ADMINISTRATIVE RECORD

1830868 - R8 SDMS

CDM FEDERAL PROGRAMS CORPORATION

January 26, 1995

Sara Weinstock
USEPA, Region VIII, Montana Office
Federal Building, Drawer 10096
301 South Park Avenue
Helena, MT 59626

Project: ARCS Regions VI, VII, and VIII, Contract No. 68-W9-0021

DCN: 7760-038-RT-DGJV

Subject: Butte Priority Soils Operable Unit (BPSOU)
November, 1994 Soil Sampling Results

Dear Sara:

Attached are the analytical results for the soil samples collected in Butte on November 9 - 14, 1994 from waste rock dumps and other mining-related areas. These areas were sampled to determine heavy metals and arsenic concentrations in the soil as part of ongoing BPSOU Expedited Response Action (ERA) activities. CDM Federal Programs Corporation (CDM Federal) has not performed a validation of these data at this time, however, we can do so at your request. We have reviewed the field quality control (QC) and the laboratory QC sample results and have included comments regarding these results.

The sample numbers, descriptions, and analytical results are shown in Table 1. Figures 1 through 12 show the center composite sample locations of the sampled areas. Five aliquots were collected and composited for each sample that was analyzed.

Soil samples having lead concentrations greater than 2,000 mg/kg came from the following areas:

Atlantic (#30)*	2,730 mg/kg lead	Western ¼ of unreclaimed Atlantic
Atlantic (#30)	2,080 " "	Between west end and center of Atlantic
Atlantic (#30)	4,160 " "	Between east end and center of Atlantic
Daly & 4th Street	2,220 " "	North of paved alley above Daly St.
West end of Ravin (#47)	2,350 " "	West end of Ravin plus railroad grade
Bridge at Main & Buffalo	3,350 " "	Waste material along east side of bridge

* Numerical listing for source areas found on NRIS map # 94ARCO68.

4030806

436594

The Power Block, West 6th & Last Chance Gulch, Suite 4W Helena, MT 59601 406 443-7559

The 2,080 mg/kg lead concentration found at the Atlantic, as well as the 2,220 mg/kg lead concentration found at Daly & 4th Street, were included in this list after analyzing the quality control samples and determining that the lead concentrations may be biased low. It is reasonable to believe that these two areas may contain lead at levels greater than 2,300 mg/kg (i.e., the removal criteria used during the BPSOU ERA). One laboratory matrix spike sample for lead had a 65% recovery. While this low recovery would not be used for validation purposes, it may be an indication of low lead recoveries from the associated samples. The analytical result of the Butte Standard Reference Material (SRM) sample for lead was 15% less than the known lead concentration. This 15% variance, if utilized, suggest that the results of the above two samples may be greater than 2,300 mg/kg.

The sampling results from the Atlantic-1 confirmed that two out of the four sections have lead concentrations greater than 2,300 mg/kg and should be reclaimed as discussed in the Source Area Work Plan. The third sample had a lead concentration of 2,080 mg/kg; its' potential bias was discussed above. The fourth sample collected at the east end of the Atlantic-1 had a lead concentration of 523 mg/kg, however there was visible waste material present in this area.

The lead concentration found in the coversoil at the Ophir Dump met the current coversoil requirements; however, copper concentrations were high and may present phytotoxic problems. The sample of coversoil contains 2,120 mg/kg of copper which is higher than the potentially phytotoxic copper concentration of 100 mg/kg. The poor vegetation growth on the Ophir may be directly attributable to soil copper concentrations.

Table 2 shows the field QC analytical results. The two field duplicates, the Butte standard reference material sample, and the rinsate blanks collected during this sampling event are of acceptable quality based on this review.

The laboratory QC analytical results are shown in Table 3. In accordance with EPA data validation guidelines, the high % recoveries noted for arsenic and zinc concentrations, as well as the 65% recovery for lead, should not be used to evaluate the accuracy of the samples because the laboratory spike concentration used was less than 4 times the sample concentration. The second laboratory matrix spike sample that was analyzed for lead had a 73% recovery and, therefore, the corresponding lead concentrations were marked in Table 1 as they may be biased low. Some of the zinc concentrations were marked in Table 1 due to a -31% recovery of the laboratory matrix spike sample. These zinc concentrations may be biased low and may represent the minimum concentration found in the soil. The 129% recovery of the laboratory matrix spike sample for cadmium caused the corresponding samples to be marked in Table 1. These cadmium samples may be biased high and may represent the maximum concentration found in the soil.

Please contact me if you have any questions or if you would like additional information on the sample data.

Sincerely,

CDM FEDERAL PROGRAMS CORPORATION

Darrel M. Stordahl
Environmental Engineer

Attachments

cc: Bob Rennick, CDM Federal
PF
RR

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Table 1. November, 1994 Soil Sampling Results

SAMPLE NUMBER	DESCRIPTION	As (mg/kg)	Cd (mg/kg)	Cu (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	pH (mg/kg)
038-WA-01-01	Capitol Hill waste rock dump (#21) - east of Capitol Hill St.	122	1.14	59.3	899 *	709 **	3.87
038-WA-02-01	Waste material at the Atlantic-1 (#30)	47.5	6.02	461	2,730 *	1,860 **	5.17
038-WA-02-02	Waste material at the Atlantic-1 (#30)	56.7	11.3 ***	388	2,080	2,550	4.85
038-WA-02-03	Waste material at the Atlantic-1 (#30)	23.8	17.2	327	4,160 *	4,740 **	4.43
038-WA-02-04	Waste material at the Atlantic-1 (#30)	95.4	2.86	548	523 *	918 **	3.57
038-WA-02-05	Field Duplicate of sample 038-WA-02-04	145	3.16 ***	537	496	1,050	3.59
038-WA-03-01	Cross-contamination rinsate sample	ND[1]	ND	0.01	ND	0.577	NA[2]
038-WA-04-01	Waste material north of paved alley - north of Daly & west of 4th St.	90.3	20.1 ***	360	2,220	2,880	6.39
038-WA-05-01	Wappello Dump (#27) - Upper Missoula Gulch	33.6	5.54 ***	106	1,025	1,840	6.82
038-WA-06-01	Waste material south of Missoula St. - West end of Ravin (#47)	49.3	29.9 ***	260	2,350	8,900	4.04
038-WA-06-02	Waste material south of Missoula St. & north of NE Syndicate Dump	404	3.62	1,480	1,197 *	2,940 **	4.05
038-WA-07-01	Waste material in Missoula Gulch above Syndicate Pit	141	3.08	1,350	1,010 *	1,260 **	2.94
038-WA-08-01	Waste material north of West Ruby Dump - south bank of Summit St.	127	3.2	1,350	643 *	1,420 **	3.9
038-WA-08-02	Waste material south of West Ruby Dump - south of Ruby St.	144	ND	687	184 *	436 **	3.29
038-WA-09-01	Waste material along east side of bridge - Main & Buffalo St.	258	36.7	688	3,350 *	6,590 **	3.61
038-WA-10-01	Waste material north of railroad - north of Clear Grit, east of Main	1,210	51.1 ***	1,920	835	14,500	3.59
038-WA-11-01	Waste material in vacant lot - Wyoming St. & North Anaconda Road	53.9	1.3 ***	733	351	708	3.96
038-WA-12-01	East Soudan-Gold Hill waste dump (#93) - material adjacent to yard	68.7	4.29 ***	433	1,550	1,730	3.72
038-WA-13-01	Butte-specific Standard Reference Material (SRM)	103	9.52 ***	362	3610	4,990	4.04
038-WA-14-01	Waste material west of Bus Depot - between Granite & Broadway St.	87.7	11.8 ***	505	1,420	3,860	3.87

ps-era\sampling\nov94.tbl

Table 1. November, 1994 Soil Sampling Results

SAMPLE NUMBER	DESCRIPTION	As (mg/kg)	Cd (mg/kg)	Cu (mg/kg)	Pb (mg/kg)	Zn (mg/kg)	pH (mg/kg)
038-WA-15-01	Waste material on east bank of Montana Ave. - Montana & Copper	168	11.5	521	1,250 *	5,170 **	4.13
038-WA-16-01	Vacant lot west of National Dump - Washington St. & Woolman St.	211	14.4	417	1,140 *	5,010 **	4.37
038-WA-16-02	Waste dump south of vacant lot - Washington St. & Woolman St.	54.6	27.6	588	1,190 *	8,560 **	4.06
038-WA-17-01	South east side of Anselmo Mine Yard - Caledonia St. & Edison St.	158	6.57	751	732 *	2,300 **	4.43
038-WA-18-01	Railroad grade east of Western St. - Western St. & Broadway St.	1,090	4.79 ***	3,950	520	2,070	3.53
038-WA-19-01	South of Hoy Hickey Shafts - north of Mercury & east of Atlantic St.	43.2	2.8 ***	430	494	1,080	3.59
038-WA-19-02	South of Hoy Hickey Shafts - corner of Mercury St. & Atlantic St.	11.6	1.02 ***	416	75.5	422	4.23
038-WA-20-01	Northwest of Butte/New England reclamation - south of Mercury St.	350	6.74 ***	1,770	174	2,640	4.04
038-WA-20-02	West of Butte/New England - south of Mercury St., south of house	101	2.57	635	507 *	1,120 **	3.7
038-WA-20-03	Field Duplicate of sample 038-WA-20-02	90.2	2.63	744	659 *	1,230 **	3.69
038-WA-21-01	Cross-contamination rinsate sample	ND	ND	0.108	ND	0.143	NA
038-WA-22-01	Waste material on southeast side of Nevada & Third St. bridge	350	3.08	1,980	721 *	1,050 **	2.98
038-WA-23-01	Fill material used as coversoil at the Ophir Dump - Colorado St.	10	ND	2,120	50.5 *	240 **	7.69
038-WA-24-01	Unnamed dump (#148) - Williamsburg	103	ND	69.2	81.7 *	273 **	4.18
038-WA-25-01	Waste rock dump south of Unnamed dump (#148) - Williamsburg	170	1.29	46.8	456 *	509 **	3.07
038-WA-26-01	Hafer property adjacent to Grove Gulch Creek - south Montana Ave.	200	5	363	626 *	1,680 **	5.6

* Value may be biased low due to 73% recovery of laboratory matrix spike quality control sample.
** Value may be biased low and may be the minimum concentration due to -31% recovery of laboratory matrix spike quality control sample.
*** Value may be biased high due to 129% recovery of laboratory matrix spike quality control sample.
[1] Not Detected
[2] Not Applicable

Table 2. Field Quality Control Analytical Results

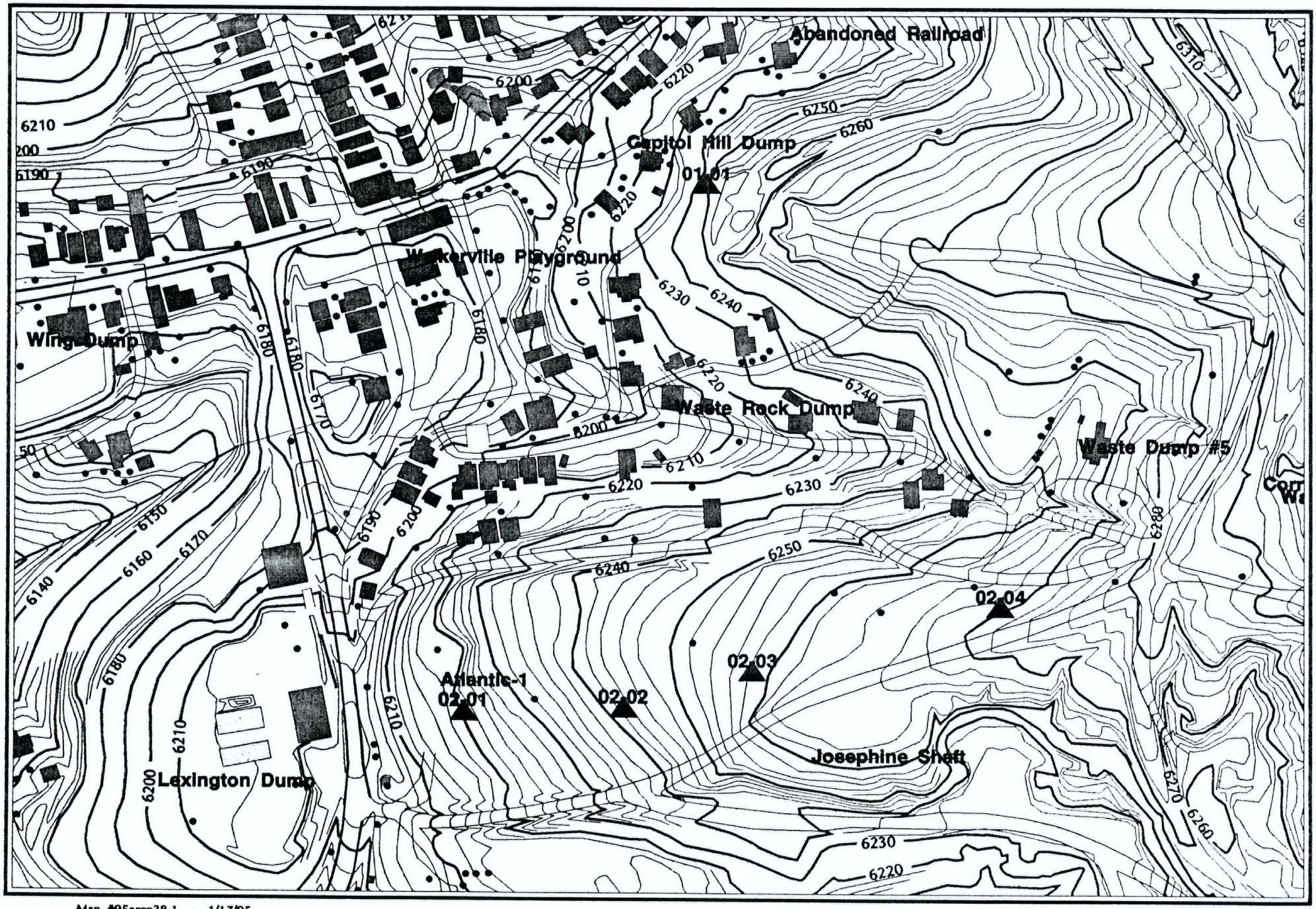
Field Quality Control Sample	Description	As	Cd	Cu	Pb	Zn	pH
038-WA-02-04	Natural Sample (mg/kg)	95.4	2.86	548	523	918	3.57
038-WA-02-05	Field Duplicate (mg/kg)	145	3.16	537	496	1,050	3.59
Relative % Difference	%	41	10	2	5	13	1
038-WA-20-02	Natural Sample (mg/kg)	101	2.57	635	507	1,120	3.70
038-WA-20-03	Field Duplicate (mg/kg)	90.2	2.63	744	659	1,230	3.69
Relative %Difference	%	11	2	16	26	9	0
SRM Average	Average of Previous Results (mg/kg)	114.2	12.1	388	4,211	5,130	4.04
038-WA-13-01	Butte SRM (mg/kg)	103	9.52	362	3,610	4,990	4.04
Relative % Difference	%	10	24	7	15	3	0
038-WA-03-01	Rinsate Blank (mg/l)	ND[1]	ND	0.01	ND	0.577	NA[2]
038-WA-21-01	Rinsate Blank (mg/l)	ND	ND	0.108	ND	0.143	NA

[1] Not Detected
[2] Not Applicable

Table 3. Lab Quality Control Analytical Results

Lab Quality Control Sample	Description	As	Cd	Cu	Pb	Zn
Laboratory Control Sample	Percent Recovery	109, 84	93, 94	93, 94	95, 94	94, 95
Laboratory Sample Duplicate	Relative Percent Difference	17, 7	0, 3	5, 23	4, 3	33, 3
Laboratory Spike	Percent Recovery	737[1],436[1]	83, 129[2]	125, 107	73[3], 65[1]	-31[4], 1212[1]
Method Blank	mg/kg	ND[5]	ND	ND	ND	ND, 3, 4

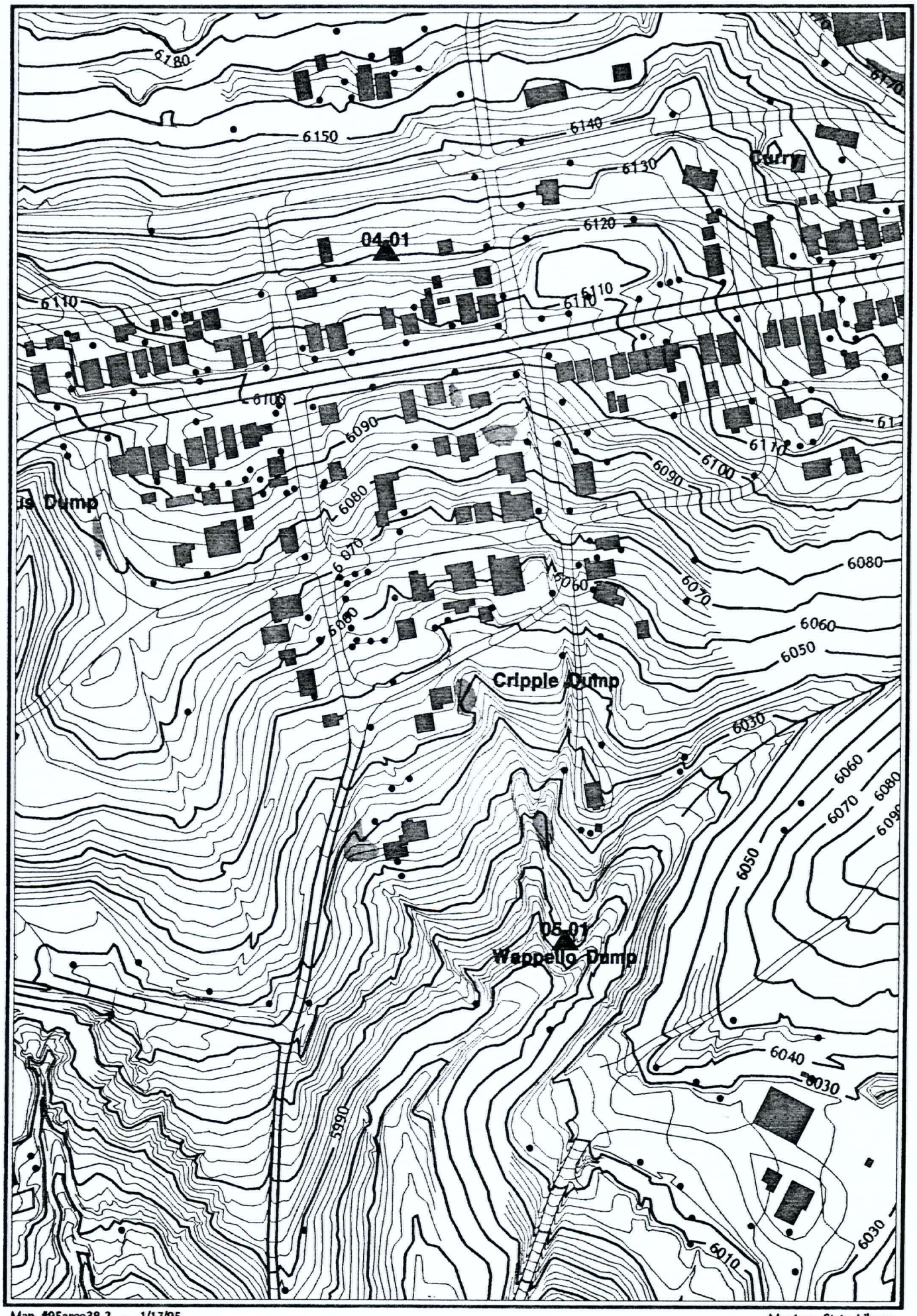
[1] Not considered accurate or used to judge the accuracy of the sample results because natural sample result is greater than 4 times the spike concentration.
[2] Representative samples may be biased high due to greater than 125% recovery of laboratory matrix spike quality control sample.
[3] Representative samples may be biased low due to less than 75% recovery of laboratory matrix spike quality control sample.
[4] Representative samples may be biased low due to less than 30% recovery of laboratory matrix spike quality control sample.
[5] Not Detected



Map #95arco38-1 - 1/17/95

Figure 1

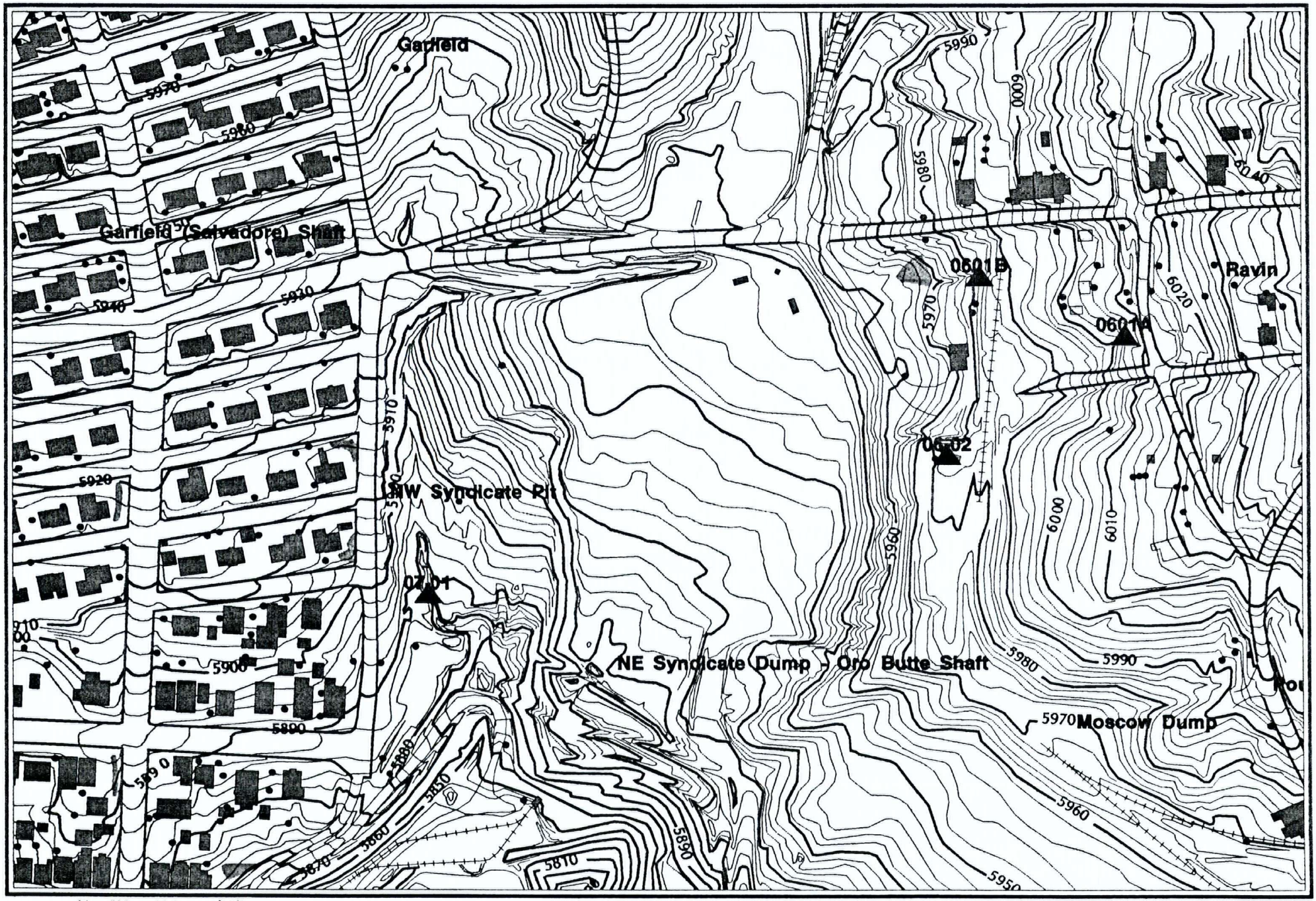
Montana State Library
Natural Resource Information System



