

1. The area cannot be tributary to a sediment pond.
2. The area must have some form of a treatment structure to treat runoff from the area.
3. The summation of the areas of the ASCA's must be less than fifteen percent of the total disturbed area.

Runoff from the ASCA's is not tributary to any of the sediment ponds and several alternative sediment treatment structures are already in place. A commitment by the applicant to complete those not yet in place prior to final approval of this mine re-permit has been made. Table 750a is inserted to provide a breakdown of areas included within each ASCA. Table 750b provides a breakdown of total tributary area which impacts each ASCA. The total disturbed tributary areas (not including Forested/Aspen and Sage/Grass areas) to Sediment Ponds 001A through 004A is 41.43 acres, and as shown in the referenced tables the total tributary area to all ASCA'S is 6.7 acres. Thus, the total area of the proposed ASCA's is approximately 13.9 percent of the total disturbed area of the mines, meeting criteria No. 3 presented above. Maps 731.720a through 731.720d show the locations of sediment control facilities, and ASCA's found within the Mine Permit Area.

**TABLE 750a  
ASCA AREA BREAKDOWNS**

<b>ASCA No.</b>	<b>PAVED AREA (ac-ft)</b>	<b>DISTURBED AREA (ac-ft)</b>	<b>SAGE/GRASS AREA (ac-ft)</b>	<b>FOREST/ASPEN AREA (ac-ft)</b>	<b>TOTAL AREA (ac-ft)</b>
1	-	1.13	-	-	1.13
2	0.11	1.00	-	-	1.11
3	0.75	0.87	-	0.5	2.12
4	-	0.19	-	-	0.19
5	-	1.16	-	-	1.16
6	-	0.95	-	-	0.95

Runoff volumes from the 10-year, 24-hour precipitation event were determined for 1) ASCA areas, and 2) that area specific to ASCA areas including adjacent tributary areas. Calculated volumes of runoff derived from the 10 year, 24 hour precipitation event for both ASCA areas as well as ASCA plus adjacent tributary areas are shown in Table 750c. A comparison of the total runoff volume from the ASCA's themselves (0.83 acre-feet) versus the runoff volume from the 10 year, 24 hour precipitation event to the sediment ponds (5.92 acre-feet) indicates that the runoff volume from the ASCA's is approximately 14 percent of the runoff volume controlled by the sediment ponds. Calculations are shown in 1993 Appendix 742.221a.

**TABLE 750b  
TOTAL ASCA PLUS TRIBUTARY AREA BREAKDOWNS**

ASCA NO.	PAVED AREA (ac-ft)	DISTURBED AREA (ac-ft)	SAGE/GRASS AREA (ac-ft)	FOREST/ASPEN AREA (ac-ft)	TOTAL AREA (ac-ft)
1	-	1.13	-	-	1.13
2	0.60	1.00	-	-	1.60
3	0.75	0.87	-	0.50	2.12
4	-	0.19	-	0.37	0.56
5	-	1.16	-	-	1.16
6	-	0.95	1.00	1.34	3.29

**TABLE 750c  
10 YEAR, 24 HOUR RUNOFF VOLUMES FROM ASCA'S AND FROM  
ASCA'S PLUS TRIBUTARY AREAS**

ASCA NO.	10 YEAR, 24 HOUR RUNOFF VOLUME FROM ASCA AREAS ONLY (AC-FT)	10 YEAR, 24 HOUR RUNOFF VOLUME FROM ASCA PLUS TRIBUTARY AREAS (AC-FT)
1	0.14	0.14
2	0.14	0.23
3	0.27	0.27
4	0.02	0.03
5	0.14	0.14
6	0.12	0.22
Total	0.83	1.03

Five undisturbed area bypass channels have been designed for the Mine Permit Area as shown on the maps referenced. These ditches aid in the control of sediment transport by preventing runoff from undisturbed areas from crossing over disturbed drainages where higher sediment transport rates are possible.

Straw pits as they are termed herein consist of small holes dug along side a mine road after which they are filled with straw. These holes (approximately 2 feet by 3 feet in horizontal dimension) serve as small retention basins which help control the amount of sediment moving within and out of an ASCA.

Small depressions located at some points within the Mine Permit Area collect and retain surface runoff from small disturbed drainage areas. These depressions help collect and retain moving sediment, as well as reduce total runoff thereby reducing erosion.

Where practical, natural vegetation is allowed to grow into runoff conveyance facilities in order to reduce overall erosion rates. Vegetative stands and the associated root network aid in holding soil in place thereby reducing sediment transport. An example of this type of erosion prevention is found in the ditch sections near the General Office Area within the Valcam Permit Area.

Paved roadways also aid in reducing erosion within the Mine Permit Area. They also aid in reducing the amount of air pollution through dust and particulate matter caused by motor vehicles. Concrete ditch sections located along the Belina Haul Road to the Belina Mines, and along selected road sections at the mine itself act in the same manner as paved roadways and reduce erosion.

Revegetation of disturbed areas and ditch sections reduce erosion rates by re-establishing vegetative growth. The additional water holding and water retention capacity of vegetated areas acts in conjunction with root zones to reduce soil movement.

The great majority of surface runoff conveyance facilities within the Mine Permit Area have been in place for an extended period of time. The amount of erosion evident at each of the facilities is therefor indicative of the type and amount of erosion that is anticipated to occur as a result of runoff characteristics. In some locations, the placement of riprap has been a successful deterrent to continued erosion.

Rock gabions have been placed within some small channel sections to prevent upstream erosion. In cases where erosion would normally exist, this type of control prevents undercutting and forces the water to back up behind the gabion until water can flow over the top of the structure. When this happens, the slope and runoff velocity of the channel remains constant thereby maintaining controlled sediment load rates. An example of ditch sections using rock gabions successfully can be seen in the ditches located at the entrance to the Valcam Loadout Area.

Sediment basins (or traps) are located at selected sites within the Mine Permit Area to reduce the amount of sediment being carried to downstream locations. These basins reduce local ditch runoff velocities thereby allowing the larger sediment to be dropped out.

Straw bales placed within the ditch section act as small filter dams which have two effects. First, they create a damming effect which reduces flow velocity (thereby reducing sediment loadings), and second, they filter out larger sediment particles. These straw bales are placed perpendicular to the ditch channel, and are kept in place through the use of steel rebar or other similar device which is driven through the bale and anchored securely into the ground.

Silt fencing is placed at the bottom of some disturbed hillslopes to help capture the small amount of sediment which may be moving on site. Typically these silt fences help control sediment while allowing the passage of runoff.

Each of the sediment control measures outlined above were considered for use at each of the ASCA's located within the Mine Permit Area. Table 750d provides a summary of the proposed treatment facilities for each ASCA.

