GH-SO-105	02/22/95	1125	XRF, As, Pb & CN	8-123658	8-21314
GH-SO-106	02/22/95	1140	XRF	N/A	N/A
GH-SO-107	02/22/95	1145	XRF, As, Pb & CN	8-123659	8-21314
GH-SO-108	02/22/95	1205	XRF, As, Pb & CN	8-123660	8-21314
GH-SO-109	02/22/95	1210	XRF	N/A	N/A
GH-SO-110	02/22/95	1405	XRF	N/A	N/A
GH-SO-111	02/22/95	1425	XRF	N/A	N/A
GH-SO-112	02/22/95	1450	XRF	N/A	N/A
GH-SO-113	02/22/95	1520	XRF	N/A	N/A
GH-SO-114	02/22/95	1535	XRF	N/A	N/A
GH-SO-114A	02/22/95	1535	XRF	N/A	N/A
GH-SO-115	02/22/95	1600	XRF	N/A	N/A
GH-SO-116	02/22/95	1835	XRF	N/A	N/A
GH-WA-001	02/22/95	1005	As & Pb	8-123661	8-21313
GH-WA-002	02/22/95	1050	As & Pb	8-123662	8-21313
GH-WA-003	02/22/95	1120	As & Pb	8-123663	8-21313
GH-WA-005	02/22/95	1200	As & Pb	8-123664	8-21313
GH-WA-006	02/22/95	1330	As & Pb	8-123665	8-21313
GH-WA-007	02/22/95	1400	As & Pb	8-123666	8-21313
GH-WA-008	02/22/95	1440	As & Pb	8-123667	8-21313
GH-WA-009	02/22/95	1445	As & Pb	8-123668	8-21313
GH-WA-010	02/22/95	1510	As & Pb	8-123669	8-21313
GH-WA-011	02/22/95	1530	As & Pb	8-123670	8-21313
GH-WA-012	02/22/95	1555	As & Pb	8-123671	8-21313

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**TABLE 2
TOTAL STATION RESULTS
GOLD HILL TAILINGS
T08-9501-012**

Location	VD Feet	HA ° ' "	HD Feet	Rod Feet	Tripod Inches	E - W Coord.	N - S Coord.	Elev Feet
Top of red/white tower to N	--	0 0 0	--	--	--	--	--	--
GH-SO-022	26.15	256 28 40	300.20	6.0	56.75	-291.9	-70.2	15.4
GH-SO-015	8.48	270 12 0	210.22	6.0	56.75	-210.2	0.7	-2.2
GH-SO-016	11.63	235 30 20	175.90	6.0	56.75	-145.0	-99.6	0.9
GH-SO-023	26.00	232 4 20	285.04	6.0	56.75	-224.8	-175.2	15.3
GH-SO-024	35.49	208 18 40	350.37	6.0	56.75	-166.2	-308.5	24.8
GH-SO-025	41.59	207 43 0	346.81	7.0	56.75	-161.3	-307.0	29.9
GH-SO-026	53.76	206 33 20	350.21	6.0	56.75	-156.6	-313.3	43.0
GH-SO-027	44.68	193 33 40	339.85	6.0	56.75	-79.7	-330.4	34.0
GH-SO-028	55.52	179 40 0	430.43	8.4	56.75	2.5	-430.4	42.4
GH-SO-029	55.36	170 46 40	467.71	6.0	56.75	75.0	-461.7	44.6
GH-SO-030	50.85	171 24 0	464.31	7.0	56.75	69.4	-459.1	39.1
GH-SO-031 & 032	49.67	170 45 20	456.77	14.4	56.75	73.4	-450.8	30.5
GH-SO-013	20.32	154 19 40	342.01	8.0	56.75	148.2	-308.2	7.6
GH-SO-014	33.97	152 21 0	471.38	8.0	56.75	218.8	-417.5	21.2
GH-SO-020	44.80	162 47 20	501.40	8.4	56.75	148.4	-478.9	31.7
GH-SO-018 & 019	39.22	173 4 0	346.05	8.4	56.75	41.8	-343.5	26.1
GH-SO-007	45.96	145 53 0	586.10	6.0	56.75	328.7	-485.2	35.2
GH-SO-006	33.28	144 17 40	453.15	6.0	56.75	264.5	-368.0	22.6
GH-SO-005	16.61	140 45 0	328.45	6.0	56.75	207.8	-254.3	5.9
GH-SO-004	7.60	131 45 20	206.26	6.0	56.75	153.9	-137.4	-3.1
GH-SO-003	1.82	100 25 20	105.00	6.0	56.75	103.3	-19.0	-8.9
GH-SO-002	-4.02	23 27 20	122.12	6.0	56.75	48.6	112.0	-14.7
Plugged monitoring well	-2.93	344 27 0	160.72	6.0	56.75	-43.1	154.8	-13.7
GH-SO-001	-7.98	355 13 20	216.46	6.0	56.75	-18.0	215.7	-18.7
GH-SO-008	-6.04	317 46 40	315.96	6.0	56.75	-212.3	234.0	-16.8
GH-SO-009	-2.25	310 50 40	194.84	6.0	56.75	-147.4	127.4	-13.0
GH-SO-010	3.06	270 57 40	70.32	6.0	56.75	-70.3	1.2	-7.7
GH-SO-011	7.44	178 16 20	108.04	6.0	56.75	3.3	-108.0	-3.3
GH-SO-012	9.02	157 1 20	217.20	6.0	56.75	84.8	-200.0	-1.7
GH-SO-017	24.27	191 10 0	230.44	8.0	56.75	-44.6	-226.1	11.5
GH-SO-021	53.74	158 14 0	642.96	14.4	56.75	238.4	-597.1	34.6
Top of tower to E	--	102 15 0	--	--	--	--	--	--
SW corner of 1st trailer	-8.34	24 18 20	193.95	5.0	56.75	79.8	176.8	-18.1
SE corner of 1st trailer	-8.75	27 1 0	196.40	5.0	56.75	89.2	175.0	-18.5
SW corner of pavement	-8.32	28 40 20	162.71	5.0	56.75	78.1	142.8	-18.0
NW corner of 2nd trailer	-7.94	38 18 0	121.85	5.0	56.75	75.5	95.6	-17.7
SW corner of 2nd trailer	-7.45	42 23 0	117.03	5.0	56.75	78.9	86.4	-17.2
NW corner of 4th trailer	-6.70	75 16 0	140.84	5.0	56.75	136.2	35.8	-16.4
SW corner of 4th trailer	-6.66	80 0 0	142.10	5.0	56.75	139.9	24.7	-16.4
NW corner of 5th trailer	-4.28	96 0 20	150.70	5.0	56.75	149.9	-15.8	-14.0
SW corner of 5th trailer	-3.88	100 22 40	157.40	5.0	56.75	154.8	-28.4	-13.6

Note: The two locations that have a rod height of 14.4 feet are approximate values.
Note: All of the elevations are relative to a randomly chosen set point.