Map #95arco38-2 - 1/17/95

Montana State Library
Natural Resource Information System

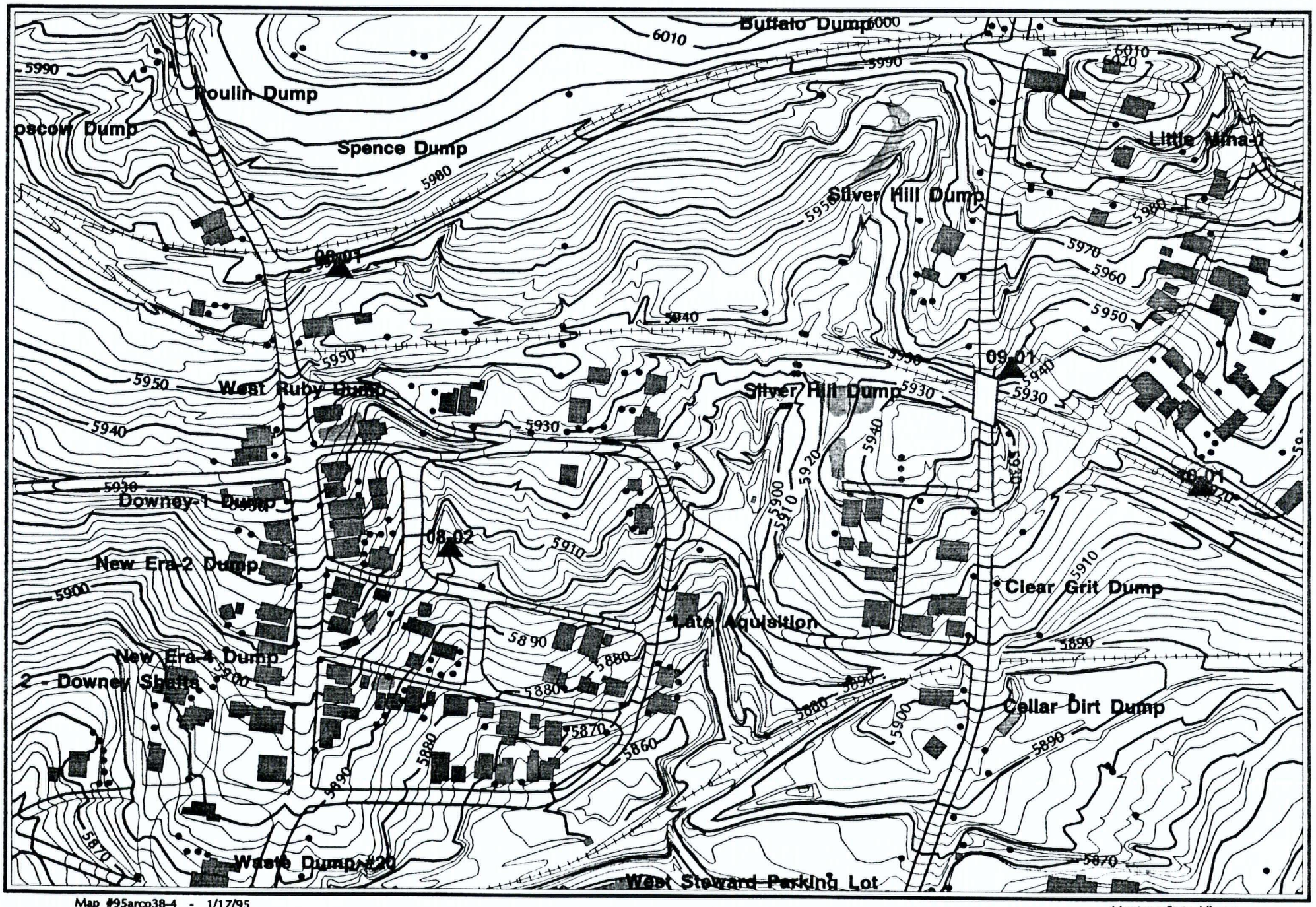
Figure 2



Map #95arco38-3 - 1/17/95

Figure 3

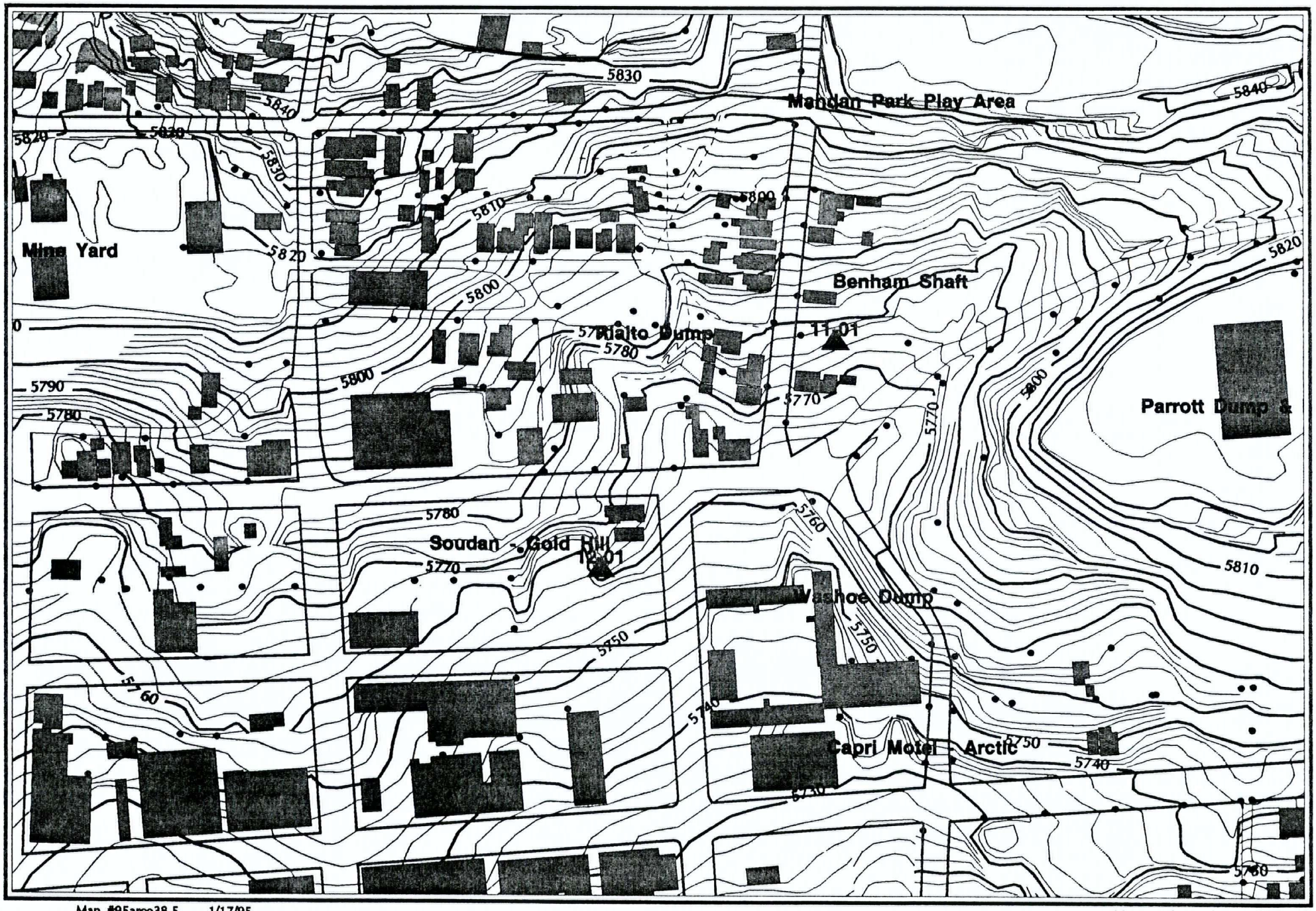
Montana State Library
Natural Resource Information System



Map #95arco38-4 - 1/17/95

Figure 4

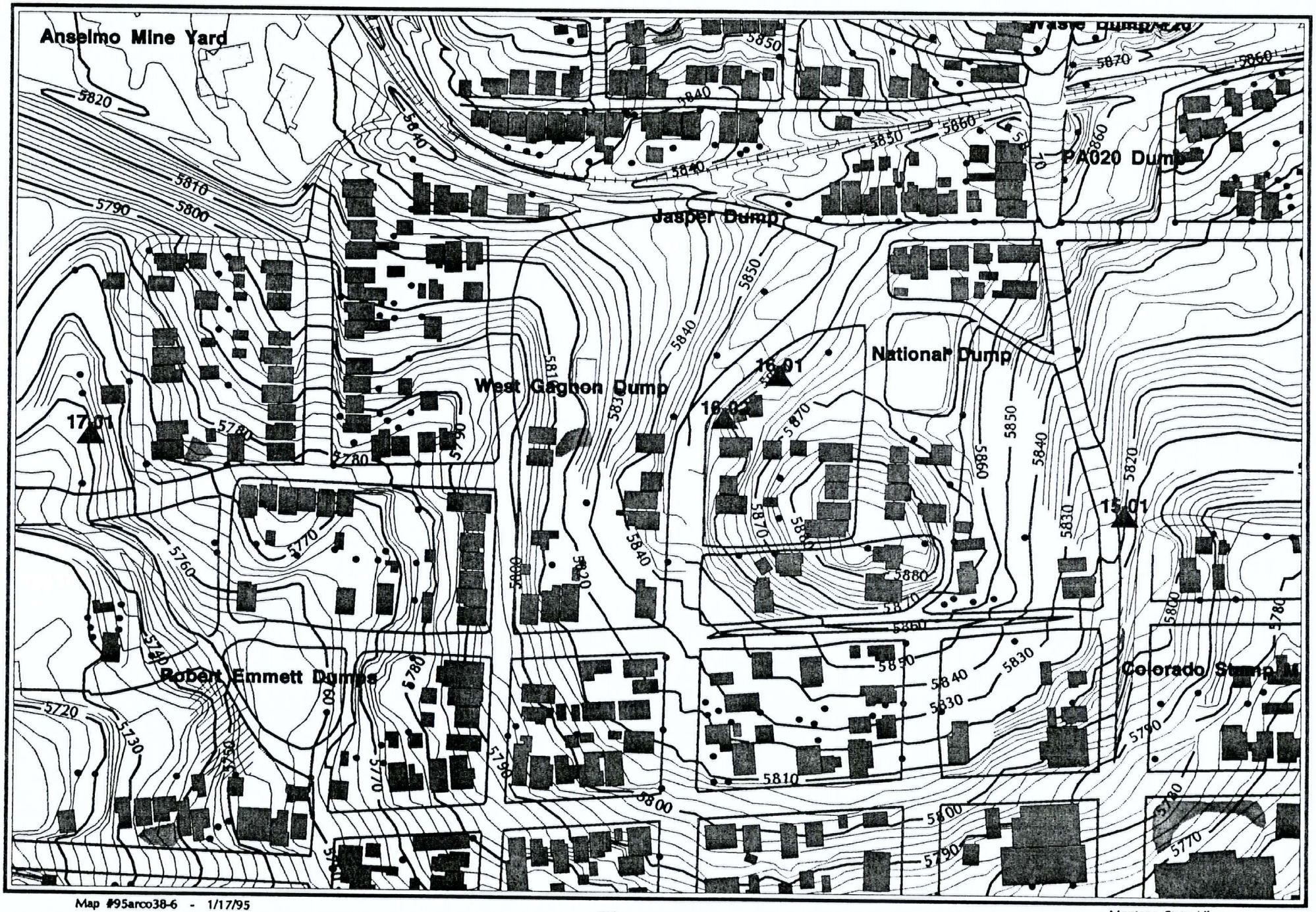
Montana State Library
Natural Resource Information System



Map #95arco38-5 - 1/17/95

Figure 5

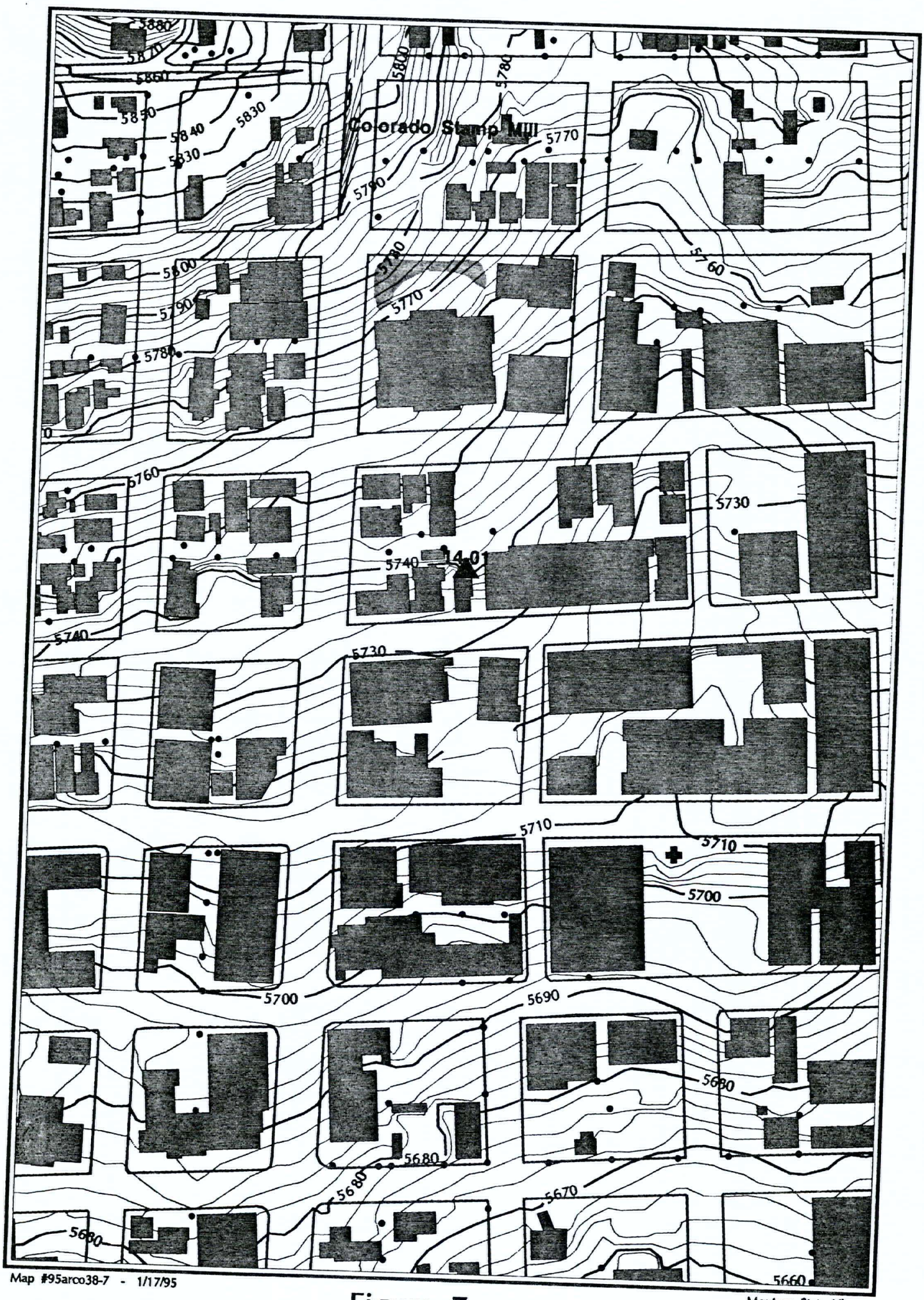
Montana State Library
Natural Resource Information System



Map #95arco38-6 - 1/17/95

Figure 6

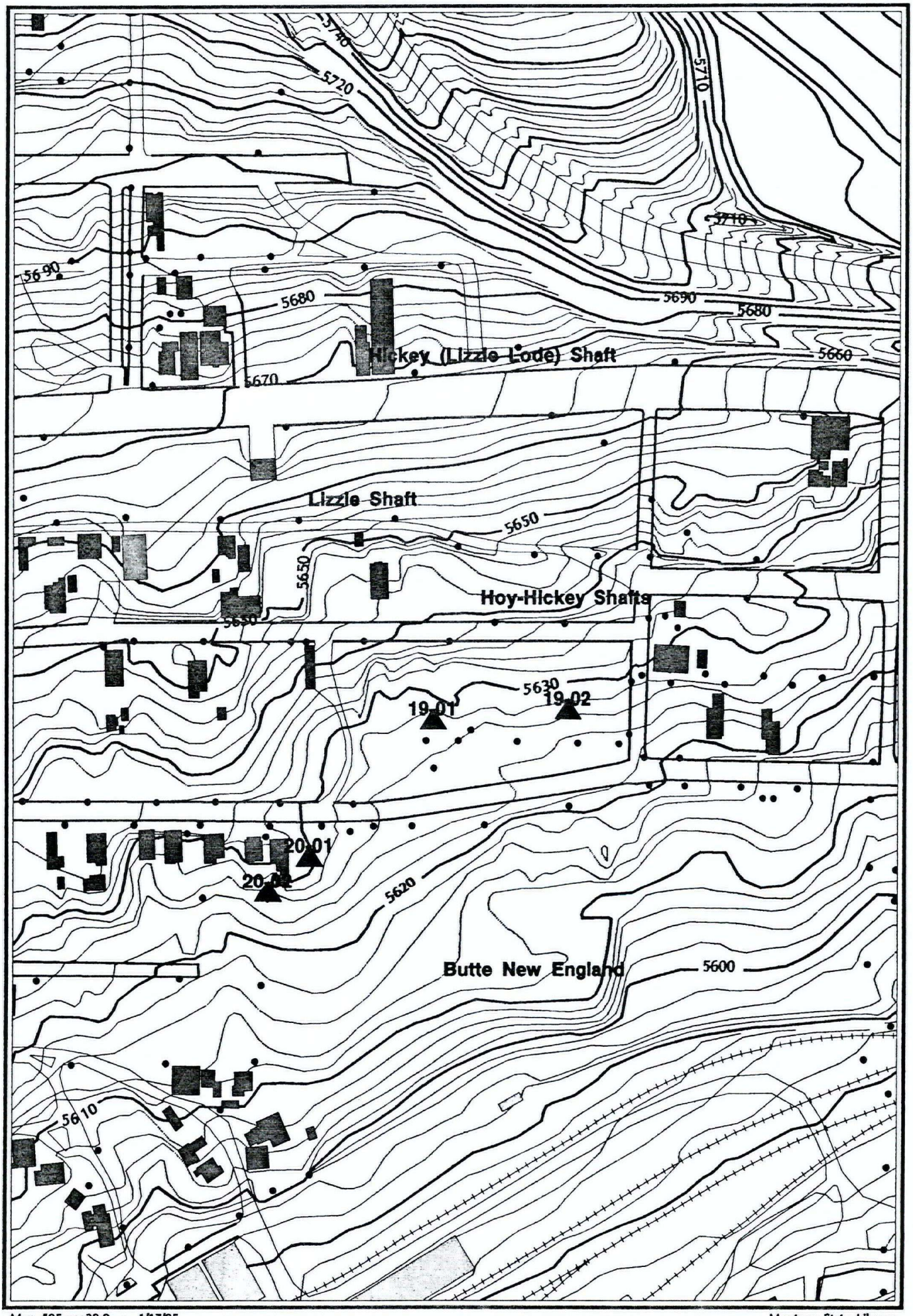
Montana State Library
Natural Resource Information System



Map #95arco38-7 - 1/17/95

Figure 7

Montana State Library
Natural Resource Information System



Map #95arco38-9 - 1/17/95

Figure 9

Montana State Library
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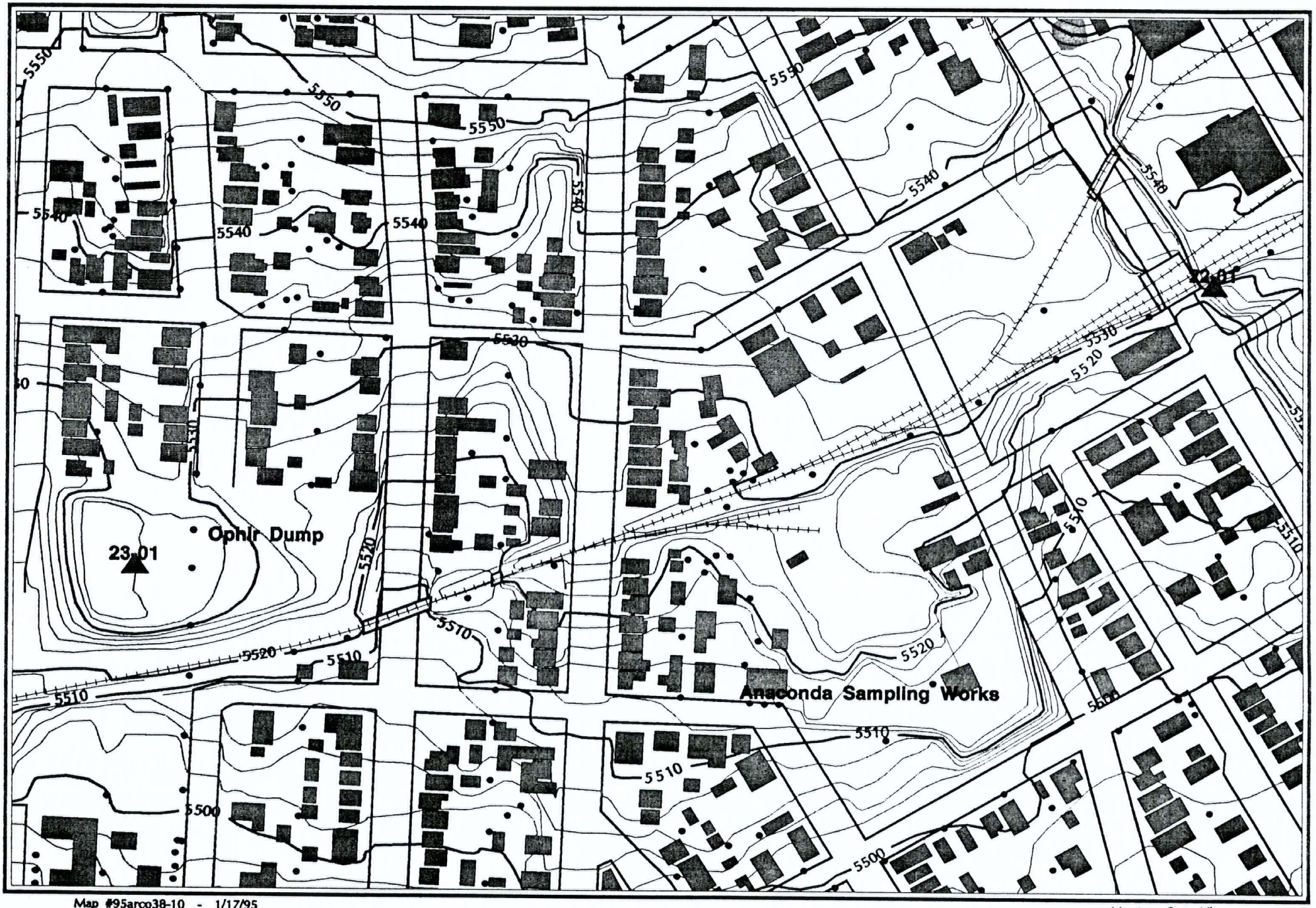
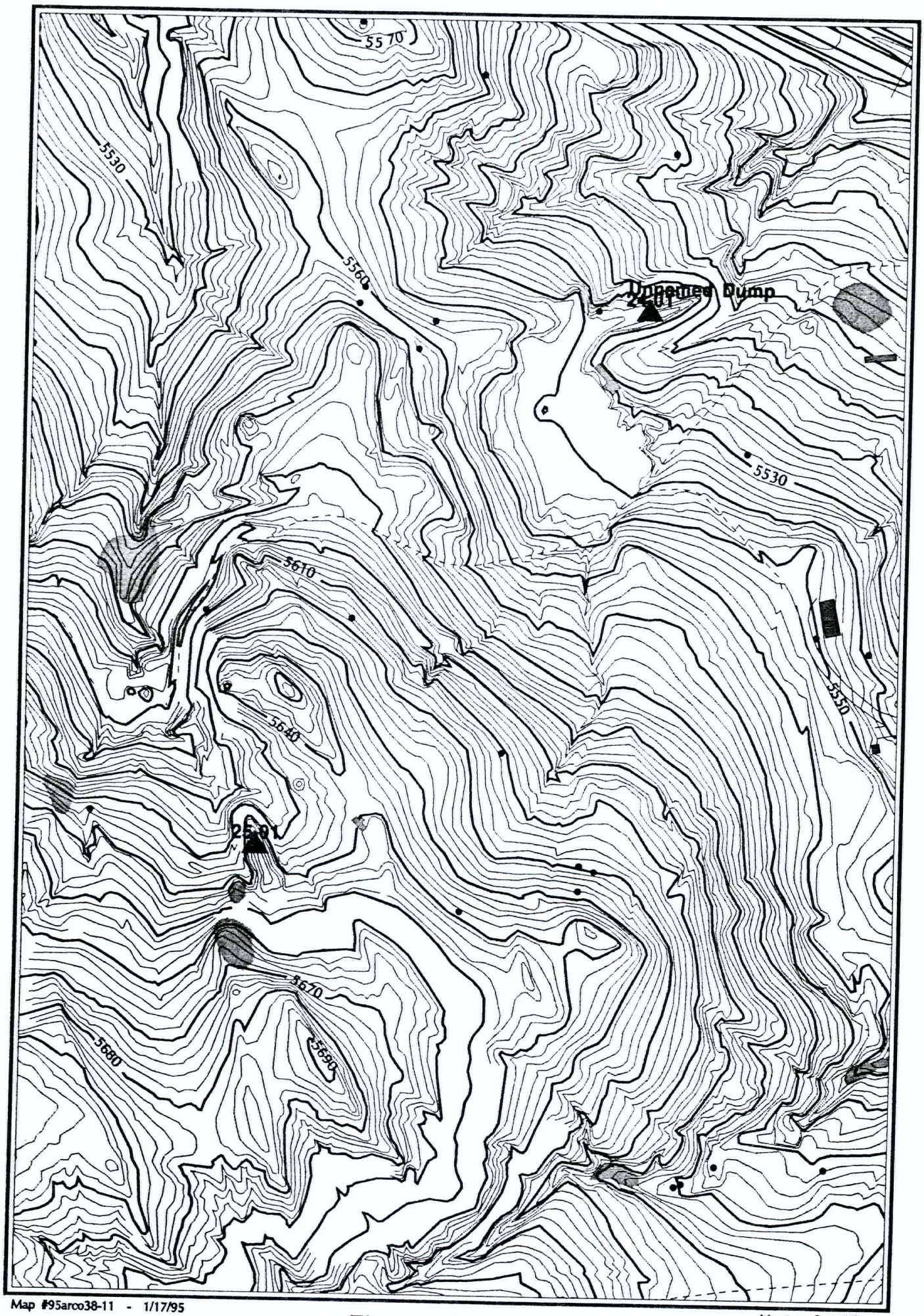