**TABLE 750d  
PROPOSED ASCA TREATMENT FACILITIES**

FACILITY	ASCA 1	ASCA 2	ASCA 3	ASCA 4	ASCA 5	ASCA 6
Bypass Channel	X	X	-	-	X	X
Straw Pits	-	X	-	X	-	X
Depressions	-	X	-	-	-	X
Nat. Vegetation	X	X	X	X	X	X
Paved	-	X	X	-	-	-
Revegetation	-	-	X	-	X	X
Riprap	X	X	-	-	X	X
Rock Gabion	-	X	-	-	-	-
Sediment Basin	X	X	-	X	X	X
Straw Bale(s)	-	X	X	X	X	X
Silt Fencing	X	-	-	-	-	-
Total Acres	1.1	0.4	2.3	1.0	0.2	0.8

Because of the continued variability of mining operations it is not possible to locate on a map the exact location of each of the sediment control alternatives outlined within the previous table. However, general guides as to their use and their location is provided in Table 750e. Note in the table that only those sediment control devices which are currently used for a particular ASCA are noted.

**TABLE 750e  
GENERAL APPLICATION OF SEDIMENT CONTROL FACILITIES**

DEVICE	LOCATION OF DEVICE
ASCA 1	
Bypass Channel	Consists of Ditch D-6

DEVICE	LOCATION OF DEVICE
Natural Vegetation	Filling in on Slopes
Riprap	Located at outlet to C-4-42
Sediment Basin	Diversion ditches route water to Ponds 001A and 002A
Silt Fence	Located at toe of slope midway between Pond 001A and 002A
ASCA 2	
Bypass Channel	Consists of Ditches D-8, D-12E and D-16B
Depression	One located at the outlet to C-12-24, one midway down D-12D, and one near the end of D-12D.
Natural Vegetation	Filling in on Slopes
Paved Roadway	Part of Access Roadway to Loadout Facility
Riprap	Located at outlet to D-12D and along Creek
Rock Gabion	Located at bottom of Ditches D-12A and D-12C
Sediment Basin	Diversion ditches route water to Ponds 002A and 003A
Straw Bales	Straw bales located at downstream end of Ditches D-12A,B & C
ASCA 3	
Natural Vegetation	Filling in from surrounding area
Paved Roadway	Access roadway to office facilities
Revegetation	Grass in front of office
Straw Bales	Located at end of Ditch D-19B
ASCA 4	
Straw Pits	Located along Ditch UDD-2
Natural Vegetation	Filling in on Slopes
Sediment Basin	Located at end of Ditch UDD-2
Straw Bales	Located at sediment basin outlet
ASCA 5	
Bypass Channel	Consists of Ditches UDD-4 and D-34A
Natural Vegetation	Filling in on Slopes
Revegetation	Entire slope

DEVICE	LOCATION OF DEVICE
Riprap	Located at sediment basin outlet
Sediment Basin	Located at far northeast corner of area
Straw Bales	Located at sediment basin outlet
ASCA 6	
Bypass Channel	Consists of Ditch UDD-3
Straw Pits	Located along Ditch D-44A and D-44B
Natural Vegetation	Filling in on Slopes
Revegetation	Topsoil stockpile, Lower UDD-3, & slope above substation
Riprap	Located at outlet to UDD-3
Sediment Basin	Located at end of Ditch D-44A
Straw Bales	Located around topsoil pile and at end of Ditches D-44A & B

UDOGM has requested that the applicant prepare a monitoring plan which samples collectable drainage for water quality from each ASCA when practical. As a minimum, each sample is proposed by the regulating agency to be analyzed for total suspended and settleable solids. Local conditions make it difficult to collect and monitor runoff from ASCA areas within the permit area because of 1) variability in climatic conditions during early spring, late fall and winter, 2) the amount of runoff noted or expected from the ASCA's (if any) is relatively small, 3) the collection of a water quality sample under low flow conditions will likely be invalidated due to the unavoidable collection of bottom sediments resulting in the distortion of the analytical results, and 4) the ability to collect samples from each ASCA prior to the end of a measurable runoff event developed from typical mountain storms is limited. It is the applicants posture that the collection of TDS and TSS samples from ASCA's is not possible nor practical and therefore no additional sampling is planned.

#### 760. RECLAMATION.

Reclamation details are provided within the reclamation section of the MRP.

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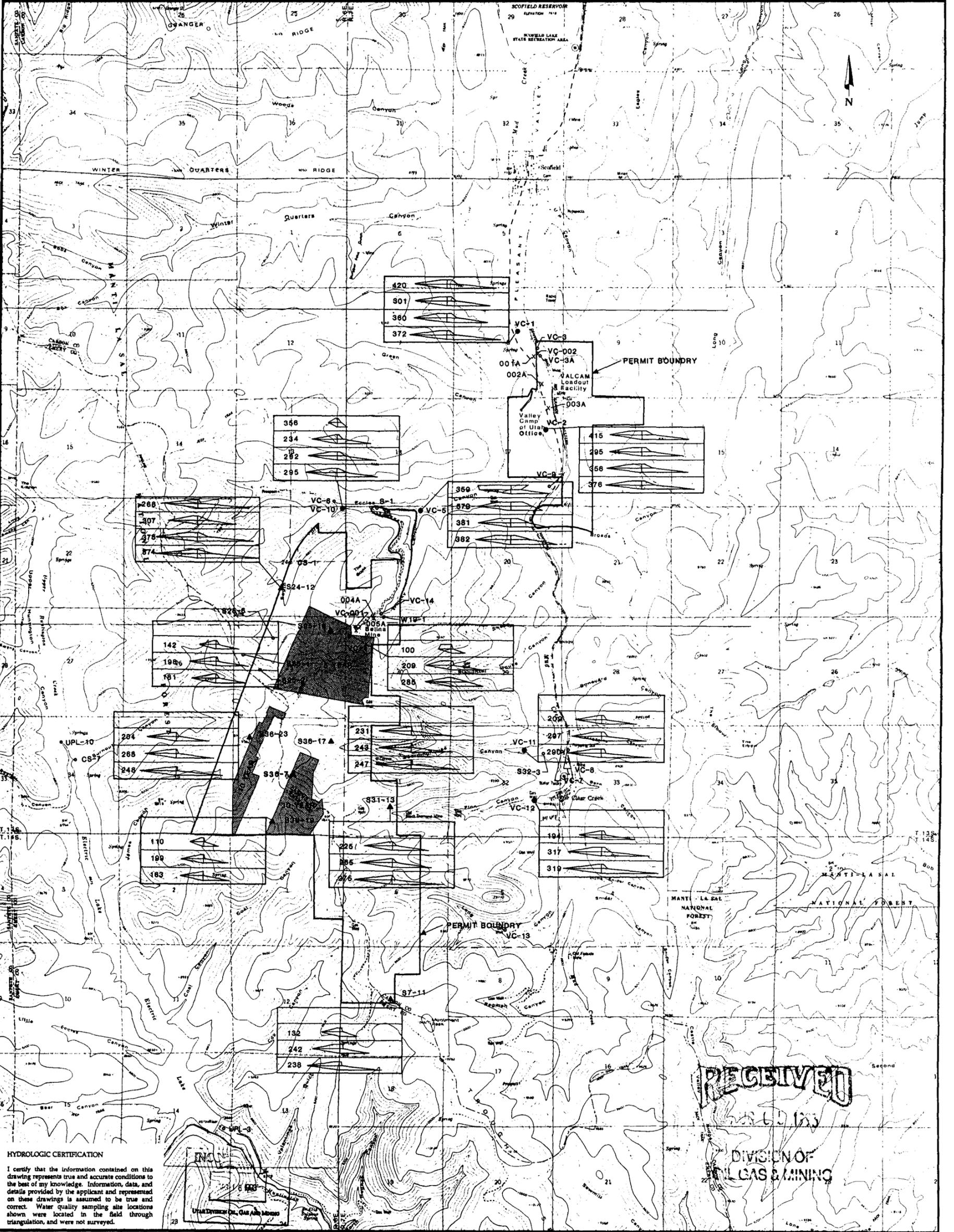
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VALLEY CAMP ACT/07/001 REVISION				INCORPORATED INTO MRP BY DOGM				VALLEY CAMP ACT/07/001 REVISION				INCORPORATED INTO MRP BY DOGM					
NO.	DATE	DESCRIPTION	REF. NO.	DATE	INITIALS	NO.	DATE	DESCRIPTION	REF. NO.	DATE	INITIALS	NO.	DATE	DESCRIPTION	REF. NO.	DATE	INITIALS