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TABLE 3
PRELIMINARY INORGANIC DUST SAMPLE RESULTS (ug)
GOLD HILL TAILINGS
T08-9501-012

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Sample Number	Particulate (ug)	Arsenic (ug)	Lead (ug)	Area m2
GH-DU-001	5,200,000	200	1300	1
GH-DU-002	2,800,000	110	650	1
GH-DU-003	20,000,000	830	430	1
GH-DU-004	2,400,000	130	680	1
GH-DU-005	8,800,000	580	3800	1
GH-DU-006	12,000,000	640	3600	1
GH-DU-007	4,500,000	85	450	2
GH-DU-008	4,000,000	192	1500	1
GH-DU-009	5,600,000	151	570	1
GH-DU-010	2,700,000	59	330	1
GH-DU-011	8,700,000	230	780	1
GH-DU-012	14,000,000	470	2100	1
GH-DU-013	100,000 U	25 U	25 U	Blank

250 ug/g
 232
 41.5
 283
 431
 353
 100
 375
 101
 122
 289.6
 150

U - The element was analyzed for but not detected.
 The value reported is the detection limit.

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ug 3800ug
 8.8g

Auran Pernel

TABLE 4
PRELIMINARY INORGANIC WATER SAMPLE RESULTS (mg/L)
GOLD HILL TAILINGS
T08-9501-012

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Sample Number	Arsenic	Lead	Laboratory Number
GH-WA-001	0.023	0.005 U	950588-11
GH-WA-002	0.007	0.006	950588-12
GH-WA-003	0.018	0.005 U	950588-13
GH-WA-005	0.005 U	0.005 U	950588-14
GH-WA-006	0.008	0.005 U	950588-15
GH-WA-007	0.005 U	0.005 U	950588-16
GH-WA-008	0.009	0.005 U	950588-17
GH-WA-009	0.005 U	0.005 U	950588-18
GH-WA-010	0.006	0.009	950588-19
GH-WA-011	0.005 U	0.019	950588-20
GH-WA-012	0.005 U	0.016	950588-21

U - The element was analyzed for but not detected.
The value reported is the detection limit.

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TABLE 5
PRELIMINARY INORGANIC SOIL SAMPLE RESULTS (mg/Kg)
GOLD HILL TAILINGS
T08-9501-012

Sample Number	Percent Moisture	Arsenic	Lead	Cyanide	Laboratory Number
GH-SO-007	6.5	21	41	0.2 U	950588-01
GH-SO-014	1.5	97	248	10.1	950588-02
GH-SO-017	12.0	131	627	3.4	950588-03
GH-SO-024	8.9	204	552	13.0	950588-04
GH-SO-025	5.7	180	830	9.2	950588-05
GH-SO-026	6.7	82	1570	4.4	950588-06
GH-SO-028	8.1	272	642	7.7	950588-07
GH-SO-105	7.5	19	94	0.2 U	950588-08
GH-SO-107	1.5	38	198	1.8	950588-09
GH-SO-108	4.9	80	527	1.6	950588-10

U - The element was analyzed for but not detected.
The value reported is the detection limit.

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TABLE 6
60 MESH SOIL SAMPLE SIEVING RESULTS
GOLD HILL TAILINGS
T08-9501-012

Sample Number	Initial Weight (g)	Non-Passing Weight (g)	Passing Weight (g)	Percent 60-mesh or smaller
GH-SO-005	449.06	300.73	148.33	33.0
GH-SO-011	433.70	267.84	165.86	38.2
GH-SO-106	344.01	188.82	155.19	45.1

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TABLE 7 (page 1 of 3)
QUALIFIED SCREENING XRF DATA RESULTS (mg/Kg)
GOLD HILL TAILINGS
T08-9501-012

ID	TIME	DATE	CrHI	K	Ca	Ti	CrLO	Mn	Fe
GH-SO-001	1418	3/09/95	400 U	53000	10000	1700	530 U	670 U	50000
GH-SO-002	1349	3/09/95	400 U	53000	13000	2800	530 U	1500 J	46000
GH-SO-002D	1358	3/09/95	550 J	52000	13000	2500	530 U	720 J	42000
GH-SO-003	1149	3/09/95	400 U	46000	17000	3100	530 U	1200 J	51000
GH-SO-004	1525	3/09/95	400 U	47000	17000	2300	530 U	1400 J	41000
GH-SO-005	1442	3/09/95	400 U	50000	17000	3100	530 U	700 J	49000
GH-SO-006	1528	3/09/95	400 U	24000	24000	2500	530 U	1300 J	45000
GH-SO-007	1203	3/09/95	640 J	23000	22000	2300	530 U	2200 J	43000
GH-SO-008	1343	3/09/95	400 U	63000	5400	2700	530 U	800 J	42000
GH-SO-009	1141	3/09/95	400 U	54000	12000	3600	530 U	2000 J	46000
GH-SO-010	1549	3/09/95	400 U	48000	23000	2200	530 U	1000 J	56000
GH-SO-011	1412	3/09/95	400 U	52000	21000	2900	530 U	1300 J	63000
GH-SO-012	1508	3/09/95	400 U	53000	9500	2300	530 U	850 J	41000
GH-SO-013	1144	3/09/95	400 U	54000	13000	3100	530 U	950 J	51000
GH-SO-014	1157	3/09/95	400 U	59000	23000	3700	530 U	2300	49000
GH-SO-015	1511	3/09/95	400 U	50000	32000	3700	530 U	1100 J	52000
GH-SO-016	1133	3/09/95	400 U	49000	19000	2700	530 U	1200 J	62000
GH-SO-017	1445	3/09/95	400 U	54000	15000	2700	530 U	2300	47000
GH-SO-018	1114	3/09/95	400 U	55000	19000	2700	530 U	2700	54000
GH-SO-019	1426	3/09/95	400 U	52000	17000	2300	530 U	2300	47000
GH-SO-020	1423	3/09/95	400 U	55000	16000	3000	530 U	630 J	48000
GH-SO-021	1120	3/09/95	400 U	42000	16000	3100	530 U	4600	54000
GH-SO-022	1437	3/09/95	420 J	67000	19000	2900	530 U	3100	28000
GH-SO-023	1538	3/09/95	400 U	62000	16000	2200	530 U	2900	28000
GH-SO-024	1454	3/09/95	400 U	54000	30000	2200	530 U	3000	47000
GH-SO-025	1429	3/09/95	400 U	43000	38000	2200	530 U	4300	46000
GH-SO-026	1448	3/09/95	400 U	39000	22000	1400	530 U	2400	81000
GH-SO-027	1531	3/09/95	670 J	47000	22000	2200	530 U	2500	59000
GH-SO-028	1147	3/09/95	1200 J	54000	20000	2800	530 U	2500	54000
GH-SO-029	1335	3/09/95	890 J	47000	39000	3000	530 U	2600	65000
GH-SO-030	1544	3/09/95	400 U	51000	23000	2900	530 U	670 U	61000
GH-SO-031	1516	3/09/95	600 J	48000	22000	2300	530 U	2300	47000
GH-SO-031D	1519	3/09/95	400 U	51000	23000	3100	530 U	2200 J	53000
GH-SO-032	1502	3/09/95	400 U	39000	26000	1900	530 U	3200	53000
GH-SO-101	1431	3/09/95	520 J	30000	15000	2800	530 U	780 J	43000
GH-SO-102	1420	3/09/95	400 U	34000	16000	1800	530 U	1400 J	20000
GH-SO-103	1514	3/09/95	400 U	58000	5200	1900	530 U	670 U	31000
GH-SO-104	1440	3/09/95	400 U	35000	22000	2800	530 U	2300	29000
GH-SO-105	1117	3/09/95	400 U	34000	14000	2600	530 U	1200 J	26000
GH-SO-106	1340	3/09/95	590 J	52000	12000	3200	530 U	670 U	39000
GH-SO-107	1346	3/09/95	400 U	37000	24000	3500	530 U	2000 J	27000
GH-SO-108	1451	3/09/95	400 U	56000	6300	2000	530 U	770 J	41000
GH-SO-109	1111	3/09/95	840 J	43000	12000	2800	530 U	670 U	36000
GH-SO-110	1559	3/09/95	850 J	38000	19000	3100	530 U	1000 J	46000
GH-SO-110D	1602	3/09/95	920 J	38000	17000	3200	530 U	2700	46000
GH-SO-111	1338	3/09/95	400 U	39000	14000	4100	530 U	2000 J	38000
GH-SO-112	1125	3/09/95	400 U	28000	12000	2500	530 U	1700 J	40000
GH-SO-113	1136	3/09/95	540 J	25000	11000	2800	530 U	1100 J	39000
GH-SO-114	1505	3/09/95	400 U	26000	14000	2700	530 U	1000 J	37000
GH-SO-114A	1541	3/09/95	400 U	25000	14000	2500	530 U	670 U	37000
GH-SO-115	1536	3/09/95	400 U	42000	14000	2400	530 U	1100 J	32000
GH-SO-116	1200	3/09/95	400 U	39000	16000	2800	530 U	980 J	38000

