

UNION CARBIDE CORPORATION

URAVAN, COLORADO

SUA - 673

SOLID WASTE DISPOSAL

REPORT

SEPTEMBER/1981

8111160110 811022  
PDR WASTE  
WM-34  
FDR

SOLID WASTE REPORT/1981

DATA SUMMARY

1.0 MONITOR POINTS

Directional movement of the monitor points is illustrated in Plate 1.0. The request for graphical representation as presented in Mr. Jeris A. Danielson's letter to Mr. Hazle on September 10, 1981 cannot be fulfilled for this report as we are still awaiting delivery on the proper graphical format sheets. The supplier sent us a format other than that requested.

1.1 POND TWO

Movement points along Two continue to show shrinkage of the pile of a very minimal nature. The following is the quarterly history of monitor points on Pond Two in foot increments:

<u>Point</u>	<u>ΔN</u>	<u>ΔE</u>	<u>ΔElev.</u>
7	-0.019	+0.009	-0.004
8	-0.006	+0.035	-0.027
9	-0.012	+0.017	-0.011
10		Destroyed during toe berm construction	
11	-0.009	+0.012	-0.032
12		Destroyed during toe berm construction	
13	-0.016	-0.017	-0.036
14		Destroyed during toe berm construction	
15		Destroyed during toe berm construction	
16	+0.009	-0.031	-0.035
17		Destroyed during toe berm construction	
18	+0.001	-0.013	-0.025
19	-0.028	-0.010	+0.003
20		Destroyed during toe berm construction	
21	-0.042	-0.033	-0.002
22	-0.083	+0.012	+0.005

1.2 POND THREE

Monitor points along Pond Three were not surveyed. Points One, Two, Three, and Six were inadvertently destroyed during August when heavy equipment was repairing storm erosion damage to the sand portion of the berm. Points Four and Five were unharmed. The four damaged points have been replaced and will be surveyed periodically beginning November 20, 1981 as will points Four and Five.

## 2.0 PIEZOMETRIC MEASUREMENTS

Location of the piezometers is illustrated on Plate 2.0. Graphical representation as per the previous referenced correspondence will be given as available.

### 2.1 POND ONE

Tailing Pile One continues to serve as a sump for runoff and seepage from the Club Mesa Spray System Area. The spray system was active for the month of September.

Pond One has been inactive since May 30, 1980.

Piezometers 2-24 and 2-25 decreased 0.07 and 0.46 feet, respectively. Piezometer 17D remained constant. Piezometers 17S, 18S, and 18D are dry. Piezometers 2-9 and 2-10 decreased 0.16 and 0.33 feet, respectively.

### 2.2 POND TWO

Pond Two has been inactive since December 20, 1980. The piezometers within Pond Two varied as shown:

<u>Piezometer</u>	<u>ΔFeet</u>	<u>Piezometer</u>	<u>ΔFeet</u>
2-1	-0.15	2-16	+0.00
2-2	-0.09	2-19S	-0.08
2-3	-0.09	2-19D	+0.08
2-4	-0.09	2-20	+0.00
2-5	+0.00	2-21	Damaged
2-6	-0.17	2-23	Damaged
2-11	-0.33	2-27	Bottomed
2-12	-0.17		

Piezometers 2-20 and 2-23 were damaged during a dike lift and will be repaired soon.

### 2.3 POND THREE

Pond three was reactivated on September 24, 1981. The piezometer changes after reactivation, for that month, were negligible. The piezometer changes for the month were:

<u>Piezometer</u>	<u>ΔFeet</u>
3-1	+0.00
3-2	-0.25
3-3	-0.08
3-4	+0.12

### 3.0 OPERATIONAL SUMMARY

#### 3.1 POND ONE

Minimum freeboard was ten feet. Beach width equaled standard at end of month due to heavy rain.

#### 3.2 POND TWO

Minimum freeboard was eight and one-half feet. Beach width exceeded two hundred feet.

#### 3.3 POND THREE

Minimum freeboard was ten feet. Beach width equaled one hundred and fifty feet. Spigot locations were as follows:

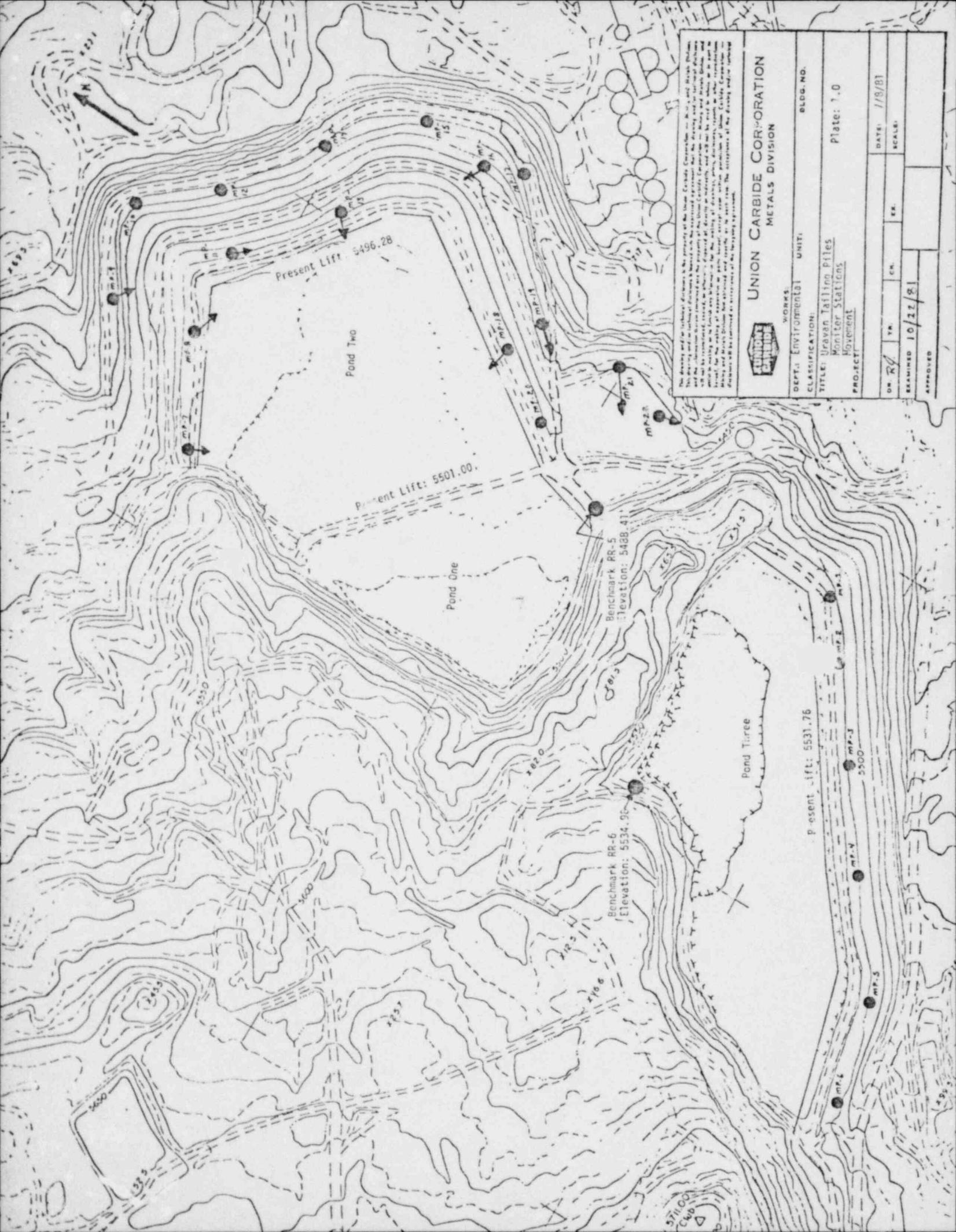
<u>Date</u>	<u>Spigot Location</u>
10/24	0'
10/25	40'
10/26	80'
10/27	120'
10/28	160'
10/29	200'
10/30	240'

#### 3.4 BERM AND DRAINAGE CONDITION

Average drainage for the toe drain system for Pond Three was 5.54 gpm. The drain system was flushed during the month as a preventative measure. Wet areas continue to exist along the lower face of the toe berm and will be drained in November.

Average drainage for the toe drain systems for Pond Two was 57.03 gpm. A drainage collection pond downslope of the tailing pile was inadvertently tied into the number four sump, causing high recorded volumes. This has been rectified.

One seep area exists down gradient of the traverse drain line near section 7-7 and will be rectified in November.



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**UNION CARBIDE CORPORATION**  
METALS DIVISION

WORKS: **Environmental** UNIT: **Environmental** BLDG. NO. **11/8/81**

CLASSIFICATION: **Environmental**

TITLE: **Urban Tailing Piles Monitor Stations** Plate: **7.0**

PROJECT: **Government**

DATE: **10/22/81** SCALE: **1/8" = 1'-0"**

DR: **RJ** YR: **CR** EA: **EA**

EXAMINED: **10/22/81**

APPROVED: **[Signature]**



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**UNION CARBIDE CORPORATION**  
METALS DIVISION

DEPT.: Environmental	UNIT:	BLOG. NO.
CLASSIFICATION:	WORKS	
TITLE: Uraven Tailing Piles Piezometer Locations		plate: 2.0
PROJECT:		
DR. <i>RJ</i>	TR.	SCALE:
EXAMINED	CK.	DATE: 7/8/81
APPROVED		

Present Lift: 5:96.28

Present Lift: 5507.00

Benchmark RR-5  
Elevation: 5488.41

Benchmark RR-6  
Elevation: 5534.96

7-5 Present Lift: 5531.76

Fond Two

Pond One

Pond Three

ROAD

B

MONITOR POINTS - FIELD DATA

URAVAN, COLORADO

UNION CARBIDE CORPORATION

Metals Division  
Uravan, Colorado

"W" SERIES

TAILINGS  
MONITOR  
STATIONS

Job No. I.T.S. POINTS

Date

9-26-81

STATION	COORDINATES		ELEVATION
	North	East	
Δ Judy	176,375.950	81,986.850	5316.26
I.T.S. 1	175,336.845	81,178.352	5421.049
I.T.S. 2	175,845.934	81,415.607	5350.690
I.T.S. 3	175,289.800	82,602.192	5342.730
I.T.S. 4	174,236.313	83,550.813	5344.410
I.T.S. 5	173,559.076	83,442.942	5368.970
I.T.S. 6 was destroyed			
I.T.S. 6A	172,924.106	82,269.968	5427.310
I.T.S. 7	172,355.532	81,518.073	5445.540
I.T.S. 8	171,830.158	80,569.076	5529.970
I.T.S. 9	173,501.107	81,911.744	5553.730
I.T.S. 10	174,873.279	81,190.244	5523.060
Δ 11	172,635.927	80,193.121	5710.850
I.T.U. 11	172,653.704	80,410.166	5649.790
BM-1	ford 2 use as check in on upper loop disk in rock		5492.847
BM-2	START OF UPPER LOOP ford 2 - cross call - check in on lower loop		5472.850