Map #95arco38-10 - 1/17/95

Figure 10

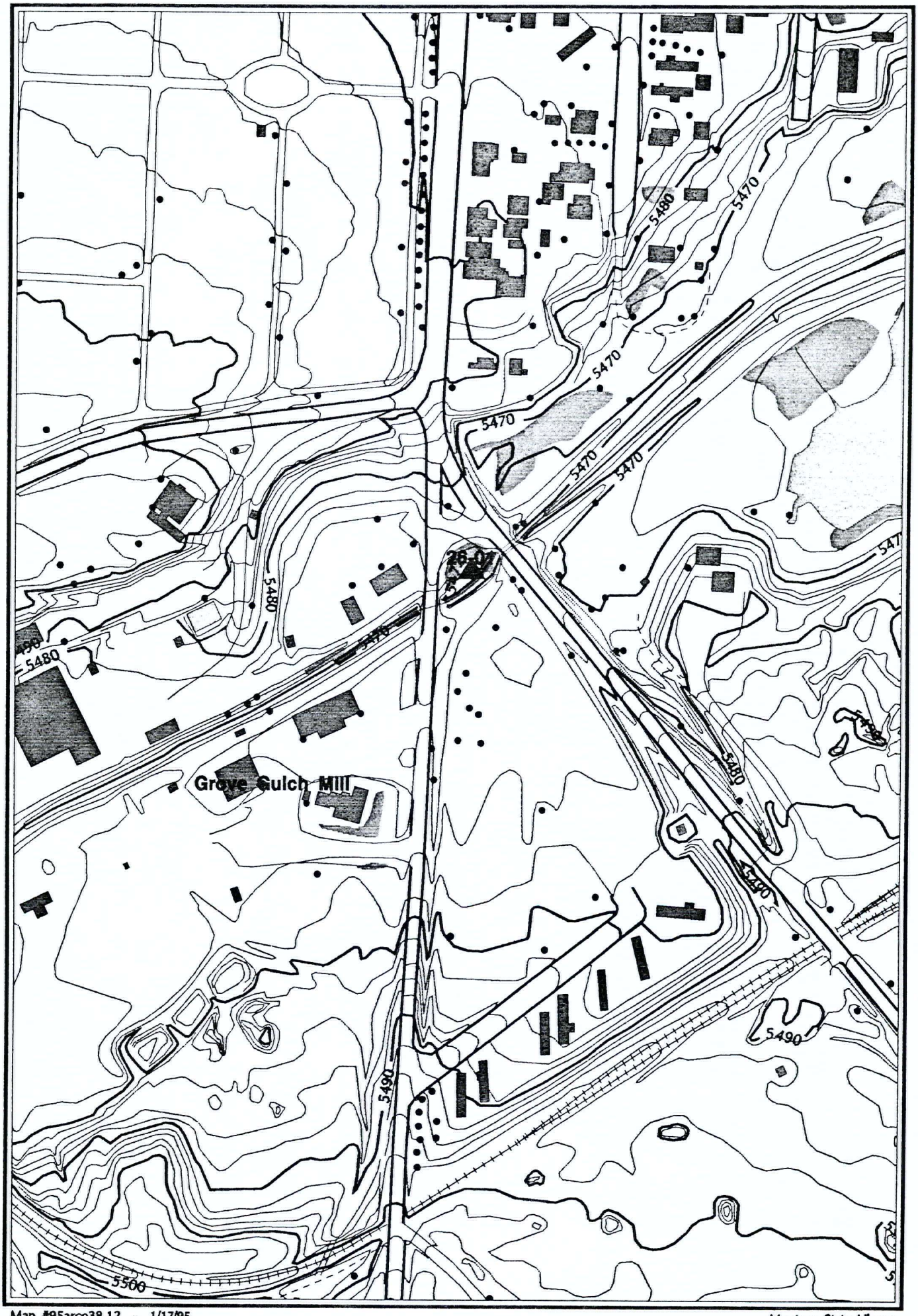
Montana State Library
Natural Resource Information System



Map #95arco38-11 - 1/17/95

Figure 11

Montana State Library
Natural Resource Information System



Map #95arco38-12 - 1/17/95

Figure 12

Montana State Library
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"Rite in the Rain"®

ALL-WEATHER

TRANSIT

Notebook No. 301

BUTTE PRIORITY SOILS OPERABLE UNIT

SILVER BOW CREEK / BUTTE AREA NPL SITE

NOVEMBER, 1994 SOIL SAMPLING

DCN: 7760-038-FN-DFSM

"Rite in the Rain"®
ALL-WEATHER WRITING PAPER

Name CDM FEDERAL PROGRAMS CORP.

Address POWER BLOCK, SUITE 4W
HELENA, MT 59601

Phone (406) 443-7559

Project SILVER BOW CREEK / BUTTE AREA
BUTTE PRIORITY SOILS OPERABLE UNIT
NOVEMBER, 1994 SOIL SAMPLING
NOVEMBER 8 - 14, 1994

CONTACT: BOB RENNICK (CDM FEDERAL)
DARREL STORAHL (CDM FEDERAL)
443-7559

OCN: 7760-038-FN-DFSM

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2 PURPOSE & DESCRIPTION
4 ATLANTIC DUMP
6 DUPLICATE SAMPLE / CAPITOL HILL
8 RINSATE SAMPLE / DALY & NORTH ST.
10 WAPPELLO DUMP
12 SOUTH OF MISSOULA ST.
14 MISSOULA GULCH NORTH OF SYNDICATE
16 NORTH OF WEST RUBY DUMP
18 SOUTH OF WEST RUBY DUMP
20 EAST OF MAIN ST.
22 OLD BENHAM SHAFT / SILVER GOLD HILL / BRM
24 WEST OF BUS DEPOT
26 EAST BANK OF MONTANA AVE.
28 NATIONAL DUMP WEST / SW
30 EAST OF ANSELMO MINE YARD
32 WESTERN ST. RAILROAD GRADE
34 SOUTH OF HOT HICKEY / WEST OF BUTTE / NEW ANSELMO
36 RINSATE SAMPLE / NEVADA & THIRD ST. BRIDGE
38 OPHIR DUMP
40 UNAMED DUMP (#148)
42 SOUTH OF UNAMED DUMP #148
44 GROVE GULCH CREEK (HAFER PROPERTY)

BPSOU NOVEMBER, 1994 SOIL SAMPLING

11-8-94

D. STORDAHL

PURPOSE AND DESCRIPTION

THE BPSOU NOVEMBER, 1994 SOIL SAMPLING CONSISTS OF COLLECTING 31 SOIL SAMPLES FROM MINE WASTE AREAS LOCATED IN BUTTE, MT. THE SOIL WILL BE ANALYZED FOR As, Cd, Cu, Pb, Zn, + pH. RESULTS WILL BE USED BY THE EPA TO DETERMINE IF THESE WASTE AREAS CONTAIN ELEVATED METALS THAT WOULD WARRANT FURTHER ACTION BY EPA. DETAILED INFORMATION OF THIS SAMPLING EVENT CAN BE FOUND IN THE TASK SPECIFIC SAMPLING MEMORANDUM (TSSM) DATED NOVEMBER 7, 1994 (DCN # 7760-038-SP-DFMZ) AND THE SITE-WIDE HEALTH & SAFETY PLAN ADDENDUM (DCN # 7760-038-HS-DFNB). THE LAB TO BE UTILIZED IS PACE, INCORPORATED, 9608 LORET BLV., LENEXA, KS 66219. THE CONTACT PERSON FOR PACE IS JOHN GERKIN (913)-599-5665. SAMPLING EQUIPMENT WAS PREPARED AND DECONTAMINATED ON 11-8-94 FOLLOWING THE PROCEDURES SPECIFIED IN THE TSSM. ALL FIELD SAMPLES WILL BE COLLECTED BY DARREL STORDAHL (CDM FEDERAL) UNDER GUIDANCE FROM SARA WEINSTOCK (RPM, EPA, BUTTE). DAVE KIRKPATRICK (CDM FEDERAL) WILL REMAIN IN VEHICLE AND WILL PREPARE SAMPLE JAR LABELS AND CUSTODY SEALS. ACCESS AGREEMENTS WERE MADE BY DAVE KIRKPATRICK.

Darrel Stordahl

11-9-94

C ROAHL, D. KIRKPATRICK SLIGHT WIND COLD

1440 - ARRIVE AT ATLANTIC DUMP. SET UP FOR SAMPLING.

1500 - COLLECTED SAMPLE 038-WA-02-01. PICTURE 1-1 TOWARD NORTH SHOWS CENTER COMPOSITE LOCATIONS. PICTURES 1-2 & 1-3 TOWARD SOUTH - SOUTHWEST SHOW ALL COMPOSITE LOCATIONS. (BLUE FLAGS) EPA TAG # 8-79002 SEE MAP PAGE 5

1540 COLLECTED SAMPLE 038-WA-02-02. PICTURE 17-4 TOWARD SOUTH SHOWS CENTER COMPOSITE LOCATIONS. PICTURES 17-5 & 17-6 TOWARD WEST SHOW COMPOSITE LOCATIONS. EPA TAG # 8-79004. SEE MAP PAGE 5

1605 COLLECTED SAMPLE 038-WA-02-03. PICTURE 17-7 TOWARD NORTH SHOWS CENTER COMPOSITE SAMPLE LOCATION. PICTURES 17-8 17-9, & 17-10 TOWARD NORTH SHOW COMPOSITE LOCATIONS. EPA TAG # 8-79005. SEE MAP ON PAGE 5

1630 COLLECTED SAMPLE 038-WA-02-04. PICTURE 17-11 TOWARD WEST SHOWS CENTER COMPOSITE LOCATION.

Darrel Stordahl

11-9-94

D.S.

ATLANTIC-1

Darrel Stordahl

11-9-94

SLIGHT WIND
COLD

D. STORDAHL, D. KIRKPATRICK

1630 CONT.
~~1440~~ DS. PICTURE 1 ~~2~~ DS-12 TOWARD WEST SHOWS COMPOSITE LOCATIONS. EPA TAG # 8-79006. SEE MAP ON PAGE 5

1635 COLLECTED SAMPLE 038-WA-02-05. DUPLICATE OF SAMPLE 038-WA-02-04. EPA TAG # 8-79007.

1810 ARRIVE BACK IN HELENA. SAMPLES LOCKED IN TRUCK WITH CUSTODY SEALS PLACED ON COOLER LID.

11-10-94 D. STORDAHL

0645 RETURN TO BUTTE. CUSTODY SEALS WERE STILL FASTENED TO COOLER LID.

0800 MET WITH SARA WEINSTOCK & DAVE KIRKPATRICK ABOUT ACCESS AGREEMENTS.

0850 ARRIVE AT CAPITOL HILL DUMP.

0920 COLLECTED SAMPLE 038-WA-01-01. COMPOSITE 0-1" SAMPLE OF DUMP MATERIAL. PICTURES 1 ~~2~~ DS-13 & 1 ~~2~~ DS-14 TOWARDS NORTH SHOW THE 5 COMPOSITE LOCATIONS. PICTURE 1 ~~2~~ DS-15 TOWARDS WEST SHOWS CENTER COMPOSITE SAMPLE. SEE MAP ON PAGE 7. EPA TAG # 8-79001

Darrel Stordahl

11-10-94

D.S. CAPITOL HILL DUMP

Darrel Stordahl

D. STURDAHL

11-10-94

CLOUDY
COOL

0950 COLLECTED CROSS-CONTAMINATION RINSATE SAMPLE #038-WA-03-01. POURED DISTILLED WATER OVER CLEAN TROWEL & COLLECTION BOWL. POURED WATER FROM BOWL TO WATER SAMPLE BOTTLE TREATED WITH HNO_3. EPA TAG # 8-79008

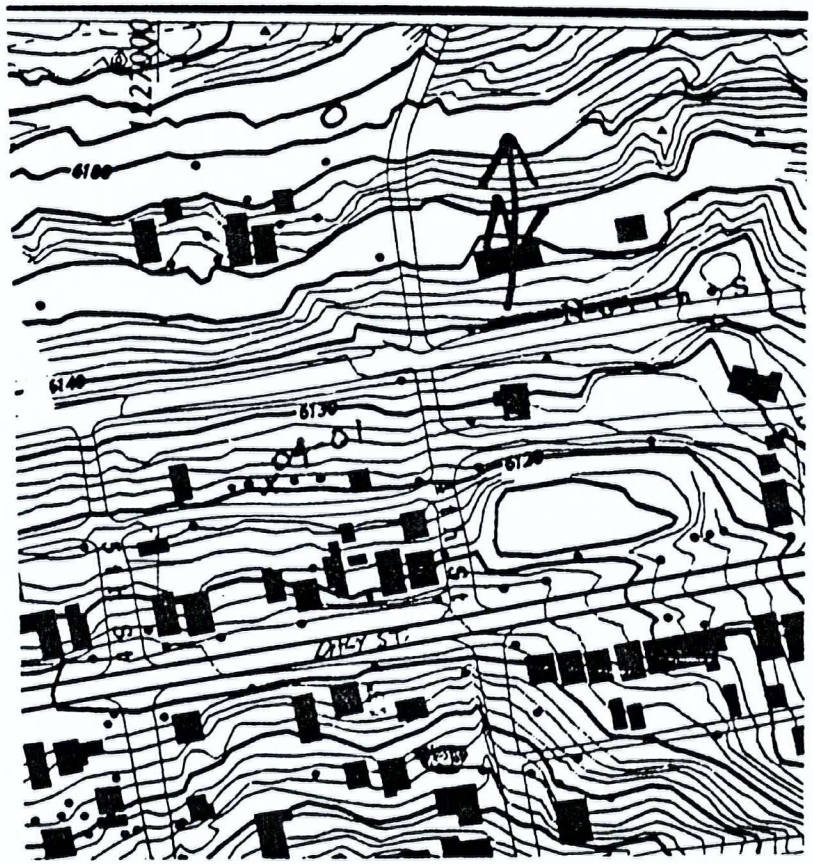
1015 COLLECTED 0-1" COMPOSITE SAMPLE # 038-WA-04-01. BETWEEN DALY & NORTH ST. PICTURE 1-16 TOWARDS NE SHOWS COMPOSITE LOCATIONS. PICTURE 1-17 TOWARDS WEST SHOWS CENTER COMPOSITE LOCATION. SEE MAP ON PAGE 9. EPA TAG # 8-79009

Darrel Sturdahl

D. STURDAHL

11-10-94

DALY AND NORTH STREET



Darrel Sturdahl

D. STORDAHL
11-10.

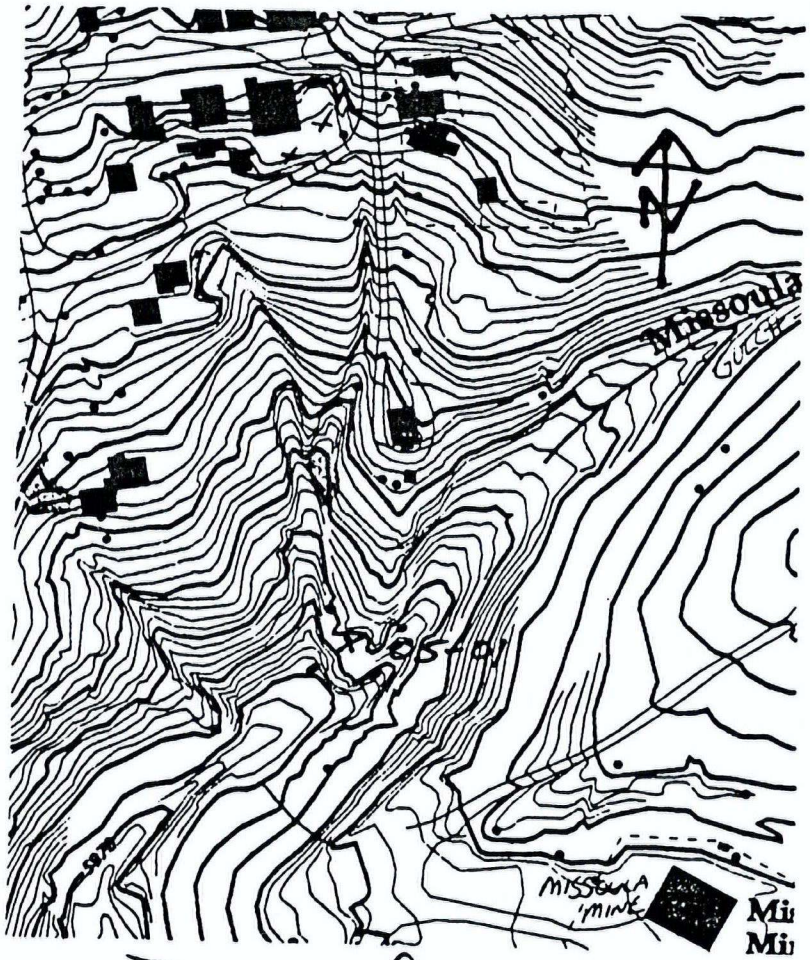
CLOUDY
COOL

1050 COLLECTED 0-1" COMPOSITE SAMPLE # 038-WA-05-01. WAPPELLO DUMP. PICTURE 1-18 TOWARDS NORTH SHOWS COMPOSITE LOCATIONS. PICTURE 1-19 TOWARDS NORTH SHOWS CLOSE-UP OF CENTER COMPOSITE LOCATION. SEE MAP ON PAGE 11. EPA TAG # 8-79010

Darrel Stordahl

D. STORDAHL
1-94

WAPPELLO DUMP



Darrel Stordahl

D. STORAHL
11-10-
D. FITZPATRICK

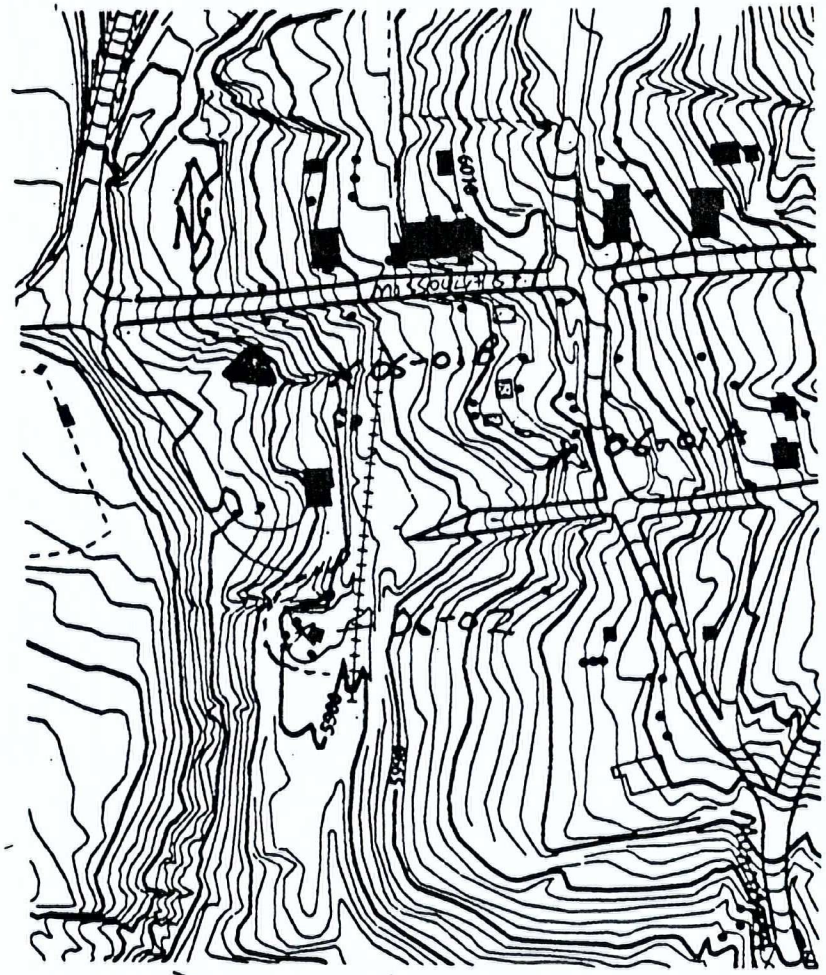
PARTLY CLOUDY COOL

D. STORAHL
11-14

SOUTH OF MISSOULA STREET

1150 COLLECTED 0-1" COMPOSITE SAMPLE # 038-WA-06-01. 3 SUB SAMPLES TAKEN ON EAST END OF VACANT FIELD. 2 SUB SAMPLES TAKEN FROM RAILROAD FILL MATERIAL FROM WEST END OF LOT. PICTURE 1-20 TOWARDS WEST SHOWS 3 SUB SAMPLE LOCATIONS. PICTURE 1-21 TOWARD EAST SHOWS CLOSE-UP OF COMPOSITE LOCATION. PICTURE 1-22 TOWARD SOUTH SHOWS TWO COMPOSITE LOCATIONS AT WEST END OF LOT. SEE MAP ON PAGE 13. EPA TAG # 8-79012