J - The value reported is between 3 and 10 times the standard deviation of a control sample.

U - The element was analyzed for but not detected.

The value reported is equal to 3 times the standard deviation of a control sample.

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TABLE 7 (page 2 of 3)
QUALIFIED SCREENING XRF DATA RESULTS (mg/Kg)
GOLD HILL TAILINGS
T08-9501-012

ID	Co	Ni	Cu	Zn	As	Se	Sr	Zr	Mo	Hg
GH-SO-001	350 U	220 U	140 U	460	200 J	55 U	350	420	9 U	80 U
GH-SO-002	350 U	220 U	140 U	190 J	95 U	55 U	370	430	31 J	80 U
GH-SO-002D	1100 J	220 U	140 U	370 J	130 J	55 U	390	450	9 U	80 U
GH-SO-003	540 J	220 U	210 J	410	95 U	55 U	360	480	9 J	110 J
GH-SO-004	560 J	220 U	140 U	370 J	130 J	55 U	330	360	41	80 U
GH-SO-005	350 U	220 U	140 U	450	240 J	55 U	360	380	15 J	80 U
GH-SO-006	350 U	220 U	140 U	330 J	120 J	55 U	360	180	9 U	80 U
GH-SO-007	350 U	220 U	140 U	280 J	95 U	55 U	310	170	9 U	97 J
GH-SO-008	350 U	220 U	140 U	440	95 U	55 U	400	530	9 U	80 U
GH-SO-009	350 U	220 U	140 U	460	130 J	55 U	400	470	41	80 U
GH-SO-010	350 U	220 U	170 J	420	95 U	55 U	410	500	30 J	80 U
GH-SO-011	1000 J	220 U	140 U	650	170 J	55 U	330	620	13 J	80 U
GH-SO-012	520 J	220 U	140 U	270 J	95 U	55 U	320	330	9 U	80 U
GH-SO-013	460 J	220 U	140 U	270 J	95 U	55 U	360	330	23 J	80 U
GH-SO-014	350 U	220 U	140 U	120 U	260 J	55 U	370	400	9 U	130 J
GH-SO-015	420 J	220 U	190 J	270 J	290 J	55 U	470	410	13 J	80 U
GH-SO-016	350 U	250 J	140 U	770	95 U	55 U	370	350	11 J	100 J
GH-SO-017	880 J	260 J	140 U	460	95 U	55 U	370	420	9 U	100 J
GH-SO-018	450 J	220 U	140 U	650	290 J	55 U	360	460	12 J	80 U
GH-SO-019	350 U	220 U	140 U	730	95 U	55 U	340	380	9 U	92 J
GH-SO-020	650 J	220 U	140 U	510	97 J	55 U	350	420	9 U	80 U
GH-SO-021	860 J	220 U	140 U	2900	95 U	55 U	390	360	54	98 J
GH-SO-022	350 U	220 U	180 J	620	180 J	55 U	560	470	25 J	80 U
GH-SO-023	350 U	220 U	140 U	590	250 J	55 U	490	520	20 J	80 U
GH-SO-024	800 J	220 U	140 U	1400	180 J	55 U	560	370	25 J	80 U
GH-SO-025	670 J	220 U	140 U	2300	95 U	55 U	450	340	30 J	80 U
GH-SO-026	390 J	220 U	180 J	1100	95 U	55 U	340	320	9 U	80 U
GH-SO-027	350 U	220 U	140 U	580	250 J	55 U	320	360	35	80 U
GH-SO-028	510 J	220 U	140 U	620	410	55 U	420	310	14 J	80 U
GH-SO-029	350 U	220 U	140 U	990	110 J	55 U	360	360	20 J	80 U
GH-SO-030	400 J	220 U	140 U	560	95 U	55 U	360	350	9 U	80 U
GH-SO-031	350 U	220 U	140 U	830	160 J	55 U	410	330	32	150 J
GH-SO-031D	350 U	220 U	140 U	890	230 J	55 U	470	360	15 J	80 U
GH-SO-032	350 U	220 U	140 U	1200	120 J	55 U	440	280	9 U	80 U
GH-SO-101	350 U	220 U	140 U	360 J	95 U	55 U	310	270	10 J	80 U
GH-SO-102	540 J	220 U	140 U	380 J	95 U	55 U	180	540	9 U	80 U
GH-SO-103	440 J	220 U	140 U	350 J	95 U	55 U	330	300	9 U	80 U
GH-SO-104	350 U	220 U	140 U	610	95 U	55 U	220	450	9 U	80 U
GH-SO-105	570 J	220 U	140 U	370 J	110 J	55 U	330	660	13 J	80 U
GH-SO-106	350 U	220 U	140 U	380 J	120 J	55 U	310	390	27 J	80 U
GH-SO-107	500 J	220 U	140 U	400	95 U	55 U	270	510	26 J	80 U
GH-SO-108	360 J	220 U	140 U	400	95 U	55 U	350	370	9 U	86 J
GH-SO-109	350 U	220 U	140 U	410	95 U	55 U	310	450	9 U	93 J
GH-SO-110	580 J	220 U	230 J	1400	95 U	55 U	330	350	31 J	80 U
GH-SO-110D	350 U	220 U	140 U	1300	120 J	55 U	370	400	39	80 U
GH-SO-111	670 J	220 U	140 U	730	95 U	55 U	340	500	16 J	80 U
GH-SO-112	850 J	220 U	140 U	200 J	95 U	55 U	280	190	9 U	190 J
GH-SO-113	650 J	220 U	140 U	340 J	95 U	55 U	220	280	12 J	85 J
GH-SO-114	890 J	220 U	140 U	390	95 U	55 U	270	220	12 J	80 U
GH-SO-114A	1000 J	220 U	140 U	450	95 U	55 U	220	200	11 J	80 U
GH-SO-115	350 U	220 U	140 U	450	95 U	55 U	290	780	13 J	80 U
GH-SO-116	350 U	220 U	140 U	790	95 U	55 U	250	470	32	86 J

J - The value reported is between 3 and 10 times the standard deviation of a control sample.