**HYDROLOGIC CERTIFICATION**

I certify that the information contained on this drawing represents true and accurate conditions to the best of my knowledge. Information, data, and details provided by the applicant and represented on these drawings is assumed to be true and correct. Water quality sampling site locations shown were located in the field through triangulation, and were not surveyed.

**LEGEND:**

- X NPDES DISCHARGE LOCATION
- ▲ SPRING SAMPLING STATION
- SURFACE WATER SAMPLING STATION
- ABANDONED SAMPLING LOCATION
- PROJECTED AREA AND TIMING OF FUTURE MINING

Scale: 1" = 2000'

BOX SHOWN IDENTIFIES SEASONAL WATER QUALITY AS SHOWN BELOW

1st	QUARTER WATER QUALITY
2nd	QUARTER WATER QUALITY
3rd	QUARTER WATER QUALITY
4th	QUARTER WATER QUALITY

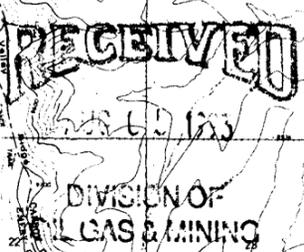
NOTES: 1. ANION-CATION DIAGRAM REPRESENTS DATA THROUGH MAY 1989. NUMBER TO LEFT OF ANION-CATION DIAGRAM IS AVERAGE QUARTERLY TDS AS UPDATED THROUGH APRIL, 1990.  
2. SPRING 36-7 SAMPLING STARTED 9/92 AT THE REQUEST OF DOGM.



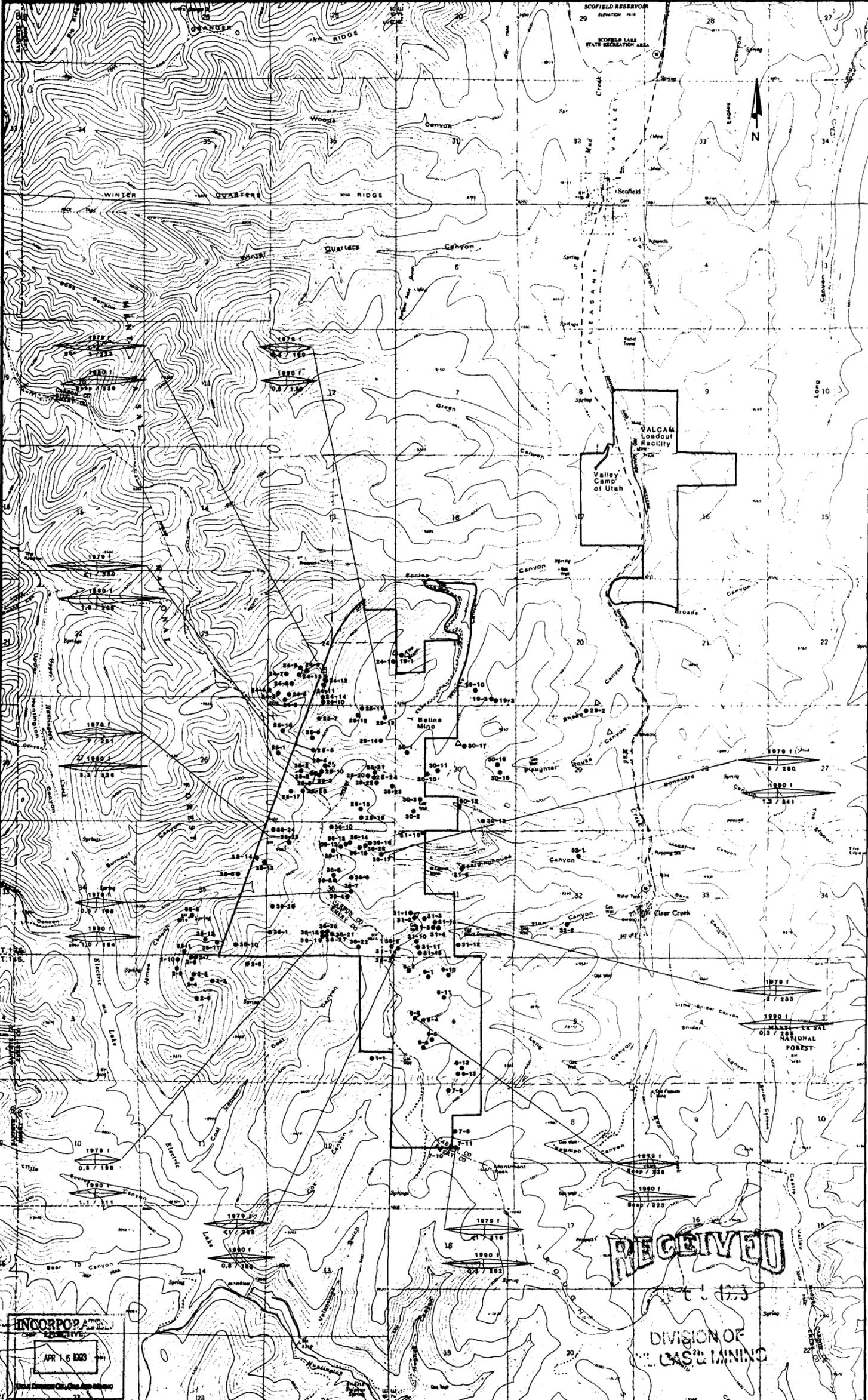
**VALLEY CAMP OF UTAH, INC.**  
SCOFIELD ROUTE, HELPER, UTAH 84526