MOVEMENT POINT DATA SHEET

ORIGINAL DATA

MOVEMENT POINT NO. MP-1

N. 173,188.854

E 81,900.579

ELEV. 5510.900

Original DATA

URAVAN TAILING DAM

Done on 4-13-4-17-85

	TIME & DATE	NORTH COORDINATE	ΔN	EAST COORDINATE	ΔE	ELEVATION	ΔELEV
A	3/17/80 4:00 PM	173,197.876	+0.032	81,900.546	-0.033	5510.900	0.000
B	3/18/80 3:15 PM	173,188.897	-0.005	81,900.501	-0.078	5510.903	+0.003
C	3/19/80 3:25 PM	173,188.867	+0.013	81,900.531	-0.043	5510.906	+0.006
D	3/21/80 7:30 AM	173,188.881	+0.027	81,900.544	-0.035	5510.901	+0.001
E	4/1/80 10:00	173,188.872	+0.019	81,900.525	-0.054	5510.905	+0.005
F	3/27/80 0730	173,188.903	+0.054	81,900.545	-0.034	5510.906	+0.006
G	4/1/80 0800	173,188.821	-0.082	81,900.795	-0.084	5510.905	+0.005
H	4/19/80 0800	173,188.869	+0.015	81,900.503	-0.076	N/A	N/A
I	4/14/80 0800	173,188.847	-0.007	81,900.522	-0.057	5510.908	+0.008
J	4/27/80 0800	173,188.818	+0.014	81,900.496	-0.081	5510.909	+0.009
K	5/12/80 0730	173,188.833	-0.021	81,900.516	-0.063	5510.909	-0.001
L	5/27/80 0730	173,188.845	-0.010	81,900.527	-0.052	5510.897	-0.007
M	5/19/80 0730 <sup>START</sup>	173,188.893	+0.029	81,900.462	-0.117	5510.885	-0.015
N	6/24/80 0730 <sup>START</sup>	173,188.947	+0.015	81,900.501	-0.078	5510.882	-0.018
O	7/17/80 0700	173,188.781	-0.166	81,900.522	-0.004	5510.875	-0.025
P	9-2-80 0700	173,188.843	+0.009	81,900.487	-0.096	5510.872	-0.038
Q	9-30-80 0700	173,188.806	-0.049	81,900.570	-0.009	5510.855	-0.045
R	10-23-80 0700	173,188.786	-0.068	81,900.575	-0.004	5510.826	-0.074
S	11-24-80 0800	173,188.813	-0.041	81,900.511	-0.068	5510.807	-0.093
T	12-24-80 0800	173,188.837	-0.017	81,900.560	-0.019	5510.795	-0.105
U	3-30-81 3:00 PM	173,188.507	-0.047	81,900.544	-0.035	5510.767	-0.133
V	6-30-81 3:00 PM	173,188.880	-0.032	81,900.611	+0.032	5510.761	-0.139





# MOVEMENT POINT DATA SHEET

ORIGINAL DATA  
N: 172,726.876  
E: 81,227.097  
ELEV: 5511.957

MOVEMENT POINT NO. MP-4

URAUAN TAILING DAM

	TIME & DATE	NORTH COORDINATE	ΔN	EAST COORDINATE	ΔE	ELEVATION	ΔELEV.
A	3/17/80 4:00 PM	172,726.886	+0.010	81,227.060	-0.037	5511.961	+0.004
B	3/18/80 2:15 PM	172,726.870	-0.006	81,227.059	-0.038	5511.957	+0.000
C	3/19/80 3:25 P.M.	172,726.877	+0.001	81,227.082	-0.015	5511.971	+0.014
D	3/21/80 7:30 AM	172,726.875	-0.001	81,227.065	-0.029	5511.959	+0.002
E	3/24/80 10:00 AM	172,726.860	-0.006	81,227.070	-0.027	5511.940	+0.003
F	3/24/80 0730	172,726.871	+0.005	81,227.073	-0.024	5511.954	+0.002
G	4/1/80 0800	172,726.857	-0.019	81,227.085	-0.012	5511.962	+0.005
H	4/9/80 0800	172,726.857	-0.019	81,227.023	-0.074	N/A	N/A
I	4/14/80 0800	172,726.873	-0.003	81,227.064	-0.032	5511.975	+0.018
J	4/22/80 0800	172,726.853	-0.023	81,227.053	-0.044	5511.967	+0.010
K	5/13/80 0730	172,726.840	-0.031	81,227.044	-0.053	5511.957	-0.000
L	5/27/80 0730	172,726.845	-0.031	81,227.062	-0.035	5511.961	+0.004
M	6/9/80 0730	172,726.873	-0.003	81,227.076	-0.019	5511.955	-0.002
N	6/29/80 0730	172,726.887	+0.011	81,227.093	-0.009	5511.951	-0.006
O	7/29/80 0700	172,726.851	-0.025	81,227.067	-0.030	5511.950	-0.007
P	9-3-80 0700	172,726.862	-0.014	81,227.071	-0.056	5511.959	+0.008
Q	9-30-80 0700	172,726.934	+0.058	81,227.175	+0.078	5511.953	-0.004
R	10-23-80 0700	172,726.904	+0.028	81,227.152	+0.055	5511.935	-0.022
S	11-29-80 0800	172,726.870	+0.046	81,227.036	+0.059	5511.925	-0.032
T	12-24-80 0800	172,726.845	-0.031	81,227.083	-0.014	5511.895	-0.062
U	3-30-81 3:00 PM	172,726.867	-0.009	81,227.077	-0.020	5511.882	-0.075
V	6-30-81 3:00 PM	172,726.844	-0.032	81,227.075	-0.022	5511.864	-0.093

# MOVEMENT POINT DATA SHEET

ORIGINAL DATA

MOVEMENT POINT NO. MP-5

N. 172,557.753

URAUAN TAILINGS-DAM

E 80,994.000

ELEV. 5511.231

	TIME & DATE	NORTH COORDINATE	ΔN	EAST COORDINATE	ΔE	ELEVATION	ΔELEV
A	3/17/80 4:00 P.M.	172,557.762	+0.009	80,993.955	-0.043	5511.230	-0.001
B	3/18/80 3:15 P.M.	172,557.749	-0.014	80,993.978	-0.022	5511.228	-0.003
C	3/19/80 3:25 P.M.	172,557.771	+0.018	80,994.002	+0.002	5511.230	-0.001
D	3/21/80 7:35 A.M.	172,557.757	+0.004	80,993.979	-0.021	5511.230	-0.001
E	3/24/80 4:15 A.M.	172,557.760	+0.007	80,993.992	-0.008	5511.231	±0.000
F	3/27/80 0730	172,557.755	+0.002	80,993.998	-0.002	5511.231	±0.000
G	4/1/80 0800	172,557.745	+0.012	80,994.085	+0.085	5511.230	-0.001
H	4/19/80 0800	172,557.763	+0.010	80,993.931	-0.069	N/A	N/A
I	4/14/80 0800	172,557.759	+0.006	80,993.988	-0.012	5511.244	+0.013
J	4/22/80 0800	172,557.754	+0.001	80,993.965	-0.035	5511.240	+0.009
K	5/13/80 0730	172,557.749	-0.009	80,993.984	-0.016	5511.227	-0.004
L	5/27/80 0730	172,557.736	-0.017	80,993.997	-0.003	5511.230	-0.001
M	6/19/80 0730	172,557.807	+0.054	80,994.016	+0.016	5511.228	-0.003
N	6/24/80 0730	172,557.771	+0.026	80,994.008	+0.008	5511.229	-0.001
O	7/29/80 0700	172,557.753	0.000	80,994.007	+0.007	5511.219	-0.012
P	9-3-80 0700	172,557.715	-0.038	80,993.947	-0.053	5511.229	-0.002
Q	9-30-80 0700	172,557.815	+0.062	80,994.036	+0.086	5511.230	-0.001
R	10-23-80 0700	172,557.746	-0.007	80,994.031	+0.031	5511.216	-0.015
S	11-29-80 0800	172,557.680	-0.073	80,993.964	-0.036	5511.205	-0.026
T	12-24-80 0800	172,557.704	-0.049	80,993.992	-0.008	5511.166	-0.065
U	3-30-81 3:00 P.M.	172,557.680	-0.073	80,994.007	-0.007	5511.156	-0.075
V	6-30-81 3:00 P.M.	172,557.714	-0.039	80,994.017	+0.017	5511.144	-0.087

# MOVEMENT POINT DATA SHEET

MOVEMENT POINT NO. MP-6  
URAVAN TAILING DAM

ORIGINAL DATA  
N 172,493.789  
E 80,738.128  
ELEV. 5511.007

	TIME & DATE	NORTH COORDINATE	ΔN	EAST COORDINATE	ΔE	ELEVATION	ΔELEV.
A	3/7/80 4:00 PM	172,493.782	-0.027	80,738.088	-0.040	5511.007	-0.002
B	3/18/80 3:15 PM	172,493.772	-0.016	80,738.115	-0.013	5511.007	-0.002
C	3/19/80 3:25 P.M.	172,493.801	+0.012	80,738.133	+0.005	5511.008	-0.001
D	3/21/80 7:30 P.M.	172,493.715	-0.014	80,738.103	-0.025	5511.010	+0.001
E	3/24/80 10:00 AM	172,493.772	-0.014	80,738.103	-0.025	5511.012	+0.003
F	3/29/80 0730	Not Visible				5511.008	-0.001
G	4/1/80 0800	172,493.782	-0.003	80,738.121	-0.007	5511.005	-0.004
H	4/9/80 0800	172,493.790	+0.010	80,738.077	-0.051	N/A	N/A
I	4/19/80 0800	172,493.791	+0.002	80,738.107	-0.022	5511.023	+0.018
J	5/22/80 0900	172,493.793	+0.004	80,738.097	-0.031	5511.013	+0.004
K	5/13/80 0730	172,493.787	-0.002	80,738.122	-0.005	5511.008	-0.001
L	5/27/80 0730	172,493.788	-0.001	80,738.117	-0.011	5511.009	-0.000
M	6/9/80 0730	172,493.790	+0.001	80,738.110	-0.018	5511.001	-0.008
N	6/23/80 0730	172,493.785	-0.004	80,738.126	-0.002	5511.004	-0.005
O	7/29/80 0730	172,493.795	+0.004	80,738.150	+0.002	5510.999	-0.010
P	9-3-80 0730	172,493.772	-0.004	80,738.130	+0.002	5511.010	+0.001
Q	9-30-80 0700	172,493.791	+0.002	80,738.107	-0.021	5511.013	+0.004
R	10-23-80 0700	172,493.703	-0.086	80,738.123	-0.005	5511.002	-0.007
S	11-24-80 0800	172,493.732	-0.057	80,738.113	-0.015	5510.996	-0.013
T	12-24-80 0800	172,493.782	-0.009	80,738.132	+0.004	5510.949	-0.060
U	3-31-81 3:00 PM	172,493.786	-0.003	80,738.120	-0.008	5510.939	-0.070
V	6-30-81 3:00 PM	172,493.766	-0.023	80,738.132	+0.004	5510.934	-0.075
W	9-26-81 DESTROYED						