U - The element was analyzed for but not detected.

The value reported is equal to 3 times the standard deviation of a control sample.

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TABLE 7 (page 3 of 3)
QUALIFIED SCREENING XRF DATA RESULTS (mg/Kg)
GOLD HILL TAILINGS
T08-9501-012

ID	Pb	Rb	Cd	Sn	Sb	Ba	Ag	U	Th
GH-SO-001	690	170	170 U	120 U	60 U	1200	120 U	37 J	51 J
GH-SO-002	1100	220	170 U	120 U	60 U	1100	120 U	31 J	52 J
GH-SO-002D	890	240	170 U	120 U	60 U	1100	150 J	50 J	35 J
GH-SO-003	880	160	170 U	120 U	60 U	1100	120 U	53 J	43 J
GH-SO-004	770	220	170 U	120 U	60 U	1100	120 U	21 U	42 J
GH-SO-005	690	260	170 U	120 U	60 U	1100	120 U	69	57 J
GH-SO-006	80 U	150	170 U	120 U	60 U	750	120 U	21 U	30 J
GH-SO-007	80 U	150	170 U	120 U	60 U	700	120 U	32 J	27 J
GH-SO-008	840	160	170 U	120 U	60 U	1100	120 U	77	63 J
GH-SO-009	890	280	180 J	120 U	60 U	1100	120 U	32 J	51 J
GH-SO-010	1300	230	170 U	120 U	60 U	1100	120 U	37 J	22 U
GH-SO-011	1200	190	170 U	120 U	60 U	1500	240 J	58 J	47 J
GH-SO-012	740	270	170 U	120 U	60 U	920	120 U	21 U	49 J
GH-SO-013	1400	220	170 U	120 U	60 U	1000	120 U	21 U	41 J
GH-SO-014	500	290	170 U	120 U	60 U	1200	120 U	44 J	55 J
GH-SO-015	870	270	170 U	120 U	60 U	1100	120 U	70	56 J
GH-SO-016	1500	230	170 U	120 U	60 U	930	120 U	22 J	51 J
GH-SO-017	770	250	170 U	120 U	60 U	1100	120 U	45 J	59 J
GH-SO-018	730	290	170 U	120 U	60 U	1100	120 U	37 J	52 J
GH-SO-019	810	300	190 J	120 U	60 U	930	120 U	51 J	64 J
GH-SO-020	1000	260	170 U	120 U	60 U	1100	120 U	65 J	31 J
GH-SO-021	1300	260	170 U	120 U	60 U	890	120 U	21 U	33 J
GH-SO-022	230 J	310	280 J	120 U	60 U	1100	120 U	28 J	56 J
GH-SO-023	200 J	290	170 U	120 U	60 U	1100	120 U	58 J	69 J
GH-SO-024	720	340	170 U	120 U	60 U	1100	120 U	46 J	42 J
GH-SO-025	1200	230	260 J	120 U	60 U	940	120 U	34 J	50 J
GH-SO-026	2200	210	170 U	120 U	60 U	850	160 J	48 J	35 J
GH-SO-027	1400	300	170 U	120 U	60 U	950	120 U	24 J	42 J
GH-SO-028	880	310	170 U	120 U	60 U	1000	120 U	32 J	48 J
GH-SO-029	1200	180	190 J	120 U	60 U	1100	120 U	42 J	37 J
GH-SO-030	1500	260	200 J	120 U	60 U	1100	120 U	43 J	64 J
GH-SO-031	760	280	170 U	120 U	60 U	1000	120 U	36 J	76
GH-SO-031D	760	250	170 U	120 U	60 U	1000	120 U	65 J	53 J
GH-SO-032	1000	230	170 U	120 U	71 J	910	120 U	42 J	22 U
GH-SO-101	440	220	170 U	120 U	60 U	720	120 U	39 J	55 J
GH-SO-102	95 J	200	170 U	120 U	60 U	770	120 U	23 J	28 J
GH-SO-103	670	240	170 U	120 U	60 U	960	120 U	28 J	40 J
GH-SO-104	310	190	170 U	120 U	60 U	630	120 U	43 J	35 J
GH-SO-105	80 U	190	170 U	120 U	60 U	700	120 U	27 J	30 J
GH-SO-106	660	220	190 J	120 U	60 U	1100	120 U	34 J	47 J
GH-SO-107	320	180	170 U	120 U	60 U	780	120 U	21 U	27 J
GH-SO-108	710	240	170 U	120 U	60 U	960	120 U	79	36 J
GH-SO-109	540	210	170 U	120 U	60 U	910	120 U	49 J	48 J
GH-SO-110	550	210	210 J	250 J	83 J	890	120 U	41 J	43 J
GH-SO-110D	500	210	170 U	230 J	60 U	850	120 U	36 J	54 J
GH-SO-111	660	200	170 U	120 U	60 U	780	120 U	29 J	39 J
GH-SO-112	84 J	170	170 U	120 U	60 U	580	120 U	21 U	26 J
GH-SO-113	97 J	130	170 U	120 U	60 U	590	120 U	21 U	22 U
GH-SO-114	140 J	170	170 U	120 U	60 U	590	120 U	22 J	32 J
GH-SO-114A	91 J	160	170 U	120 U	60 U	630	120 U	21 U	29 J
GH-SO-115	240 J	240	170 U	120 U	60 U	810	120 U	29 J	40 J
GH-SO-116	490	200	170 U	120 U	60 U	740	120 U	21 U	43 J

J - The value reported is between 3 and 10 times the standard deviation of a control sample.

U - The element was analyzed for but not detected.

The value reported is equal to 3 times the standard deviation of a control sample.

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TABLE 8
XRF vs LABORATORY RESULTS COMPARISON
GOLD HILL TAILINGS
T08-9501-012

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Sample Number	Arsenic		Lead	
	XRF	LAB	XRF	LAB
GH-SO-007	95 U	21	80 U	41
GH-SO-014	260 J	97	500	248
GH-SO-017	95 U	131	770	627
GH-SO-024	180 J	204	720	552
GH-SO-025	95 U	180	1200	830
GH-SO-026	95 U	82	2200	1570
GH-SO-028	410	272	880	642
GH-SO-105	110 J	19	80 U	94.3
GH-SO-107	95 U	38	320	198
GH-SO-108	95 U	80	710	527
Corr. Factor	0.596		0.983	
Slope	0.672		0.727	
Intercept	-13.3		-14.4	

Note: The XRF values qualified with a "U" were not included in the data regression analysis

J - The value reported is between 3 and 10 times the standard deviation of a control sample.