**TITLE:** MAP R645-301-722.100a  
GROUND AND SURFACE WATER SAMPLING LOCATIONS WITH SEASONAL WATER QUALITY

Drawn by: DEH Date: 7/89  
Approval: DEH Date: 9/90  
Drawing No. Rev. 1  
3/93



VALLEY CAMP ACT/007/001 REVISION			INCORPORATED INTO MRP BY DOGM			VALLEY CAMP ACT/007/001 REVISION			INCORPORATED INTO MRP BY DOGM			VALLEY CAMP ACT/007/001 REVISION			INCORPORATED INTO MRP BY DOGM		
NO.	DATE	DESCRIPTION	REF. NO.	DATE	INITIALS	NO.	DATE	DESCRIPTION	REF. NO.	DATE	INITIALS	NO.	DATE	DESCRIPTION	REF. NO.	DATE	INITIALS



**SEEP AND SPRING FIELD DATA**

Spring No.	Date	Flow (gpm)	Temperature (°F)	Conductivity (micromhos/cm)	TDS (mg/l)	pH
1-01	Spring/79	2	12.7	20	300	7.1
1-02	Fall/79	12	14	10	334	7.3
2-01	8/13/79	0.21	14	10	334	7.3
2-02	Fall/79	1	14	10	334	7.3
2-03	Fall/79	1	14	10	334	7.3
2-04	Fall/79	1	14	10	334	7.3
2-05	Fall/79	1	14	10	334	7.3
2-06	Fall/79	1	14	10	334	7.3
2-07	Fall/79	1	14	10	334	7.3
2-08	Fall/79	1	14	10	334	7.3
2-09	Fall/79	1	14	10	334	7.3
2-10	Fall/79	1	14	10	334	7.3
2-11	Fall/79	1	14	10	334	7.3
2-12	Fall/79	1	14	10	334	7.3
2-13	Fall/79	1	14	10	334	7.3
2-14	Fall/79	1	14	10	334	7.3
2-15	Fall/79	1	14	10	334	7.3
2-16	Fall/79	1	14	10	334	7.3
2-17	Fall/79	1	14	10	334	7.3
2-18	Fall/79	1	14	10	334	7.3
2-19	Fall/79	1	14	10	334	7.3
2-20	Fall/79	1	14	10	334	7.3
2-21	Fall/79	1	14	10	334	7.3
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2-25	Fall/79	1	14	10	334	7.3
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2-84	Fall/79	1	14	10	334	7.3
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2-94	Fall/79	1	14	10	334	7.3
2-95	Fall/79	1	14	10	334	7.3
2-96	Fall/79	1	14	10	334	7.3
2-97	Fall/79	1	14	10	334	7.3
2-98	Fall/79	1	14	10	334	7.3
2-99	Fall/79	1	14	10	334	7.3
2-100	Fall/79	1	14	10	334	7.3

INCORPORATED  
APR 16 1983

**LEGEND:**

- IDENTIFIED SEEP AND SPRING LOCATION AND IDENTIFICATION NUMBER
- ◊ IDENTIFIED STOCK POND LOCATION

**CATIONS**

Na  
Ca  
Mg

**ANIONS**

Cl  
HCO<sub>3</sub>  
SO<sub>4</sub>

**CERTIFICATION**

I certify that to the best of my knowledge the information contained on this map represent true and accurate conditions as of the date the data was collected. No certification is made with respect to the accuracy of any water quality analysis.

**YEAR LAST UPDATED**  
1980

**VALLEY CAMP OF UTAH, INC.**  
SCOFIELD ROUTE, HELPER, UTAH 84526

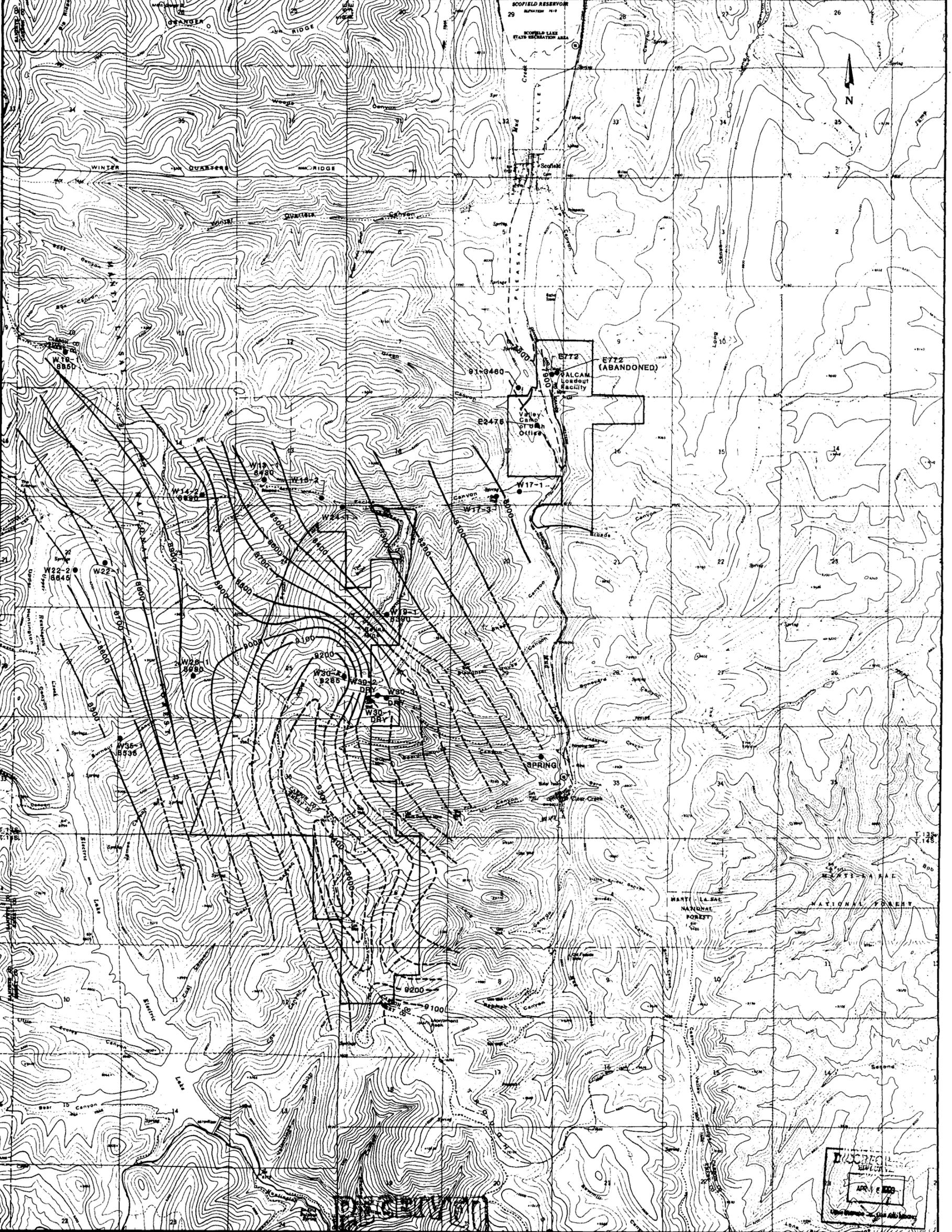
**TITLE:**  
MAP R645-301-722.100b  
SEEP AND SPRING SURVEY  
UPDATE