1225 COLLECTED 0-1" COMPOSITE # 038-WA-06-02. PICTURES 1-23 & 1-24 TOWARDS NORTH EAST SHOW COMPOSITE LOCATIONS. PICTURE 1-25 TOWARDS NORTH EAST SHOWS 2 COMPOSITE LOCATIONS. SEE MAP ON PAGE 13. EPA TAG # 8-79011



D. STORDAHL

10-94 D. KIRKPATRICK PARTLY CLOUDY COOL

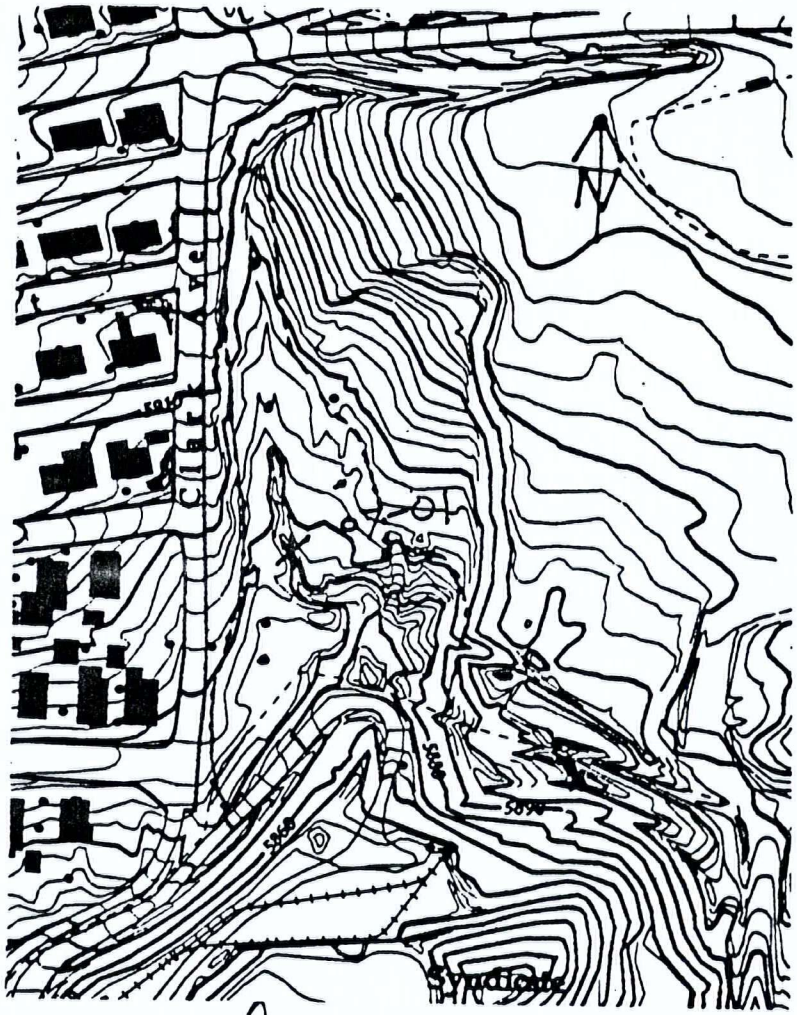
1310 COLLECTED 0-1" COMPOSITE SAMPLE # 038-WA-07-01. 3 ~~2~~ SUBSAMPLES TAKEN FROM DITCH. 2 TAKEN ON EAST & WEST SIDES OF DITCH. PICTURE 1-26 TOWARDS NORTH SHOWS 2 SUBSAMPLE LOCATIONS. PICTURE 1-27 TOWARD SOUTH SHOWS CENTER COMPOSITE LOCATION IN DITCH. PICTURES 2-1 + 2-2 TOWARDS SE SHOWS SOUTH END OF MISSOULA GULCH DITCH ABOVE SYNDICATE PIT. SEE MAP ON PAGE 15. EPA TAG #B-79013

Darrel Stordahl

D. STORDAHL

11-10-94

MISSOULA GULCH DITCH
NORTH OF SYNDICATE PIT



Darrel Stordahl

11-10-

1345

O. KIRKPATRIC

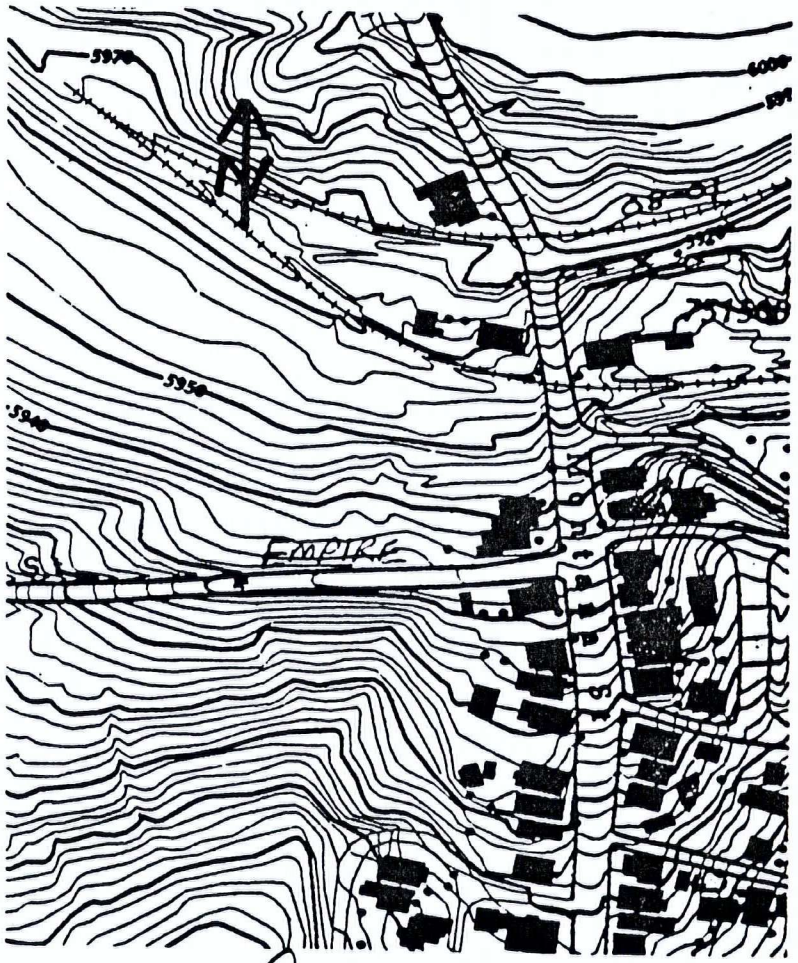
PARTLY CLOUDY COOL

COLLECTED 0-1" COMPOSITE SAMPLE # 038-WA-08-01. PICTURE 2-3 DS TOWARD EAST SHOWS COMPOSITE LOCATIONS. SEE MAP ON PAGE 17. EPA TAG # 8-79015.

Daniel Stoddard

1 -94

NORTH OF WEST RUBY DUMP



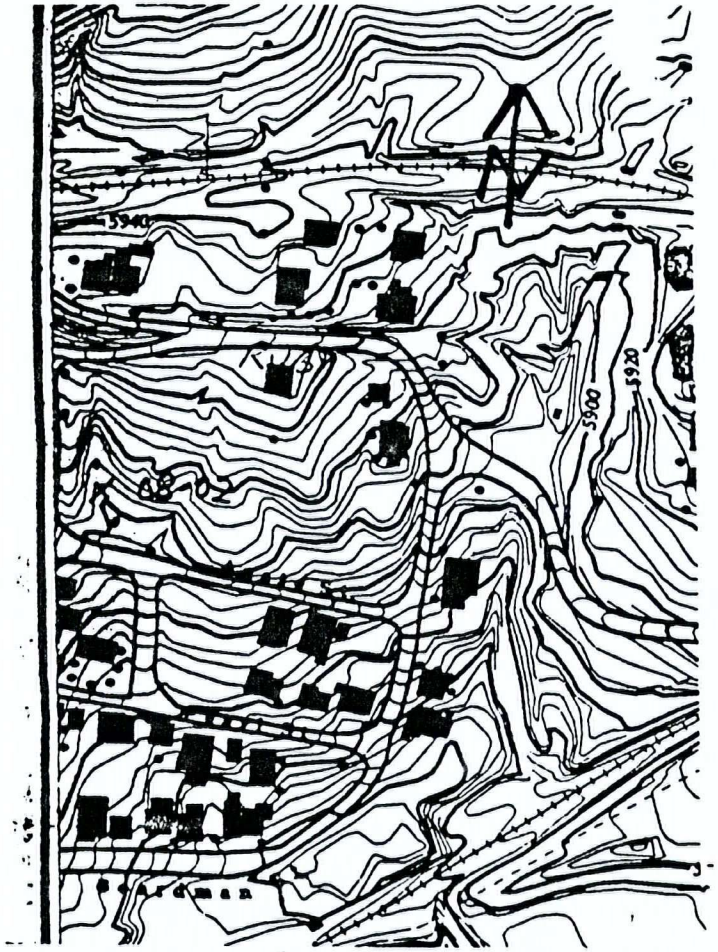
Daniel Stoddard

D. STORDAHL PARTLY CLOUDY
11-10-94 D. KIRKPATRICK COOL
1410 COLLECTED 0-1" COMPOSITE SAMPLE # 038-WA-08-02. COLLECTED SUB-SAMPLES ALONG ROAD & IN DITCH. PICTURE 2-4 TOWARDS EAST SHOWS COMPOSITE LOCATIONS ALONG ROAD. PICTURES 2-5 & 2-6 SHOW LOCATIONS IN DITCH. SEE MAP ON PAGE 19. EPA TAG # 8-79014.

Darlene Stordahl

D. STORDAHL
11-10-94

SOUTH OF WEST RUBY DUMP



Darlene Stordahl

O. STORDAHL
O. KIRKPATRICK

PARTLY CLOUDY
COOL

11-10-94

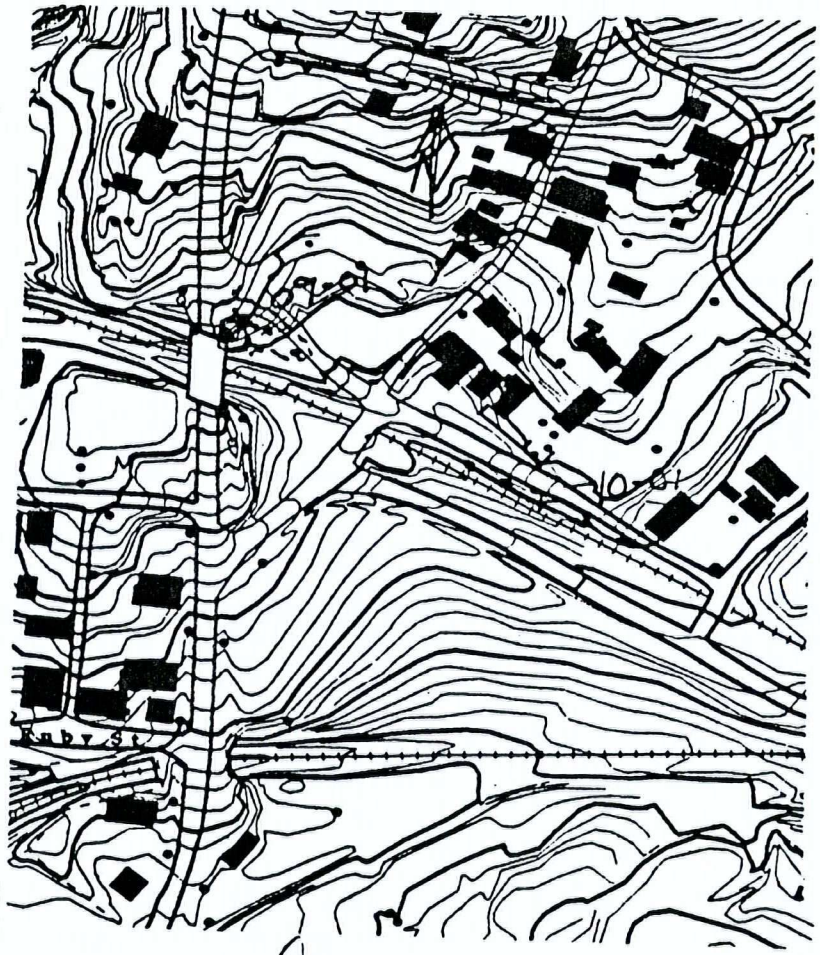
1440 COLLECTED 0-1" COMPOSITE SAMPLE # 038-WA-09-01. WASTE MATERIAL EAST OF MAIN ST. BRIDGE. PICTURES 2-7, 2-8, + 2-9 TOWARD EAST SHOW COMPOSITE LOCATIONS. SEE MAP ON PAGE 21. EPA TAG # 8-79016.

1455 COLLECTED 0-1" COMPOSITE SAMPLE # 038-WA-10-01. PICTURE 2-10 TOWARDS NORTH SHOWS CLOSE-UP OF CENTER COMPOSITE SAMPLE. PICTURE 2-11 TOWARDS EAST SHOWS ALL COMPOSITE LOCATIONS. SEE MAP ON PAGE 21. EPA TAG # 8-79017.

Darrel Stordahl

O. STORDAHL
11-10-94

EAST OF MAIN ST.
EAST BRIDGE / SOUTH OF RAILROAD



Darrel Stordahl

D. STORAHL

-10-94 D. KIRKPATRICK

PARTLY CLOUDY COOL

1605 COLLECTED 0-1" COMPOSITE SAMPLE # 038-WA-11-01. PICTURE 2-12 TOWARDS NW SHOWS CENTER COMPOSITE LOCATION. PICTURES 2-13, 2-14 TOWARDS EAST SHOWS COMPOSITE LOCATIONS. SEE MAP ON PAGE 23. EPA TAG # 8-79018.

1620 COLLECTED 0-1" COMPOSITE SAMPLE # 038-WA-12-01. PICTURE 2-15 & 2-16 TOWARDS NE SHOW CENTER COMPOSITE. PICTURE 2-17 TOWARDS SOUTH SHOWS COMPOSITE LOCATIONS. SEE MAP ON PAGE 23. EPA TAG # 8-79019.

1630 COLLECTED BUTTE SPECIFIC STANDARD REFERENCE MATERIAL SAMPLE # 038-WA-13-01. EPA TAG # 8-79020.

1745 ARRIVE BACK IN HELENA. SAMPLES LOCKED IN TRUCK WITH CUSTODY SEALS PLACED ON ~~LID~~ COOLER LID.

Darrel Stordahl

D. STORAHL

11-10-94

OLD BENHAM SHAFT/
SOUDAN-GOLD HILL

Darrel Stordahl

D. STORDAHL
D. KIRKPATRICK

FOGGY
COOL

11-11

0700 HEAD BACK TO BUTTE. CUSTODY SEALS STILL FASTENED TO COOLER LID.

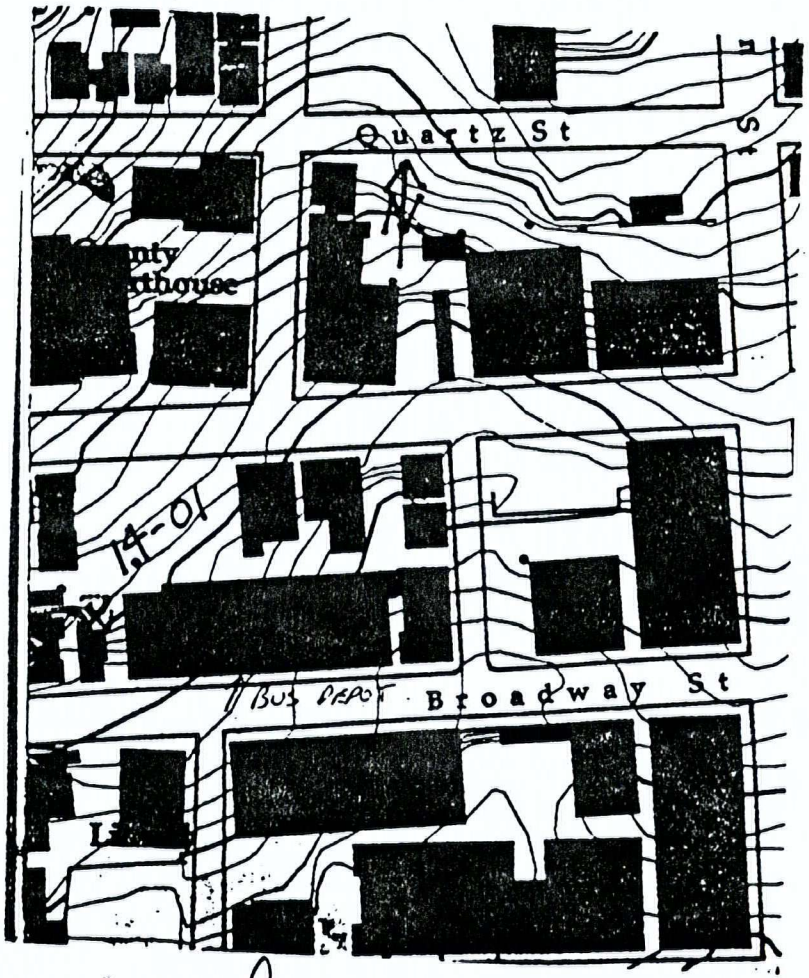
0820 ARRIVE IN BUTTE TO MEET DAVE AT EPA OFFICE. WENT OVER FINAL ACCESS AGREEMENTS.

0940 COLLECTED 0-1" COMPOSITE SAMPLE 038-WA-14-01. SMALL WASTE DUMP USED AS PARKING LOT. PICTURE 2-18 TOWARDS NW SHOWS CLOSE-UP OF CENTER COMPOSITE LOCATION. PICTURE 2-19 TOWARDS WEST SHOW COMPOSITE LOCATIONS. SEE MAP ON PAGE 25. EPA TAG # 8-79021

Daniel Stordahl

D. STORDAHL
11-94

WEST OF
BUS DEPOT



Daniel Stordahl

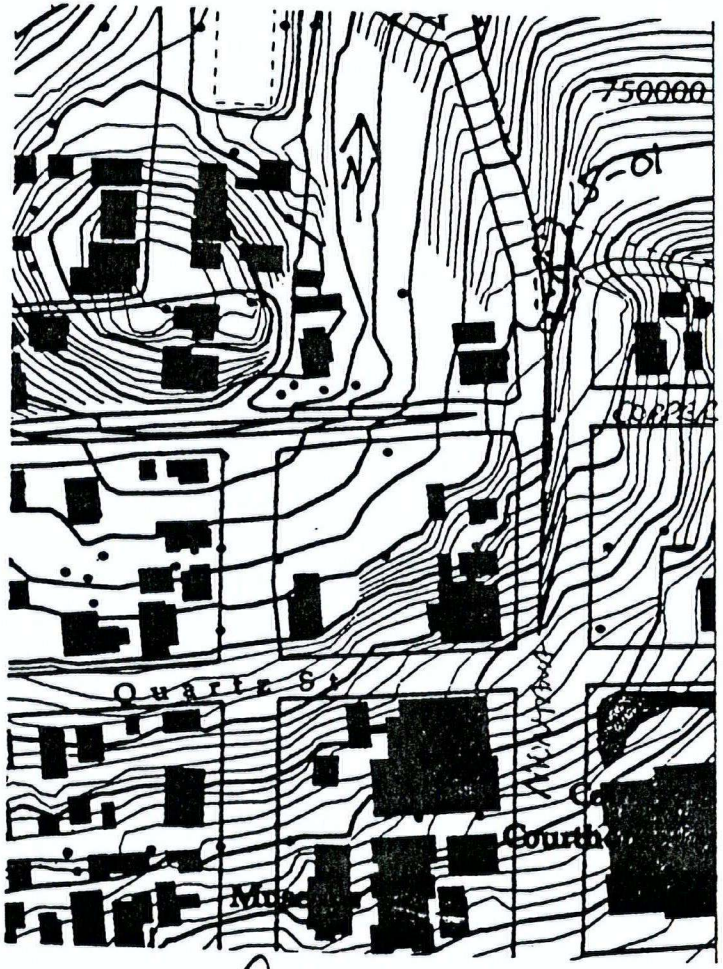
11 14 O. KIRKPATRICK FOGGY COOL

1020 COLLECTED ~~0-1~~ 0-1" COMPOSITE SAMPLE 038-WA-15-01. PICTURE 2-20 TOWARD SOUTH. 2-21 TOWARD NORTH SHOWS COMPOSITE LOCATIONS. PICTURE 2-22 TOWARD WEST SHOWS CLOSE-UP OF CENTER COMPOSITE. PICTURE 2-23 TOWARDS SW SHOWS RETAINING WALL. SEE MAP ON PAGE 27. EPA TAG # 8-79022.

Darrel Goodall

11-11-94

EAST BANK OF MONTANA AVE.



Darrel Goodall

D. STORDAHL
D. KIRKPATRICK

FOGGY
COOL

D. STORDAHL
-11-94

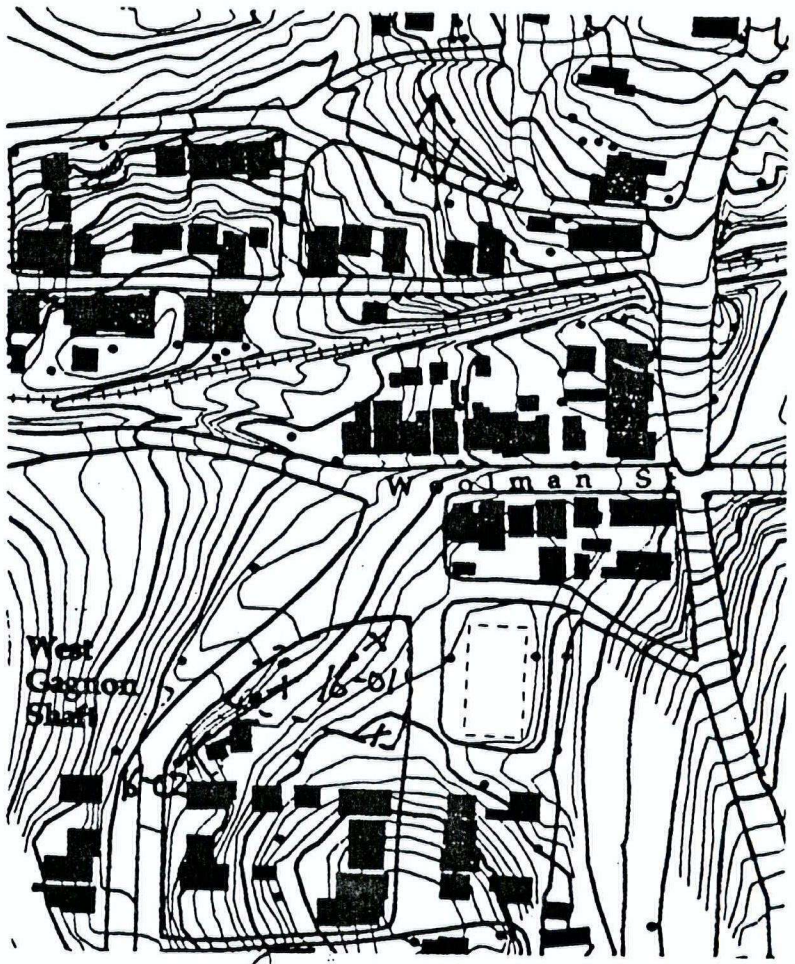
11-1.