U - The element was analyzed for but not detected.
The value reported is the detection limit.

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APPENDIX A

CHAIN-OF-CUSTODY FORMS

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Poor Quality Source Document

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have been scanned from the best
available source copy.**

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Superfund Records Center at 303-312-6473**

PROJ. NO. T08-9501- Φ12		PROJECT NAME Gold Hill TAILINGS				NO. OF CON- TAINERS	REMARKS 8"40" Fume - A 10, 12, 13, 14 SAMPLE TAG #										
SAMPLERS: (Signature) <i>[Signature]</i>																	
STAT. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION												
GH-DU-001	2/22/95	1005	X		GH-DU-001	1	1								8-123672		
GH-DU-002		1100	X		GH-DU-002	1	1								8-123673		
GH-DU-003		1116	X		GH-DU-003	1	1								8-123674		
GH-DU-004		1155	X		GH-DU-004	1	1								8-123675		
GH-DU-005		1210	X		GH-DU-005	1	1								8-123676		
GH-DU-006		1336	X		GH-DU-006	1	1								8-123677		
GH-DU-007		1400	X		GH-DU-007	1	1								8-123678		
GH-DU-008		1420	X		GH-DU-008	1	1								8-123679		
GH-DU-009		1445	X		GH-DU-009	1	1								8-123680		
GH-DU-010		1515	X		GH-DU-010	1	1								8-123681		
GH-DU-011		1535	X		GH-DU-011	1	1								8-123682		
GH-DU-012		1600	X		GH-DU-012	1	1								8-123683		
GH-DU-013	✓	1620		X	GH-DU-013	1	1								8-123684		
						DRAFT											
Relinquished by: (Signature) <i>[Signature]</i>		Date/Time 3/16/95 1400		Received by: (Signature) FED EX		Relinquished by: (Signature)		Date/Time		Received by: (Signature)		Relinquished by: (Signature)		Date/Time		Received by: (Signature)	
Relinquished by: (Signature)		Date/Time		Received by: (Signature)		Relinquished by: (Signature)		Date/Time		Received by: (Signature)		Relinquished by: (Signature)		Date/Time		Received by: (Signature)	
Relinquished by: (Signature)		Date/Time		Received for Laboratory by: (Signature)		Date/Time		Remarks									

Distribution: Original Accompanies Shipment: First Copy to Coordinator Field Files: Second Copy to Representative of Inspected Facility

CHAIN OF CUSTODY RECORD

PROJ. NO. 708-9501-012		PROJECT NAME GOLD HILL TAILINGS				NO. OF CONTAINERS	REMARKS Sample Tag #										
SAMPLERS: (Signature) <i>[Signature]</i>																	
STAT. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION												
GH-SO-007	2/22/95	1109	X		GH-SO-007	1	1										8-123651
GH-SO-011		1143	X		GH-SO-011	1	1										8-123652
GH-SO-017		1203	X		GH-SO-017	1	1										8-123653
GH-SO-021		1412	X		GH-SO-021	1	1										8-123654
GH-SO-025		1419	X		GH-SO-025	1	1										8-123655
GH-SO-026		1426	X		GH-SO-026	1	1										8-123656
GH-SO-028		1443	X		GH-SO-028	1	1										8-123657
GH-SO-105		1125	X		GH-SO-105	1	1										8-123658
GH-SO-107		1145	X		GH-SO-107	1	1										8-123659
GH-SO-108		1205	X		GH-SO-108	1	1										8-123660
DRAFT																	

Relinquished by: (Signature) <i>[Signature]</i>	Date/Time 2/14/95 1710	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature) <i>[Signature]</i>	Date/Time 3/14/95 1710	Remarks	

Distribution: Original Accompanies Shipment: First Copy to Coordinator Field Files: Second Copy to Representative of Inspected Facility

Split Samples:
☐ Accepted ☐ Declined
Signature

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APPENDIX B

LABORATORY DATA SHEETS

DRAFT

Client Name: Ecology & Environment, Inc.

Clayton Project No.: 24962.00

Matrix: 8 X 10 Filter

Lab Sample ID: 001a

Level (low/med): --

Date Received: 03/17/95

% Solids: 0.0

DRAFT

Concentration Units : μg

[illegible]

DRAFT

Color Before: _____

Clarity Before: _____

Texture: _____

Color After: _____

Clarity After: _____

Artifacts: _____

Comments:

G = Gravimetric Method

Client Name: Ecology & Environment, Inc.

Clayton Project No.: 24962.00

Matrix: 8 X 10 Filter

Lab Sample ID: 002a

Level (low/med): --

Date Received: 03/17/95

% Solids: 0.0

DRAFT

Concentration Units : μg

[illegible]

DRAFT

Color Before: _____

Clarity Before: _____

Texture: _____

Color After: _____

Clarity After: _____

Artifacts: _____

Comments:

G = Gravimetric Method

Client Name: Ecology & Environment, Inc.

Clayton Project No.: 24962.00

Matrix: 8 X 10 Filter

Lab Sample ID: 003a

Level (low/med): --

Date Received: 03/17/95

% Solids: 0.0

DRAFT

Concentration Units : μg

[illegible]

DRAFT

Color Before: _____

Clarity Before: _____

Texture: _____

Color After: _____

Clarity After: _____

Artifacts: _____

Comments:

G = Gravimetric Method

Client Name: Ecology & Environment, Inc.

Clayton Project No.: 24962.00

Matrix: 8 X 10 Filter

Lab Sample ID: 004a

Level (low/med): --

Date Received: 03/17/95

% Solids: 0.0

DRAFT

Concentration Units : μg

[illegible]

DRAFT

Color Before: _____

Clarity Before: _____

Texture: _____

Color After: _____

Clarity After: _____

Artifacts: _____

Comments:

G = Gravimetric Method

Client Name: Ecology & Environment, Inc.

Clayton Project No.: 24962.00

Matrix: 8 X 10 Filter

Lab Sample ID: 005a

Level (low/med): --

Date Received: 03/17/95

% Solids: 0.0

DRAFT

Concentration Units : μg

[illegible]

Color Before: _____

Clarity Before: _____

Texture: _____

Color After: _____

Clarity After: _____

Artifacts: _____

Comments:

G = Gravimetric Method

Client Name: Ecology & Environment, Inc.

Clayton Project No.: 24962.00

Matrix: 8 X 10 Filter

Lab Sample ID: 006a

Level (low/med): --

Date Received: 03/17/95

% Solids: 0.0

DRAFT

Concentration Units : μg

[illegible]

Color Before: _____

Clarity Before: _____

Texture: _____

Color After: _____

Clarity After: _____

Artifacts: _____

Comments:

G = Gravimetric Method

Client Name: Ecology & Environment, Inc.