# MOVEMENT POINT DATA SHEET

ORIGINAL DATA

MOVEMENT POINT NO. MP-2

N. 175,097.820

E. 81,539.411

ELEV. 5488.856

## URAVAN TAILINGS DAM

	TIME & DATE	NORTH COORDINATE	ΔN	EAST COORDINATE	ΔE	ELEVATION	ΔELEV
A	3/7/80 4:00 PM	175,097.854	+0.024	81,539.375	-0.032	5488.850	-0.006
B	3/18/80 3:15 PM	175,097.866	+0.036	81,539.366	-0.045	5488.856	+0.000
C	3/19/80 3:25 PM	175,097.840	+0.010	81,539.371	-0.020	5488.852	-0.004
D	3/21/80 7:30 AM	175,097.852	+0.022	81,539.407	-0.004	N/A	N/A
E	3/25/80 10:00 AM	175,097.831	+0.001	81,539.384	-0.027	5488.854	-0.002
F	3/25/80 0730	175,097.854	+0.024	81,539.402	-0.009	5488.855	-0.001
G	4/1/80 0800	175,097.826	-0.061	81,539.423	+0.012	5488.854	-0.002
H	4/9/80 0800	175,097.865	+0.035	81,539.392	-0.019	N/A	N/A
I	4/14/80 0800	175,097.874	+0.044	81,539.380	-0.031	5488.854	-0.002
J	4/22/80 0800	175,097.792	-0.028	81,539.424	+0.013	5488.841	-0.012
K	5/13/80 0730	175,097.838	+0.008	81,539.396	-0.015	5488.830	-0.026
L	5/28/80 0730	175,097.848	+0.018	81,539.423	-0.012	5488.830	-0.026
M	6/9/80 0730	175,097.836	+0.006	81,539.422	-0.011	5488.815	-0.041
N	6/29/80 0730	175,097.897	+0.017	81,539.370	-0.041	5488.876	-0.020
O	7/27/80 0700	175,097.811	+0.036	81,539.453	+0.042	5488.773	-0.083
P	9-3-80	175,097.844	+0.014	81,539.406	-0.003	5488.799	-0.057
Q	9-30-80 0700	175,097.811	-0.019	81,539.336	-0.025	5488.791	-0.065
R	10-23-80 0700	175,097.820	-0.010	81,539.415	+0.004	5488.801	-0.055
S	11-29-80 0800	175,097.836	+0.008	81,539.421	+0.010	5488.777	-0.079
T	12-24-80 0900	175,097.838	+0.008	81,539.417	+0.006	5488.773	-0.083
U	2-31-81 0800	175,097.799	-0.031	81,539.487	+0.076	5488.724	-0.132
V	6-20-81 0800	175,097.804	-0.026	81,539.433	+0.022	5488.724	-0.132
W	9-26-81 10:00	175,097.798	-0.032	81,539.468	+0.057	5488.697	-0.159

## MOVEMENT POINT DATA SHEET

ORIGINAL DATA

MOVEMENT POINT NO. MP-13

N 174,827.826

E 82,020.227

URAVAN TAILING DAM

ELEV 5486.608

	TIME & DATE	NORTH COORDINATE	$\Delta N$	EAST COORDINATE	$\Delta E$	ELEVATION	$\Delta ELEV$
A	3/17/80 4:00 PM	174,827.843	-0.013	82,020.346	+0.009	5486.608	0.000
B	3/18/80 3:15 P.M.	174,827.876	-0.010	82,020.294	-0.043	5486.609	-0.001
C	3/19/80 3:25 PM	174,827.910	+0.024	82,020.322	-0.015	5486.607	-0.001
D	3/11/80 7:30 A.M.	174,827.839	-0.047	82,020.290	-0.047	N/A	N/A
E	3/24/80 10:00 A.M.	174,827.870	-0.016	82,020.305	-0.032	5486.594	0.014
F	3/27/80 0735	174,827.875	-0.011	82,020.332	-0.005	5486.608	0.000
G	4/1/80 0800	174,827.916	+0.030	82,020.354	+0.017	5486.590	-0.018
H	4/9/80 0800	174,827.845	-0.041	82,020.339	+0.002	N/A	N/A
I	4/12/80 0800	174,827.857	-0.024	82,020.292	-0.045	5486.585	+0.007
J	4/27/80 0800	174,827.898	+0.012	82,020.347	+0.010	5486.596	+0.012
K	5/12/80 0730	174,827.881	-0.005	82,020.346	+0.007	5486.563	-0.045
	5/27/80 0730	174,827.883	-0.002	82,020.341	+0.040	5486.554	-0.054
M	6/9/80 0730	174,827.876	-0.010	82,020.318	-0.019	5486.548	-0.060
N	6/24/80 0730	174,827.849	-0.037	82,020.292	-0.045	5486.534	-0.024
O	7/27/80 0700	174,827.851	-0.035	82,020.306	-0.031	5486.478	-0.130
P	9-3-80	174,827.847	-0.044	82,020.315	-0.022	5486.496	-0.112
Q	9-30-80 0700	174,827.834	-0.052	82,020.245	-0.092	5486.499	-0.109
R	10-23-80 0700	174,827.848	-0.038	82,020.309	-0.028	5486.456	-0.152
S	11-29-80 0800	174,827.848	-0.038	82,020.321	-0.016	5486.434	-0.174
T	12-24-80 0830	174,827.857	-0.029	82,020.303	-0.034	5486.405	-0.203
U	3-31-81 0800	174,827.896	+0.010	82,020.341	+0.004	5486.334	-0.274
V	5-20-81 0800	174,827.819	-0.067	82,020.291	-0.046	5486.303	-0.305
W	9-26-81 10:00	174,827.803	-0.083	82,020.274	-0.063	5486.267	-0.341

# MOVEMENT POINT DATA SHEET

MOVEMENT POINT NO. MP-16  
URAUAN TAILINGS DAM

ORIGINAL DATA  
 N. 174,607.219  
 E 82,157.723  
 ELEV. 5483.802

	TIME & DATE	NORTH COORDINATE	ΔN	EAST COORDINATE	ΔE	ELEVATION	ΔELEV.
A	3/17/80 4:00 PM	174,607.168	-0.051	82,157.895	+0.072	5483.899	-0.009
B	3/18/80 3:15 PM	174,607.270	+0.051	82,157.665	-0.058	5483.906	-0.002
C	3/19/80 3:25 AM	174,607.225	+0.006	82,157.737	+0.019	5483.902	-0.006
D	3/21/80 7:27 PM	N/A		N/A		N/A	N/A
E	2/24/80 10:00 AM	174,607.253	+0.034	82,157.649	-0.014	5483.899	-0.011
F	3/27/80 0730	174,607.268	+0.049	82,157.709	-0.019	5483.907	-0.001
G	4/1/80 0800	174,607.299	+0.030	82,157.687	-0.036	5483.892	-0.016
H	4/9/80 0800	174,607.253	+0.034	82,157.721	-0.002	N/A	N/A
I	4/14/80 0800	174,607.223	+0.004	82,157.678	-0.045	5483.900	-0.008
J	4/22/80 0800	174,607.291	+0.072	82,157.626	-0.027	5483.893	-0.015
K	5/12/80 0730	174,607.195	-0.024	82,157.735	+0.012	5483.852	-0.056
L	5/28/80 0730	174,607.257	+0.038	82,157.735	+0.012	5483.852	-0.056
M	6/9/80 0730	174,607.259	+0.035	82,157.702	-0.012	5483.832	-0.070
N	6/24/80 0730	174,607.250	+0.031	82,157.686	-0.037	5483.871	-0.037
O	7/29/80 0700	174,607.247	+0.028	82,157.704	-0.019	5483.775	-0.133
P	9-03-80 0700	174,607.231	+0.012	82,157.723	+0.000	5483.815	-0.092
Q	9-30-80 0700	174,607.219	0.000	82,157.725	+0.002	5483.804	-0.104
R	10-23-80 0700	174,607.256	+0.037	82,157.618	-0.105	5483.795	-0.112
S	11-29-80 0800	174,607.263	+0.044	82,157.610	-0.113	5483.765	-0.143
T	12-24-80 0800	174,607.277	+0.058	82,157.544	-0.079	5483.738	-0.170
U	3-30-81 0800	174,607.290	+0.071	82,157.636	-0.037	5483.692	-0.216
V	6-30-81 0800	174,607.313	+0.094	82,157.597	-0.126	5483.645	-0.263
W	9-26-81 10:00	175,607.322	+0.103	82,157.566	-0.157	5483.610	-0.278



MOVEMENT POINT DATA SHEET

ORIGINAL DATA

N. 175,426.723

E 81,736.823

ELEV. 5413.924

MOVEMENT POINT NO. MP-10

URAVAN TAILING DAM

	TIME & DATE	NORTH COORDINATE	ΔN	EAST COORDINATE	ΔE	ELEVATION	ΔELEV.
A	3/17/80 4:00 PM	175,426.721	-0.002	81,736.823	-0.025	5413.923	-0.001
B	3/18/80 3:15 PM	175,426.777	-0.005	81,736.849	-0.034	5413.925	-0.001
C	3/19/80 3:25 P.M.	175,426.667	-0.116	81,736.777	-0.106	5413.919	-0.005
D	3/21/80 7:30 AM	175,426.753	-0.030	81,736.871	-0.012	N/A	N/A
E	3/24/80 10:00 A.M.	175,426.732	-0.051	81,736.833	-0.050	5413.929	+0.005
F	3/27/80 0730	175,426.767	-0.016	81,736.866	-0.017	5413.914	-0.010
G	4/1/80 0800	175,426.768	-0.015	81,736.877	-0.006	5413.914	-0.010
H	4/9/80 0800	175,426.762	-0.021	81,736.864	-0.019	N/A	N/A
I	4/14/80 0800	175,426.772	-0.011	81,736.856	-0.027	5413.923	+0.001
J	4/22/80 0800	175,426.761	-0.022	81,736.884	+0.001	5413.919	-0.005
K	5/13/80 0730	175,426.762	-0.021	81,736.833	-0.022	5413.918	-0.006
L	5/27/80 0730	175,426.794	+0.011	81,736.891	-0.002	5413.921	-0.004
M	6/9/80 0730	175,426.759	-0.018	81,736.868	-0.015	5413.919	-0.005
N	6/24/80 0730	175,426.776	-0.007	81,736.851	-0.032	5413.907	-0.017
O	7/1-9/80 0700	175,426.773	-0.010	81,736.877	-0.006	5413.892	-0.032
P	9-3-80	DESTROYED BY CONSTRUCTION					
Q	9-30-80	DESTROYED BY CONSTRUCTION					
R	10-23-80 0730						
S							
T							