NATIONAL DUMP
WEST / SOUTHWEST

1100 COLLECTED 0-1" COMPOSITE SAMPLE 038-WA-16-01. PICTURES 2-24 & 2-25 TOWARDS NORTH SHOWING COMPOSITE LOCATIONS. PICTURE 2-26 TOWARDS NORTH SHOWS CENTER COMPOSITE CLOSE-UP. SEE MAP ON PAGE 29. EPA TAG # 8-79023.

1115 COLLECTED 0-1" COMPOSITE SAMPLE 038-WA-16-02. SMALL WASTE DUMP WITH SHED ON TOP. PICTURE 2-27 TOWARDS EAST SHOWS CLOSE-UP OF CENTER SUB-SAMPLE. PICTURES 2-28 & 2-29 TOWARDS EAST SHOWING 5 ~~SUB-SAMPLE~~ PS SUB-SAMPLE LOCATIONS. SEE MAP ON PAGE 29. EPA TAG # 8-79024

Darkel Stordahl



Darkel Stordahl

D. STORDAHL
D. KIRKPATRICK

SLIGHT FOG
COOL

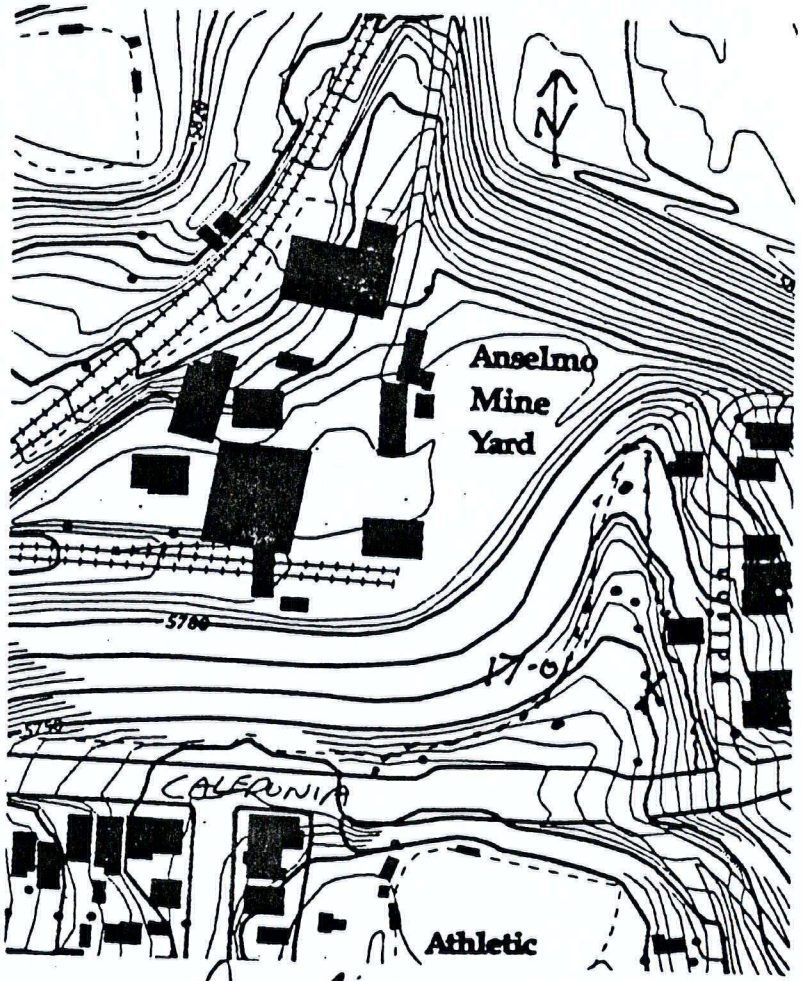
D. STORDAHL
-11-94

11-11-.5
1140

EAST OF ANSELMO
MINE YARD

COLLECTED 0-1" COMPOSITE SAMPLE 038-WA-17-01. PICTURE 2-30 TOWARDS NE SHOWING SUB-SAMPLE LOCATIONS. PICTURES 2-31 & 2-32 TOWARDS NORTH SHOWING LOCATIONS & CLOSE-UP OF CENTER COMPOSITE. SEE MAP ON PAGE 31. EPA TAG # 8-79025

Darlel Stordahl

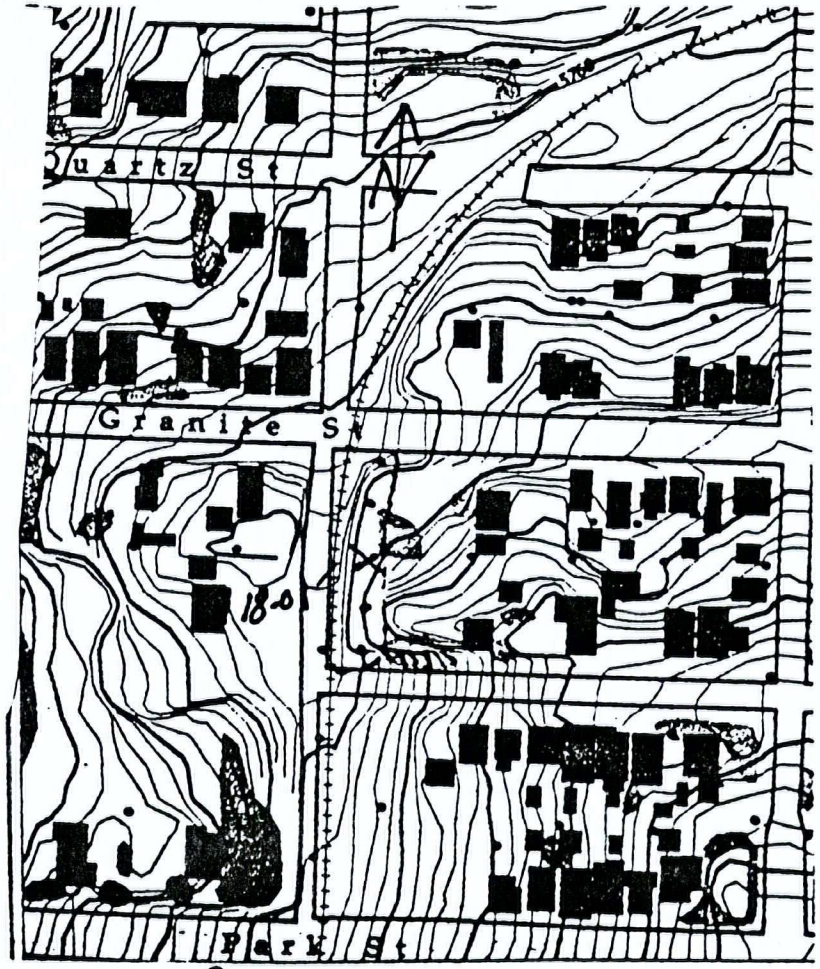


Darlel Stordahl

11-94 D. KIRKPATRICK COOL 11-11-94 WESTERN ST. RAILROAD GRADE

1200 COLLECTED 0-1" COMPOSITE SAMPLE 038-WA-18-01. PICTURES 2-33 & 2-34 TOWARDS NORTH SHOWING SUB-SAMPLE LOCATIONS + CLOSE-UP OF CENTER COMPOSITE LOCATION, SEE MAP ON PAGE 33. EPA TAG # 8-77026. ~~CHAIN OF CU~~ RS.

David Stoddard



David Stoddard

D. STORDAHL
11 94 & KIRKPATRICK

SUNNY
COOL

D. STORDAHL
11-11-94

SOUTH OF HOY HICKEY/
WEST OF BUTTE/NEWENGLAND

1330 COLLECTED 0-1" COMPOSITE SAMPLE 038-WA-19-01. PICTURE 2-35 TOWARDS WEST SHOWING CENTER SUB-SAMPLE. PICTURES 2-36 & 37 LOOKING SW AT COMPOSITE LOCATIONS. SEE MAP ON PAGE 35. EPA TAG # 8-79027

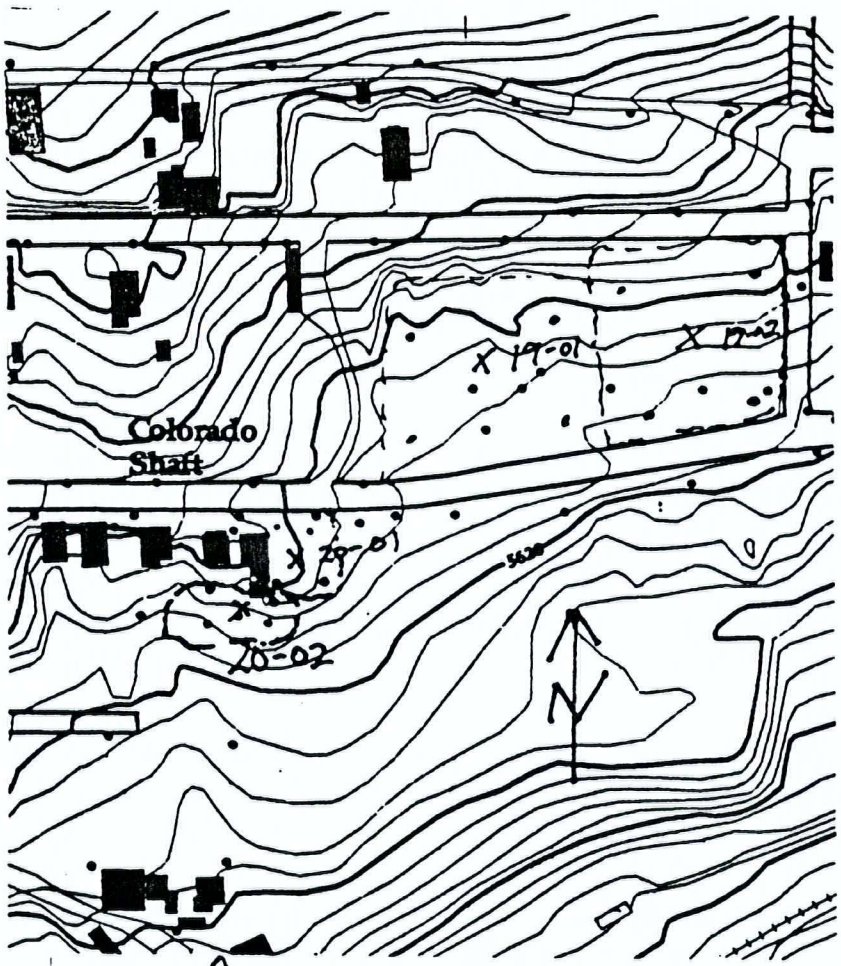
1350 COLLECTED 0-1" COMPOSITE SAMPLE 038-WA-19-02. PICTURES 3-1, 3-2, & 3-3 TOWARDS NORTH SHOWING COMPOSITE LOCATIONS. SEE MAP ON PAGE 35. EPA TAG # 8-79028

1400 COLLECTED 0-1" COMPOSITE SAMPLE 038-WA-20-01. PICTURES 3-4 & 3-5 TOWARDS NORTH SHOW LOCATIONS. SEE MAP ON PAGE 35. EPA TAG # ~~8-79028~~ DS 8-79029

1410 COLLECTED 0-1" COMPOSITE SAMPLE 038-WA-20-02. PICTURES 3-6 & 3-7 TOWARDS NORTH SHOW COMPOSITE LOCATIONS. PICTURE 3-8 TOWARDS EAST SHOWS CLOSE-UP OF CENTER COMPOSITE LOCATION. SEE MAP ON PAGE 35. EPA # 8-~~79029~~ DS 79030

1415 COLLECTED 8 DS DUPLICATE SAMPLE 038-WA-20-03. FIELD DUPLICATE OF 038-WA-20-02. EPA TAG # 8-79031

Darkul Stordahl



Darkul Stordahl

11-1 : O. KIRKPATRICK SUNNY COOL V. STORDAHL 11-11-99

1455 COLLECTED RINSATE BLANK SAMPLE # 038-WA-21-01. POURED DISTILLED WATER OVER TROWEL & BOWL. EPA TAG # 8-79032.

1520 COLLECTED 0-1" COMPOSITE SAMPLE 038-WA-22-01. PICTURE 3-9 NORTH LOOKING AT CENTER COMPOSITE. PICTURE 3-10 TOWARDS NE. PICTURE 3-11 NW SHOWING COMPOSITE LOCATIONS. SEE MAP ON PAGE 37 EPA TAG # 8-79033

Darrel Stordahl

NEVADA AND THIRD ST. BRIDGE

Darrel Stordahl

D. STORDAHL
D. KIRKPATRICK

SUNNY, COOL

D. STORDAHL
11-11-94

11- 4

1590 COLLECTED 0-1" COMPOSITE SAMPLE 038-~~B~~ WA-23-01. PICTURE 3-12 TOWARDS EAST SHOWS CENTER LOCATION. PICTURES 3-13 + 3-14 TOWARDS EAST. PICTURE 3-15 NORTH LOOKING AT COMPOSITE LOCATIONS. EPA TAG 8-79034. SEE MAP ON PAGE 39.

1610 DROPPED DAVE OFF AT EPA OFFICE. RETURN TO HELENA.

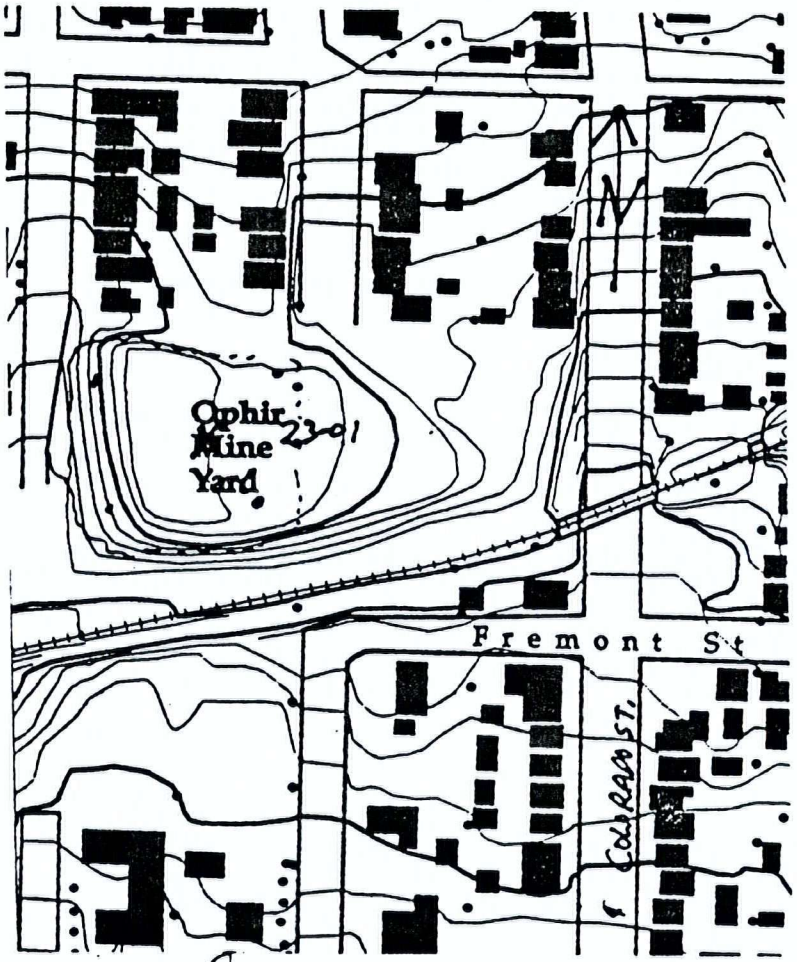
1730 ARRIVE IN HELENA. SAMPLES ARE IN COOLER WITH ICE. CUSTODY SEALS PLACED ON COOLER. COOLER WILL REMAIN IN A LOCKED ROOM UNTIL MONDAY.

11-13-94 D. STORDAHL

0910 CHECKED SAMPLES. ICE ADDED TO COOLER. CUSTODY SEALS PLACED ON COOLER.

Darrel Stordahl

OPHIR DUMP



Darrel Stordahl

..-4-94 D. STORDAHL SUNNY COOK

0740 - SAMPLES PLACED IN TRUCK. STOPPED BY HELENA OFFICE & THEN TRAVELED TO BUTTE.

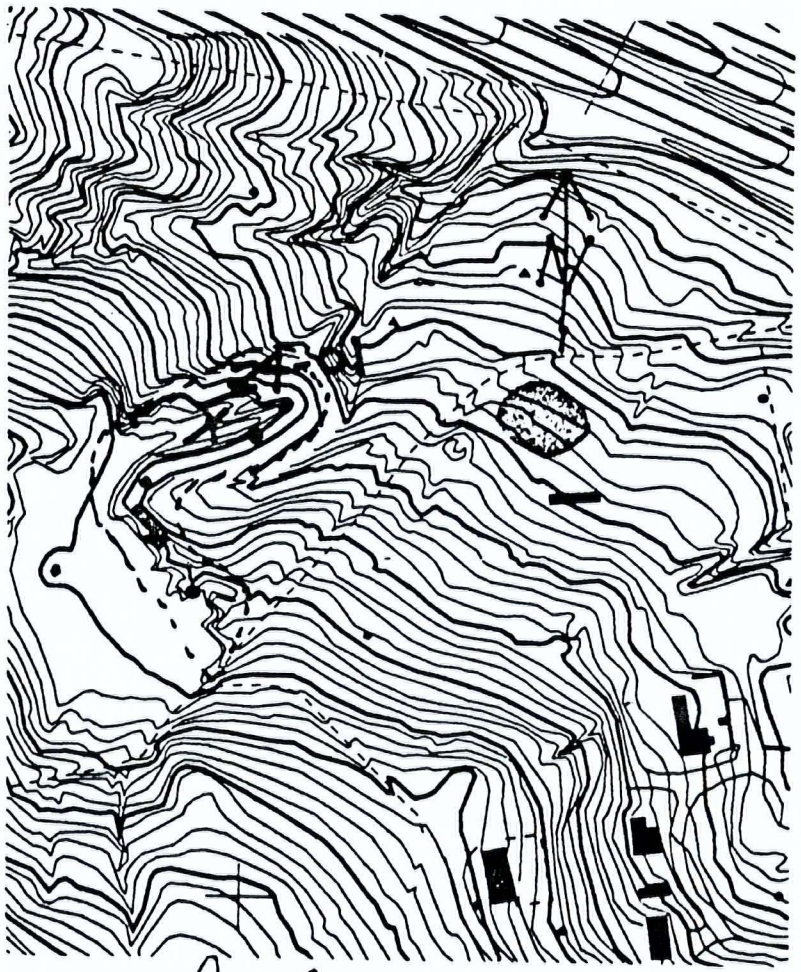
1310 - ARRIVED AT UN-NAMED DUMP (#148) IN WILLIAMSBURG.

1340 COLLECTED 0-1" COMPOSITE SAMPLE 038-WA-24-01. PICTURE 3-16 TOWARD SE. PICTURE 3-17 SE SHOWING CLOSE-UP OF CENTER COMPOSITE SAMPLE. PICTURES 3-18, 3-19, 3-20 TOWARD NORTH - NW SHOWING COMPOSITE LOCATIONS. SEE MAP ON PAGE 41. EPA TAG NO. 8-79035

Daniel Stordahl

D. STORDAHL
11-14-94

UNAMED DUMP
(#148)



Daniel Stordahl

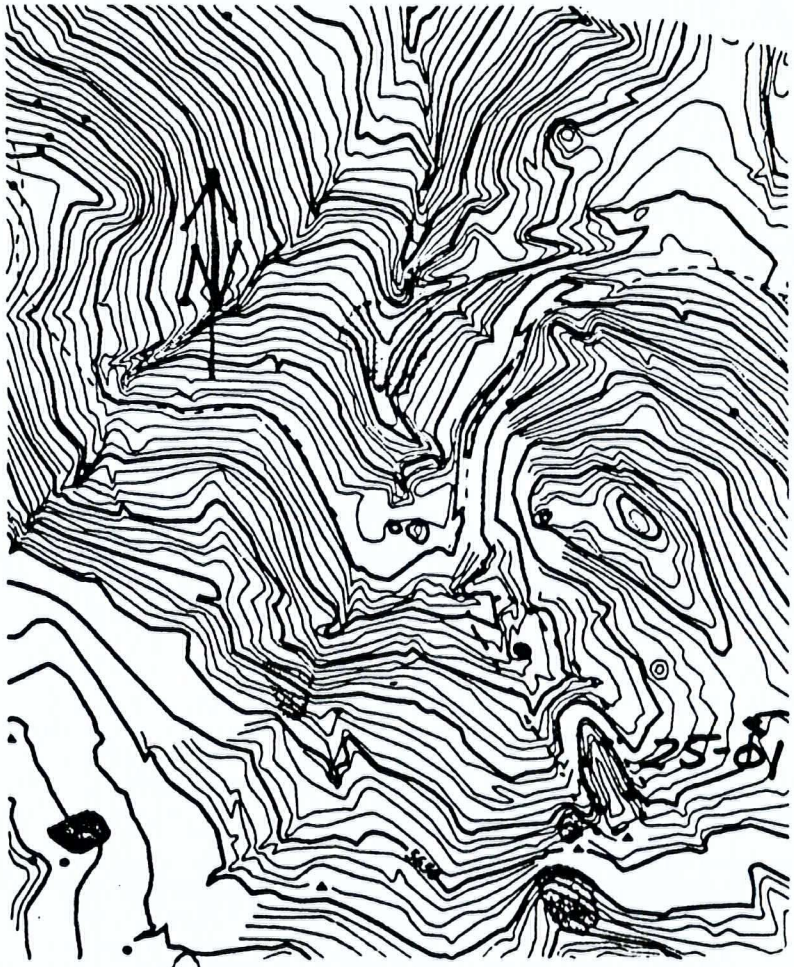
11-1: D. STORDAHL SUNNY COOL

1430 COLLECTED 0-1" COMPOSITE SAMPLE 038-WA-25-01. PICTURE 3-21 TOWARDS NW. PICTURE 3-22 TOWARDS EAST. PICTURE 3-23 SHOWS CLOSE-UP OF DUMP MATERIAL TOWARDS SOUTH. SEE MAP ON PAGE 43. EPA TAG # 7[illegible] 8-77036.