**Drawn by:** JVH **Date:** 9/80  
**Approval:** DEH **Date:** 9/80

**Drawing No.:** **Rev.:** 1/3/93

**SCALE:** 1" = 2000' **SHEET:** 1 OF 1

VALLEY CAMP ACT/007/001 REVISION			INCORPORATED INTO MRP BY DOGM			VALLEY CAMP ACT/007/001 REVISION			INCORPORATED INTO MRP BY DOGM			VALLEY CAMP ACT/007/001 REVISION			INCORPORATED INTO MRP BY DOGM		
NO.	DATE	DESCRIPTION	REF. NO.	DATE	INITIALS	NO.	DATE	DESCRIPTION	REF. NO.	DATE	INITIALS	NO.	DATE	DESCRIPTION	REF. NO.	DATE	INITIALS



**LEGEND:**

- W22-2 OBSERVATION HOLE OR WELL LOCATION
- 8645 SHALLOW HOLE WATER ELEVATION
- 8900 WATER LEVEL CONTOUR ESTIMATED FOR VALLEY CAMP
- 8900 WATER LEVEL CONTOUR FROM COASTAL STATES REPORT
- MODIFIED CONTOUR BASED ON INFO AVAILABLE FROM COASTAL STATES MINE PERMIT ON FILE AT DOGM, JAN. 1993.

**HYDROLOGIC CERTIFICATION**

I certify that the information contained on this drawing represents true and accurate conditions at the time it was prepared consistent with the level of accuracy obtainable from the data. Information, data, and details provided by the applicant and represented on these drawings is assumed to be true and correct.

**DIVISION OF OIL, GAS & MINES**

**STATE OF UTAH**

**AUG 05 1993**

**VALLEY CAMP OF UTAH, INC.**  
SCOFIELD ROUTE, HELPER, UTAH 84526

**TITLE:** MAP R645-301-722.100c  
**GROUND WATER CONTOURS**

Drawn by: JWH Date: 9/80  
Approval: DEH Date: 9/90  
Drawing No. Rev. 1 3/93

**SCALE: 1" = 2000'** **SHEET 1 OF 1**



VALLEY CAMP ACT/007/001 REVISION				INCORPORATED INTO MRF BY DOGM				VALLEY CAMP ACT/007/001 REVISION				INCORPORATED INTO MRF BY DOGM				VALLEY CAMP ACT/007/001 REVISION				INCORPORATED INTO MRF BY DOGM			
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**STREAM SURVEY LINES**

SURVEY LINE	STA. NO.	DATE
0	9531.34	OCT 91
1	9538.89	OCT 91
2	9545.22	OCT 91
3	9551.34	OCT 91
4	9557.01	OCT 91
5	9562.08	OCT 91
6	9567.79	OCT 91
7	9573.04	OCT 91
8	9577.81	OCT 91
9	9582.11	OCT 91
10	9586.99	OCT 91
11	9591.44	OCT 91
12	9595.44	OCT 91
13	9599.00	OCT 91
14	9602.11	OCT 91
15	9604.77	OCT 91
16	9606.99	OCT 91
17	9608.77	OCT 91
18	9610.11	OCT 91
19	9611.00	OCT 91
20	9611.44	OCT 91
21	9611.44	OCT 91
22	9611.44	OCT 91
23	9611.44	OCT 91
24	9611.44	OCT 91
25	9611.44	OCT 91
26	9611.44	OCT 91
27	9611.44	OCT 91
28	9611.44	OCT 91
29	9611.44	OCT 91
30	9611.44	OCT 91
31	9611.44	OCT 91
32	9611.44	OCT 91
33	9611.44	OCT 91
34	9611.44	OCT 91
35	9611.44	OCT 91
36	9611.44	OCT 91
37	9611.44	OCT 91
38	9611.44	OCT 91
39	9611.44	OCT 91
40	9611.44	OCT 91
41	9611.44	OCT 91
42	9611.44	OCT 91
43	9611.44	OCT 91
44	9611.44	OCT 91
45	9611.44	OCT 91
46	9611.44	OCT 91
47	9611.44	OCT 91
48	9611.44	OCT 91
49	9611.44	OCT 91
50	9611.44	OCT 91
51	9611.44	OCT 91
52	9611.44	OCT 91
53	9611.44	OCT 91
54	9611.44	OCT 91
55	9611.44	OCT 91
56	9611.44	OCT 91
57	9611.44	OCT 91
58	9611.44	OCT 91
59	9611.44	OCT 91
60	9611.44	OCT 91

**STREAM SURVEY LINES**

SURVEY LINE	STA. NO.	DATE
0	9614.21	OCT 91
10	9620.97	OCT 91
20	9627.79	OCT 91
30	9634.54	OCT 91
40	9641.34	OCT 91
50	9648.08	OCT 91
60	9654.77	OCT 91
70	9661.44	OCT 91
80	9668.08	OCT 91
90	9674.77	OCT 91
100	9681.44	OCT 91
110	9688.08	OCT 91
120	9694.77	OCT 91
130	9701.44	OCT 91
140	9708.08	OCT 91
150	9714.77	OCT 91
160	9721.44	OCT 91
170	9728.08	OCT 91
180	9734.77	OCT 91
190	9741.44	OCT 91
200	9748.08	OCT 91
210	9754.77	OCT 91
220	9761.44	OCT 91
230	9768.08	OCT 91
240	9774.77	OCT 91
250	9781.44	OCT 91
260	9788.08	OCT 91
270	9794.77	OCT 91
280	9801.44	OCT 91
290	9808.08	OCT 91
300	9814.77	OCT 91
310	9821.44	OCT 91
320	9828.08	OCT 91
330	9834.77	OCT 91
340	9841.44	OCT 91
350	9848.08	OCT 91
360	9854.77	OCT 91
370	9861.44	OCT 91
380	9868.08	OCT 91
390	9874.77	OCT 91
400	9881.44	OCT 91
410	9888.08	OCT 91
420	9894.77	OCT 91
430	9901.44	OCT 91
440	9908.08	OCT 91
450	9914.77	OCT 91
460	9921.44	OCT 91
470	9928.08	OCT 91
480	9934.77	OCT 91
490	9941.44	OCT 91
500	9948.08	OCT 91
510	9954.77	OCT 91
520	9961.44	OCT 91
530	9968.08	OCT 91
540	9974.77	OCT 91
550	9981.44	OCT 91
560	9988.08	OCT 91
570	9994.77	OCT 91
580	10001.44	OCT 91
590	10008.08	OCT 91
600	10014.77	OCT 91