# MOVEMENT POINT DATA SHEET

ORIGINAL DATA  
N 175,078.002  
E 81,791.937  
ELEV 5484.997

MOVEMENT POINT NO. MP-11

URAVAN TAILINGS DAM

	TIME & DATE	NORTH COORDINATE	ΔN	EAST COORDINATE	ΔE	ELEVATION	ΔELEV
A	3/17/80 4:00 PM	175,077.947	-0.055	81,791.892	2.045	5484.989	-0.008
B	3/18/80 3:45 P.M.	175,077.952	+0.050	81,791.867	-2.130	5484.998	+0.001
C	3/19/80 3:25 P.M.	175,078.003	+0.001	81,791.911	-0.086	5484.981	-0.008
D	3/21/80 7:35 A.M.	175,077.961	-0.041	81,791.914	-0.023	NA	N/A
E	3/24/80 10:00 A.M.	175,077.965	-0.037	81,791.912	-0.025	5484.956	-0.041
F	3/25/80 6:25	175,077.937	-0.065	81,791.906	-0.031	5484.993	-0.004
G	4/1/80 8:00	175,077.993	-0.029	81,791.919	-0.018	5484.986	-0.011
H	4/1/80 8:00	175,077.893	-0.109	81,791.889	-0.048	N/A	N/A
I	4/14/80 8:00	175,077.935	-0.066	81,791.845	-0.042	5483.975	+0.019
J	4/22/80 8:00	175,077.912	-0.090	81,791.900	-0.037	5484.978	-0.019
K	5/13/80 0730	175,077.931	-0.011	81,791.917	-0.020	5484.962	-0.015
L	5/27/80 0730	175,077.949	+0.027	81,791.921	-0.076	5484.955	-0.009
M	6/9/80 0730	175,077.957	-0.045	81,791.913	-0.024	5484.957	-0.000
N	6/29/80 0730	175,077.932	-0.070	81,791.901	-0.036	5484.996	-0.001
O	7/27/80 0700	175,077.910	-0.084	81,791.906	-0.031	5484.995	-0.102
P	9-3-80 0700	175,077.942	-0.060	81,791.911	+0.016	5484.920	-0.077
Q	9-20-80 0700	175,077.984	-0.018	81,791.903	-0.054	5484.907	-0.090
R	9-23-80 0700	175,077.947	-0.055	81,791.903	-0.034	5484.904	-0.093
S	11-27-80 0800	175,077.945	-0.054	81,791.923	-0.014	5484.882	-0.115
T	12-24-80 0800	175,077.936	-0.066	81,791.895	-0.042	5484.863	-0.129
U	5-31-81 0800	175,077.963	-0.037	81,791.964	+0.027	5484.814	-0.183
V	6-30-81 0800	175,077.922	-0.020	81,791.874	-0.063	5484.804	-0.193
W	9-26-81 10:00	175,077.913	-0.087	81,791.886	-0.051	5484.772	-0.225

# MOVEMENT POINT DATA SHEET

MOVEMENT POINT NO. MP-12

URAUAN TAILING DAM

ORIGINAL DATA  
 N 175,210.651  
 E 81,946.077  
 ELEV. 5414.232

	TIME & DATE	NORTH COORDINATE	ΔN	EAST COORDINATE	ΔE	ELEVATION	ΔELEV.
A	3/7/80 4:00 PM	175,210.625	-0.025	81,946.041	-0.036	5414.246	+0.013
B	3/13/80 3:15 P.M.	175,210.584	-0.067	81,946.007	-0.070	5414.245	+0.012
C	3/17/80 3:25 P.M.	175,210.614	-0.037	81,946.043	-0.029	5414.244	+0.011
D	3/21/80 7:30 A.M.	175,210.518	-0.072	81,946.049	-0.028	N/A	N/A
E	3/24/80 10:00 A.M.	175,210.565	-0.066	81,946.043	-0.034	5414.238	+0.005
F	3/24/80 0730	175,210.562	-0.089	81,946.034	-0.043	5414.227	-0.005
G	4/1/80 0800	175,210.603	-0.048	81,946.072	-0.005	5414.228	-0.005
H	4/9/80 0900	175,210.558	-0.093	81,946.052	-0.035	N/A	N/A
I	4/14/80 0800	175,210.553	-0.093	81,946.040	-0.037	5414.226	-0.007
J	4/22/80 0800	175,210.574	-0.077	81,946.026	-0.051	5414.223	-0.010
K	5/13/80 0730	175,210.556	-0.045	81,946.361	-0.016	5414.227	-0.006
L	5/27/80 0720	175,210.595	-0.056	81,946.049	-0.028	5414.229	-0.004
M	6/9/80 0730	175,210.583	-0.068	81,946.032	-0.045	5414.230	-0.003
N	6/24/80 0730	175,210.575	-0.076	81,946.018	-0.059	5414.216	-0.017
O	7/29/80 0700	175,210.568	-0.093	81,946.041	-0.036	5414.196	-0.037
	9-3-80	UN A.P. L.	+0	USE	his pt	Due to	const.
Q	9-20-80 0700	UN A.P. TO	TRAINING	CONSI.	ADJUST	5414.169	-0.064
R	10-23-80 0700					5414.189	-0.044
S	11-29-80 0800					5414.165	-0.048
T	12-28-80 0800					5414.099	-0.734
U	3-30-81 0800					5414.157	-0.076
V	3-30-81 11:00					5414.154	-0.079
W	9-25-81 11:00 A.M.					5414.143	-0.090

# MOVEMENT POINT DATA SHEET

MOVEMENT POINT NO. MP-14

URAUAN TAILING DAM

ORIGINAL DATA  
 N: 175,023.337  
 E: 82,197.957  
 ELEV: 5414.226

	TIME & DATE	NORTH COORDINATE	ΔN	EAST COORDINATE	ΔE	ELEVATION	ΔELEV.
A	3/17/80 4:00 PM	175,023.215	-0.022	82,197.949	-0.008	5414.238	-0.008
B	3/18/80 3:15 PM	175,023.241	+0.004	82,197.917	-0.040	5414.237	-0.009
C	3/19/80 3:25 PM	175,023.342	+0.005	82,197.944	-0.013	5414.238	-0.008
D	3/21/80 7:30 AM	175,022.157	-0.180	82,197.955	-0.002	N/A	N/A
E	3/21/80 10:00 AM	175,023.325	-0.012	82,197.936	-0.021	5414.251	+0.005
F	3/27/80 0730	175,033.331	-0.006	82,197.940	-0.017	5414.238	-0.008
G	4/1/80 0800	175,027.362	+0.025	82,197.952	-0.005	5414.239	-0.007
H	4/9/80 0800	175,033.329	-0.008	82,197.954	-0.003	N/A	N/A
I	4/14/80 0800	175,033.214	-0.023	82,197.935	-0.022	5414.240	-0.006
J	4/22/80 0800	175,033.357	+0.020	82,197.941	-0.016	5414.239	-0.007
K	5/13/80 0730	175,027.360	+0.023	82,197.970	+0.017	5414.260	-0.006
L	5/27/80 0730	175,023.343	+0.006	82,197.944	-0.013	5414.245	-0.001
M	6/9/80 0730	175,033.350	+0.013	82,197.912	-0.045	5414.243	-0.003
N	6/24/80 0730	175,033.320	-0.017	82,197.914	-0.043	5414.226	-0.020
O	7/27/80 0700	175,033.259	-0.048	82,197.926	-0.031	5414.212	-0.016
P	9-3-80	unavailable	unavailable	unavailable	unavailable	5414.216	-0.002
Q	9-30-80 0700	unavailable	unavailable	unavailable	unavailable	5414.182	-0.064
R	10-23-80 0700	unavailable	unavailable	unavailable	unavailable	5414.207	-0.039
S	11-24-80 0800	unavailable	unavailable	unavailable	unavailable	5414.207	-0.039
T	12-24-80 0800	unavailable	unavailable	unavailable	unavailable	5414.119	-0.077
U	3-30-81 0800	unavailable	unavailable	unavailable	unavailable	5414.170	-0.076
V	6-30-81 1:00 PM	unavailable	unavailable	unavailable	unavailable	5414.171	-0.075
W	9-26-81 11:30 AM	175,033.357	+0.022	82,197.915	-0.042	5414.168	-0.073

MOVEMENT POINT DATA SHEET

ORIGINAL DATA  
 N 174,815.454  
 E 82,388.408  
 ELEV 5411.276

MOVEMENT POINT NO. MP-15

URAUAN TAILING DAM

	TIME & DATE	NORTH COORDINATE	ΔN	EAST COORDINATE	ΔE	ELEVATION	ΔELEV
A	3/17/80 7:00 PM	174,815.454	-0.034	82,388.451	+0.043	5411.266	-0.010
B	3/18/80 3:15 PM	174,815.451	-0.003	82,388.426	-0.016	5411.266	-0.010
C	3/19/80 3:25 PM	174,815.459	+0.005	82,388.365	-0.043	5411.258	-0.008
D	3/17/80 7:30 AM	N/A		N/A		N/A	N/A
E	3/29/80 10:00 AM	174,815.493	+0.039	82,388.389	-0.019	5411.269	-0.007
F	3/23/80 0730	174,815.461	+0.007	82,388.401	-0.007	5411.272	-0.004
G	4/1/80 0800	174,815.479	+0.025	82,388.356	-0.022	5411.274	-0.002
H	4/9/80 0800	174,815.461	+0.007	82,388.404	-0.004	N/A	N/A
I	4/14/80 0800	174,815.435	-0.019	82,388.357	-0.021	5411.268	-0.008
J	4/22/80 0800	174,815.500	+0.046	82,388.410	+0.002	5411.258	-0.018
K	5/13/80 0730	174,815.452	+0.010	82,388.436	+0.026	5411.270	-0.006
L	5/26/80 0730	174,815.436	-0.018	82,388.463	+0.055	5411.276	+0.006
M	6/9/80 0730	174,815.461	+0.007	82,388.437	+0.029	5411.272	-0.004
N	6/24/80 0730	174,815.376	-0.078	82,388.509	+0.101	5411.250	-0.026
O	7/28/80 0700	174,815.399	-0.055	82,388.467	+0.059	5411.279	-0.047
P	9-3-80	DESTROYED BY CONSTRUCTION					
Q	9-10-80	DESTROYED BY CONSTRUCTION					
R	10-23-80						
S							
T							

# MOVEMENT POINT DATA SHEET

MOVEMENT POINT NO. MP-22

URAUAN TAILING DAM

ORIGINAL DATE

N 173,831.721

E 82,022.356

ELEV. 5458.264

	TIME & DATE	NORTH COORDINATE	ΔN	EAST COORDINATE	ΔE	ELEVATION	ΔELEV.
A	3/17/80 4:00 PM	173,831.722	+0.007	82,022.356	0.000	5458.255	-0.009
B	3/18/80 3:15 P.M.	173,831.834	+0.003	82,022.277	-0.079	5458.255	-0.011
C	3/19/80 3:25 P.M.	173,831.854	-0.027	82,022.761	-0.095	5458.250	-0.014
D	3/21/80 7:30 A.M.	N/A	---	N/A	---	N/A	N/A
E	3/24/80 10:00 A.M.	173,831.911	+0.030	82,022.299	-0.059	5458.256	---
F	3/27/80 0730	173,831.902	+0.021	82,022.341	-0.015	5458.256	-0.002
G	4/1/80 0800	173,831.878	-0.003	82,022.282	-0.074	5458.239	-0.030
H	4/9/80 0800	173,831.873	-0.003	82,022.542	-0.014	N/A	N/A
I	4/14/80 0800	173,831.875	+0.014	82,022.735	-0.121	5458.272	+0.008
J	4/22/80 0800	173,831.940	+0.059	82,022.124	-0.232	5458.274	+0.010
K	5/13/80 0730	173,831.883	+0.002	82,022.377	-0.075	5458.273	+0.009
L	5/29/80 0730	173,831.906	+0.025	82,022.219	-0.137	5458.264	+0.000
M	6/9/80 0730	173,831.868	-0.013	82,022.137	-0.219	5458.268	+0.004
N	6/19/80 0730	173,831.862	-0.019	82,022.359	-0.097	5458.272	+0.006
O	7/27/80 0700	173,831.872	-0.009	82,022.357	+0.001	5458.277	+0.013
P	7/13/80 0700	173,831.907	+0.026	82,022.432	0.076	5458.266	+0.002
Q	7/30/80 0700	173,831.886	+0.005	82,022.470	0.114	5458.271	-0.053
R	10-23-80 0700	173,831.891	+0.010	82,022.220	-0.136	5458.258	-0.006
S	11-23-80 0800	173,831.882	+0.001	82,022.155	-0.201	5458.196	+0.032
T	12-24-80 0800	173,831.863	-0.018	82,022.293	-0.063	5458.274	+0.010
U	3-30-81 11:00 AM	173,831.922	+0.041	82,022.365	+0.009	5458.237	-0.027
V	6-30-81 1:00 PM	173,831.855	+0.057	82,022.279	-0.077	5458.244	-0.020
W	7-26-81 2:30 PM	173,831.855	-0.026	82,022.291	-0.065	5458.249	-0.015