Darrel Stordahl

D. STORDAHL
1-19-94

DUMP SOUTH OF UNAMED DUMP #148



Darrel Stordahl

11- & D. STORAHL

SUNNY
COOL

D. STORAHL
11-14-94

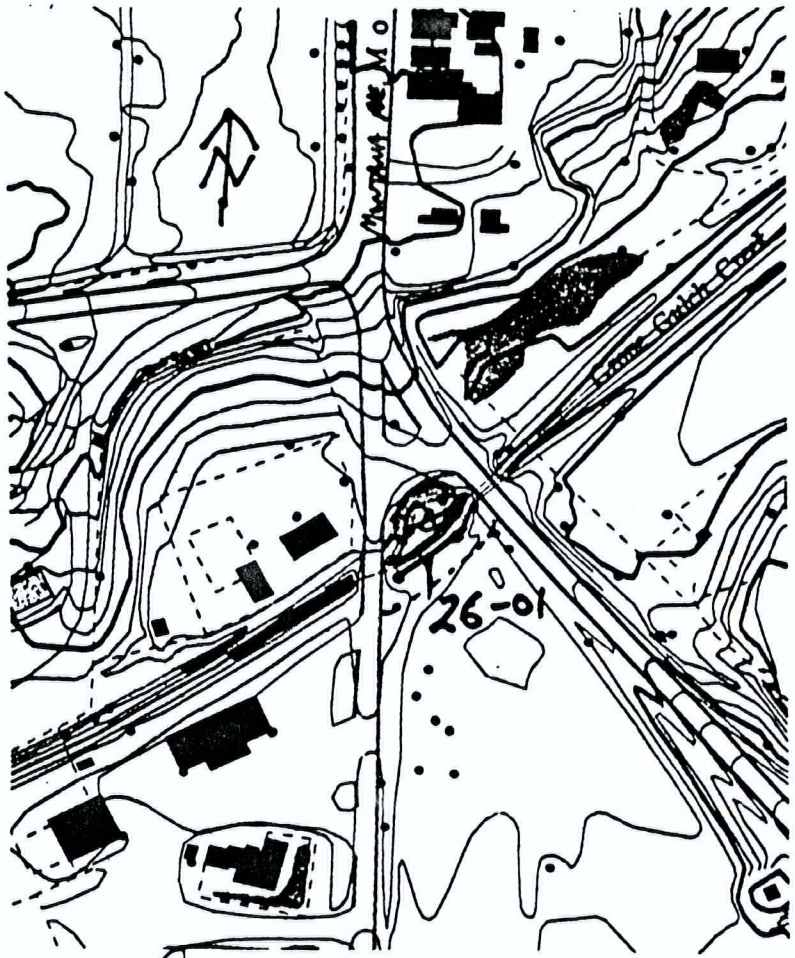
1510 COLLECTED 0-1" COMPOSITE SAMPLE 038-WA-26-01. PICTURE 3-24 TOWARDS SE. PICTURE 3-25 TOWARDS NW. SAMPLES TAKEN ON BOTH SIDES OF GROVE GULCH CREEK. SEE MAP ON PAGE 95. EPA TAG # 8-79037

1600 ADDED ICE TO COOLER. PREPARED SAMPLES FOR SHIPMENT TO PACE LABORATORIES. PLACED CUSTODY SEALS ON COOLER. FEDERAL EXPRESS SHIPMENT # 8850469375.

1750 SHIPPED SAMPLES FROM HELENA FEDERAL EXPRESS OFFICE. CHAIN OF CUSTODY #'S 187400-187402, 187404, 153,995 & 36582.

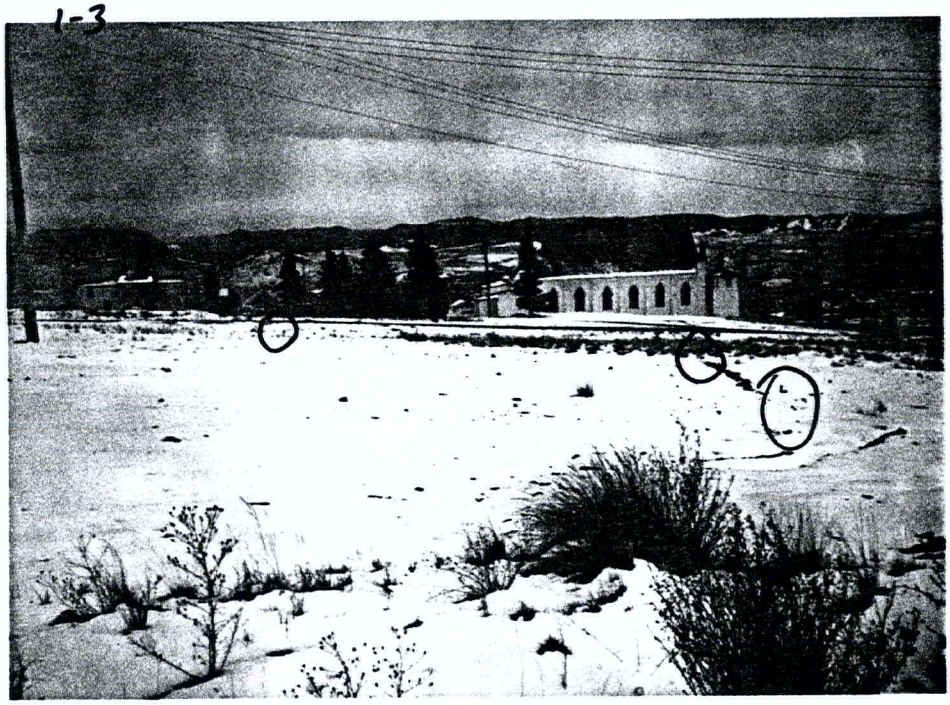
Darrel Storahl

GROVE GULCH CREEK
(HAFER PROPERTY)



Darrel Storahl

1-3



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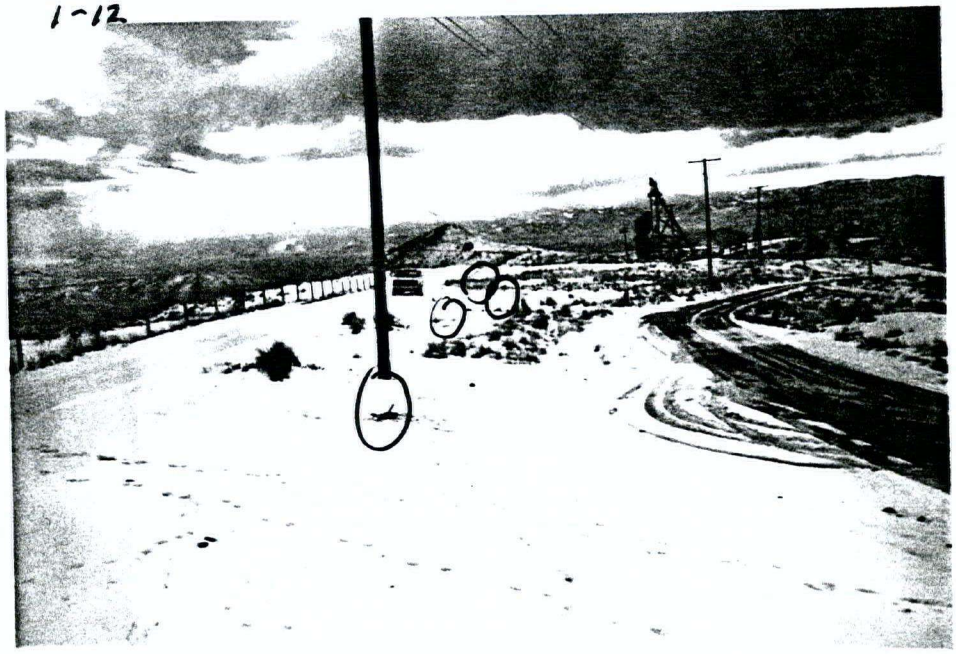
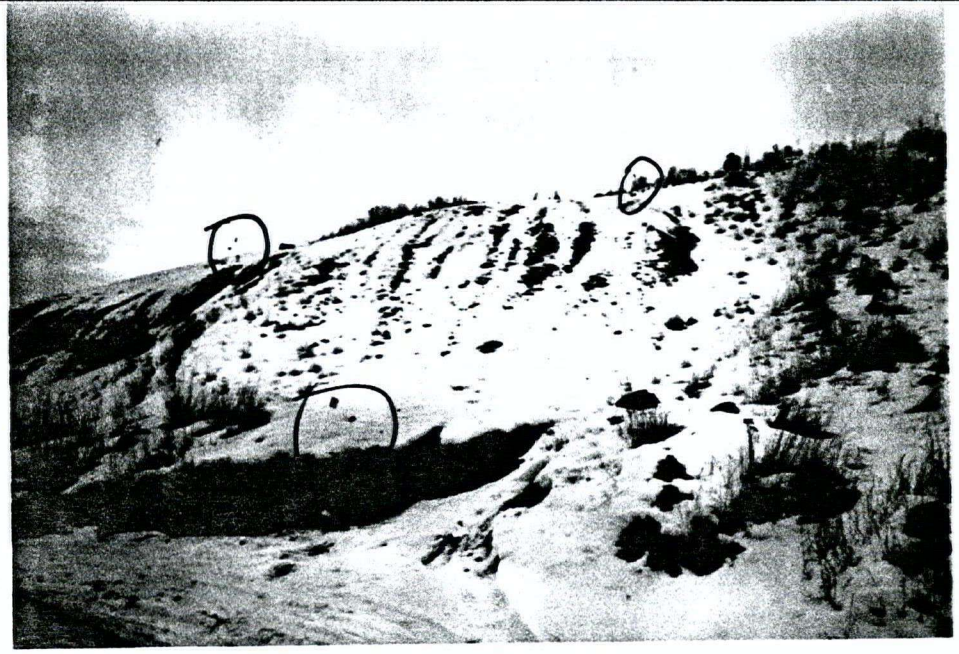
1-11

1-10

1-12





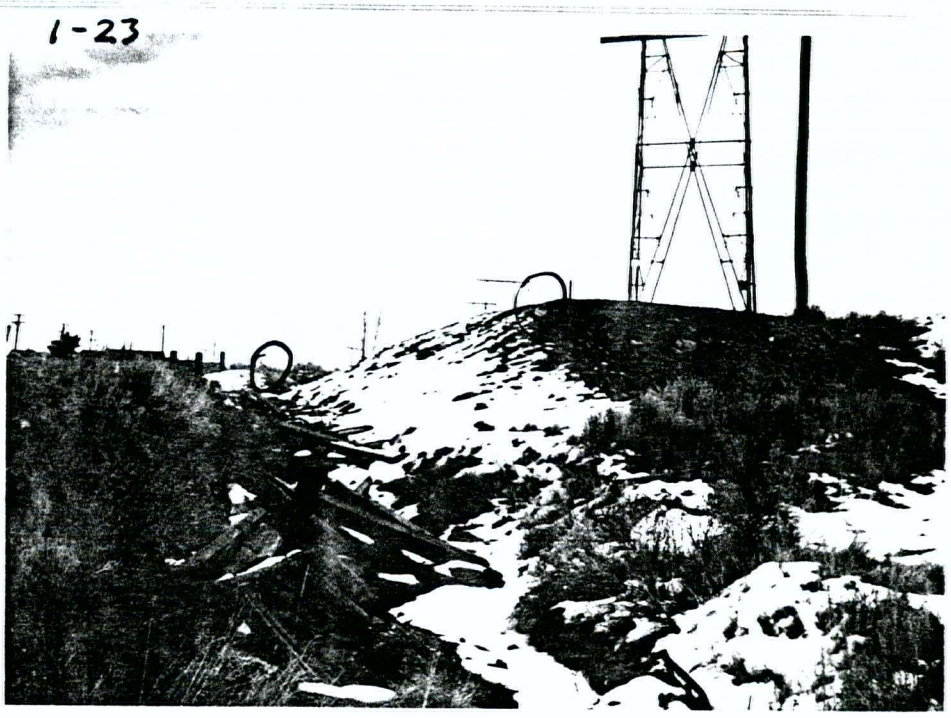
1-15

1-17

1-16

1-18

1-21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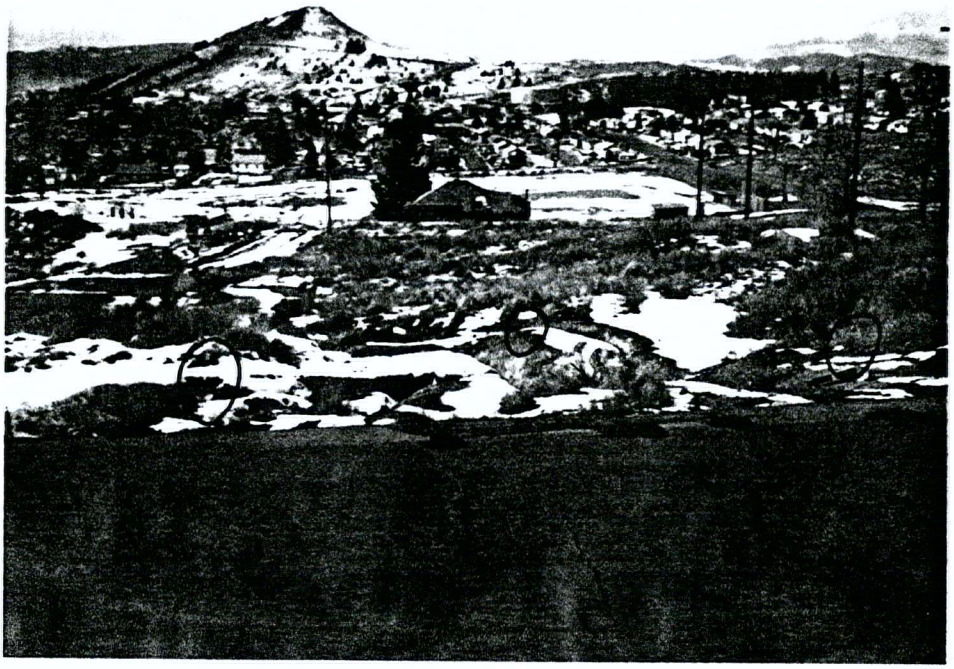

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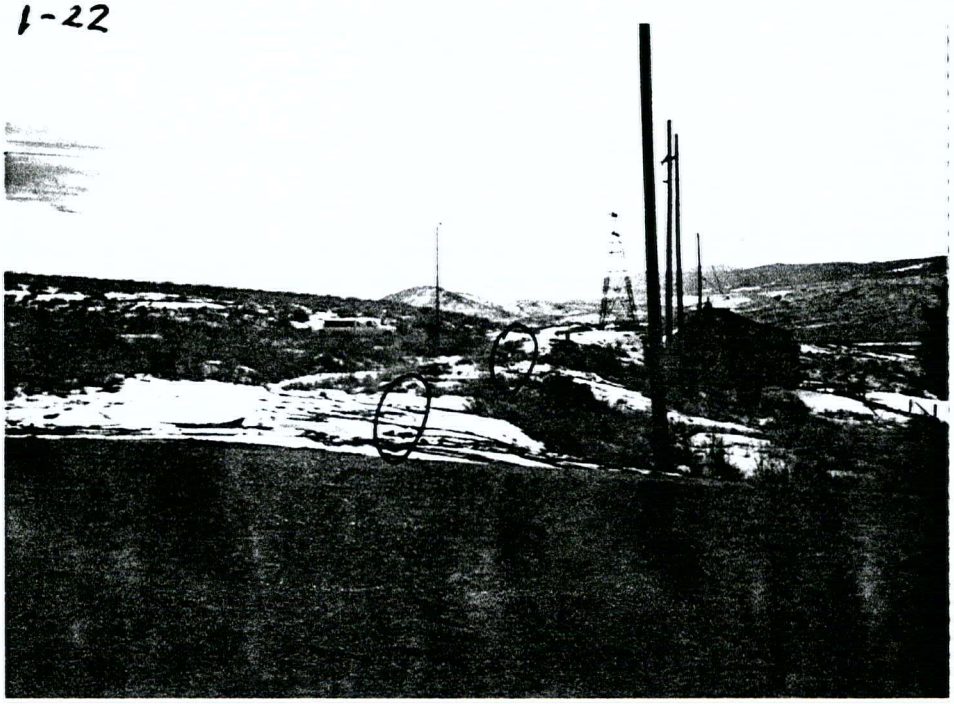

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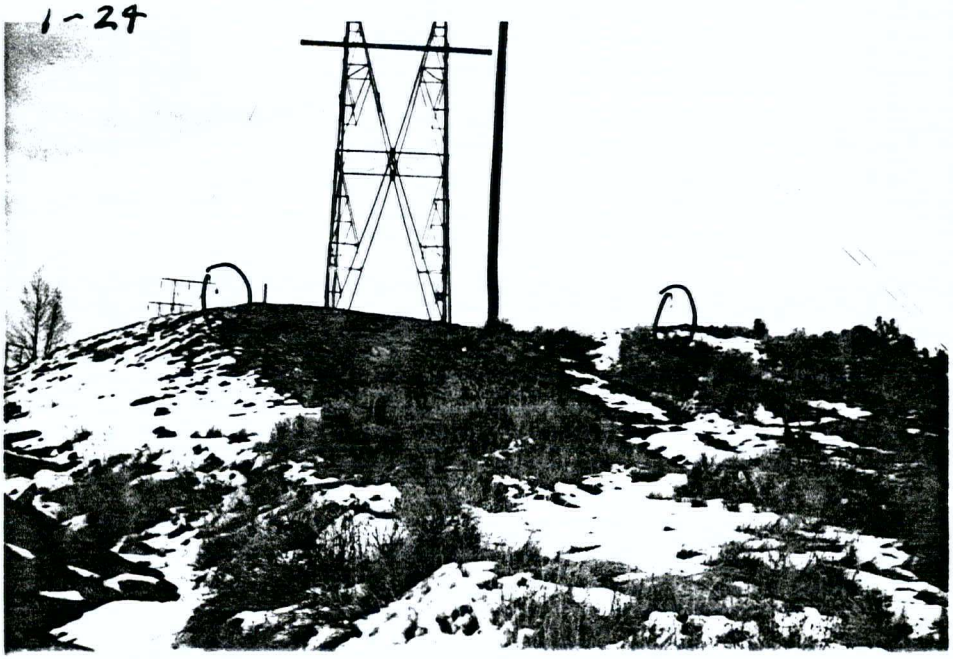
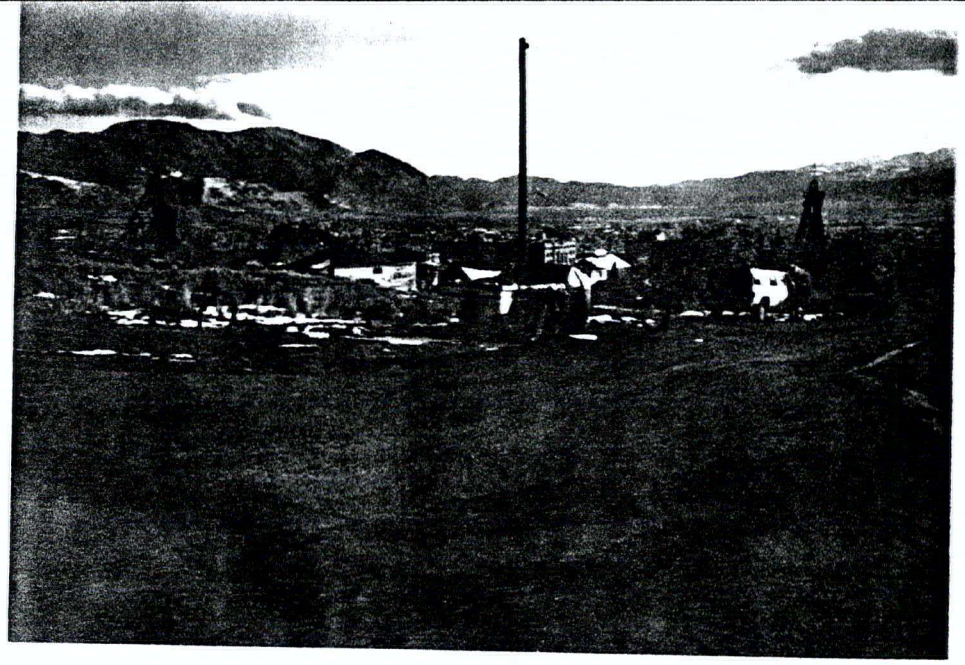


1-27

2-2

2-1

2-3



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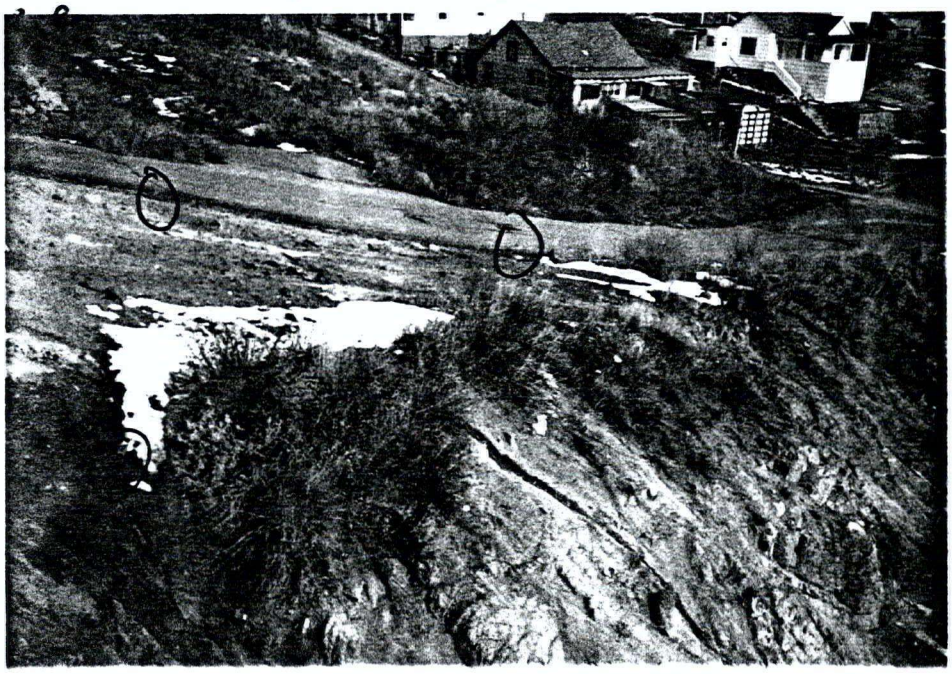
2-6



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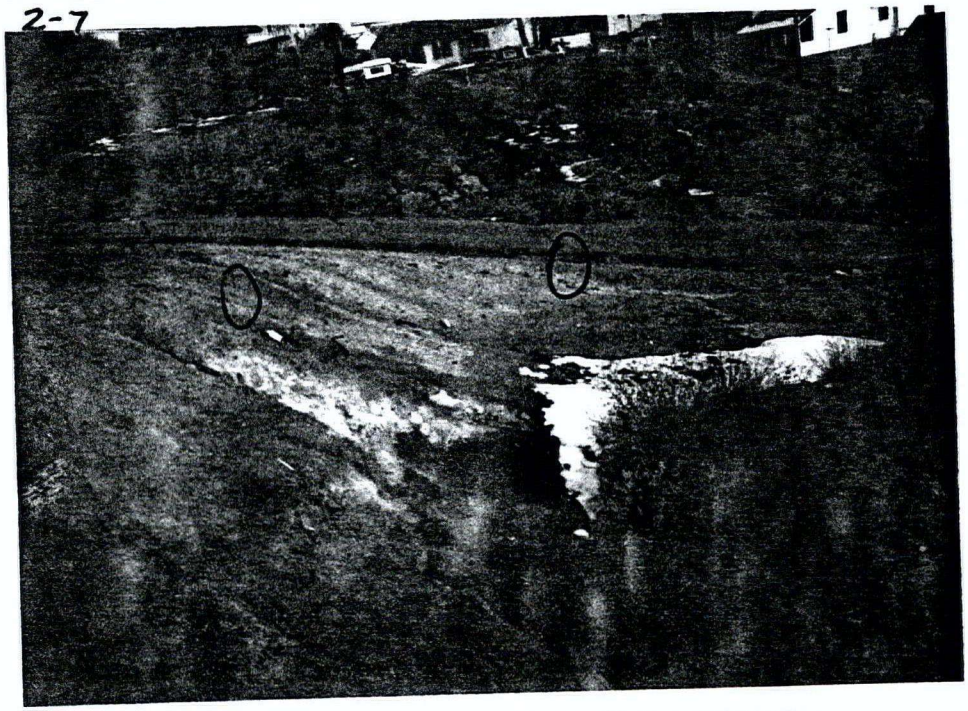