**STREAM SURVEY LINES**

SURVEY LINE	STA. NO.	DATE
0	9914.21	OCT 91
10	9920.97	OCT 91
20	9927.79	OCT 91
30	9934.54	OCT 91
40	9941.34	OCT 91
50	9948.08	OCT 91
60	9954.77	OCT 91
70	9961.44	OCT 91
80	9968.08	OCT 91
90	9974.77	OCT 91
100	9981.44	OCT 91
110	9988.08	OCT 91
120	9994.77	OCT 91
130	10001.44	OCT 91
140	10008.08	OCT 91
150	10014.77	OCT 91
160	10021.44	OCT 91
170	10028.08	OCT 91
180	10034.77	OCT 91
190	10041.44	OCT 91
200	10048.08	OCT 91
210	10054.77	OCT 91
220	10061.44	OCT 91
230	10068.08	OCT 91
240	10074.77	OCT 91
250	10081.44	OCT 91
260	10088.08	OCT 91
270	10094.77	OCT 91
280	10101.44	OCT 91
290	10108.08	OCT 91
300	10114.77	OCT 91
310	10121.44	OCT 91
320	10128.08	OCT 91
330	10134.77	OCT 91
340	10141.44	OCT 91
350	10148.08	OCT 91
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440	10208.08	OCT 91
450	10214.77	OCT 91
460	10221.44	OCT 91
470	10228.08	OCT 91
480	10234.77	OCT 91
490	10241.44	OCT 91
500	10248.08	OCT 91

**STREAM SURVEY LINES**

SURVEY LINE	STA. NO.	DATE
0	10254.21	OCT 91
10	10260.97	OCT 91
20	10267.79	OCT 91
30	10274.54	OCT 91
40	10281.34	OCT 91
50	10288.08	OCT 91
60	10294.77	OCT 91
70	10301.44	OCT 91
80	10308.08	OCT 91
90	10314.77	OCT 91
100	10321.44	OCT 91
110	10328.08	OCT 91
120	10334.77	OCT 91
130	10341.44	OCT 91
140	10348.08	OCT 91
150	10354.77	OCT 91
160	10361.44	OCT 91
170	10368.08	OCT 91
180	10374.77	OCT 91
190	10381.44	OCT 91
200	10388.08	OCT 91
210	10394.77	OCT 91
220	10401.44	OCT 91
230	10408.08	OCT 91
240	10414.77	OCT 91
250	10421.44	OCT 91
260	10428.08	OCT 91
270	10434.77	OCT 91
280	10441.44	OCT 91
290	10448.08	OCT 91
300	10454.77	OCT 91
310	10461.44	OCT 91
320	10468.08	OCT 91
330	10474.77	OCT 91
340	10481.44	OCT 91
350	10488.08	OCT 91
360	10494.77	OCT 91
370	10501.44	OCT 91
380	10508.08	OCT 91
390	10514.77	OCT 91
400	10521.44	OCT 91
410	10528.08	OCT 91
420	10534.77	OCT 91
430	10541.44	OCT 91
440	10548.08	OCT 91
450	10554.77	OCT 91
460	10561.44	OCT 91
470	10568.08	OCT 91
480	10574.77	OCT 91
490	10581.44	OCT 91
500	10588.08	OCT 91

**STREAM SURVEY LINES**

SURVEY LINE	STA. NO.	DATE
0	10594.21	OCT 91
10	10600.97	OCT 91
20	10607.79	OCT 91
30	10614.54	OCT 91
40	10621.34	OCT 91
50	10628.08	OCT 91
60	10634.77	OCT 91
70	10641.44	OCT 91
80	10648.08	OCT 91
90	10654.77	OCT 91
100	10661.44	OCT 91
110	10668.08	OCT 91
120	10674.77	OCT 91
130	10681.44	OCT 91
140	10688.08	OCT 91
150	10694.77	OCT 91
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170	10708.08	OCT 91
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200	10728.08	OCT 91
210	10734.77	OCT 91
220	10741.44	OCT 91
230	10748.08	OCT 91
240	10754.77	OCT 91
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260	10768.08	OCT 91
270	10774.77	OCT 91
280	10781.44	OCT 91
290	10788.08	OCT 91
300	10794.77	OCT 91
310	10801.44	OCT 91
320	10808.08	OCT 91
330	10814.77	OCT 91
340	10821.44	OCT 91
350	10828.08	OCT 91
360	10834.77	OCT 91
370	10841.44	OCT 91
380	10848.08	OCT 91
390	10854.77	OCT 91
400	10861.44	OCT 91
410	10868.08	OCT 91
420	10874.77	OCT 91
430	10881.44	OCT 91
440	10888.08	OCT 91
450	10894.77	OCT 91
460	10901.44	OCT 91
470	10908.08	OCT 91
480	10914.77	OCT 91
490	10921.44	OCT 91
500	10928.08	OCT 91

**STREAM SURVEY LINES**

SURVEY LINE	STA. NO.	DATE
0	10934.21	OCT 91
10	10940.97	OCT 91
20	10947.79	OCT 91
30	10954.54	OCT 91
40	10961.34	OCT 91
50	10968.08	OCT 91
60	10974.77	OCT 91
70	10981.44	OCT 91
80	10988.08	OCT 91
90	10994.77	OCT 91
100	11001.44	OCT 91
110	11008.08	OCT 91
120	11014.77	OCT 91
130	11021.44	OCT 91
140	11028.08	OCT 91
150	11034.77	OCT 91
160	11041.44	OCT 91
170	11048.08	OCT 91
180	11054.77	OCT 91
190	11061.44	OCT 91
200	11068.08	OCT 91
210	11074.77	OCT 91
220	11081.44	OCT 91
230	11088.08	OCT 91
240	11094.77	OCT 91
250	11101.44	OCT 91
260	11108.08	OCT 91
270	11114.77	OCT 91
280	11121.44	OCT 91
290	11128.08	OCT 91
300	11134.77	OCT 91
310	11141.44	OCT 91
320	11148.08	OCT 91
330	11154.77	OCT 91
340	11161.44	OCT 91
350	11168.08	OCT 91
360	11174.77	OCT 91
370	11181.44	OCT 91
380	11188.08	OCT 91
390	11194.77	OCT 91
400	11201.44	OCT 91
410	11208.08	OCT 91
420	11214.77	OCT 91
430	11221.44	OCT 91
440	11228.08	OCT 91
450	11234.77	OCT 91
460	11241.44	OCT 91
470	11248.08	OCT 91
480	11254.77	OCT 91
490	11261.44	OCT 91
500	11268.08	OCT 91

**SURVEY MONUMENT COORDINATES**

SURVEY STATION	VALLEY CAMP LOCAL COORDINATES	STATE PLANE COORDINATES	ELEVATION
	NORTH	EAST	
BH-3	4		















VALLEY CAMP ACT/007/001 REVISION			INCORPORATED INTO MRP BY DOGM			VALLEY CAMP ACT/007/001 REVISION			INCORPORATED INTO MRP BY DOGM			VALLEY CAMP ACT/007/001 REVISION			INCORPORATED INTO MRP BY DOGM		
NO.	DATE	DESCRIPTION	REF. NO.	DATE	INITIALS	NO.	DATE	DESCRIPTION	REF. NO.	DATE	INITIALS	NO.	DATE	DESCRIPTION	REF. NO.	DATE	INITIALS