Clayton Project No.: 24962.00

Matrix: 8 X 10 Filter .

Lab Sample ID: 007a

Level (low/med): --

Date Received: 03/17/95

% Solids: 0.0

DRAFT

Concentration Units : μg

[illegible]

Color Before: _____

Clarity Before: _____

Texture: _____

Color After: _____

Clarity After: _____

Artifacts: _____

Comments:

G = Gravimetric Method

Client Name: Ecology & Environment, Inc.

Clayton Project No.: 24962.00

Matrix: 8 X 10 Filter

Lab Sample ID: 008a

Level (low/med): --

Date Received: 03/17/95

% Solids: 0.0

DRAFT

Concentration Units : μg

[illegible]

DRAFT

Color Before: _____

Clarity Before: _____

Texture: _____

Color After: _____

Clarity After: _____

Artifacts: _____

Comments:

G = Gravimetric Method

Client Name: Ecology & Environment, Inc.

Clayton Project No.: 24962.00

Matrix: 8 X 10 Filter

Lab Sample ID: 009a

Level (low/med): --

Date Received: 03/17/95

% Solids: 0.0

DRAFT

Concentration Units : μg

[illegible]

Color Before: _____

Clarity Before: _____

Texture: _____

Color After: _____

Clarity After: _____

Artifacts: _____

Comments:

G = Gravimetric Method

Client Name: Ecology & Environment, Inc. Clayton Project No.: 24962.00

Matrix: 8 X 10 Filter

Lab Sample ID: 010a

Level (low/med): --

Date Received: 03/17/95

% Solids: 0.0

DRAFT

Concentration Units : μg

[illegible]

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

G = Gravimetric Method

Client Name: Ecology & Environment, Inc. Clayton Project No.: 24962.00

Matrix: 8 X 10 Filter

Lab Sample ID: 011a

Level (low/med): --

Date Received: 03/17/95

% Solids: 0.0

DRAFT

Concentration Units : μg

[illegible]

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

G = Gravimetric Method

Client Name: Ecology & Environment, Inc. Clayton Project No.: 24962.00

Matrix: 8 X 10 Filter

Lab Sample ID: 012a

Level (low/med): --

Date Received: 03/17/95

```
% Solids: 0.0
```

DRAFT

Concentration Units : μg [illegible]

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

G = Gravimetric Method

CLAYTON - CLP

1
INORGANIC ANALYSIS DATA SHEET

E & E SAMPLE NO.
GH-DU-013 (8-123684)

Client Name: Ecology & Environment, Inc. Clayton Project No.: 24962.00

Matrix: 8 X 10 Filter

Lab Sample ID: 013a

Level (low/med): --

Date Received: 03/17/95

* Solids: 0.0

DRAFT

Concentration Units : μg

[illegible]

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

G = Gravimetric Method



CORE LABORATORIES

LABORATORY TESTS RESULTS 03/29/95

JOB NUMBER: 950588

CUSTOMER: Ecology and Environment

ATTN: Kent Alexander

CLIENT I.D.: T08-9501-012 GOLD HILL TAILINGS
DATE SAMPLED: 02/22/95
TIME SAMPLED: 11:09
WORK DESCRIPTION: GH-SO-007

LABORATORY I.D.: 950588-0001
DATE RECEIVED: 03/14/95
TIME RECEIVED: 17:10
REMARKS:

DRAFT

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Cyanide, Total	<0.2	0.2	mg/Kg	9010 (2)	03/17/95	KDS
Moisture (@ 104 Deg. C)	6.5	0.1	%	2540 G (3)	03/23/95	NAB
Arsenic, Total (As)	21	1	mg/Kg	6010 (2)	03/16/95	GEF
Lead, Total (Pb)	41	1	mg/Kg	6010 (2)	03/16/95	GEF

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CORE LABORATORIES

LABORATORY TESTS RESULTS 03/29/95

JOB NUMBER: 950588

CUSTOMER: Ecology and Environment

ATTN: Kent Alexander

CLIENT I.D.: T08-9501-012 GOLD HILL TAILINGS
DATE SAMPLED: 02/22/95
TIME SAMPLED: 11:43
WORK DESCRIPTION: GH-SO-014

LABORATORY I.D.: 950588-0002
DATE RECEIVED: 03/14/95
TIME RECEIVED: 17:10
REMARKS:

DRAFT

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Cyanide, Total	10.1	0.2	mg/Kg	9010 (2)	03/17/95	KDS
Moisture (@ 104 Deg. C)	1.5	0.1	%	2540 G (3)	03/23/95	NAB
Arsenic, Total (As)	97	1	mg/Kg	6010 (2)	03/16/95	GEF
Lead, Total (Pb)	248	1	mg/Kg	6010 (2)	03/16/95	GEF

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CORE LABORATORIES

LABORATORY TESTS RESULTS 03/29/95

JOB NUMBER: 950588

CUSTOMER: Ecology and Environment

ATTN: Kent Alexander

CLIENT I.D.: T08-9501-012 GOLD HILL TAILINGS
DATE SAMPLED: 02/22/95
TIME SAMPLED: 12:03
WORK DESCRIPTION: GH-SO-017

LABORATORY I.D.: 950588-0003
DATE RECEIVED: 03/14/95
TIME RECEIVED: 17:10
REMARKS:

DRAFT

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Cyanide, Total	3.4	0.2	mg/Kg	9010 (2))	03/17/95	KDS
Moisture (@ 104 Deg. C)	12.0	0.1	%	2540 G (3)	03/23/95	NAB
Arsenic, Total (As)	131	3	mg/Kg	6010 (2)	03/16/95	GEF
Lead, Total (Pb)	627	3	mg/Kg	6010 (2)	03/16/95	GEF

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CORE LABORATORIES

LABORATORY TESTS RESULTS 03/29/95

JOB NUMBER: 950588

CUSTOMER: Ecology and Environment

ATTN: Kent Alexander

CLIENT I.D.: T08-9501-012 GOLD HILL TAILINGS
DATE SAMPLED: 02/22/95
TIME SAMPLED: 14:12
WORK DESCRIPTION: GH-SO-024

LABORATORY I.D.: 950588-0004
DATE RECEIVED: 03/14/95
TIME RECEIVED: 17:10
REMARKS:

DRAFT

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Cyanide, Total	13.0	0.2	mg/Kg	9010 (2)	03/17/95	KDS
Moisture (@ 104 Deg. C)	8.9	0.1	%	2540 G (3)	03/23/95	NAB
Arsenic, Total (As)	204	1	mg/Kg	6010 (2)	03/16/95	GEF
Lead, Total (Pb)	552	1	mg/Kg	6010 (2)	03/16/95	GEF

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CORE LABORATORIES

LABORATORY TESTS RESULTS 03/29/95

JOB NUMBER: 950588

CUSTOMER: Ecology and Environment

ATTN: Kent Alexander

CLIENT I.D.: T08-9501-012 GOLD HILL TAILINGS
DATE SAMPLED: 02/22/95
TIME SAMPLED: 14:19
WORK DESCRIPTION: GH-SO-025

LABORATORY I.D.: 950588-0005
DATE RECEIVED: 03/14/95
TIME RECEIVED: 17:10
REMARKS:

DRAFT

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Cyanide, Total	9.2	0.2	mg/Kg	9010 (2)	03/17/95	KDS
Moisture (@ 104 Deg. C)	5.7	0.1	%	2540 G (3)	03/27/95	NAB
Arsenic, Total (As)	180	3	mg/Kg	6010 (2)	03/16/95	GEF
Lead, Total (Pb)	830	3	mg/Kg	6010 (2)	03/16/95	GEF

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CORE LABORATORIES

LABORATORY TESTS RESULTS 03/29/95

JOB NUMBER: 950588

CUSTOMER: Ecology and Environment

ATTN: Kent Alexander

CLIENT I.D.: T08-9501-012 GOLD HILL TAILINGS
DATE SAMPLED: 02/22/95
TIME SAMPLED: 14:26
WORK DESCRIPTION: GH-SO-026

LABORATORY I.D.: 950588-0006
DATE RECEIVED: 03/14/95
TIME RECEIVED: 17:10
REMARKS:

DRAFT

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Cyanide, Total	4.4	0.2	mg/Kg	9010 (2)	03/17/95	KDS
Moisture (@ 104 Deg. C)	6.7	0.1	%	2540 G (3)	03/23/95	NAB
Arsenic, Total (As)	82	3	mg/Kg	6010 (2)	03/16/95	GEF
Lead, Total (Pb)	1570	3	mg/Kg	6010 (2)	03/16/95	GEF

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CORE LABORATORIES

LABORATORY TESTS RESULTS 03/29/95

JOB NUMBER: 950588

CUSTOMER: Ecology and Environment

ATTN: Kent Alexander

CLIENT I.D.: T08-9501-012 GOLD HILL TAILINGS
DATE SAMPLED: 02/22/95
TIME SAMPLED: 14:43
WORK DESCRIPTION: GH-SO-028

LABORATORY I.D.: 950588-0007
DATE RECEIVED: 03/14/95
TIME RECEIVED: 17:10
REMARKS:

DRAFT

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Cyanide, Total	7.7	0.2	mg/Kg	9010 (2)	03/17/95	KDS
Moisture (@ 104 Deg. C)	8.1	0.1	%	2540 G (3)	03/23/95	NAB
Arsenic, Total (As)	272	3	mg/Kg	6010 (2)	03/16/95	GEF
Lead, Total (Pb)	642	3	mg/Kg	6010 (2)	03/16/95	GEF

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CORE LABORATORIES

LABORATORY TESTS RESULTS

03/29/95

JOB NUMBER: 950588

CUSTOMER: Ecology and Environment

ATTN: Kent Alexander

CLIENT I.D.: T08-9501-012 GOLD HILL TAILINGS

DATE SAMPLED: 02/22/95

TIME SAMPLED: 11:25

WORK DESCRIPTION: GH-SO-105

LABORATORY I.D.: 950588-0008

DATE RECEIVED: 03/14/95

TIME RECEIVED: 17:10

REMARKS:

DRAFT

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Cyanide, Total	<0.2	0.2	mg/Kg	9010 (2)	03/17/95	KDS
Moisture (@ 104 Deg. C)	7.5	0.1	%	2540 G (3)	03/23/95	NAB
Arsenic, Total (As)	19.1	0.5	mg/Kg	6010 (2)	03/16/95	GEF
Lead, Total (Pb)	94.3	0.5	mg/Kg	6010 (2)	03/16/95	GEF

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CORE LABORATORIES

LABORATORY TESTS RESULTS 03/29/95

JOB NUMBER: 950588

CUSTOMER: Ecology and Environment

ATTN: Kent Alexander

CLIENT I.D.: T08-9501-012 GOLD HILL TAILINGS
DATE SAMPLED: 02/22/95
TIME SAMPLED: 11:45
WORK DESCRIPTION: GH-SO-107

LABORATORY I.D.: 950588-0009
DATE RECEIVED: 03/14/95
TIME RECEIVED: 17:10
REMARKS:

DRAFT

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Cyanide, Total	1.8	0.2	mg/Kg	9010 (2)	03/17/95	KDS
Moisture (@ 104 Deg. C)	1.5	0.1	%	2540 G (3)	03/23/95	NAB
Arsenic, Total (As)	37.8	0.5	mg/Kg	6010 (2)	03/16/95	GEF
Lead, Total (Pb)	198	0.5	mg/Kg	6010 (2)	03/16/95	GEF

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CORE LABORATORIES

LABORATORY TESTS RESULTS 03/29/95

JOB NUMBER: 950588

CUSTOMER: Ecology and Environment

ATTN: Kent Alexander

CLIENT I.D.: T08-9501-012 GOLD HILL TAILINGS
DATE SAMPLED: 02/22/95
TIME SAMPLED: 12:05
WORK DESCRIPTION: GH-SO-108

LABORATORY I.D.: 950588-0010
DATE RECEIVED: 03/14/95
TIME RECEIVED: 17:10
REMARKS:

DRAFT

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Cyanide, Total	1.6	0.2	mg/Kg	9010 (2)	03/17/95	KDS
Moisture (@ 104 Deg. C)	4.9	0.1	%	2540 G (3)	03/23/95	NAB
Arsenic, Total (As)	80	1	mg/Kg	6010 (2)	03/16/95	GEF
Lead, Total (Pb)	527	1	mg/Kg	6010 (2)	03/16/95	GEF

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CORE LABORATORIES

LABORATORY TESTS RESULTS 03/29/95

JOB NUMBER: 950588

CUSTOMER: Ecology and Environment

ATTN: Kent Alexander

CLIENT I.D.: T08-9501-012 GOLD HILL TAILINGS
DATE SAMPLED: 02/22/95
TIME SAMPLED: 10:05
WORK DESCRIPTION: GH-WA-01

LABORATORY I.D.: 950588-0011
DATE RECEIVED: 03/14/95
TIME RECEIVED: 17:10
REMARKS:

DRAFT

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Arsenic, Total (As)	0.023	0.005	mg/L	200.7 (1)	03/24/95	GAG
Lead, Total (Pb)	<0.005	0.005	mg/L	200.7 (1)	03/24/95	GAG

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CORE LABORATORIES

LABORATORY TESTS RESULTS 03/29/95

JOB NUMBER: 950588

CUSTOMER: Ecology and Environment

ATTN: Kent Alexander

CLIENT I.D.: T08-9501-012 GOLD HILL TAILINGS
DATE SAMPLED: 02/22/95
TIME SAMPLED: 10:50
WORK DESCRIPTION: GH-WA-02

LABORATORY I.D.: 950588-0012
DATE RECEIVED: 03/14/95
TIME RECEIVED: 17:10
REMARKS:

DRAFT

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Arsenic, Total (As)	0.007	0.005	mg/L	200.7 (1)	03/24/95	GAG
Lead, Total (Pb)	0.006	0.005	mg/L	200.7 (1)	03/24/95	GAG