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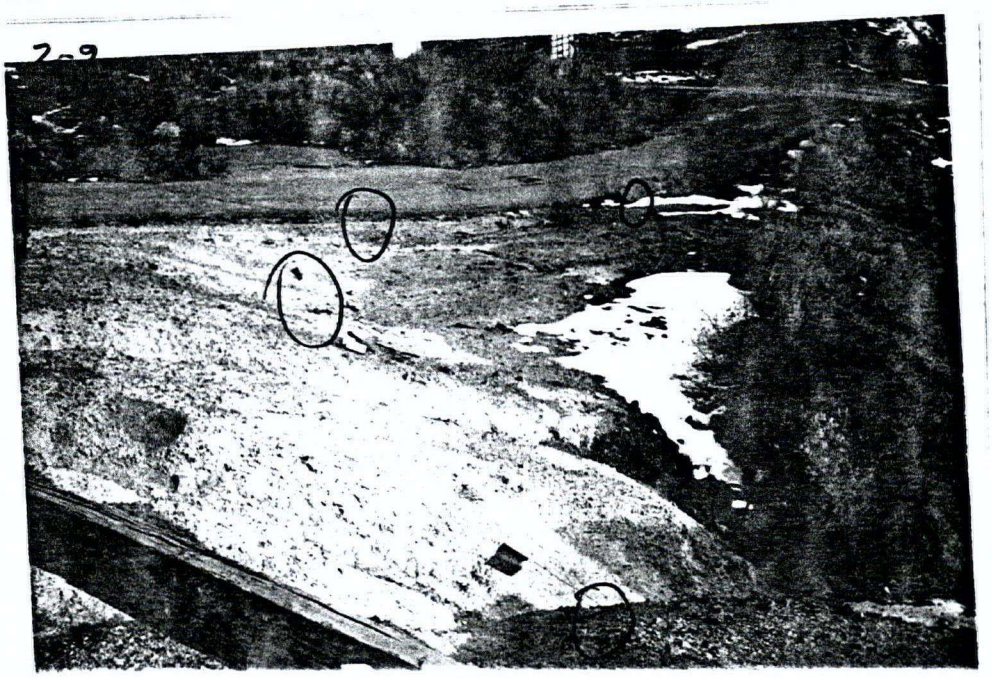

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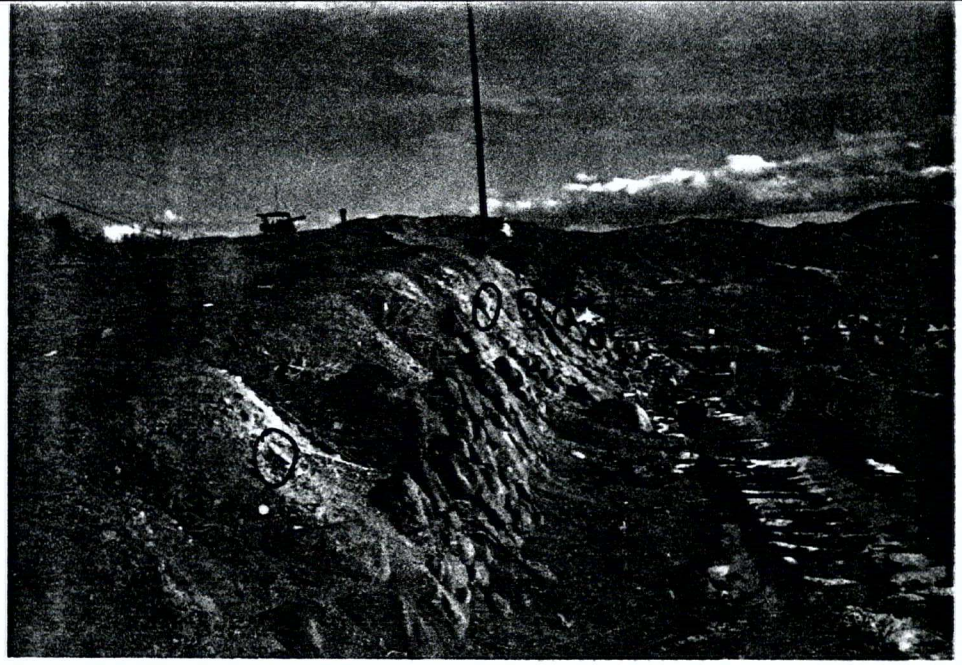

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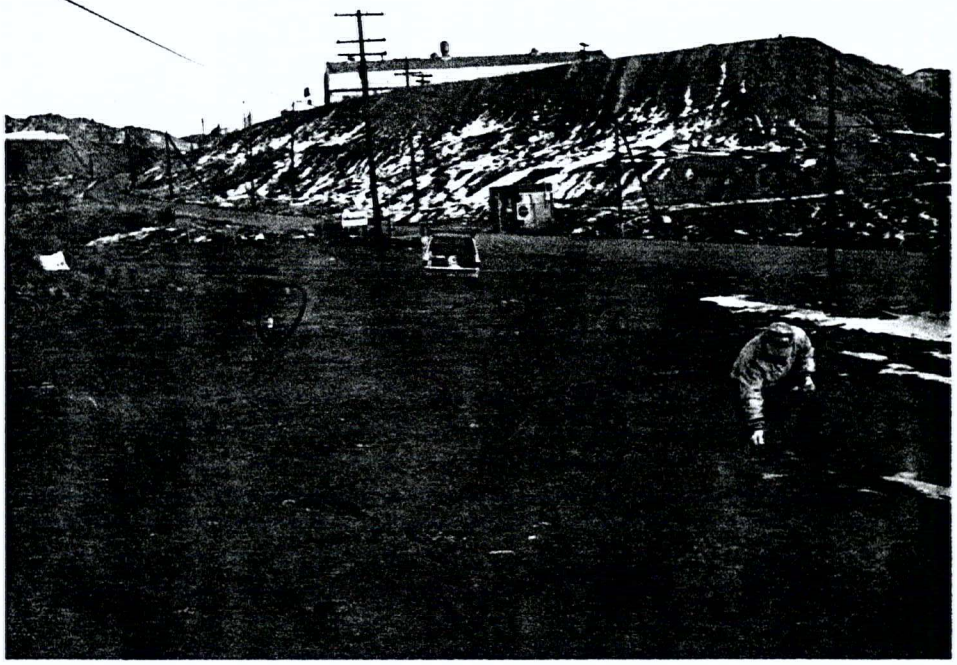

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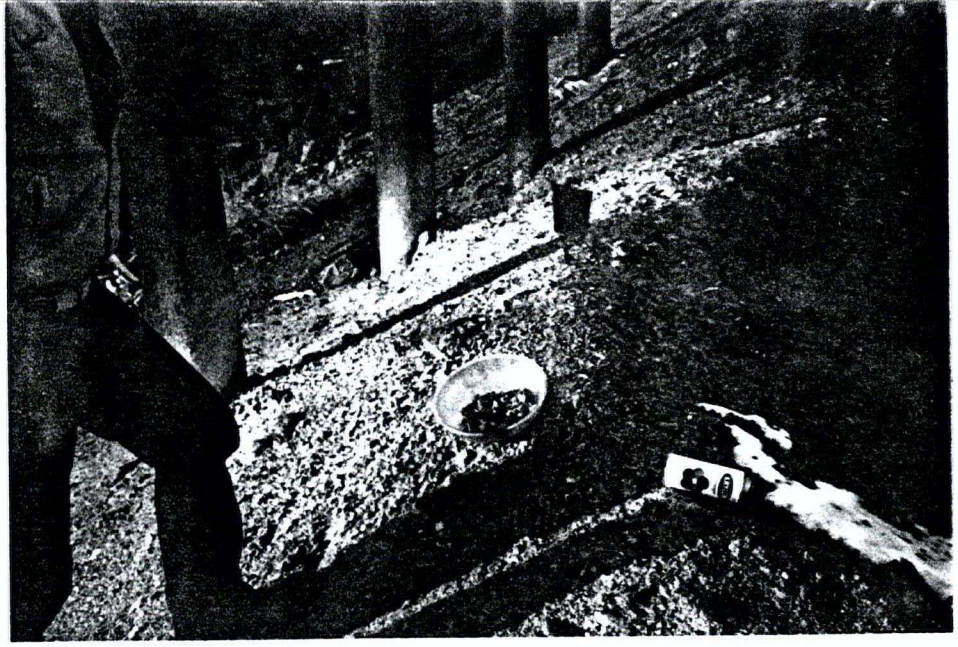

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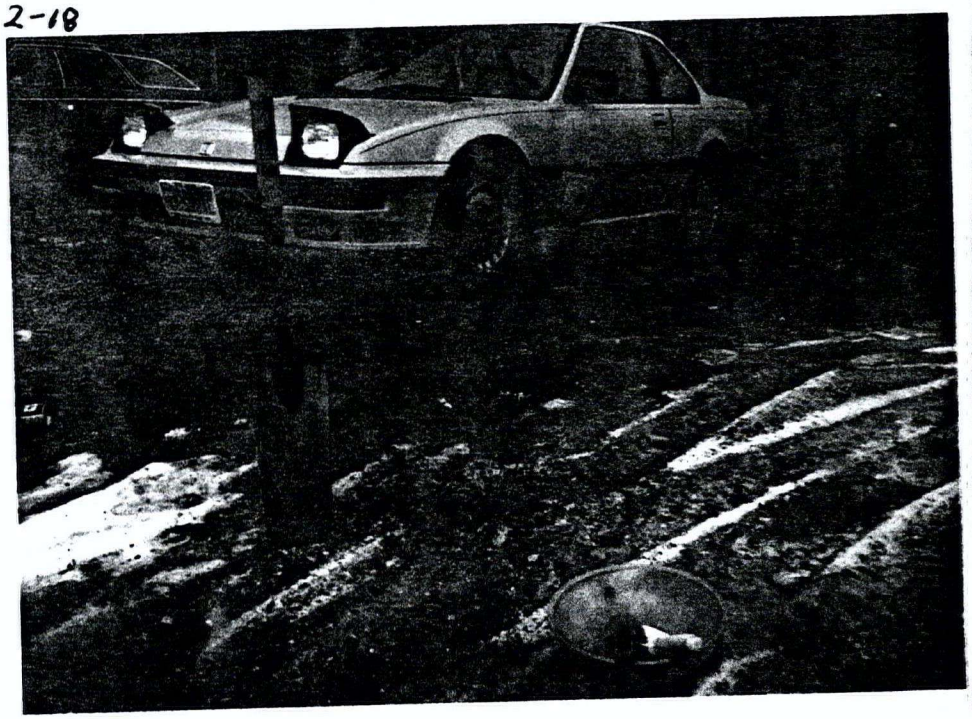
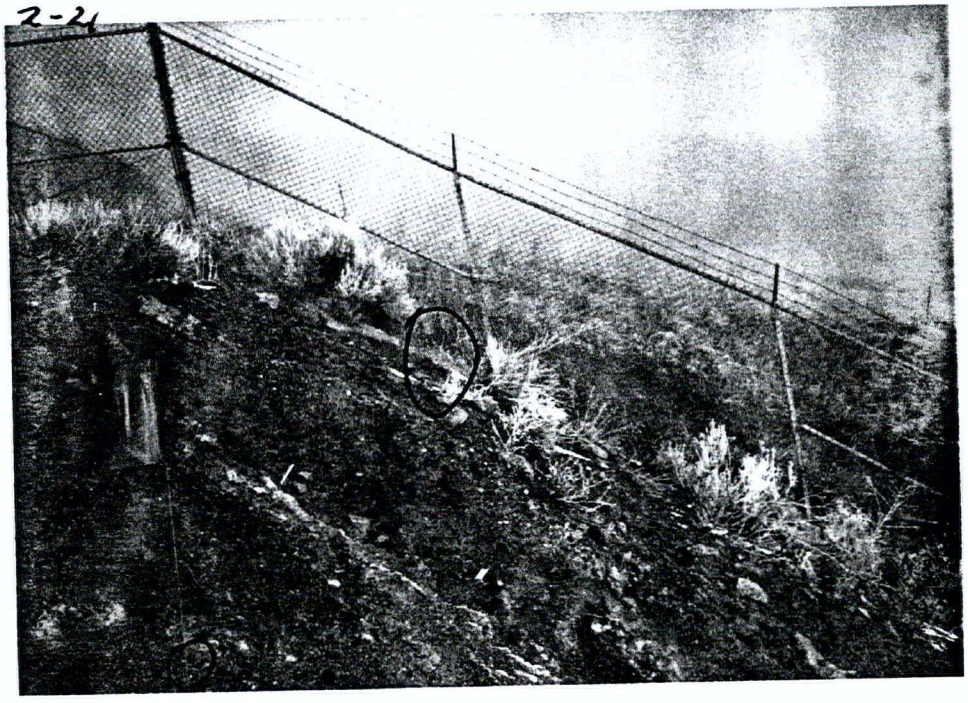
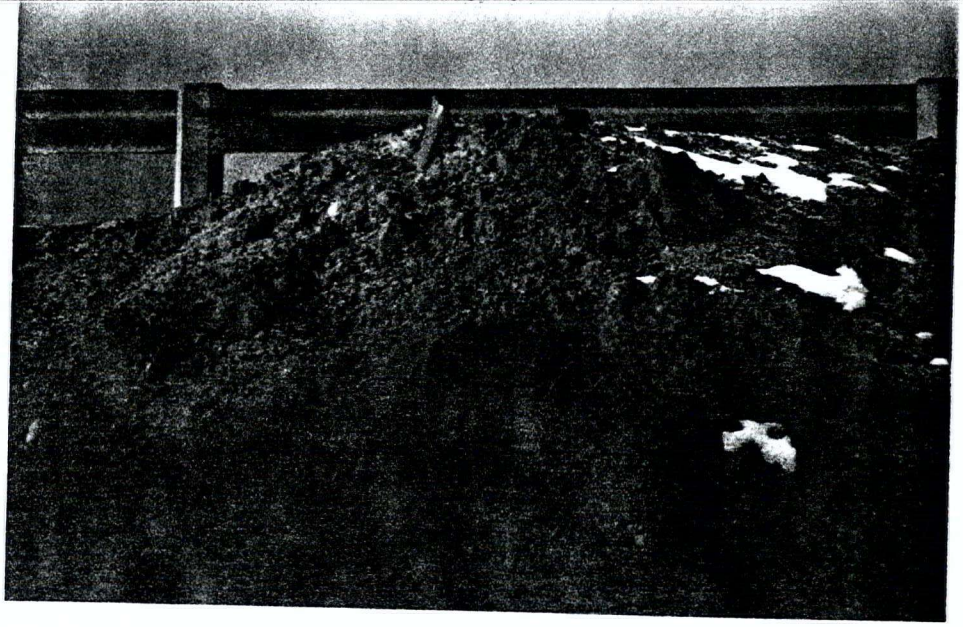


2-20

2-19

2-21





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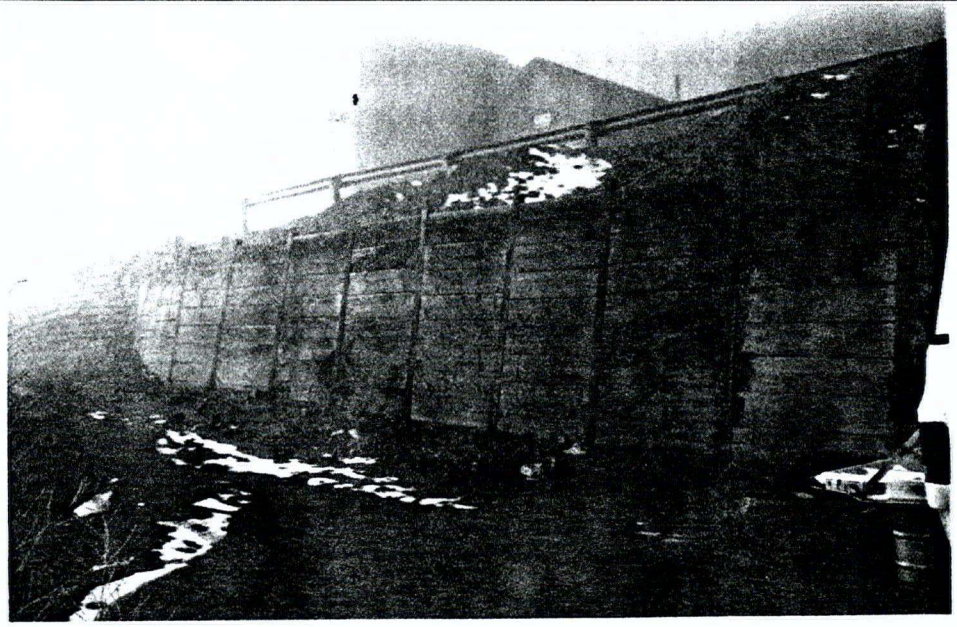

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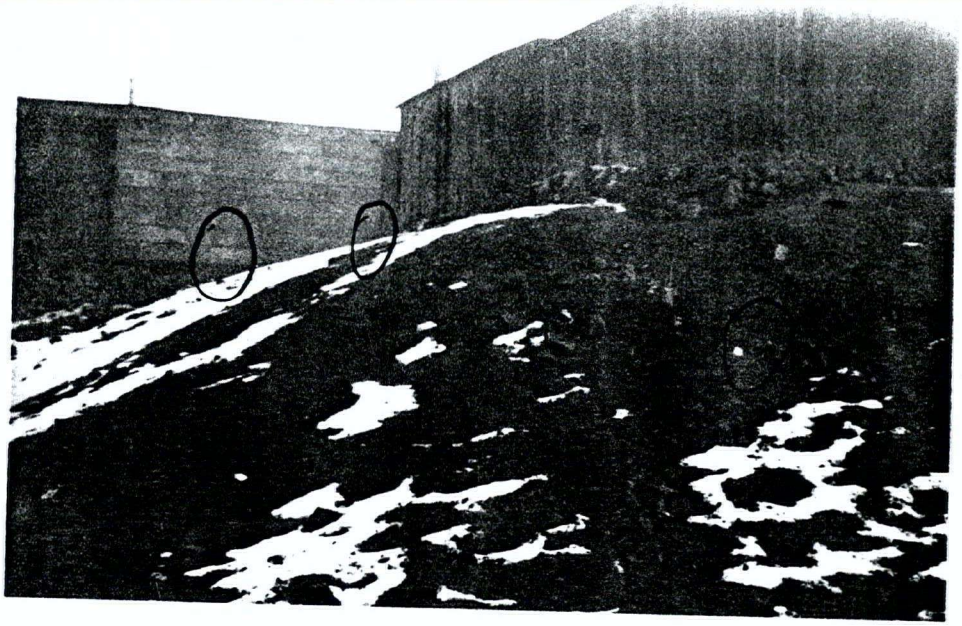

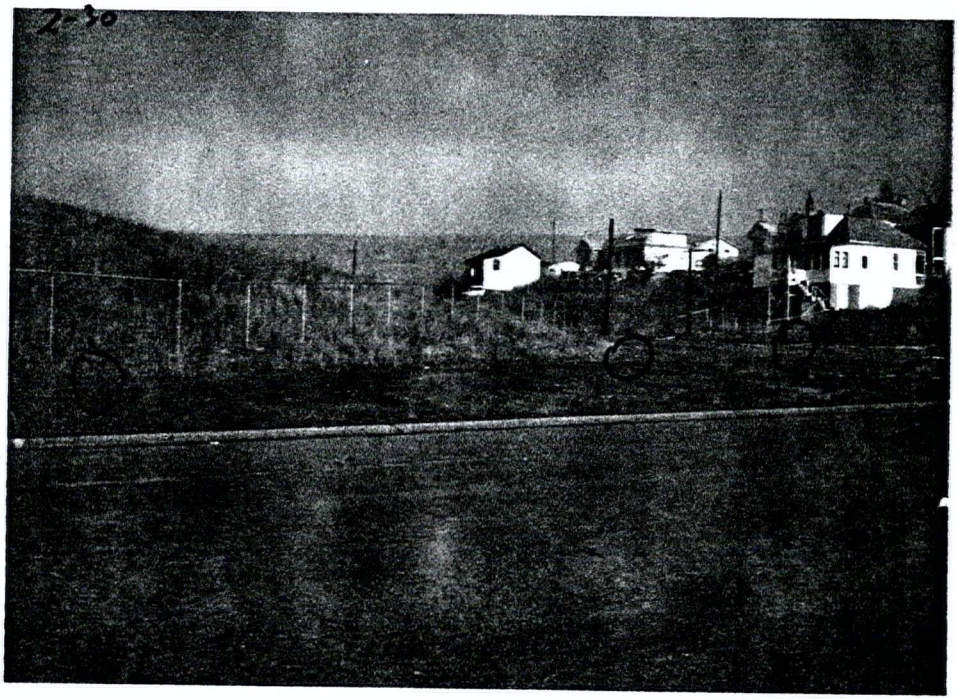

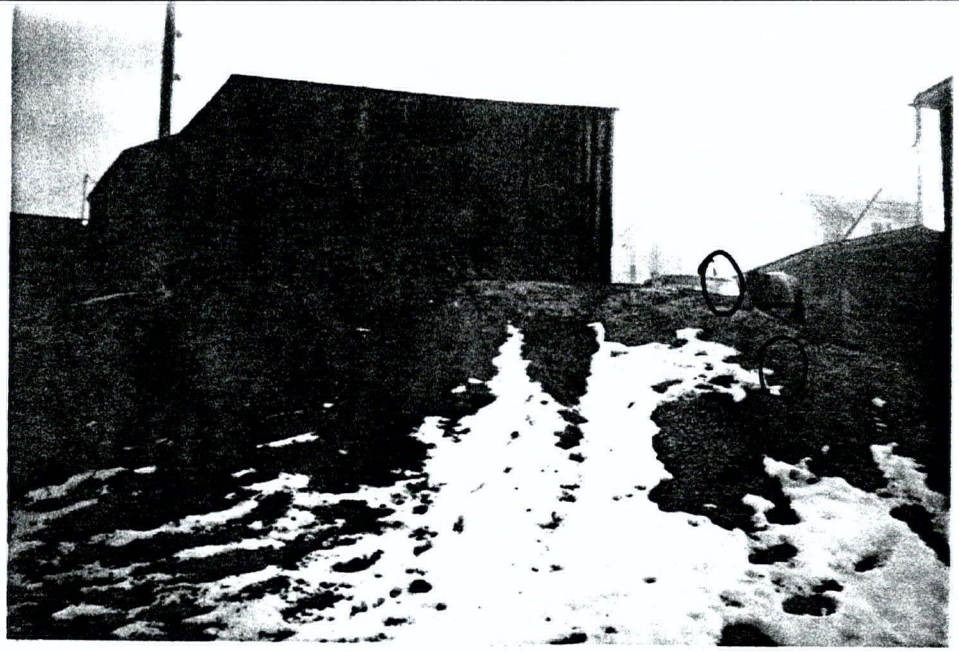

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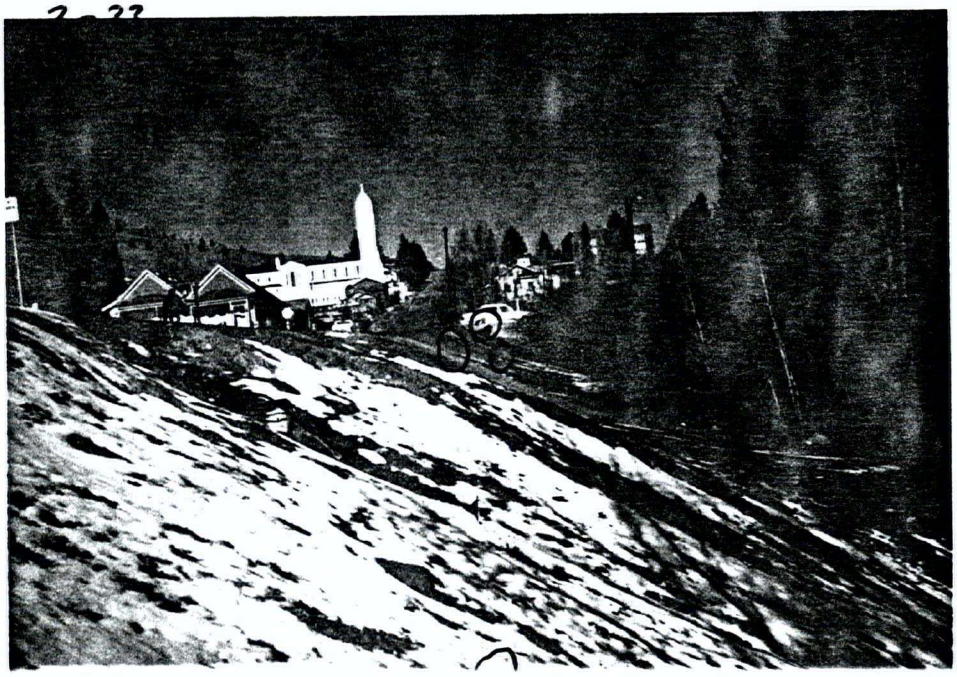