## MOVEMENT POINT DATA SHEET

ORIGINAL DATA

N. 174,516.95

E. 82,381.37

ELEV. 5411.352

MOVEMENT POINT NO. MP-17

URAUAN TAILING DAM

	TIME & DATE	NORTH COORDINATE	$\Delta N$	EAST COORDINATE	$\Delta E$	ELEVATION	$\Delta ELEV$
A	3/7/80 4:00 PM	174,516.858	-0.060	82,381.422	+0.051	5411.353	-0.005
B	3/13/80 3:15 PM	174,516.858	-0.060	82,381.420	+0.049	5411.357	-0.001
C	3/19/80 3:25 PM	174,516.865	-0.053	82,381.417	+0.046	5411.357	-0.001
D	3/21/80 7:20 PM	174,516.757	-0.161	82,381.433	+0.062	N/A	N/A
E	3/24/80 10:00 AM	174,516.736	+0.018	82,381.392	+0.021	5411.362	+0.004
F	3/27/80 0730	174,516.868	-0.050	82,381.377	+0.006	5411.353	-0.005
G	4/1/80 0600	174,516.860	-0.058	82,381.385	+0.014	5411.350	-0.008
H	4/9/80 0800	174,516.860	-0.078	82,381.409	+0.038	N/A	N/A
I	4/14/80 0800	174,516.847	-0.071	82,381.354	-0.007	5411.348	-0.010
J	4/22/80 0800	174,516.852	-0.056	82,381.402	+0.031	5411.348	-0.010
K	5/13/80 0730	174,516.857	-0.031	82,381.382	+0.011	5411.354	-0.004
L	5/28/80 0730	174,516.921	+0.003	82,381.397	+0.026	5411.352	+0.001
M	6/7/80 0730	174,516.824	-0.094	82,381.409	+0.038	5411.352	-0.006
N	6/24/80 0730	174,516.928	+0.010	82,381.358	-0.013	5411.337	-0.021
O	7/27/80	PT 17	is buried by	random	Rock Fill		
P	9-3-80						
Q	9-30-80	POINT DESTROYED BY CONSTRUCTION					
R	10-23-80						
S							
T							

MOVEMENT POINT DATA SHEET

ORIGINAL DATA

MOVEMENT POINT NO. MP-18

N 174,367.739

E 81,984.221

ELEV. 5485.609

URAUAN TAILING DAM

83

	TIME & DATE	NORTH COORDINATE	ΔN	EAST COORDINATE	ΔE	ELEVATION	ΔELEV.
A	3/7/80 4:00 PM	174,367.763	+0.024	81,984.180	-0.051	5485.607	-0.002
B	3/18/80 3:15 PM	174,367.779	+0.040	81,984.145	-0.036	5485.608	-0.001
C	3/19/80 3:25 PM	174,367.763	+0.024	81,984.150	-0.081	5485.610	+0.001
D	3/21/80 7:30 AM	N/A		N/A		S N/A	N/A
E	3/25/80 10:00 AM	174,367.755	+0.046	81,984.146	-0.085	5485.606	-0.003
F	3/27/80 7:30	174,367.831	+0.092	81,984.159	-0.072	5483.607	+0.000
G	4/1/80 0800	174,367.792	+0.053	81,984.139	-0.097	5483.607	-0.002
H	4/9/80 0800	174,367.783	+0.044	81,984.157	-0.074	N/A	N/A
I	4/14/80 0800	174,367.789	+0.030	81,984.110	-0.121	5483.603	-0.003
J	4/22/80 0500	174,367.832	+0.083	81,984.147	-0.084	5483.598	-0.001
K	5/13/80 0730	174,367.792	+0.053	81,984.172	-0.057	5483.592	-0.027
L	5/28/80 0730	174,367.822	+0.033	81,984.132	-0.099	5483.579	-0.030
M	6/7/80 0730	174,367.798	+0.059	81,984.152	-0.079	5483.567	-0.042
N	6/24/80 0730	174,367.786	+0.047	81,984.167	-0.064	5483.593	-0.016
O	7/12/80 0700	174,367.785	+0.046	81,984.160	-0.071	5483.574	-0.025
P	7-3-80	174,367.784	+0.045	81,984.179	-0.052	5483.565	-0.041
Q	9-30-80 0700	174,367.754	+0.015	81,984.133	-0.048	5483.559	-0.050
R	10-23-80 0700	174,367.808	+0.069	81,984.070	-0.161	5483.558	-0.051
S	11-29-80 0800	174,367.810	+0.071	81,984.052	-0.179	5483.535	-0.074
T	12-24-80 0300	174,367.812	+0.073	81,984.080	-0.151	5483.520	-0.089
U	3-30-81 0800	174,367.799	+0.060	81,984.195	-0.036	5483.515	-0.094
V	4-30-81 0500	174,367.864	+0.125	81,984.088	-0.143	5483.490	-0.119
W	9-28-81 10:00	174,367.8	+0.126	81,984.075	-0.156	5483.465	-0.144

# MOVEMENT POINT DATA SHEET

MOVEMENT POINT NO. MIP-19

URAUAN TAILING DAM

ORIGINAL DATA

N 174,282.283

E 82,101.391

ELEV 5444.230

	TIME & DATE	NORTH COORDINATE	ΔN	EAST COORDINATE	ΔE	ELEVATION	ΔELEV.
A	3/17/80 4:30 PM	174,282.291	+0.008	82,101.478	+0.067	5444.232	+0.002
B	3/18/80 3:15 P.M.	174,282.292	+0.009	82,101.415	+0.024	5444.233	+0.009
C	3/19/80 5:25 P.M.	174,282.292	+0.010	82,101.401	+0.010	5444.232	+0.008
D	3/11/80 7:30 AM	N/A		N/A		N/A	N/A
E	3/22/80 10:00 AM	174,282.299	+0.016	82,101.474	+0.033	5444.235	+0.005
F	3/27/80 0730	174,282.351	+0.068	82,101.416	+0.025	5444.232	+0.006
G	4/1/80 0800	174,282.345	+0.062	82,101.380	-0.011	5444.226	-0.004
H	4/9/80 0800	174,282.320	+0.037	82,101.497	+0.056	N/A	N/A
I	4/16/80 0800	174,282.312	+0.029	82,101.405	+0.014	5444.232	+0.002
J	4/22/80 0800	174,282.372	+0.091	82,101.474	+0.083	5444.234	+0.004
K	5/13/80 0730	174,282.338	+0.045	82,101.454	+0.053	5444.239	+0.009
L	5/28/80 0730	174,282.368	+0.085	82,101.452	+0.061	5444.232	-0.002
M	6/9/80 0730	174,282.354	+0.071	82,101.479	+0.088	5444.225	-0.005
N	6/29/80 0730	174,282.329	+0.046	82,101.470	+0.079	5444.217	-0.013
O	7/7/80 0700	174,282.332	+0.049	82,101.476	+0.055	5444.229	-0.022
P	9-3-80	174,282.306	+0.023	82,101.547	+0.156	5444.235	+0.008
Q	9-30-80 0700	174,282.326	+0.023	82,101.471	+0.080	5444.184	-0.046
R	10-23-80 0700	174,282.335	+0.052	82,101.362	-0.029	5444.223	-0.007
S	11-29-80 0700	174,282.323	+0.040	82,101.371	-0.020	5444.247	+0.017
T	12-24-80 0800	174,282.345	+0.062	82,101.375	-0.016	5444.230	0.000
U	3-30-81 11:00 AM	174,282.315	+0.032	82,101.458	+0.067	5444.204	-0.026
V	6-30-81 11:00 PM	174,282.367	+0.084	82,101.416	+0.025	5444.201	-0.029
W	9-26-81 2:00 PM	174,282.339	+0.056	82,101.406	+0.015	5444.204	-0.026

## MOVEMENT POINT DATA SHEET

ORIGINAL DATA  
 N 174,133.256  
 E 81,817.828  
 ELEV. 5482.470

MOVEMENT POINT NO. MP-20

URAUAN TAILINGS-DAM

	TIME & DATE	NORTH COORDINATE	$\Delta N$	EAST COORDINATE	$\Delta E$	ELEVATION	$\Delta$ ELEV.
A	3/17/80 4:00 PM	174,133.266	+0.010	81,817.820	-0.008	5482.465	-0.005
B	3/18/80 3:15 PM	174,133.261	+0.005	81,817.835	+0.007	5482.469	-0.001
C	3/19/80 3:25 P.M.	174,133.258	+0.002	81,817.795	-0.033	5482.471	+0.001
D	3/21/80 7:30 P.M.	N/A		N/A		N/A	N/A
E	3/24/80 10:00 P.M.	174,133.265	+0.009	81,817.804	-0.024	5482.464	-0.006
F	3/25/80 0730	174,133.324	+0.068	81,817.836	+0.008	5482.472	+0.002
G	4/1/80 0800	174,133.262	+0.006	81,817.819	-0.014	5482.466	-0.004
H	4/9/80 0800	174,133.269	+0.013	81,817.873	+0.045	N/A	N/A
I	4/14/80 0800	174,133.265	+0.009	81,817.811	-0.017	5482.458	-0.012
J	4/22/80 0800	174,133.326	+0.080	81,817.805	-0.020	5482.458	-0.012
K	5/13/80 0730	174,133.275	-0.019	81,817.867	-0.039	5482.430	-0.040
L	5/28/80 0730	174,133.312	+0.065	81,817.821	-0.007	5482.474	-0.046
M	6/19/80 0730	174,133.263	+0.007	81,817.859	+0.031	5482.414	-0.056
N	6/24/80 0730	174,133.263	+0.007	81,817.877	+0.049	5482.423	-0.047
O	7/25/80 0700	174,133.234	-0.022	81,817.884	+0.056	5482.334	-0.136
P	9-3-80	DESTROYED BY		CONSTRUCTION			
Q	9-30-80 0700	DESTROYED BY		CONSTRUCTION			
R	10-23-80						
S							
T							