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CORE LABORATORIES

LABORATORY TESTS RESULTS 03/29/95

JOB NUMBER: 950588

CUSTOMER: Ecology and Environment

ATTN: Kent Alexander

CLIENT I.D.: T08-9501-012 GOLD HILL TAILNGS
DATE SAMPLED: 02/22/95
TIME SAMPLED: 11:20
WORK DESCRIPTION: GH-WA-03

LABORATORY I.D.: 950588-0013
DATE RECEIVED: 03/14/95
TIME RECEIVED: 17:10
REMARKS:

DRAFT

TEST DESCRIPTION	FINAL RESULT	LIMITS/DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Arsenic, Total (As)	0.018	0.005	mg/L	200.7 (1)	03/24/95	GAG
Lead, Total (Pb)	<0.005	0.005	mg/L	200.7 (1)	03/24/95	GAG
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CORE LABORATORIES

LABORATORY TESTS RESULTS 03/29/95

JOB NUMBER: 950588

CUSTOMER: Ecology and Environment

ATTN: Kent Alexander

CLIENT I.D.: T08-9501-012 GOLD HILL TAILINGS
DATE SAMPLED: 02/22/95
TIME SAMPLED: 12:00
WORK DESCRIPTION: GH-WA-05

LABORATORY I.D.: 950588-0014
DATE RECEIVED: 03/14/95
TIME RECEIVED: 17:10
REMARKS:

DRAFT

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Arsenic, Total (As)	<0.005	0.005	mg/L	200.7 (1)	03/24/95	GAG
Lead, Total (Pb)	<0.005	0.005	mg/L	200.7 (1)	03/24/95	GAG
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CORE LABORATORIES

LABORATORY TESTS RESULTS 03/29/95

JOB NUMBER: 950588

CUSTOMER: Ecology and Environment

ATTN: Kent Alexander

CLIENT I.D.: T08-9501-012 GOLD HILL TAILNGS
DATE SAMPLED: 02/22/95
TIME SAMPLED: 13:30
WORK DESCRIPTION: GH-WA-06

LABORATORY I.D.: 950588-0015
DATE RECEIVED: 03/14/95
TIME RECEIVED: 17:10
REMARKS:

DRAFT

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Arsenic, Total (As)	0.008	0.005	mg/L	200.7 (1)	03/24/95	GAG
Lead, Total (Pb)	<0.005	0.005	mg/L	200.7 (1)	03/24/95	GAG

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CORE LABORATORIES

LABORATORY TESTS RESULTS 03/29/95

JOB NUMBER: 950588

CUSTOMER: Ecology and Environment

ATTN: Kent Alexander

CLIENT I.D.: T08-9501-012 GOLD HILL TAILINGS
DATE SAMPLED: 02/22/95
TIME SAMPLED: 14:00
WORK DESCRIPTION: GH-WA-07

LABORATORY I.D.: 950588-0016
DATE RECEIVED: 03/14/95
TIME RECEIVED: 17:10
REMARKS:

DRAFT

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Arsenic, Total (As)	<0.005	0.005	mg/L	200.7 (1)	03/24/95	GAG
Lead, Total (Pb)	<0.005	0.005	mg/L	200.7 (1)	03/24/95	GAG

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CORE LABORATORIES

LABORATORY TESTS RESULTS 03/29/95

JOB NUMBER: 950588

CUSTOMER: Ecology and Environment

ATTN: Kent Alexander

CLIENT I.D.: T08-9501-012 GOLD HILL TAILNGS

DATE SAMPLED: 02/22/95

TIME SAMPLED: 14:40

WORK DESCRIPTION: GH-WA-08

LABORATORY I.D.: 950588-0017

DATE RECEIVED: 03/14/95

TIME RECEIVED: 17:10

REMARKS:

DRAFT

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Arsenic, Total (As)	0.009	0.005	mg/L	200.7 (1)	03/24/95	GAG
Lead, Total (Pb)	<0.005	0.005	mg/L	200.7 (1)	03/24/95	GAG
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CORE LABORATORIES

LABORATORY TESTS RESULTS 03/29/95

JOB NUMBER: 950588

CUSTOMER: Ecology and Environment

ATTN: Kent Alexander

CLIENT I.D.: T08-9501-012 GOLD HILL TAILNGS
DATE SAMPLED: 02/22/95
TIME SAMPLED: 14:45
WORK DESCRIPTION: GH-WA-09

LABORATORY I.D.: 950588-0018
DATE RECEIVED: 03/14/95
TIME RECEIVED: 17:10
REMARKS:

DRAFT

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Arsenic, Total (As)	<0.005	0.005	mg/L	200.7 (1)	03/24/95	GAG
Lead, Total (Pb)	<0.005	0.005	mg/L	200.7 (1)	03/24/95	GAG
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CORE LABORATORIES

LABORATORY TESTS RESULTS 03/29/95

JOB NUMBER: 950588

CUSTOMER: Ecology and Environment

ATTN: Kent Alexander

CLIENT I.D.: T08-9501-012 GOLD HILL TAILINGS

DATE SAMPLED: 02/22/95

TIME SAMPLED: 15:10

WORK DESCRIPTION: GH-WA-10

LABORATORY I.D.: 950588-0019

DATE RECEIVED: 03/14/95

TIME RECEIVED: 17:10

REMARKS:

DRAFT

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Arsenic, Total (As)	0.006	0.005	mg/L	200.7 (1)	03/24/95	GAG
Lead, Total (Pb)	0.009	0.005	mg/L	200.7 (1)	03/24/95	GAG
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CORE LABORATORIES

LABORATORY TESTS RESULTS 03/29/95

JOB NUMBER: 950588

CUSTOMER: Ecology and Environment

ATTN: Kent Alexander

CLIENT I.D.: T08-9501-012 GOLD HILL TAILNGS
DATE SAMPLED: 02/22/95
TIME SAMPLED: 15:30
WORK DESCRIPTION: GH-WA-11

LABORATORY I.D.: 950588-0020
DATE RECEIVED: 03/14/95
TIME RECEIVED: 17:10
REMARKS:

DRAFT

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Arsenic, Total (As)	<0.005	0.005	mg/L	200.7 (1)	03/24/95	GAG
Lead, Total (Pb)	0.019	0.005	mg/L	200.7 (1)	03/24/95	GAG

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CORE LABORATORIES

LABORATORY TESTS RESULTS

03/29/95

JOB NUMBER: 950588

CUSTOMER: Ecology and Environment

ATTN: Kent Alexander

CLIENT I.D.: T08-9501-012 GOLD HILL TAILNGS

DATE SAMPLED: 02/22/95

TIME SAMPLED: 15:55

WORK DESCRIPTION: GH-WA-12

LABORATORY I.D.: 950588-0021

DATE RECEIVED: 03/14/95

TIME RECEIVED: 17:10

REMARKS:

DRAFT

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Arsenic, Total (As)	<0.005	0.005	mg/L	200.7 (1)	03/24/95	GAG
Lead, Total (Pb)	0.016	0.005	mg/L	200.7 (1)	03/24/95	GAG
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