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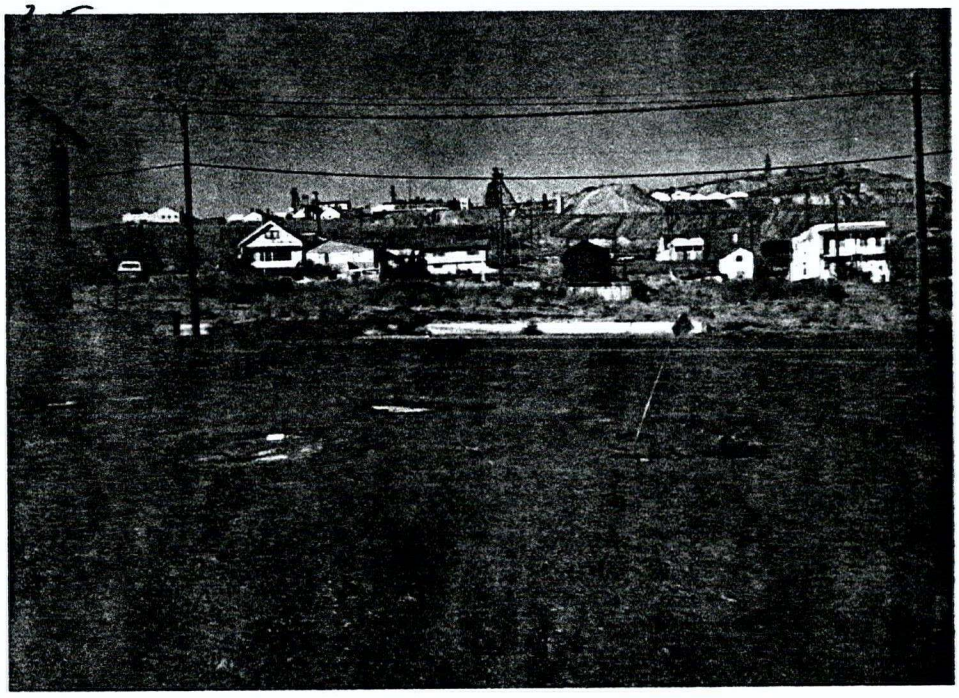

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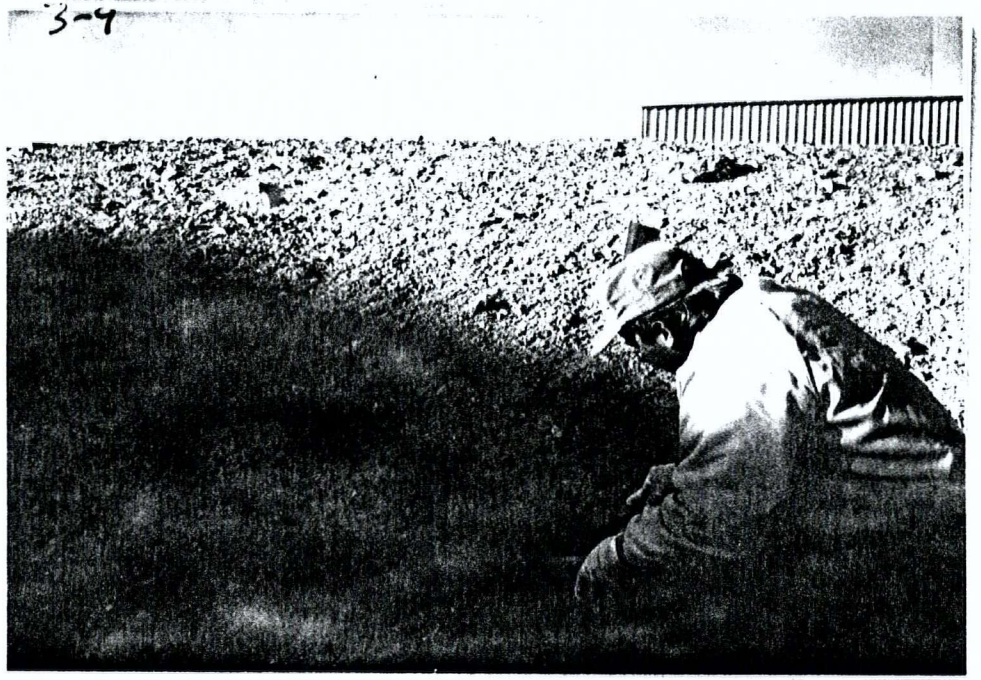
C-LINE #52581
110 OR POLAROID
PRINTS

3-9



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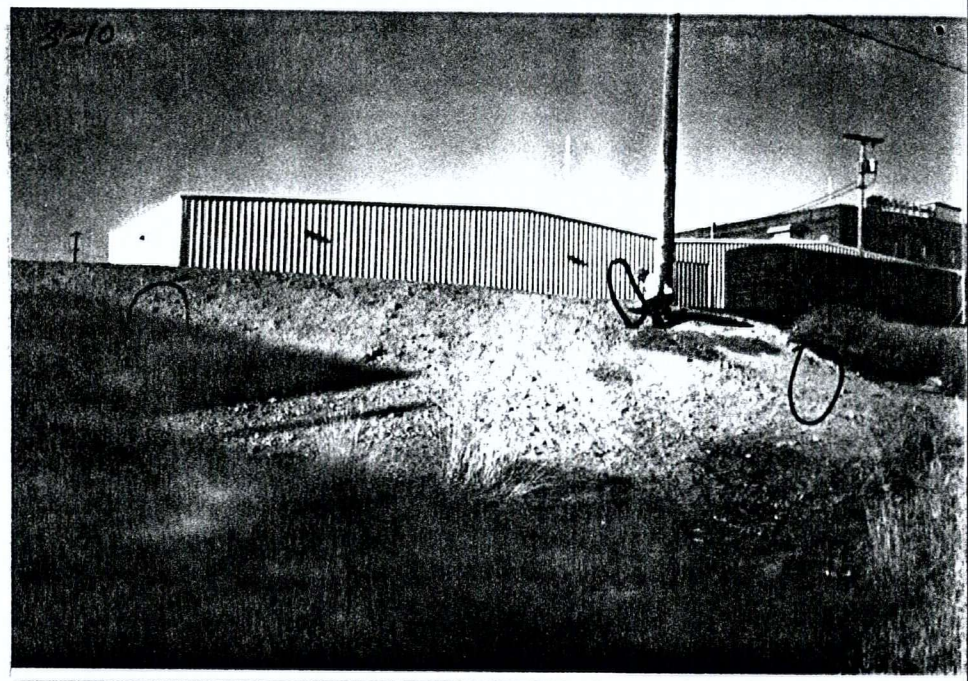

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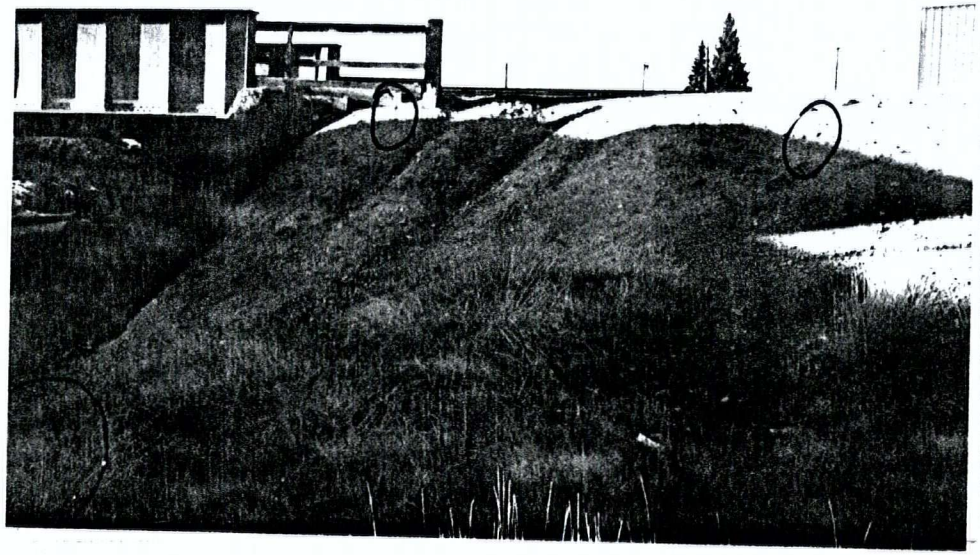

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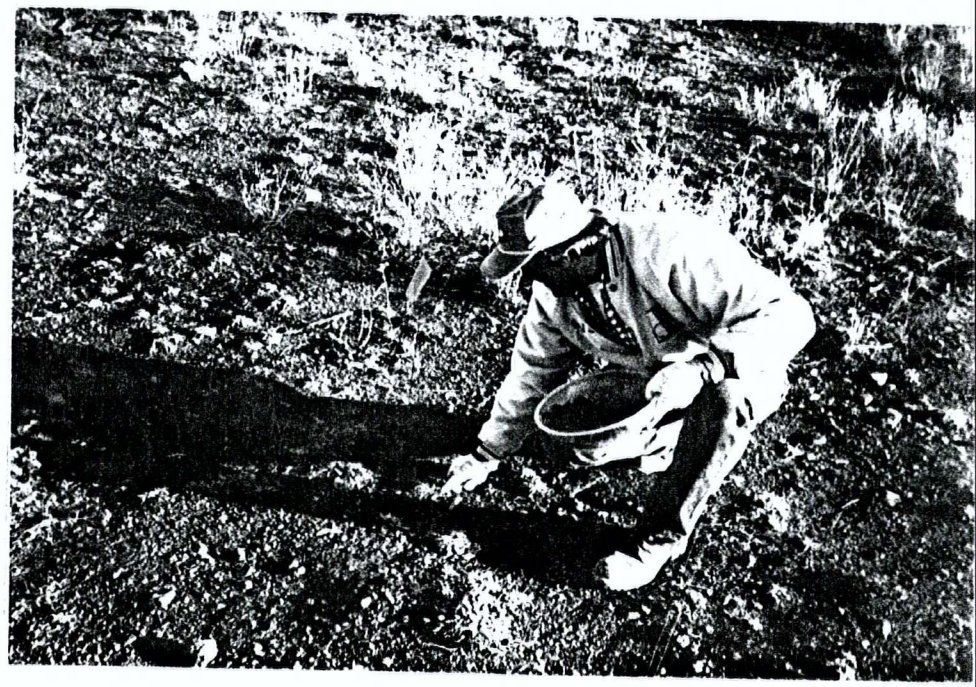

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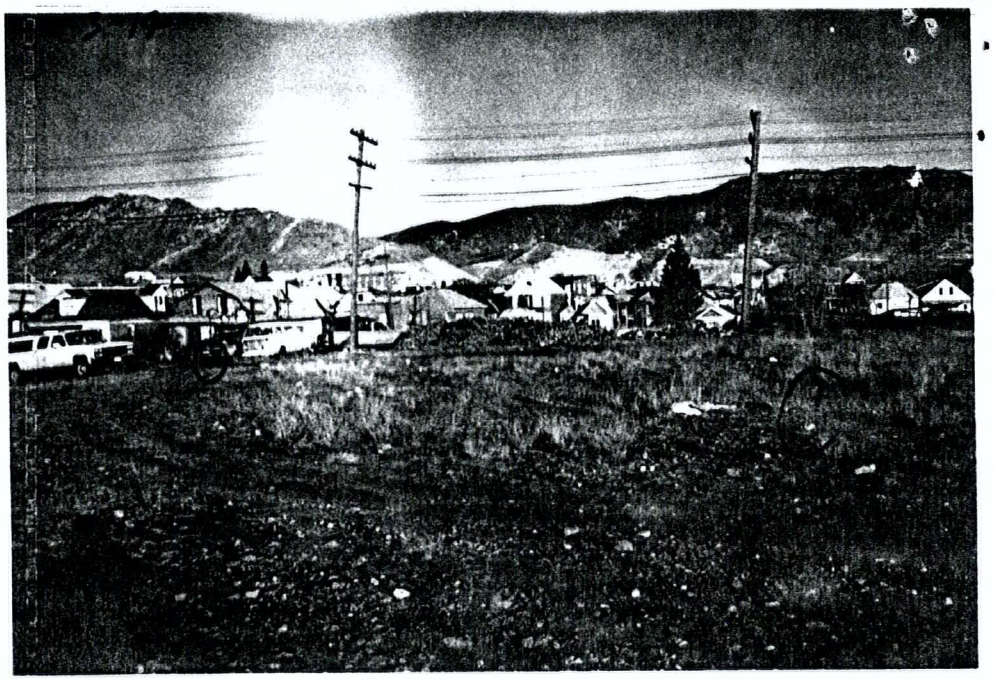

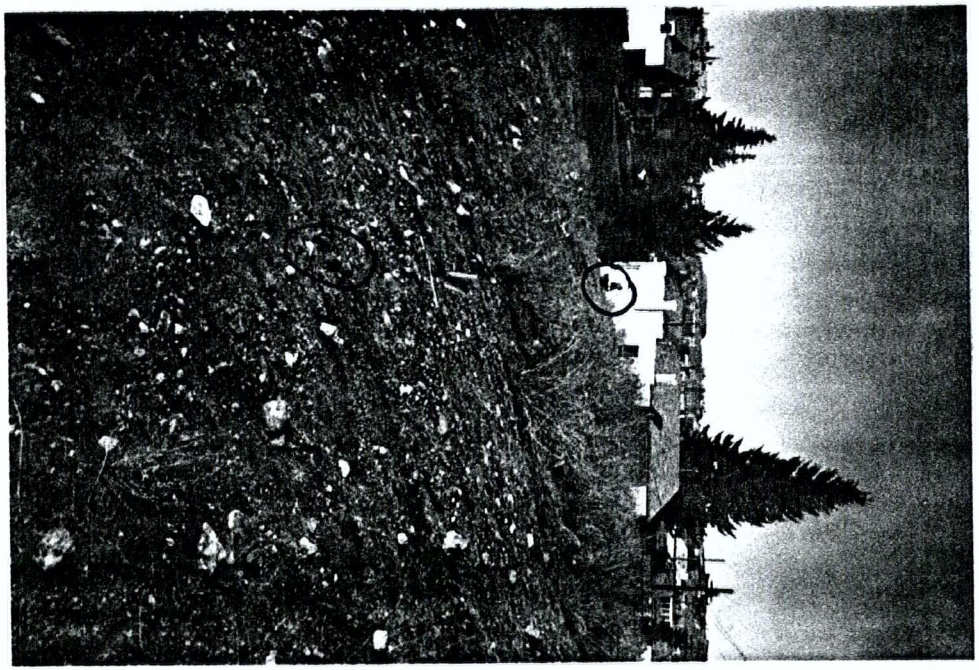

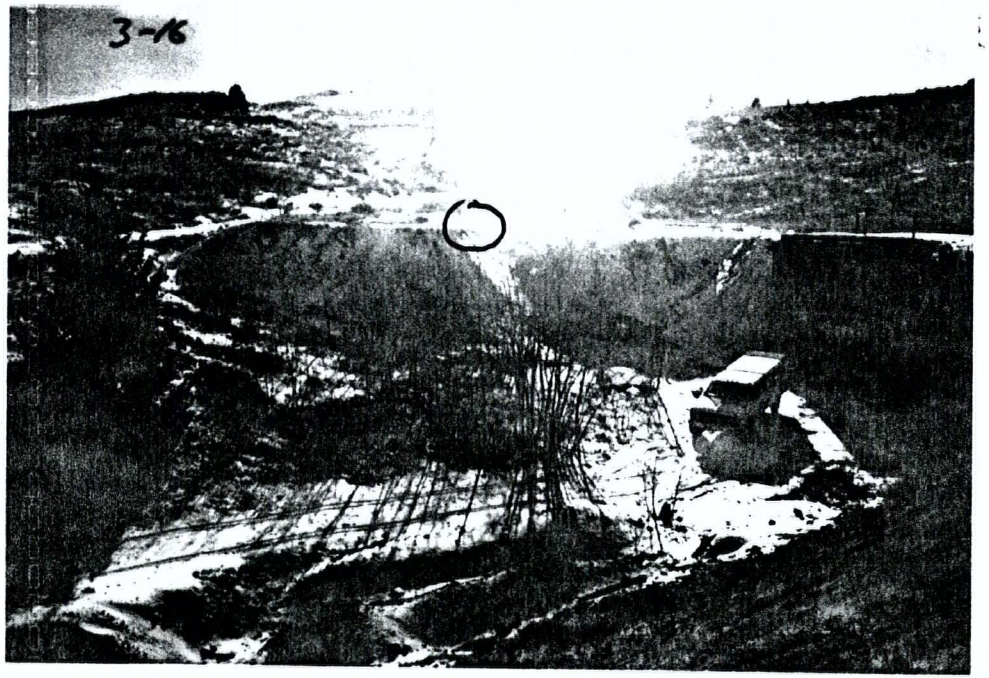
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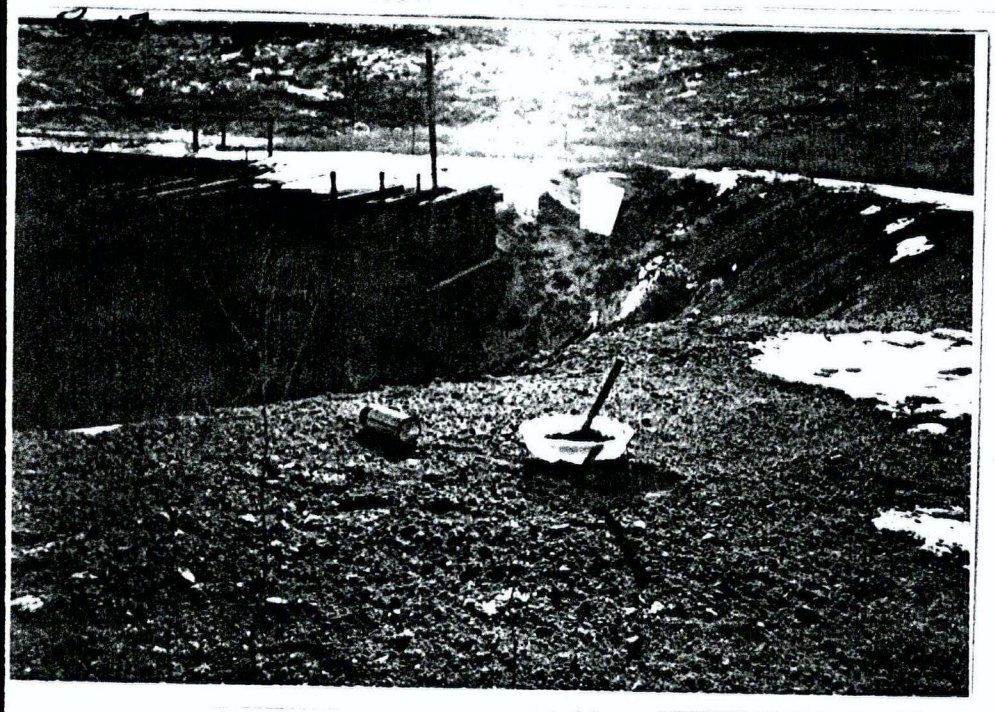

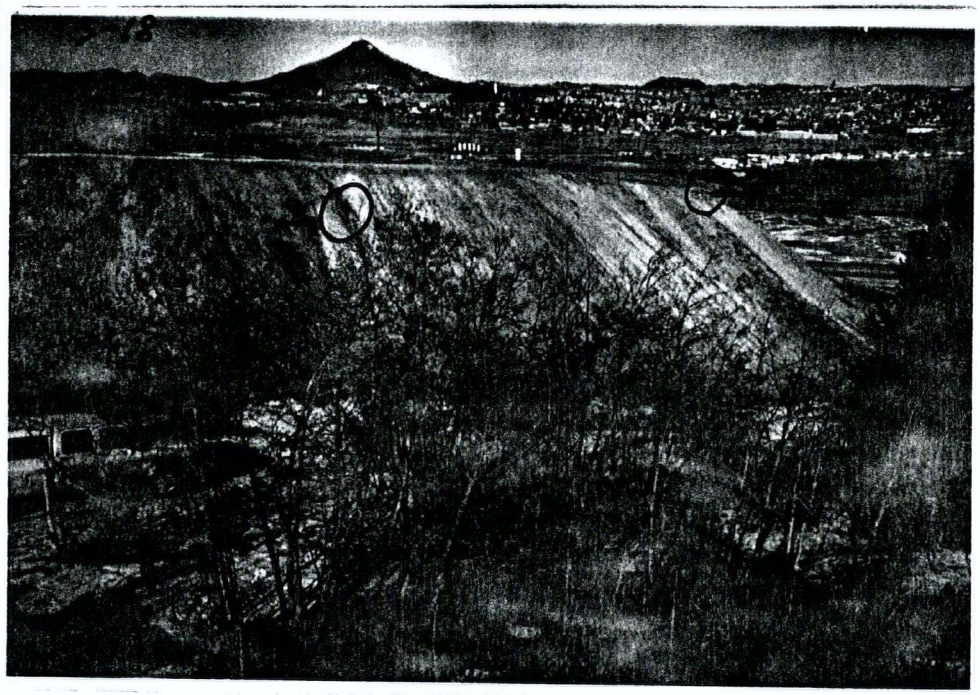

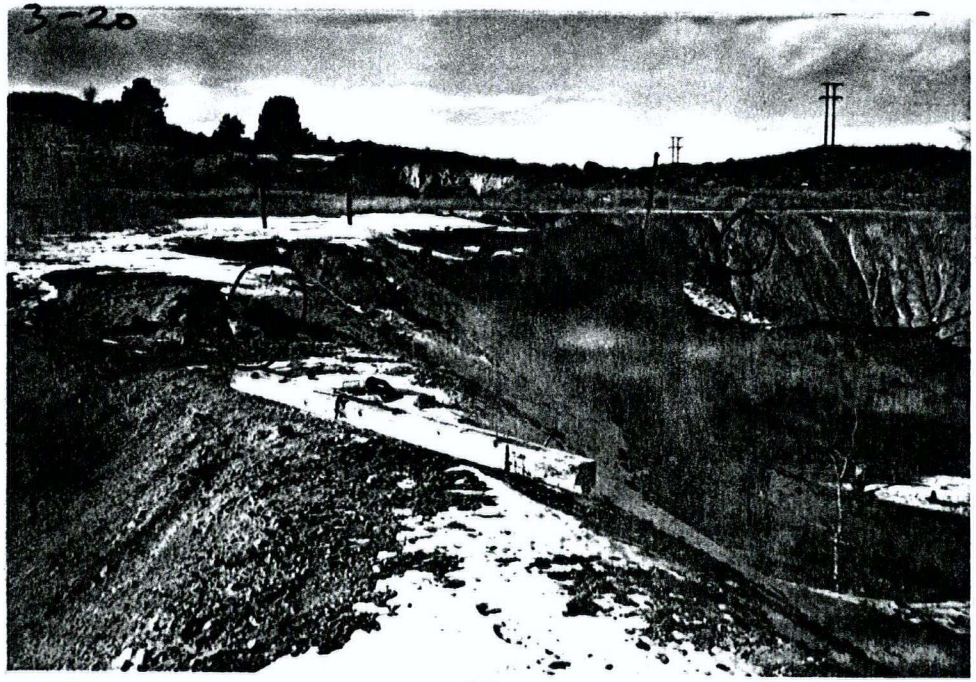
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