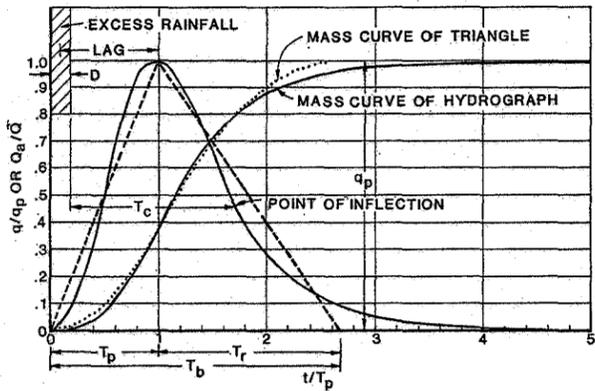
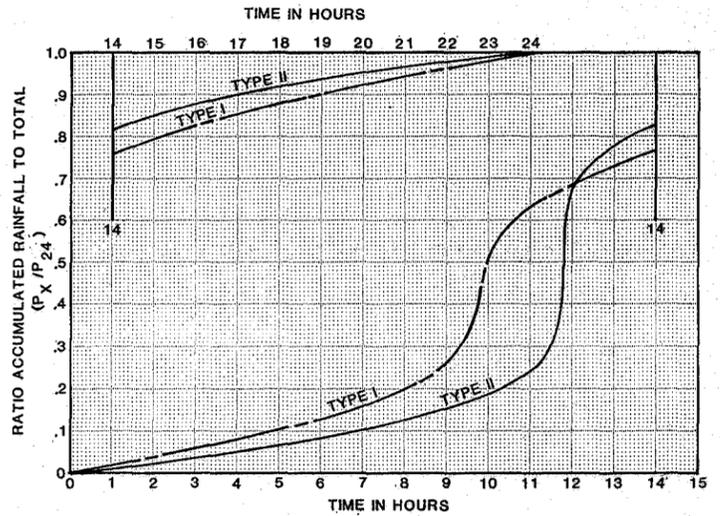


FIGURE 742.221a  
DIMENSIONLESS CURVILINEAR UNIT  
HYDROGRAPH AND EQUIVALENT  
TRIANGULAR HYDROGRAPH



TYPE I HAWAII, COASTAL SIDE OF SIERRA NEVADA IN SOUTHERN CALIFORNIA, AND THE INTERIOR REGIONS OF ALASKA.  
 TYPE IA STORM DISTRIBUTION REPRESENTS THE COASTAL SIDE OF THE SIERRA NEVADA AND THE CASCADE MOUNTAINS IN OREGON, WASHINGTON, AND NORTHERN CALIFORNIA, AND THE COASTAL REGIONS OF ALASKA. USERS REQUIRING PEAK RATES OF DISCHARGE FOR THESE AREAS CAN OBTAIN THE GRAPHS FROM THE WEST REGIONAL TECHNICAL SERVICE CENTER, SCS, PORTLAND, OREGON.  
 TYPE II REMAINING UNITED STATES, PUERTO RICO, AND VIRGIN ISLANDS.

FIGURE 742.221b  
TWENTY-FOUR HOUR  
RAINFALL DISTRIBUTIONS

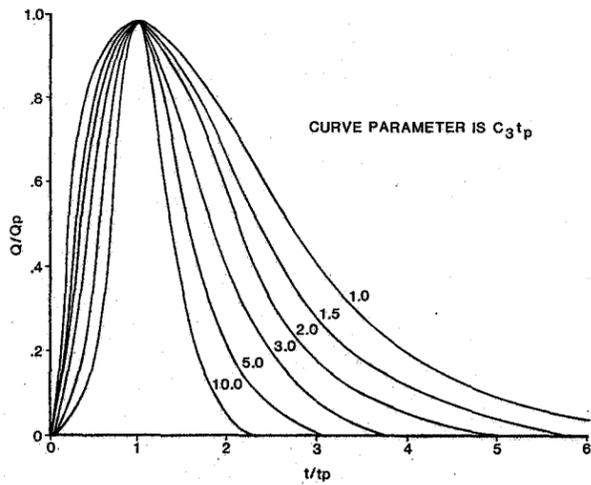
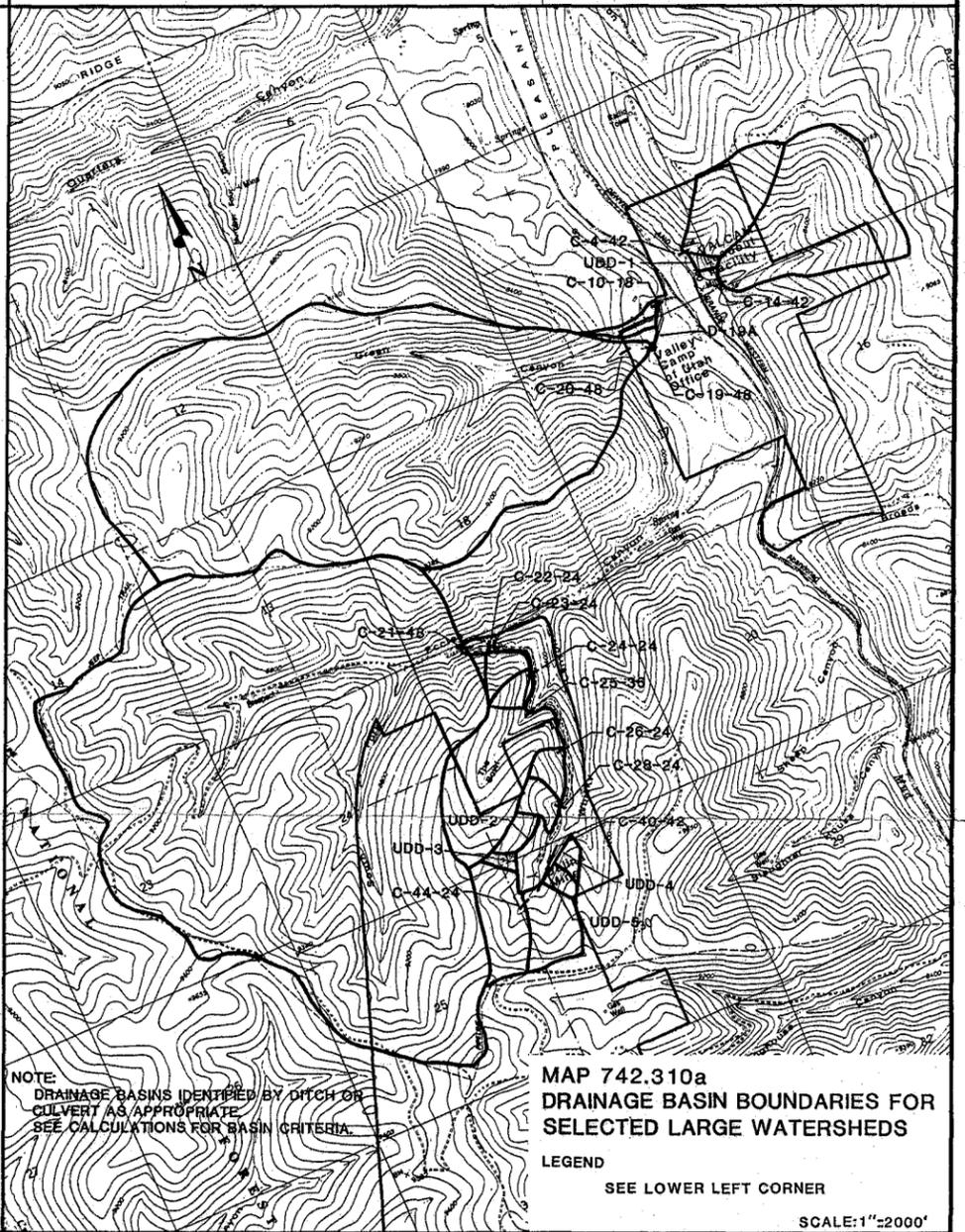