MOVEMENT POINT DATA SHEET

ORIGINAL DATA

MOVEMENT POINT NO. MIP-21

N 174,002.635

E 82,082.731

ELEV. 5453.391

URAUAN TAILING-DAM

	TIME & DATE	NORTH COORDINATE	ΔN	EAST COORDINATE	ΔE	ELEVATION	ΔELEV
A	3/17/70 4:30 PM	174,002.152	-0.007	82,082.712	+0.021	5453.394	+0.003
B	3/18/80 3:15 PM	174,002.597	-0.039	82,082.679	-0.052	5453.384	+0.002
C	3/19/80 2:25 PM	174,002.589	-0.047	82,082.681	-0.050	5453.368	-0.003
D	3/21/80 7:30 AM	N/A		N/A		N/A	N/A
E	3/24/80 10:00 AM	174,002.661	+0.026	82,082.713	-0.018	5453.385	-0.006
F	3/27/80 0730	174,002.695	+0.060	82,082.798	+0.067	5453.393	+0.002
G	4/1/80 0800	174,002.796	+0.111	82,082.784	+0.053	5453.371	-0.020
H	4/19/80 0800	174,002.677	+0.042	82,082.713	-0.018	N/A	N/A
I	4/14/80 0800	174,002.641	+0.006	82,082.643	-0.038	5453.411	+0.020
J	4/22/80 0800	174,002.710	+0.075	82,082.723	-0.008	5453.410	+0.019
K	5/13/80 0730	174,002.605	-0.030	82,082.699	-0.032	5453.409	+0.018
L	5/25/80 0730	174,002.674	+0.043	82,082.710	-0.021	5453.401	+0.010
M	6/9/80 0730	174,002.574	-0.061	82,082.705	-0.026	5453.408	+0.017
N	6/24/80 0730	174,002.584	-0.091	82,082.491	-0.040	5453.410	+0.019
O	7/27/80 0700	174,002.626	-0.009	82,082.758	+0.027	5453.414	+0.023
P	9-3-80 0700	174,002.419	-0.016	82,082.721	-0.010	5453.406	+0.015
Q	9-5-80 0700	174,002.552	-0.083	82,082.718	-0.013	5453.353	-0.038
R	10-23-80 0700	174,002.609	-0.026	82,082.618	-0.113	5453.398	+0.007
S	11-24-80 0800	174,002.592	-0.043	82,082.603	-0.128	5453.434	+0.043
T	12-24-80 0800	174,002.601	-0.034	82,082.643	-0.088	5453.422	+0.031
U	3-30-81 11:00 AM	174,002.567	-0.068	82,082.699	-0.032	5453.391	+0.000
V	6-30-81 1:00 PM	174,002.654	+0.019	82,082.658	-0.073	5453.391	+0.000
W	9-25-81 2:00 PM	174,002.612	-0.023	82,082.625	-0.106	5453.389	-0.002

140" SERIES

Date 9-30-71

UNION CARBIDE CORPORATION  
Metals Division Uravan, Colorado

HORIZONTAL CONTROL

State \_\_\_\_\_ Area \_\_\_\_\_ Sheet 1 of 3

From	STATION	TO	AZIMUTH BEARING	DISTANCE	LATITUDE		DEPARTURE		COORDINATES
					N+	S-	E+	W-	
ITS-6A	MP-1								
ITS-8	MP-1								
ITU-11	MP-1								
ITS-6A	MP-2								
ITS-8	MP-2								
ITU-11	MP-2								
ITS-6A	MP-3								
ITS-8	MP-3								
ITU-11	MP-3								
ITS-6A	MP-4								
ITS-8	MP-4								
ITU-11	MP-4								
ITS-6A	MP-5								
ITS-8	MP-5								
ITU-11	MP-5								
ITS-8	MP-6		DESTROYED						
ITU-11	MP-6								
ITS-1	MP-7		509-04-42. E'						174,987.713
ITS-2	MP-7		511-56-21 42'						174,987.686
ITS-4	MP-7		528-28-00 42'						174,986.195

Date 9-30-81

UNION CARBIDE CORPORATION  
Metals Division Ureavan, Colorado

## HORIZONTAL CONTROL

Area TAILINGSSheet 2 of 3

STATION	To	AZIMUTH BEARING	DISTANCE	LATITUDE		DEPARTURE		COORDINATES	
				N+	S-	E+	W-	North	East
MP-8		S 56-29-45 E						175,097.789	81,539.469
MP-8		S 09-24-02 E						175,097.807	81,539.466
MP-8		S 19-17-29 W						175,097.798	81,539.468
MP-9		S 86-39-39 E						175,319.319	81,478.731
MP-9		S 06-50-07 E						175,319.349	81,478.727
MP-9		S 25-40-59 W						175,319.334	81,478.729
MP-11		S 08-32-31 W						175,077.913	81,791.886
MP-11		S 75-20-45 W							
13		S 01-17-07 E						174,887.779	82,020.259
13		S 55-21-46 W						174,887.827	82,020.308
13		N 66-50-20 W						174,887.803	82,020.274
14		S 02-56-02 E						175,033.359	82,197.915
14		S 57-21-44 W							
16		N 75-05-20 W						175,607.322	82,157.566
16		N 12-31-43 E							
18		N 25-17-02 W						174,367.865	81,984.075
18		N 04-46-13 E							
19		N 28-10-53 W						174,282.339	82,101.406
19		N 12-34-45 E							

(10' Range pole)



PIEZOMETRIC MEASUREMENTS

URAVAN, COLORADO











UNION CARBIDE CORPORATION  
 URAVAN ENVIRONMENTAL DEPARTMENT  
 MONITOR WELL PHREATIC MEASUREMENTS

Monitor Well	2-195	2-197D	2-20	2-21	2-22
Casing Elevation	5491.90	5491.90	5489.44	5496.28	5492.90
Surface Elevation					
Date					
8/8/81	5444.98	5417.98	5420.36	5424.45	DRAWN
8/12/81	5444.65	5417.90	5420.44	5425.53	-
8/18/81	5444.57	5417.90	5420.44	5424.45	-
8/27/81	5444.48	5417.82	5419.94	5424.28	-
9/4/81	5444.40	5417.78	5419.94	PLUGGED	-
9/12/81	5444.40	5417.82	5419.94	To be repaired when	-
9/16/81	5444.40	5417.90	5420.11	lift is completed	-
9/25/81	5444.40	5417.90	5419.94	-	-
10/3/81	5				-

UNION CARBIDE CORPORATION  
URAVAN ENVIRONMENTAL DEPARTMENT  
MONITOR WELL PHREATIC MEASUREMENTS

Monitor Well	2-23	2-24	2-25	2-26	2-27
Casing Elevation	5494.20	5496.68	5493.74	5496.53	5493.5
Surface Elevation					
Date					
8/8/81	BOTTOMED	5475.76	5476.82	DAMAGED	BOTTOMED
8/12/81	-	5475.85	5476.82	-	-
8/18/81	-	5475.76	5476.82	-	-
8/27/81	-	5475.60	5475.91	-	-
9/4/81	-	5475.60	5475.66	-	-
9/12/81	-	5475.61	5475.82	-	-
9/16/81	-	5475.53	5475.71	-	-
9/26/81	-	5475.53	5475.45	-	-
10/3/81	-			-	-



URAVAN POND 2 PIEZOMETER 2-3

1981 1982

ACTION LEVEL

5405

HIGH

LOW

ACTION LEVEL

5410

5400

5390

5380

5370

5360

5350

JAN ' FEB ' MAR ' APR ' MAY ' JUN ' JUL ' AUG ' SEP ' OCT ' NOV ' DEC '

1981

46 3013

K-E 1 YEAR BY WEEKS X 100 DIVISIONS  
KUFFEL & ESSER CO. NEW YORK

1981 1982

ACTION LEVEL 5410  
HIGH  
LOW

ACTION LEVEL

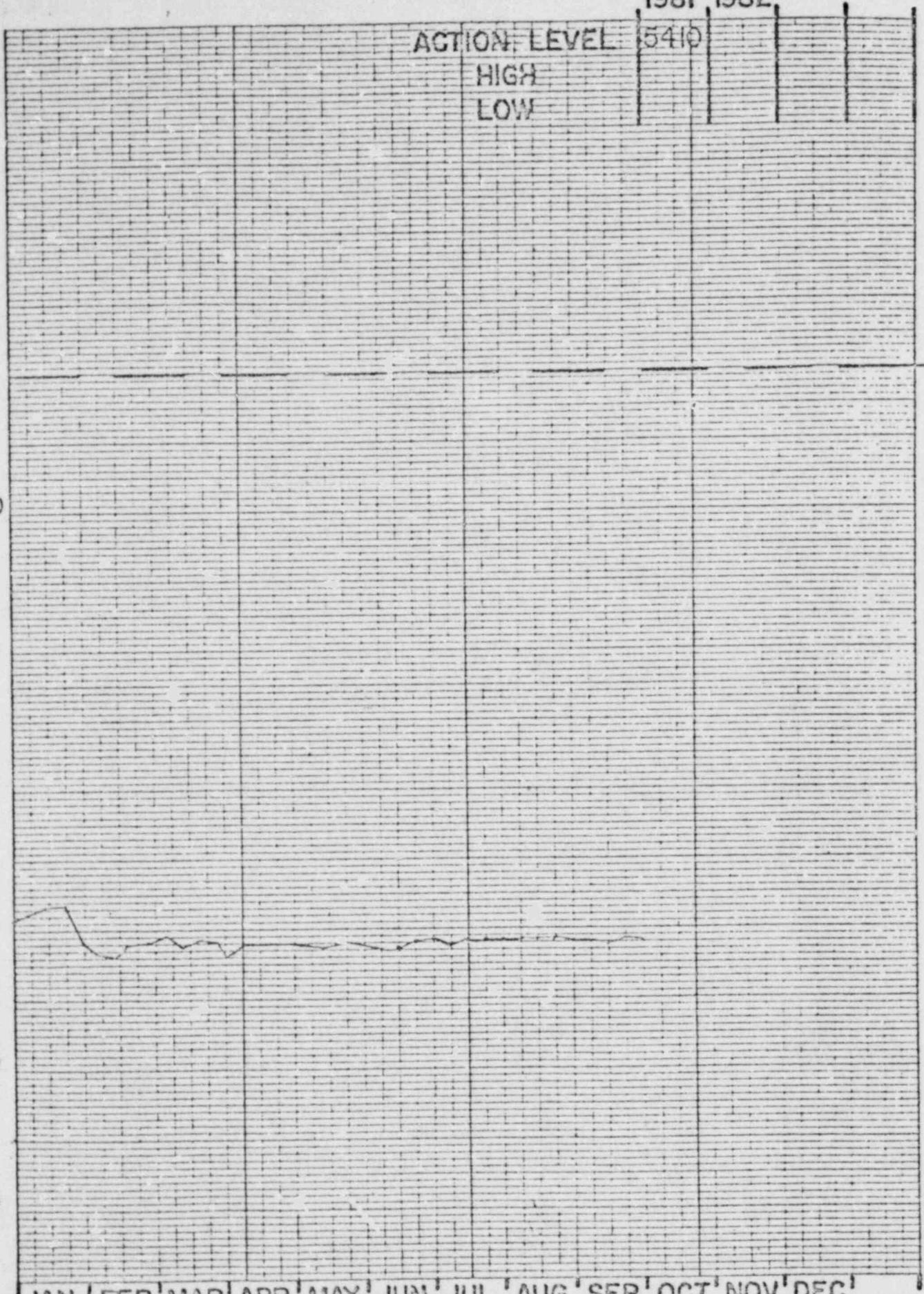
46 3013

K&E 1 YEAR BY WEEKS X 180 DIVISIONS  
KEUFFEL & ESSER CO. MADE IN U.S.A.