FIGURE 742.221c  
VARIATION IN HYDROGRAPH  
SHAPE WITH VARIATION IN  $C_{3tp}$   
(TAKEN FROM HAAN, 1970)



NOTE: DRAINAGE BASINS IDENTIFIED BY DITCH OR CULVERT AS APPROPRIATE. SEE CALCULATIONS FOR BASIN CRITERIA.

MAP 742.310a  
DRAINAGE BASIN BOUNDARIES FOR  
SELECTED LARGE WATERSHEDS

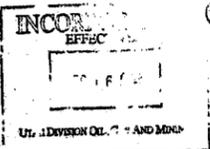
LEGEND  
SEE LOWER LEFT CORNER

SCALE: 1"=2000'

RECEIVED

AUG 05 1993

DIVISION OF  
OIL, GAS & MINING



LEGEND: (MAP 742.310a)

- C-25-36 CULVERT 25 (36 INCH DIAMETER)
- D-19A DITCH 19A
- ~ DRAINAGE BASIN BOUNDARY
- UDD-2 UNDISTURBED DRAINAGE DITCH - 2

HYDROLOGIC CERTIFICATION

I certify that the information contained on this drawing accurately represents hydrologic analyses and methodology completed for this permit renewal as per standard engineering practice.



VALLEY CAMP OF UTAH, INC.  
SCOFIELD ROUTE, HELPER, UTAH 84526



TITLE:  
FIGURES R645-301-742.221a  
THROUGH R645-301-742.221c  
AND MAP R645-301-742.310a

Drawn by: DCR Date: 8/89

Approval: DEH Date: 9/90

Drawing No. Rev. 1 3/93

SCALE: AS SHOWN SHEET 1 OF 1

TABLE OF CONTENTS  
BONDING. R645-301-800

<u>SECTION</u>	<u>PAGE NO.</u>
800. BONDING AND INSURANCE .....	800-1
820. REQUIREMENT TO FILE A BOND .....	800-1
830. DETERMINATION OF BOND AMOUNT. ....	800-2
840. GENERAL TERMS AND CONDITIONS. ....	800-2
850. BONDING REQUIREMENTS. ....	800-2
860. FORMS OF BONDS. ....	800-3
870. REPLACEMENT BONDS. ....	800-3
880. REQUIREMENTS TO RELEASE PERFORMANCE BOND. ....	800-3
890. TERMS AND CONDITIONS OF LIABILITY. ....	800-3

R645-301-800. BONDING AND INSURANCE.

820. REQUIREMENT TO FILE A BOND.

820.100.

The Mine Permit Renewal Application under R645-301 has been approved, and prior to the permit being issued, Valley Camp of Utah, Inc. filed with the Division, on a form prescribed and furnished by the Division, a bond for performance made payable to the Division and conditioned upon the faithful performance of all the requirements of the State Program, the Mine Permit and the Reclamation Plan.

On November 17, 1989, the Utah Division of Oil, Gas and Mining and Valley Camp of Utah, Inc. entered into a Coal Reclamation and Bonding Agreement.

BOND TYPE (Form of Bond)	Performance
BOND (Bond Amount-Dollars) (Year-Dollars)	2.3 Million (1993 Amount Pending) 1989
INSTITUTION (Bank or Agency)	Federal Insurance Co. (CHUBB GROUP of Insurance Co.) 15 Mountain View Road, Warren, New Jersey 07060
POLICY OR ACCOUNT NUMBER:	8099-56-50
LIABILITY INSURANCE (Exp) (Insurance Company)	Ongoing The Home Indemnity Company, P.O. 5160 Manchester, New Hampshire 03108
POLICY OR ACCOUNT NUMBER	GL 99 48 43

For further details see 1993 MRP.

820.110. AREAS TO BE COVERED BY THE PERFORMANCE BOND.

820.111. THRU 820.114.

The bond covers the entire Mine Permit Area which is utilized by Valley Camp's coal mining and reclamation operations.

See Reclamation maps included within the MRP for the effected and disturbed area boundaries.

820.120.

Prior to new surface disturbance, Valley Camp will adjust the performance bond to the amount approved by the Division.

820.130. THRU 820.224.

Valley Camp has furnished the Division (with the submittal of the 1993 MRP) reclamation details and calculations for the purpose of determining a performance bond amount sufficient to cover reclamation costs.

820.300. THRU 820.352. PERIOD OF LIABILITY.

The performance bond liability is for the duration of the coal mining and reclamation operations and for a period which is coincident with Valley Camp's period of extended responsibility for successful revegetation provided in 356, or until achievement of the reclamation requirements of the State Program and permit, whichever is the latter.

830. THRU 830.130. DETERMINATION OF BOND AMOUNT.

The bond amount is to be determined by the Division.

830.140. DETAILED COST ESTIMATE.

See the 1993 MRP.

830.200. THRU 830.300 MINIMUM BOND AMOUNT.

After reviewing the reclamation plan and cost calculations the Division will determine the minimum bond amount. At this time Valley Camp of Utah will provide a new Reclamation Agreement and Bond for the required amount.

830.400. THRU 830.500. ADJUSTMENT OF AMOUNT.

Valley Camp of Utah agrees to re-evaluate the bond whenever the permitted area is altered or the standards of reclamation change.

840. THRU 840.520. GENERAL TERMS AND CONDITIONS.

The bond provided by Valley Camp of Utah meets the General Terms and Conditions.

850. THRU 850.320. BONDING REQUIREMENTS.

The bond will remain in full force until reclamation is completed as described in the approved Reclamation Plan. It is not anticipated that the bond will be fully released until the period of extended responsibility for successful revegetation has expired.

**860. THRU 860.380. FORMS OF BONDS.**

The bond provided by Valley Camp of Utah is a Surety Bond.

**870. THRU 870.200. REPLACEMENT BONDS.**

If the current bond is replaced, the replacing bond will provide equivalent coverage and conditions.

**880. THRU 880.932. REQUIREMENTS TO RELEASE PERFORMANCE BOND.**

Valley Camp of Utah commits to meet the requirements of R645-301-880. through R645-301-880.932.

**890. THRU 890.400. TERMS AND CONDITIONS OF LIABILITY.**

The policy number the Valley Camp of Utah, Inc. liability insurance policy is GL 99 48 43.