5410  
5400  
5390  
5380  
5370  
5360  
5350

JAN ' FEB ' MAR ' APR ' MAY ' JUN ' JUL ' AUG ' SEP ' OCT ' NOV ' DEC '

1981



URAVAN POND 2 PIEZOMETER 2-6

1981 1982

ACTION LEVEL 5410  
HIGH  
LOW

ACTION LEVEL

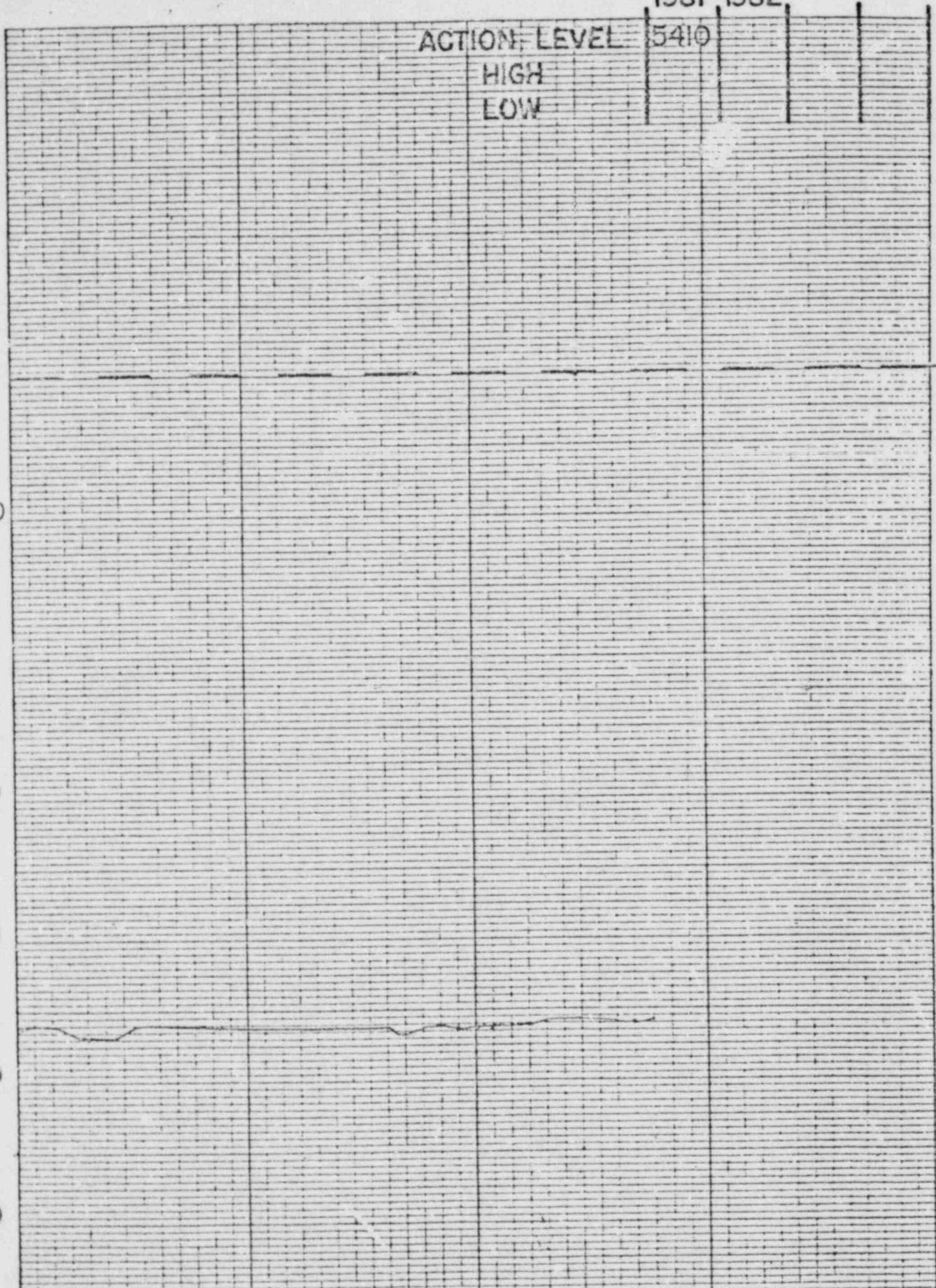
46 3013

K·E  
1 YEAR BY WEEKS X 160 DIVISIONS  
KLUFFEL & ESSER CO. WICHITA KAN.

5410  
5400  
5390  
5380  
5370  
5360  
5350

JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

1981



URAVAN POND 2 PIEZOMETER 2-12

1981 1982

ACTION LEVEL  
HIGH  
LOW

5445

ACTION LEVEL

5450

5440

5430

5420

5410

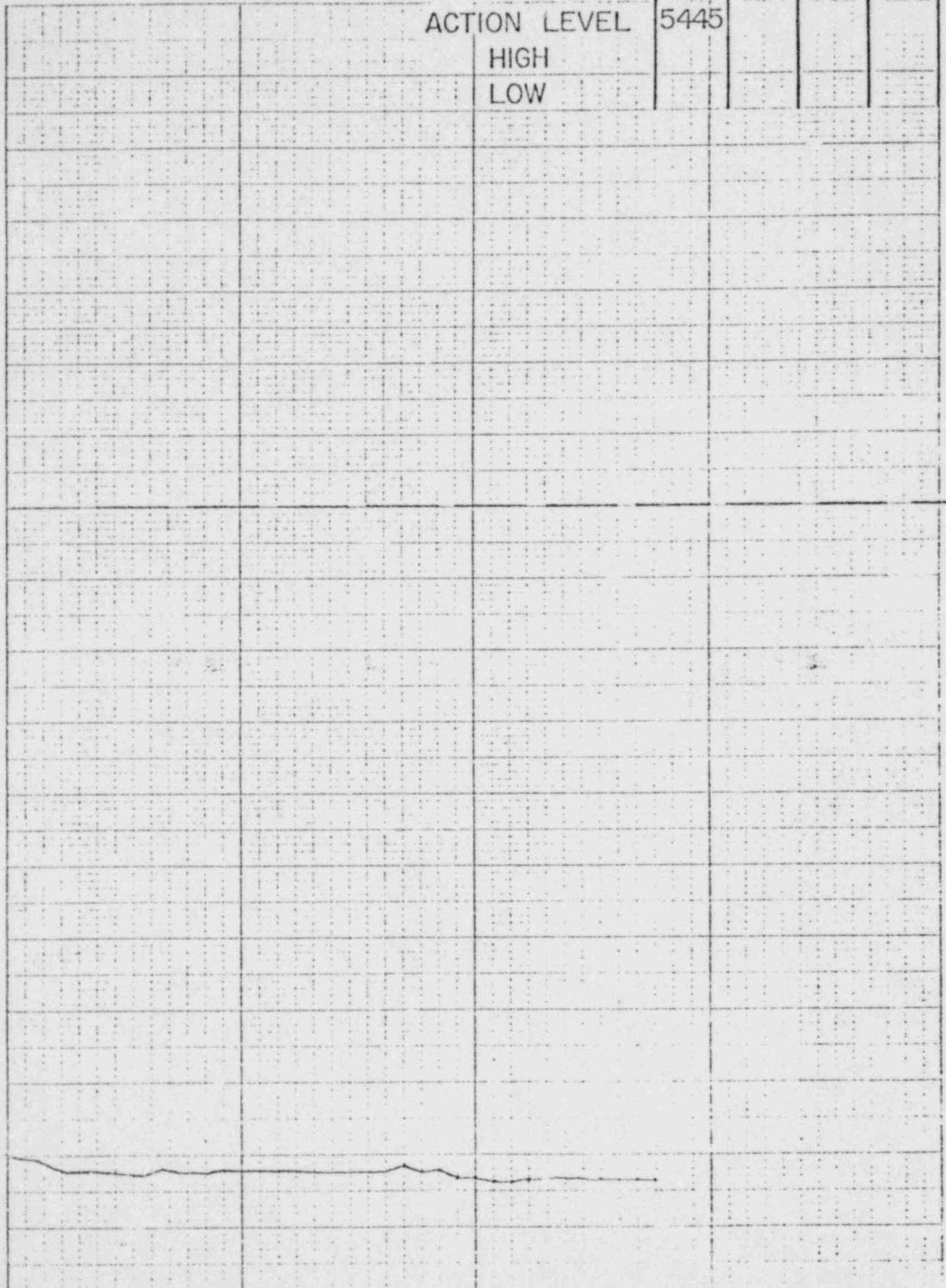
5400

JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |

1981

4-8 3013

RECEIVED BY 100 CIVIL ENGRS  
KAPTEL & ESSER CO. MAIA 10 1981



URAVAN POND 2 PIEZOMETER 2-20

1981 1982

ACTION LEVEL

5432

HIGH

LOW

ACTION LEVEL

5450

5440

5430

5420

5410

JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |

1981

DIVISION OF WATER RESOURCES  
 KEUFEL & ESSER CO. WPTV, VA.

URAVAN POND 2 PIEZOMETER 2-21

1981 1982

ACTION LEVEL

5453

HIGH

LOW

ACTION LEVEL

5453

5450

5440

5430

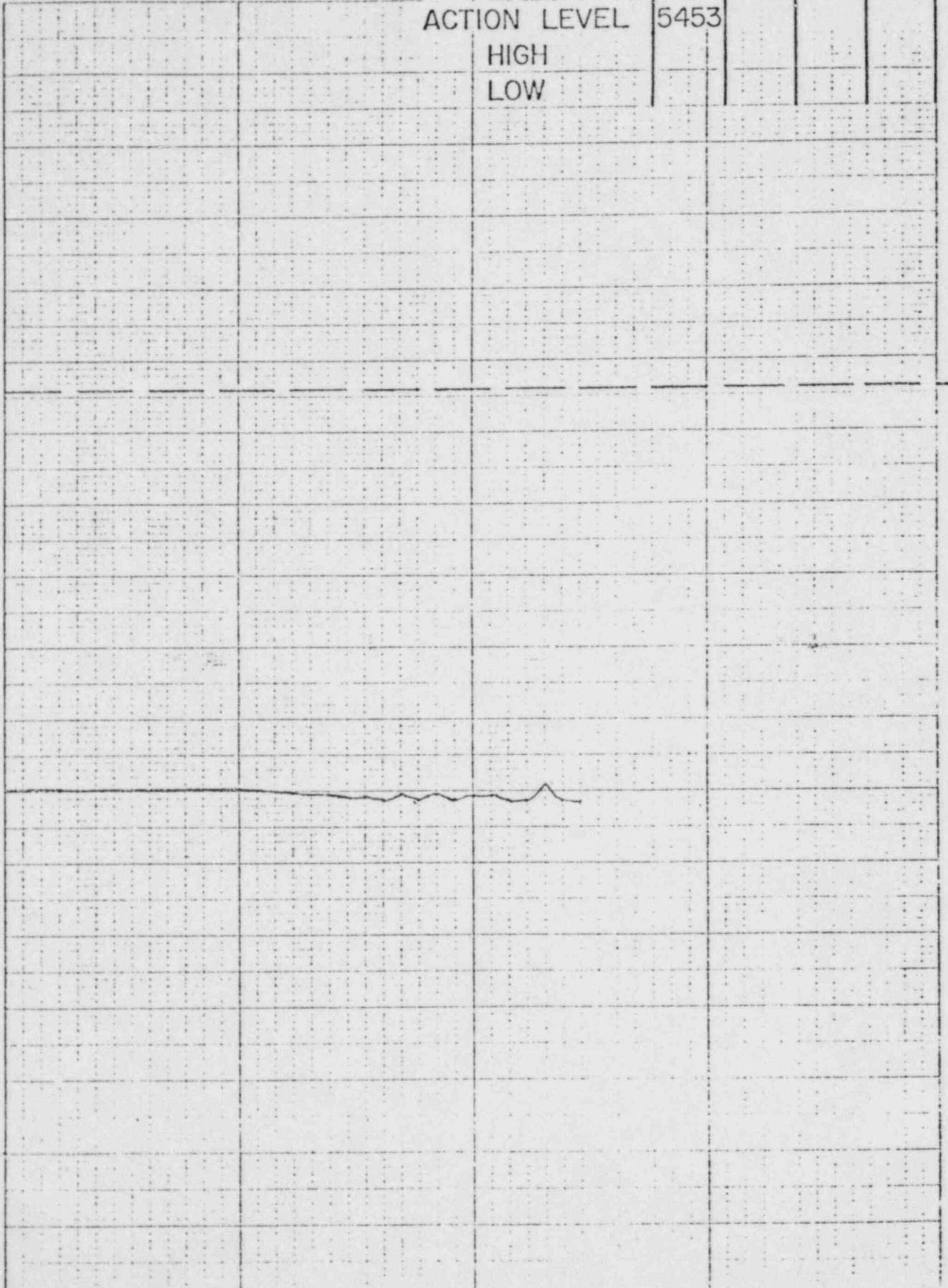
5420

5410

1. METER BY WILCOX X 10 DIVISION  
BY G. ADRIAN & SONS CO. MADE IN USA

JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |

1981



URAVAN POND 3 PIEZOMETER 3-1

1981	1982
5489	5489

ACTION LEVEL  
HIGH  
LOW

ACTION LEVEL

5500

5490

5480

5470

5460

JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC

40 3013

100% KUPFER & ESNER CO. MADE IN SWITZERLAND



URAVAN POND 3 PIEZOMETER 3-3

1981 1982

ACTION LEVEL

5495

HIGH

LOW

ACTION LEVEL

5500

5490

5480

5470

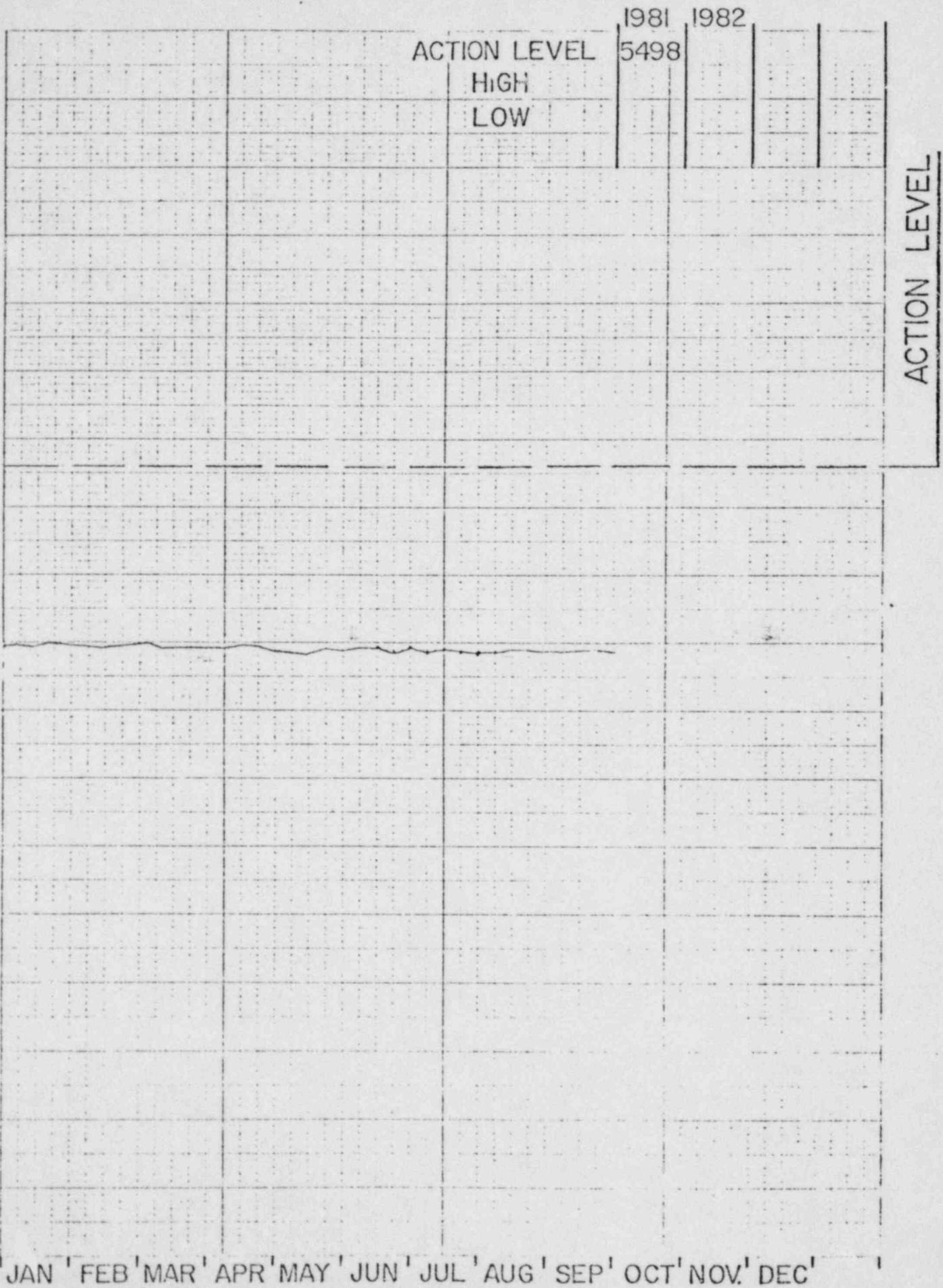
5460

JAN' FEB' MAR' APR' MAY' JUN' JUL' AUG' SEP' OCT' NOV' DEC'

40 3015

MADE BY GEORGE W. TILDEN & SONS  
NEW YORK

URAVAN POND 3 PIEZOMETER 3-4



1981

45 0018

WATER & POWER ENGINEERS & ARCHITECTS

OPERATION SUMMARY

DATA

URAVAN, COLORADO

ENVIRONMENTAL DEPARTMENT

TAILING PILE TOE DRAINAGE

FLOW  
GPM

Month SEPTEMBER 1981

DATE	SUMP 1	SUMP 2	SUMP 3	SUMP 4	PILE #3	
1	2.41	4.29	9.40	13.70	5.83	29.81
2	1.54	9.86	1.91	28.92	5.83	42.23
3	1.57	6.43	5.59	9.77	5.83	23.36
4	2.05	5.79	3.57	29.06	5.83	40.47
5	1.54	6.30	5.47	30.68	5.83	43.99
6	2.56	5.99	8.57	67.35	5.83	84.86
7	2.07	5.85	5.53	2.55	5.83	16.00
8	1.27	6.37	4.91	25.20	5.83	37.75
9	1.83	5.80	5.95	49.24	5.83	62.82
10	1.12	5.87	4.50	61.99	5.35	73.98
11	2.51	6.56	7.69	38.39	5.35	55.16
12	1.57	5.71	4.38	44.05	5.35	55.71
13	1.50	6.82	6.48	38.27	4.86	53.07
14	6.63	6.67	3.78	64.30	4.86	76.38
15	1.96	5.54	5.24	143.84	5.35	156.57
16	0.50	5.72	4.85	89.61	5.35	100.67
17	2.14	8.27	1.50	34.00	5.83	45.90
18	1.49	7.49	3.93	89.47	5.35	102.38
19	1.54	10.58	-0.70	27.30	5.35	38.71
20	2.16	1.60	8.28	8.38	5.35	20.42
21	0.00	6.69	7.20	285.39	4.86	299.28
22	2.72	6.46	3.79	24.37	5.35	37.34
23	1.53	6.28	7.35	12.90	5.35	28.06
24	1.47	6.70	5.46	39.32	5.35	52.95
25	1.59	6.50	<del>3.76</del> 3.69	13.65	5.83	25.43
26	1.57	7.16	4.86	9.77	5.83	23.36
27	2.03	6.43	2.83	7.86	5.83	19.16
28	1.51	8.27	1.41	9.51	5.83	20.68
29	1.45	7.97	3.15	10.69	5.83	23.26
30	1.56	7.86	4.12	7.94	5.35	21.49
31						
MEAN					5.54	57.03
STD. DEV.						

UNION CARBIDE CORPORATION  
URAVAN ENVIRONMENTAL DEPARTMENT

Pond: ONE

Month September 1981

DAY	BEACH FT.	FREEBOARD FT.	SPICOT LOCATION	SURVEYOR INITIALS	METEOROLOGICAL CONDITIONS
1	150/200	10	not used		
2	150/200	10	-		
3	150/200	10	-		
4	150/200	10	-		
5	150/200	10	-		
6	150/200	10	-		
7	150/200	10	-		
8	150/200	10	-		
9	150/200	10	-		
10	150/200	10	-		
11	150/200	10	-		
12	150/200	10	-		
13	150/200	10	-		
14	150/200	10	-		
15	150/200	10	-		
16	150/200	10	-		
17	150/200	10	-		
18	150/200	10	-		
19	150/200	10	-		
20	150/200	10	-		
21	150/200	10	-		
22	150/200	10	-		
23	150/200	10	-		
24	150/200	10	-		
25	150/200	10	-		
26	150/200	10	-		
27	150/200	10	-		
28	150/200	10	-		
29	150/200	10	-		
30	150/200	10	-		
31					

REMARKS:

UNION CARBIDE CORPORATION  
URAVAN ENVIRONMENTAL DEPARTMENT

Pond: Two

Month September 1981

DAY	BEACH FT.	FREEBOARD FT.	SPIGOT LOCATION	SURVEYOR INITIALS	METEOROLOGICAL CONDITIONS
1	200	9	not used		
2	200	9	-		
3	200	9	-		
4	200	9	-		
5	200	9	-		
6	200	9	-		
7	200	9	-		
8	200	9	-		
9	200	9	-		
10	200	9	-		
11	200	9	-		
12	200	9	-		
13	200	9	-		
14	200	9	-		
15	200	9	-		
16	200	9	-		
17	200	9	-		
18	200	8.75	-		
19	250	8.5	-		
20	250	8.67	-		
21	200	8.67	-		
22	200 <sup>+</sup>	8.5	-		
23	200 <sup>+</sup>	8.5	-		
24	200 <sup>+</sup>	8.5	-		
25	200	8.5	-		
26	200	8.5	-		
27	200	8.5	-		
28	200	8.5	-		
29	200	8.5	-		
30	200	8.5	-		
31					

REMARKS:

UNION CARBIDE CORPORATION  
URAVAN ENVIRONMENTAL DEPARTMENT

Pond: THREE

Month September 1981

DAY	BEACH FT.	FREEBOARD FT.	SPIGOT LOCATION	SURVEYOR INITIALS	METEOROLOGICAL CONDITIONS
1	150	10	not used 0 N.A.		
2	150	10	0		
3	150	10	0		
4	150	10	0		
5	150	10	0		
6	150	10	0		
7	150	10	-		
8	150	10	-		
9	150	10	-		
10	150	10	-		
11	150	10	-		
12	150	10	-		
13	150	10	-		
14	150	10	-		
15	150	10	-		
16	150	10	-		
17	150	10	-		
18	150	10.16	-		
19	150	10.16	-		
20	150	10.16	0		
21	150	10.25	0		
22	150	10.16	0		
23	150	10.08	0		
24	150	10.25	0		
25	150	10.25	40		
26	150	10	80		
27	150	10.42	120		
28	150	10.33	160		
29	150	10.33	200		
30	150	10.67	240		
31					

REMARKS:

