

CIMARRON CORPORATION
CIMARRON FACILITY
PHASE II, SUB-AREA "J", SURFACE
AFFECTED AREA

DATE: 03/20/97

LN #	GRID NUMBER	3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	0-6" Sample	
					Total-U	Th (Nat)
1	250W-55N	8268	8	8	10	2
2	250W-60N	7756	8	8	9	2
3	250W-65N	7426	8	7	7	1
4	250W-70N	6518	7	7	5	1
5	250W-75N	7194	8	7	15	1
6	250W-80N	6330	7	7	9	1
7	250W-85N	7110	8	7	10	1
8	250W-90N	7144	8	7	7	1
9	255W-50N	7782	9	9	6	1
10	255W-55N	7494	7	8	10	1
11	255W-60N	7770	8	8	5	1
12	255W-65N	7362	8	6	8	1
13	255W-70N	7160	8	7	6	1
	255W-75N	6338	8	7	5	1
15	255W-80N	6356	7	7	10	1
16	255W-85N	6498	7	7	13	1

INSTRUMENTS:	RESULTS IN:	BACKGROUND	MDA
UDLUM MICRO 'R' METER - MODEL 19 S/N 111299	μR/hr	7-10	7
UDLUM 2221, UNSHIELDED 3" X 1/2" NaI DETECTOR S/N 97264	CPM	7916	N/A
		Total U	4
		Th(Nat)	10
CIMARRON SOIL COUNTER 4" X 4" X 16" NaI DETECTOR	pCi/g	1.5	0.25

BACKGROUND NOT SUBTRACTED

FILE: AJAASURF

William T. Rhodes DATE: 4-11-97

CIMARRON CORPORATION
CIMARRON FACILITY
PHASE II, SUB-AREA "J", SURFACE
AFFECTED AREA

DATE: 03/20/97

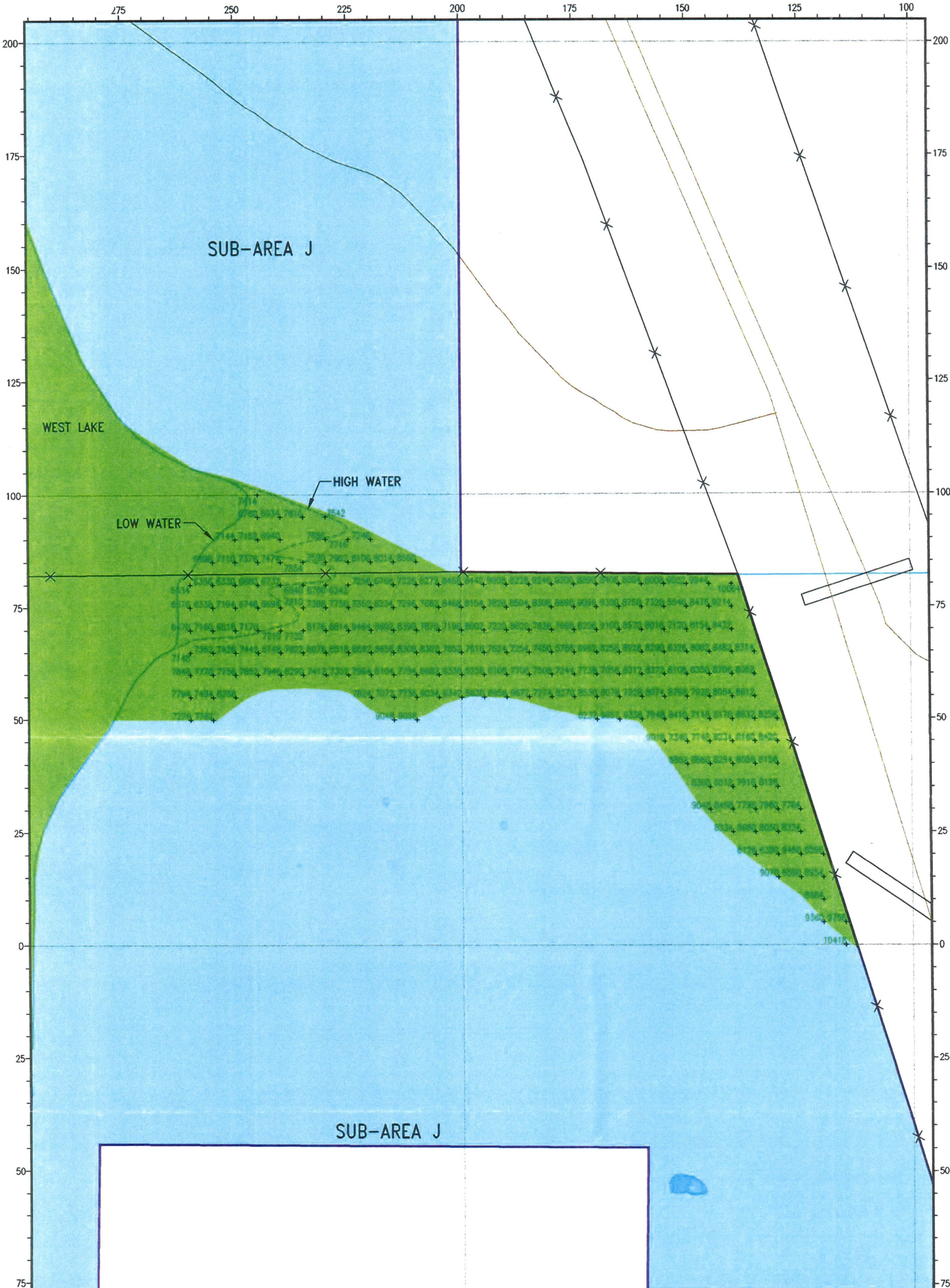
LN #	GRID NUMBER	3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	0-6" Sample	
					Total-U	Th (Nat)
1	260W-50N	7276	7	7	9	1
2	260W-55N	7794	8	8	8	1
3	260W-60N	7846	8	7	6	1
4	260W-65N	7148	7	6	6	1
5	260W-70N	6470	7	7	7	1
6	260W-75N	6676	7	7	6	1
7	260W-80N	5934	7	7	3	1
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15						
16						
17						
18						
19						
20						

INSTRUMENTS:	RESULTS IN:	BACKGROUND	MDA
UDLUM MICRO 'R' METER - MODEL 19 S/N 111299	μR/hr	7-10	7
UDLUM 2221, UNSHIELDED 3" X 1/2" NaI DETECTOR S/N 97264	CPM	7916	N/A
		Total U	4
		Th(Nat)	10
IMMARON SOIL COUNTER 4" X 4" X 16" NaI DETECTOR	pCi/g	Th(Nat)	1.5
			0.25

ACKGROUND NOT SUBTRACTED

AJAASURF

Richard T. Rhodes DATE: 4-11-97

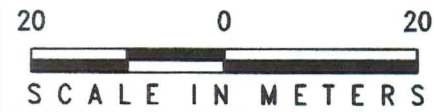


NOTES:

INSTRUMENT: LUDLUM 2221, UNSHIELDED 3" X 1/2"
NaI DETECTOR

BACKGROUND: 7916 CPM

-+ FIELD SURVEY READING NOT TAKEN
OVER STANDING WATER



LEGEND

- UNAFFECTED AREA (PHASE II)
- AFFECTED AREA (PHASE II)

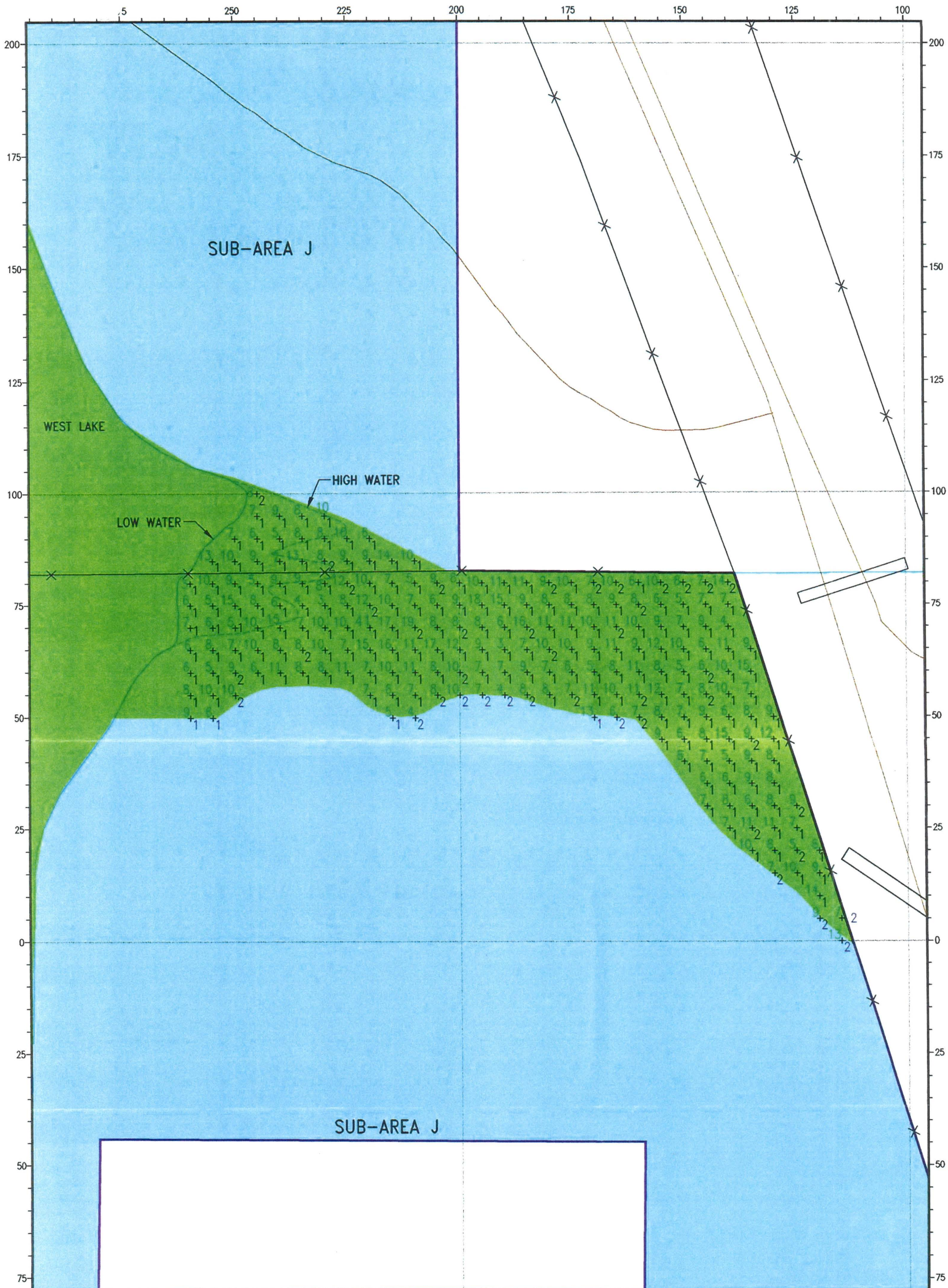


CIMARRON CORPORATION

**CIMARRON FACILITY
PHASE II - SUB-AREA J
POST REMEDIATION AFFECTED AREA
GAMMA SURVEY (1997)**

REV.	DESCRIPTION	DRWN BY:	CK'D BY:	APP'D BY:	DATE
0	DRAWING ISSUED.	JE	RS	JK	8/20/97

DRWN BY: JE	DATE: 7/9/97	SCALE: AS SHOWN
JOB NO.	DRAWING NO. 97POAJ3D-0	REV. 0



NOTES:

SAMPLES ARE IN PICO-CURIES PER GRAM URANIUM (pCi/g U) AND THORIUM (pCi/g Th).

CIMARRON GAMMA SPEC SOIL COUNTER.

SITE SOIL BACKGROUND OF 4 pCi/g U & 1.5 pCi/g Th, NOT SUBTRACTED.

8+ URANIUM
+1 THORIUM

20 0 20
SCALE IN METERS



LEGEND

- UNAFECTED AREA (PHASE II)
- AFFECTED AREA (PHASE II)

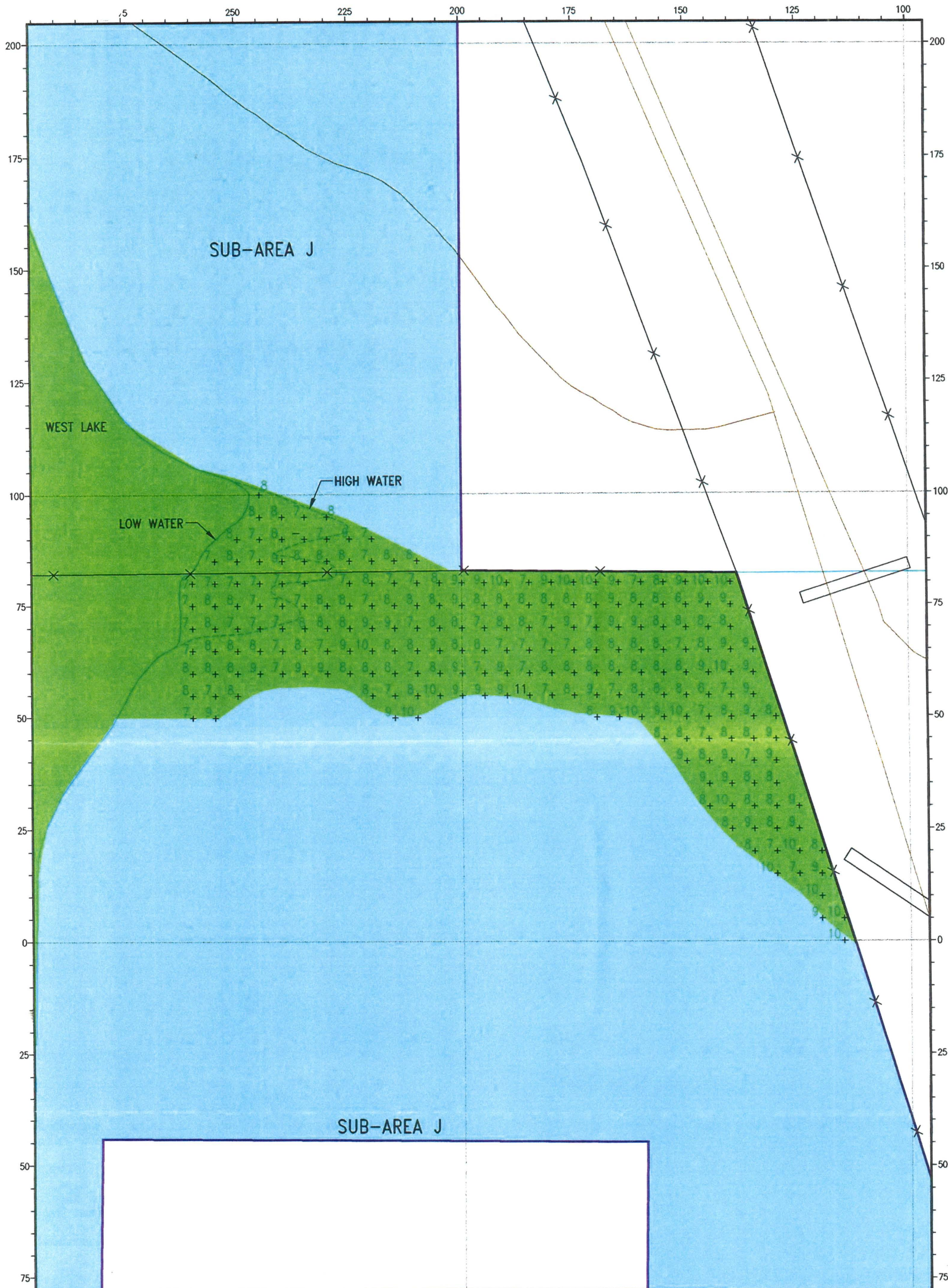


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CIMARRON FACILITY
PHASE II - SUB-AREA J
POST REMEDIATION AFFECTED AREA
SOIL SAMPLE RESULTS (1997)
SOIL SAMPLE ALIQUOT: 0-6"

REV.	DESCRIPTION	DRWN BY:	CK'D BY:	APP'D BY:	DATE
0	DRAWING ISSUED.	JE	RS	JK	8/20/97

DRWN. BY	JE	DATE	7/3/97	SCALE	AS SHOWN
JOB NO.		DRAWING NO.	97POAJSS-0	REV.	0



NOTES:

READINGS ARE IN MICRO-R/Hr. (μ R/Hr.)

INSTRUMENT: LUDLUM MICRO-R METER
MODEL NO.: 19
BACKGROUND: 7 μ R/Hr.

20 0 20
SCALE IN METERS



LEGEND

- UNAFFECTED AREA (PHASE II)
- AFFECTED AREA (PHASE II)

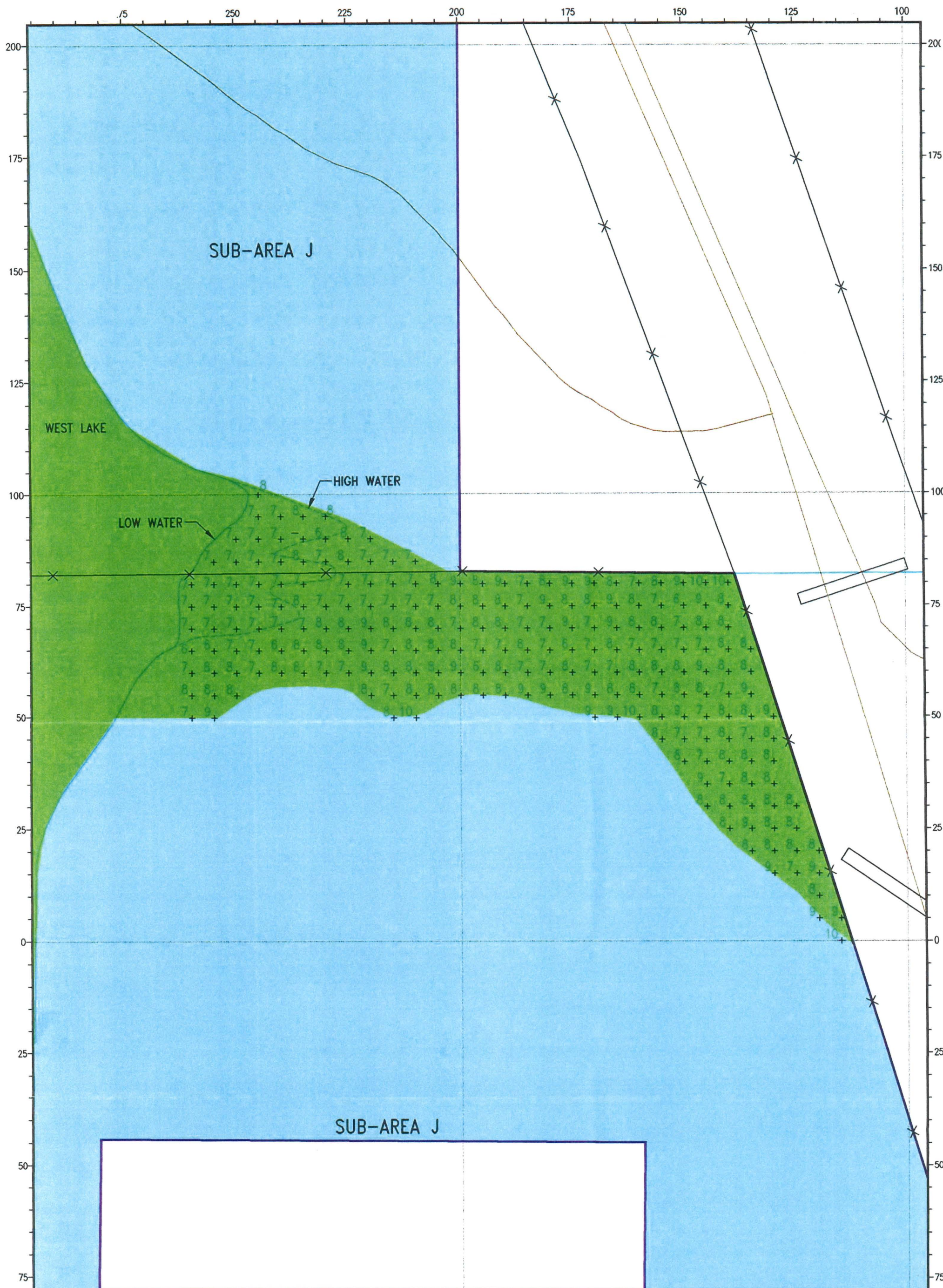


CIMARRON CORPORATION

**CIMARRON FACILITY
PHASE II - SUB-AREA J
POST REMEDIATION AFFECTED AREA
MICRO-R SURVEY (1997)
AT LAND SURFACE**

REV.	DESCRIPTION	DRWN BY:	CK'D BY:	APP'D BY:	DATE
0	DRAWING ISSUED.	JE	RS	JK	8/20/97

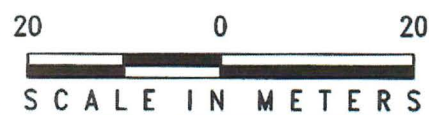
DRWN. BY: JE	DATE: 7/9/97	SCALE: AS SHOWN
JOB NO.	DRAWING NO. 97POAJUR-0	REV. 0





NOTES:

READINGS ARE IN MICRO-R/Hr. (μ R/Hr.)

INSTRUMENT: LUDLUM MICRO-R METER
MODEL NO.: 19
BACKGROUND: 7 μ R/Hr.



LEGEND

-  UNAFFECTED AREA (PHASE II)
-  AFFECTED AREA (PHASE II)



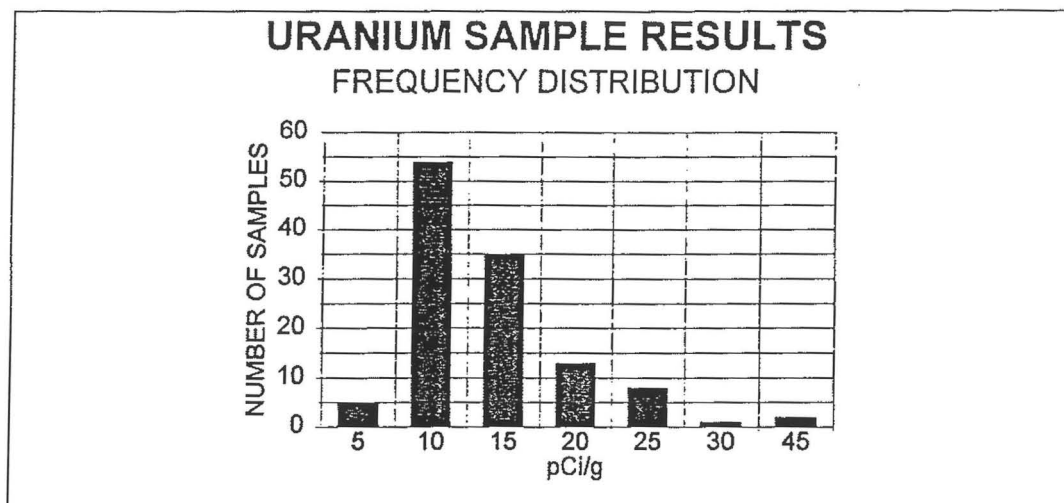
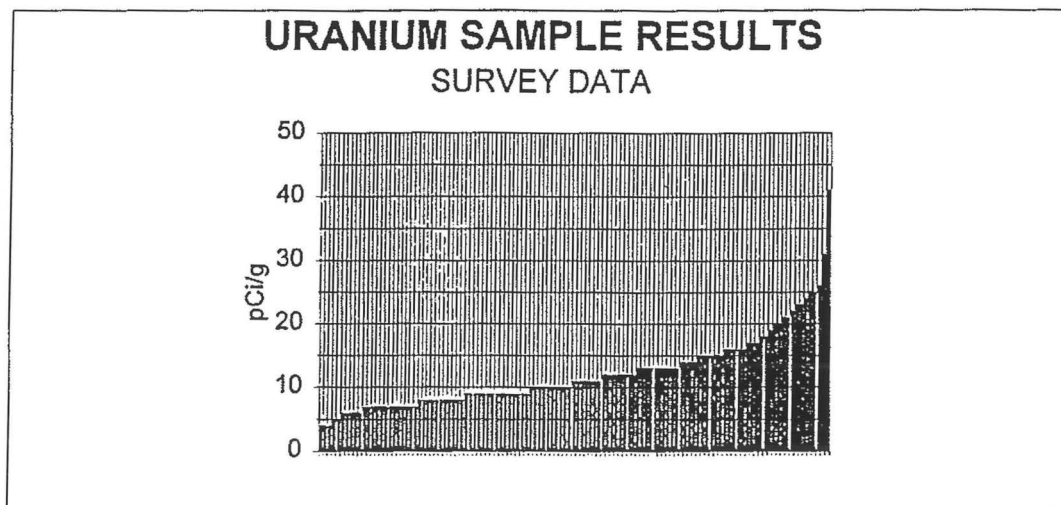
CIMARRON CORPORATION

CIMARRON FACILITY
PHASE II - SUB-AREA J
POST REMEDIATION AFFECTED AREA
MICRO-R SURVEY (1997)
AT ONE METER ABOVE SURFACE

REV.	DESCRIPTION	DRWN BY:	CK'D BY:	APP'D BY:	DATE
0	DRAWING ISSUED.	JE	RS	JK	8/20/97

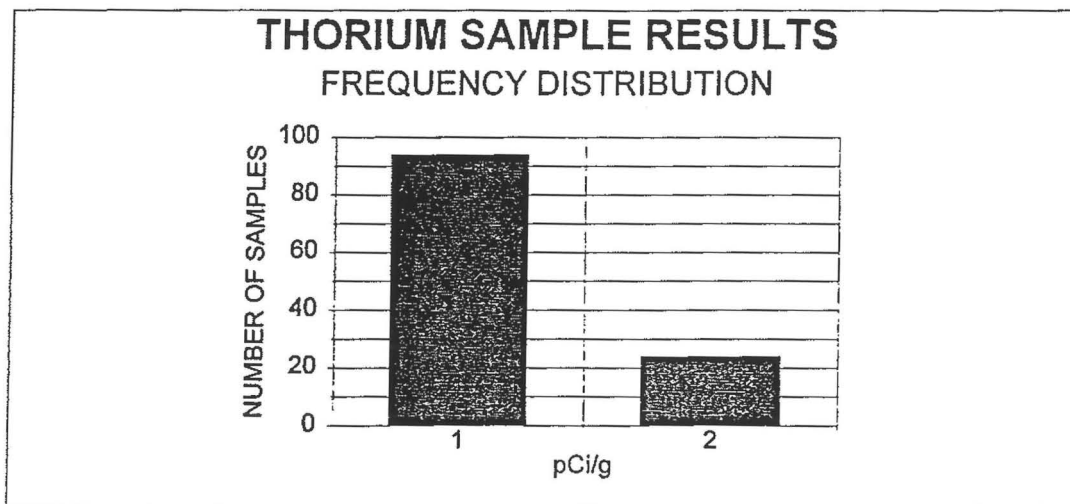
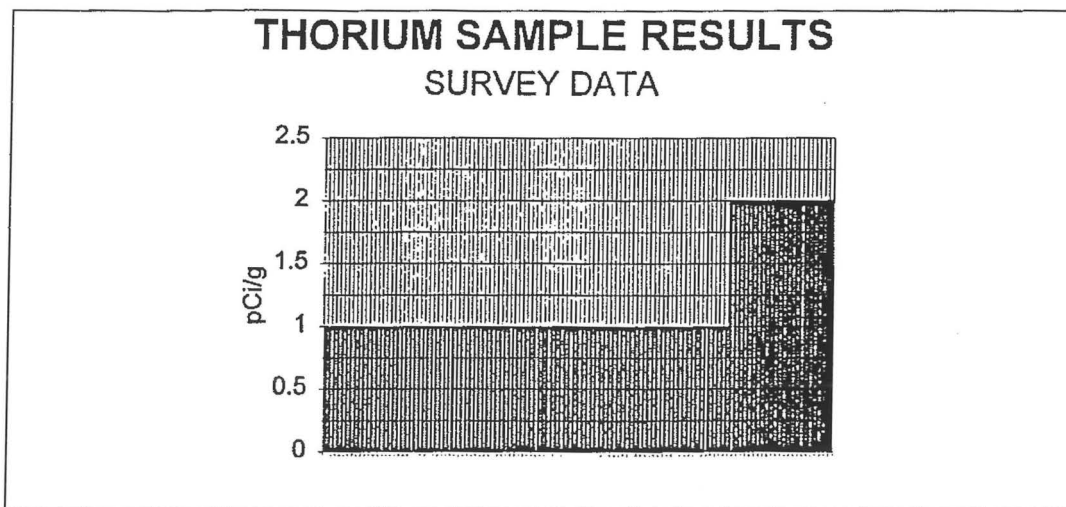
DRWN. BY: JE	DATE: 7/9/97	SCALE: AS SHOWN
JOB NO.	DRAWING NO. 97POAJUR-1	REV. 0

PHASE II, SUB-AREA "J" - DEPTH
AFFECTED AREA
CIMARRON SOIL COUNTER
TOTAL URANIUM SAMPLE RESULTS
SITE BACKGROUND OF 4 pCi/g NOT SUBTRACTED
APRIL 1997



NUMBER OF SAMPLES	118
AVERAGE SAMPLE	12
MINIMUM SAMPLE	4
MAXIMUM SAMPLE	41
STANDARD DEVIATION	6

PHASE II, SUB-AREA "J" - DEPTH
AFFECTED AREA
CIMARRON SOIL COUNTER
THORIUM (NAT) SAMPLE RESULTS
SITE BACKGROUND OF 1.5 pCi/g NOT SUBTRACTED
APRIL 1997

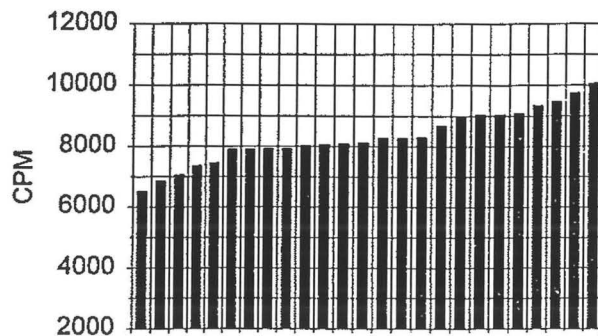


NUMBER OF SAMPLES	118
AVGERAGE SAMPLE	1
MINIMUM SAMPLE	1
MAXIMUM SAMPLE	2
STANDARD DEVIATION	0

PHASE II, SUB-AREA "J" - DEPTH
AFFECTED AREA
GROSS GAMMA READINGS IN CPM
LUDLUM MODEL 2221, S/N 97264
BACKGROUND AVERAGE: 7920
APRIL 1997

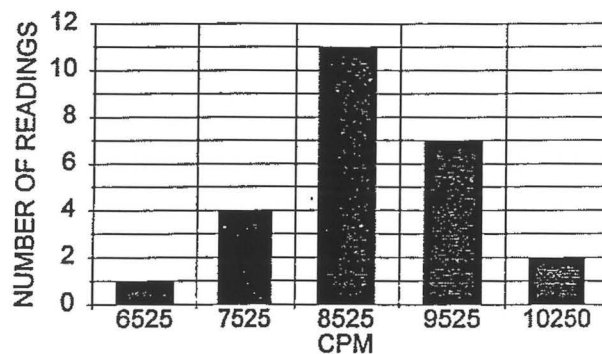
3" DETECTOR READINGS

SURVEY DATA



3" DETECTOR READINGS

FREQUENCY DISTRIBUTION

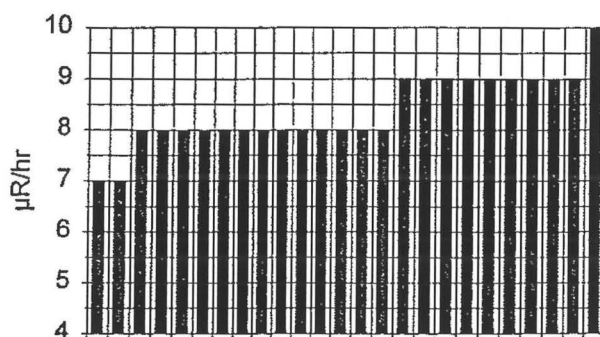


NUMBER OF READINGS	25
AVERAGE READING	8304
MINIMUM READING	6522
MAXIMUM READING	10064
STANDARD DEVIATION	877

PHASE II, SUB-AREA "J" - DEPTH
AFFECTED AREA.
MICRO 'R' READINGS AT SURFACE
LUDLUM MODEL 19, S/N 111299
RESULTS IN $\mu\text{R/hr}$
APRIL 1997

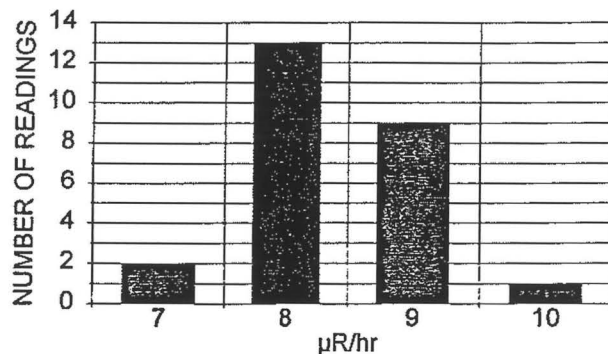
MICRO 'R' READINGS

SURVEY DATA



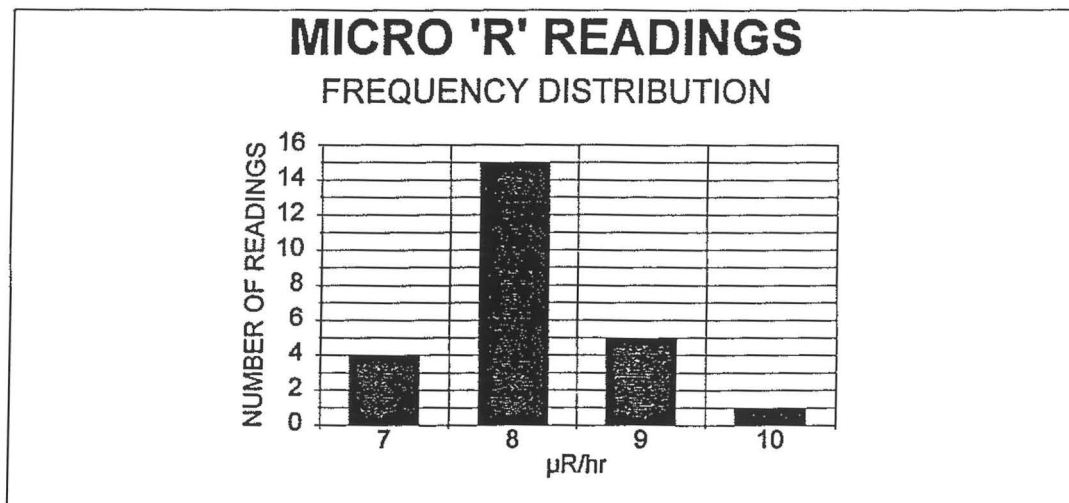
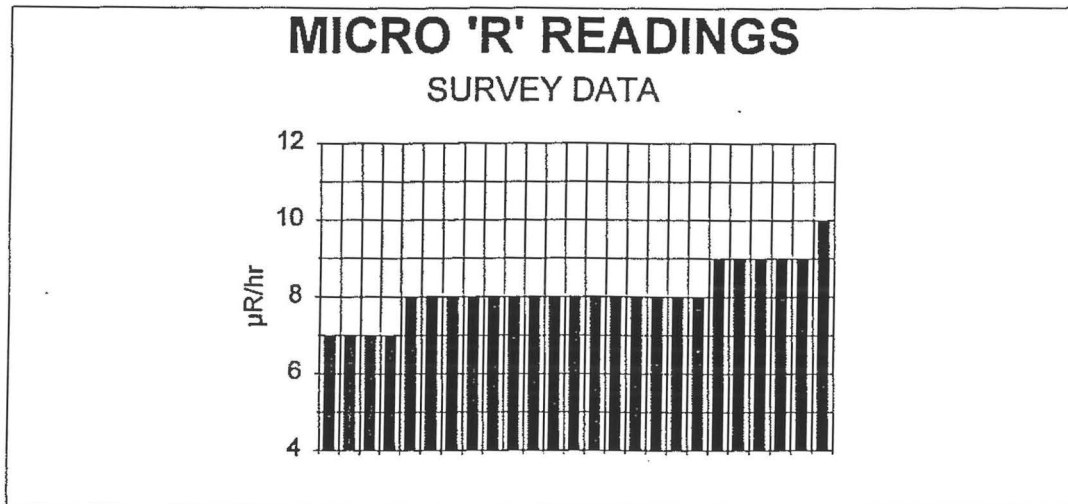
MICRO 'R' READINGS

FREQUENCY DISTRIBUTION



NUMBER OF READINGS	25
AVERAGE READING	8
MINIMUM READING	7
MAXIMUM READING	10
STANDARD DEVIATION	1

PHASE II, SUB-AREA "J" - DEPTH
AFFECTED AREA.
MICRO 'R' READINGS AT 1 METER ABOVE SURFACE
LUDLUM MODEL 19, S/N 111299
RESULTS IN $\mu\text{R/hr}$
APRIL 1997



NUMBER OF READINGS	25
AVERAGE READING	8
MINIMUM READING	7
MAXIMUM READING	10
STANDARD DEVIATION	1

TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE (SUB - AREA "J") AFFECTED AREA
 $n = pCi/g \text{ TOTAL U}$ (DEPTH)

(DEPTH)

[illegible]

No. of Samples (x) : 118

COUNT TIME: 5 MINUTES

Sample Mean (N) = Sum(n) + (x)

Sample Mean (N) : 12.06

Standard Deviation (Sd) = $\text{SQRT} [(n-N)^2 + (x - 1)]$

Standard Deviation: 5.9

2 Std Deviations:	11.7
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Degree of Freedom(df).= (x) - 1 Data listed on Table B-1

$$(df) = 1.659$$

Area's Average Level (Au) = (N) + (df) x [(Sd)/(x)]

(A_μ) = 12.95 pCi/gU TOTAL U

pCi/gU TOTAL U

GUIDELINE VALUE:	30	pCl/gU	TOTAL U
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pCl/gU TOTAL U

Acceptable Level:	34.0	pCi/gU	TOTAL U
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pCi/gU TOTAL U

(30 PLUS BACKGROUND)

TABLE B-1

(df)	95%	97.5%	(df)	95%	97.5%
1	6.314	12.706	19	1.729	2.093
2	2.92	4.303	20	1.725	2.086
3	2.353	3.182	21	1.721	2.08
4	2.132	2.776	22	1.717	2.074
5	2.015	2.571	23	1.714	2.069
6	1.943	2.447	24	1.711	2.064
7	1.895	2.365	25	1.708	2.06
8	1.86	2.306	26	1.706	2.056
9	1.833	2.262	27	1.703	2.052
10	1.812	2.228	28	1.701	2.048
11	1.796	2.201	29	1.699	2.045
12	1.782	2.179	30	1.697	2.042
13	1.771	2.16	40	1.684	2.021
14	1.761	2.145	60	1.671	2
15	1.753	2.131	120	1.658	1.98
16	1.746	2.12	400	1.649	1.966
17	1.74	2.11	Infinite	1.645	1.96
18	1.734	2.101			

For values of Degrees of Freedom not listed:

Interpolate between the listed values.

(df) high value(Z)	120	is (B)	1.658	95%
(df) low value(Y)	60	is (A)	1.671	95%

Desired value(df) (X)	117	is calculated as follow:
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$$\text{EXP}[(\text{Ln}(\text{B}) - \text{Ln}(\text{A})) + (\text{Z} - \text{Y}) (\text{X} - \text{Y}) + \text{Ln}(\text{A})]$$

The (df) value for χ^2	117	1.659	95%
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PERFORMED BY: Clwing Powell DATE: 4-16-97

REVIEWED BY: W. A. Rogers DATE: 4-16-97

TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE (SUB - AREA "J") AFFECTED AREA

n = pCl/g TOTAL U			
Number	n	(n-N)	(n-N) ²
51	10	-2.06	4.24
52	10	-2.06	4.24
53	10	-2.06	4.24
54	10	-2.06	4.24
55	10	-2.06	4.24
56	10	-2.06	4.24
57	10	-2.06	4.24
58	10	-2.06	4.24
59	10	-2.06	4.24
60	11	-1.06	1.12
61	11	-1.06	1.12
62	11	-1.06	1.12
63	11	-1.06	1.12
64	11	-1.06	1.12
65	11	-1.06	1.12
66	11	-1.06	1.12
67	12	-0.06	0.00
68	12	-0.06	0.00
69	12	-0.06	0.00
70	12	-0.06	0.00
71	12	-0.06	0.00
72	12	-0.06	0.00
73	12	-0.06	0.00
74	12	-0.06	0.00
75	13	0.94	0.88
76	13	0.94	0.88
77	13	0.94	0.88
78	13	0.94	0.88
79	13	0.94	0.88
80	13	0.94	0.88
81	13	0.94	0.88
82	13	0.94	0.88
83	13	0.94	0.88
84	13	0.94	0.88
85	14	1.94	3.77
86	14	1.94	3.77
87	14	1.94	3.77
88	14	1.94	3.77
89	15	2.94	8.65
90	15	2.94	8.65
91	15	2.94	8.65
92	15	2.94	8.65
93	15	2.94	8.65
94	15	2.94	8.65
95	16	3.94	15.53
96	16	3.94	15.53
97	16	3.94	15.53
98	16	3.94	15.53
99	16	3.94	15.53
100	17	4.94	24.41
	636		223.90
	Sum(n)		Sum(n-N)²

n = pCl/g TOTAL U			
Number	n	(n-N)	(n-N) ²
101	17	4.94	24.41
102	17	4.94	24.41
103	18	5.94	35.29
104	18	5.94	35.29
105	19	6.94	48.17
106	20	7.94	63.05
107	20	7.94	63.05
108	21	8.94	79.94
109	21	8.94	79.94
110	22	9.94	98.82
111	23	10.94	119.70
112	23	10.94	119.70
113	24	11.94	142.58
114	25	12.94	167.46
115	25	12.94	167.46
116	26	13.94	194.34
117	31	18.94	358.75
118	41	28.94	837.56
119			
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	411		2659.93
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY

TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE (SUB - AREA "J") AFFECTED AREA
(DEPTH)

$n = \text{pCi/g Th (NAT)}$

Number	n	(n-N)	(n-N) ²
1	1	-0.20	0.04
2	1	-0.20	0.04
3	1	-0.20	0.04
4	1	-0.20	0.04
5	1	-0.20	0.04
6	1	-0.20	0.04
7	1	-0.20	0.04
8	1	-0.20	0.04
9	1	-0.20	0.04
10	1	-0.20	0.04
11	1	-0.20	0.04
12	1	-0.20	0.04
13	1	-0.20	0.04
14	1	-0.20	0.04
15	1	-0.20	0.04
16	1	-0.20	0.04
17	1	-0.20	0.04
18	1	-0.20	0.04
19	1	-0.20	0.04
20	1	-0.20	0.04
21	1	-0.20	0.04
22	1	-0.20	0.04
23	1	-0.20	0.04
24	1	-0.20	0.04
25	1	-0.20	0.04
26	1	-0.20	0.04
27	1	-0.20	0.04
28	1	-0.20	0.04
29	1	-0.20	0.04
30	1	-0.20	0.04
31	1	-0.20	0.04
32	1	-0.20	0.04
33	1	-0.20	0.04
34	1	-0.20	0.04
35	1	-0.20	0.04
36	1	-0.20	0.04
37	1	-0.20	0.04
38	1	-0.20	0.04
39	1	-0.20	0.04
40	1	-0.20	0.04
41	1	-0.20	0.04
42	1	-0.20	0.04
43	1	-0.20	0.04
44	1	-0.20	0.04
45	1	-0.20	0.04
46	1	-0.20	0.04
47	1	-0.20	0.04
48	1	-0.20	0.04
49	1	-0.20	0.04
50	1	-0.20	0.04
56			5.628
36			11.423
142			19.119
Sum(n)			Sum(n-N) ²

No. of Samples (x) : 118

COUNT TIME: 5 MINUTES

Sample Mean (N) = Sum(n) + (x)

Sample Mean (N) : 1.20

Standard Deviation (Sd) = SQRT [(n-N)² + (x - 1)]

Standard Deviation: 0.40

2 Std Deviations: 0.81

Degree of Freedom(df) = (x) - 1 Data listed on Table B-1

(df) = 1.659

Area's Average Level (Aμ) = (N) + (df) x [(Sd)/(x)]

(Aμ) = 1.27 pCi/gTh (NAT)

GUIDELINE VALUE: 10 pCi/gTh (NAT)

Acceptable Level: 4.0 pCi/gTh (NAT)

(25% OF GUIDELINE PLUS BACKGROUND)

TABLE B - 1

Factors for Comparison of Survey Data with Guidelines					
(df)	95%	97.5%	(df)	95%	97.5%
1	6.314	12.706	19	1.729	2.093
2	2.92	4.303	20	1.725	2.086
3	2.353	3.182	21	1.721	2.08
4	2.132	2.776	22	1.717	2.074
5	2.015	2.571	23	1.714	2.069
6	1.943	2.447	24	1.711	2.064
7	1.895	2.365	25	1.708	2.06
8	1.86	2.306	26	1.706	2.056
9	1.833	2.262	27	1.703	2.052
10	1.812	2.228	28	1.701	2.048
11	1.796	2.201	29	1.699	2.045
12	1.782	2.179	30	1.697	2.042
13	1.771	2.16	40	1.684	2.021
14	1.761	2.145	60	1.671	2
15	1.753	2.131	120	1.658	1.98
16	1.746	2.12	400	1.649	1.966
17	1.74	2.11	Infinite	1.645	1.96
18	1.734	2.101			

For values of Degrees of Freedom not listed:

Interpolate between the listed values.

(df) high value(Z)	120	is (B)	1.658	95%
(df) low value(Y)	60	is (A)	1.671	95%

Desired value(df) (X) 117 is calculated as follow:

$\text{EXP}[(\text{Ln}(B) - \text{Ln}(A)) + (Z - Y) / (X - Y) + \text{Ln}(A)]$

The (df) value for (X) 117 1.659 95%

PERFORMED BY: Clayton Powell DATE: 4-16-97

REVIEWED BY: W.A. Rogers DATE: 4-17-97

CIMARRON CORPORATION - CIMARRON FACILITY

TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE (SUB - AREA "J") AFFECTED AREA (DEPTH)

n = pCi/g Th (NAT)

Number	n	(n-N)	(n-N) ²
51	1	-0.20	0.04
52	1	-0.20	0.04
53	1	-0.20	0.04
54	1	-0.20	0.04
55	1	-0.20	0.04
56	1	-0.20	0.04
57	1	-0.20	0.04
58	1	-0.20	0.04
59	1	-0.20	0.04
60	1	-0.20	0.04
61	1	-0.20	0.04
62	1	-0.20	0.04
63	1	-0.20	0.04
64	1	-0.20	0.04
65	1	-0.20	0.04
66	1	-0.20	0.04
67	1	-0.20	0.04
68	1	-0.20	0.04
69	1	-0.20	0.04
70	1	-0.20	0.04
71	1	-0.20	0.04
72	1	-0.20	0.04
73	1	-0.20	0.04
74	1	-0.20	0.04
75	1	-0.20	0.04
76	1	-0.20	0.04
77	1	-0.20	0.04
78	1	-0.20	0.04
79	1	-0.20	0.04
80	1	-0.20	0.04
81	1	-0.20	0.04
82	1	-0.20	0.04
83	1	-0.20	0.04
84	1	-0.20	0.04
85	1	-0.20	0.04
86	1	-0.20	0.04
87	1	-0.20	0.04
88	1	-0.20	0.04
89	1	-0.20	0.04
90	1	-0.20	0.04
91	1	-0.20	0.04
92	1	-0.20	0.04
93	1	-0.20	0.04
94	1	-0.20	0.04
95	2	0.80	0.63
96	2	0.80	0.63
97	2	0.80	0.63
98	2	0.80	0.63
99	2	0.80	0.63
100	2	0.80	0.63
	56		5.628
	Sum(n)		Sum(n-N)²

n = pCi/g Th (NAT)

Number	n	(n-N)	(n-N) ²
101	2	0.80	0.63
102	2	0.80	0.63
103	2	0.80	0.63
104	2	0.80	0.63
105	2	0.80	0.63
106	2	0.80	0.63
107	2	0.80	0.63
108	2	0.80	0.63
109	2	0.80	0.63
110	2	0.80	0.63
111	2	0.80	0.63
112	2	0.80	0.63
113	2	0.80	0.63
114	2	0.80	0.63
115	2	0.80	0.63
116	2	0.80	0.63
117	2	0.80	0.63
118	2	0.80	0.63
119			
120			
121			
122			
123			
124			
125			
126			
127			
128			
129			
130			
131			
132			
133			
134			
135			
136			
137			
138			
139			
140			
141			
142			
143			
144			
145			
146			
147			
148			
149			
150			
	36		11.423
	Sum(n)		Sum(n-N)²

CIMARRON CORPORATION
CIMARRON FACILITY
PHASE II, SUB-AREA "J", DEPTH
AFFECTED AREA

QAQC-158
REV.1

SAMPLE LOCATION :

GRID LOCATION :

DATE: 03/20/97

N #	GRID NUMBER	3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METE	pCi/g											
					0 - 6"		6" - 1'		1' - 2'		2' - 3'		3' - 4'		4' - 5'	
					Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)
1	135W-25N	8680	9	9	11	2	9	1	11	1	9	2	7	1		
2	140W-52N	7062	8	7	5	2	7	1	8	1	8	1	10	1		
3	140W-68N	7364	8	7	7	1	9	1	8	1	13	1	7	1		
4	140W-80N	10064	10	10	14	2	6	2	13	1	4	2	9	1		
5	150W-80N	9052	9	9	8	2	7	1	7	1	9	1	4	1		
6	160W-68N	7934	8	8	9	1	10	1	11	1	12	1	13	1		
7	165W-70N	9100	9	9	10	2	15	1	17	1	15	1	9	1		
8	180W-68N	6522	7	7	9	1	14	1	7	1	8	1	7	1		
9	180W-75N	8308	8	9	8	1	11	1	15	1	7	2	6	1		
10	200W-55N	9342	9	8	10	2	12	2	8	1	ROCK	ROCK	ROCK	ROCK		
11	200W-68N	6858	8	8	9	1	7	1	18	1	7	1	8	1		
12	215W-50N	9048	9	8	5	1	13	1	10	1	10	1	6	2		
13	217W-70N	8070	8	8	17	1	20	1	17	1	9	1	8	1		
14	218W-69N	8282	8	8	22	2	16	1	14	1	11	1	6	2		
15	218W-70N	8026	8	8	26	1	20	1	31	2	13	1	21	1	10	1
16	218W-71N	7456	8	7	12	1	12	1	13	1	8	1	10	1		
17	219W-70N	9758	9	8	23	1	25	1	18	1	13	2	6	2		
18	220W-68N	7934	9	9	9	1	9	1	9	1	10	1	12	1		

INSTRUMENTS:

RESULTS IN

BACKGROUND

MDA

LUDLUM MICRO 'R' METER - 19, S/N 111299

µr/hr

7-10

7

LUDLUM 2221, UNSHIELDED 3" X 1/2" NaI DETECTOR S/N 97264

CPM

7920

N/A

Total U 4

10

CIMMARON SOIL COUNTER X" X 4" X 16" NaI DETECTOR

pCi/G

Th (Nat) 1.5

0.25

BACKGROUND NOT SUBTRACTED

REVIEWED BY:

William J. Rhodes

DATE: 4-16-97

FILE: AJAADEPTH

CIMARRON CORPORATION
CIMARRON FACILITY
PHASE II, SUB-AREA "J", DEPTH
AFFECTED AREA

QAQC-158
REV.1

SAMPLE LOCATION :

GRID LOCATION :

DATE: 03/20/97

N #	GRID NUMBER	3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METE	pCi/g											
					0 - 6"		6" - 1'		1' - 2'		2' - 3'		3' - 4'		4' - 5'	
					Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)
1	220W-69N	8960	9	8	23	1	16	1								
2	220W-70N	9482	9	8	41	1	13	1	24	1	16	1	12	2	---	---
3	220W-71N	8096	8	8	13	1	12	2								
4	221W-70N	8128	7	8	21	1	25	1	15	1	14	1	11	1	---	---
5	222W-70N	7898	8	8	19	1	9	2	16	2	11	1	7	1	---	---
6	225W-85N	7902	8	8	9	1	15	2	16	1	15	1	13	1	---	---
7	250W-55N	8268	8	8	10	2	12	2	8	1	7	1	4	1	---	---
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																
18																

INSTRUMENTS:

RESULTS IN

BACKGROUND

MDA

LUDLUM MICRO 'R' METER - 19, S/N 111299

µr/hr

7-10

7

LUDLUM 2221, UNSHIELDED 3" X 1/2" NaI DETECTOR S/N 97264

CPM

7920

N/A

Total U 4

10

CIMMARON SOIL COUNTER X" X 4" X 16" NaI DETECTOR

pCi/G

Th (Nat) 1.5

0.25

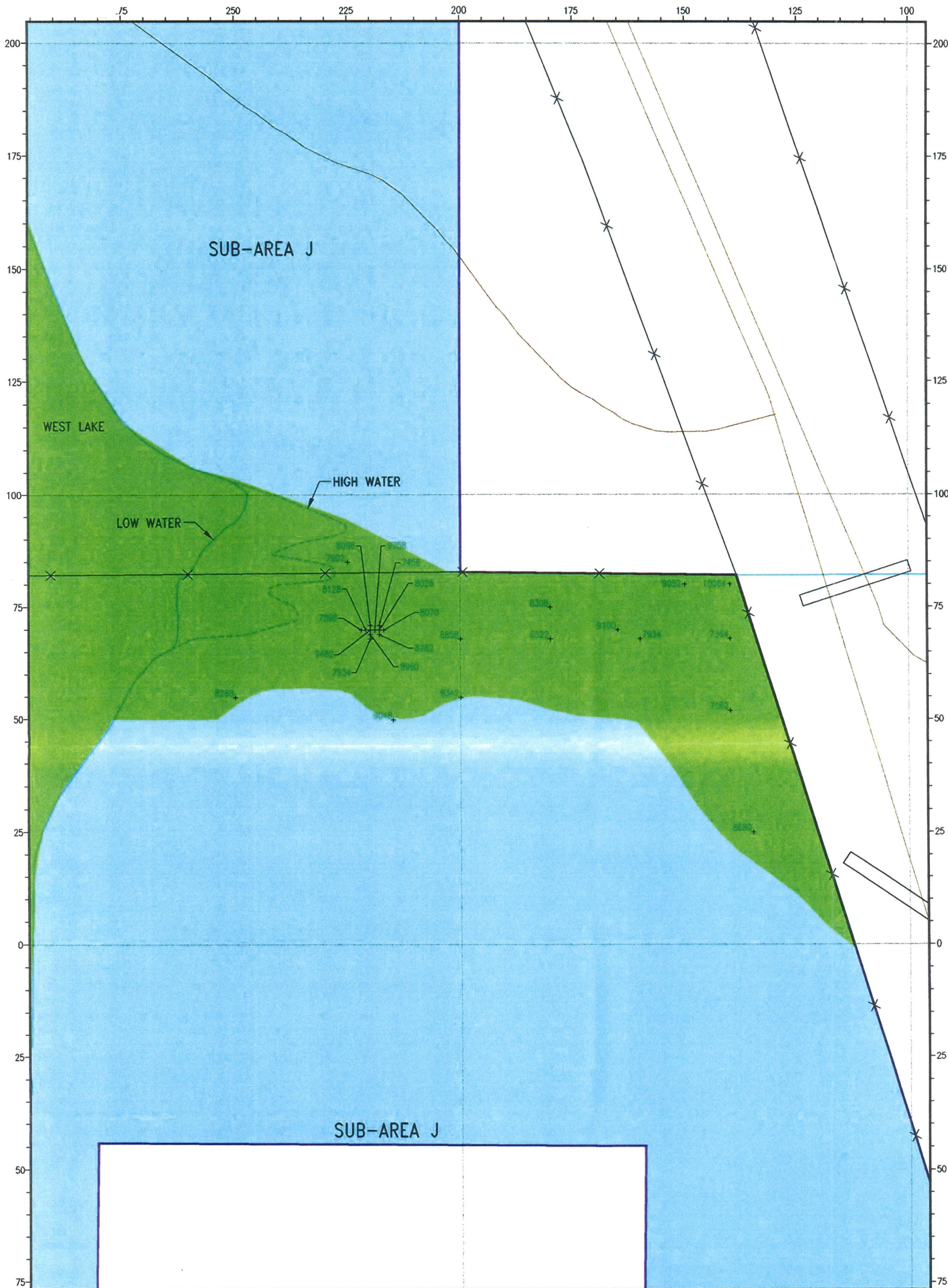
BACKGROUND NOT SUBTRACTED

REVIEWED BY:

William J. Rhodes

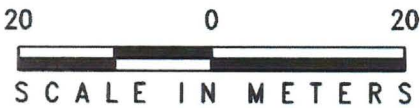
DATE: 4-16-97

FILE: AJAADEPTH



NOTES:

INSTRUMENT: LUDLUM 2221, UNSHIELDED 3" X 1/2" NaI DETECTOR
BACKGROUND: 7920 CPM



LEGEND

- UNAFECTED AREA (PHASE II)
- AFFECTED AREA (PHASE II)

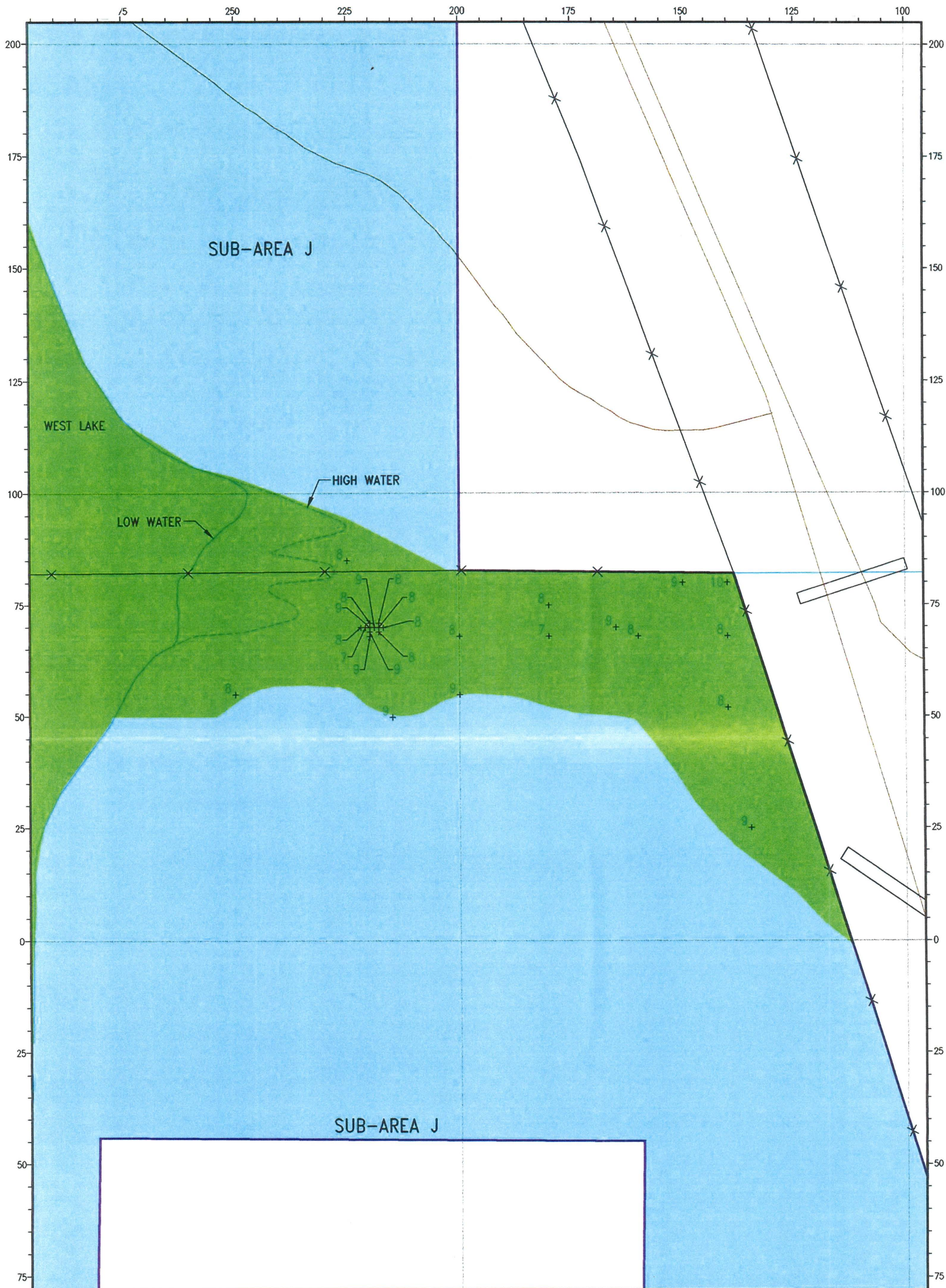


CIMARRON CORPORATION

CIMARRON FACILITY
PHASE II - SUB-AREA J
POST REMEDIATION AFFECTED AREA
CONFIRMATORY GAMMA SURVEY (1997)

REV.	DESCRIPTION	DRWN BY:	CHK'D BY:	APP'D BY:	DATE
0	DRAWING ISSUED.	JE	RS	JK	8/20/97

DRWN. BY: JE	DATE: 7/9/97	SCALE: AS SHOWN
JOB NO.	DRAWING NO. 97POAJ3D-CONF-0	REV. 0



NOTES:

READINGS ARE IN MICRO-R/Hr. ($\mu\text{R}/\text{Hr.}$)

INSTRUMENT: LUDLUM MICRO-R METER
MODEL NO.: 19
BACKGROUND: 7 $\mu\text{R}/\text{Hr.}$

20 0 20
SCALE IN METERS



LEGEND

- UNAFECTED AREA (PHASE II)
- AFFECTED AREA (PHASE II)

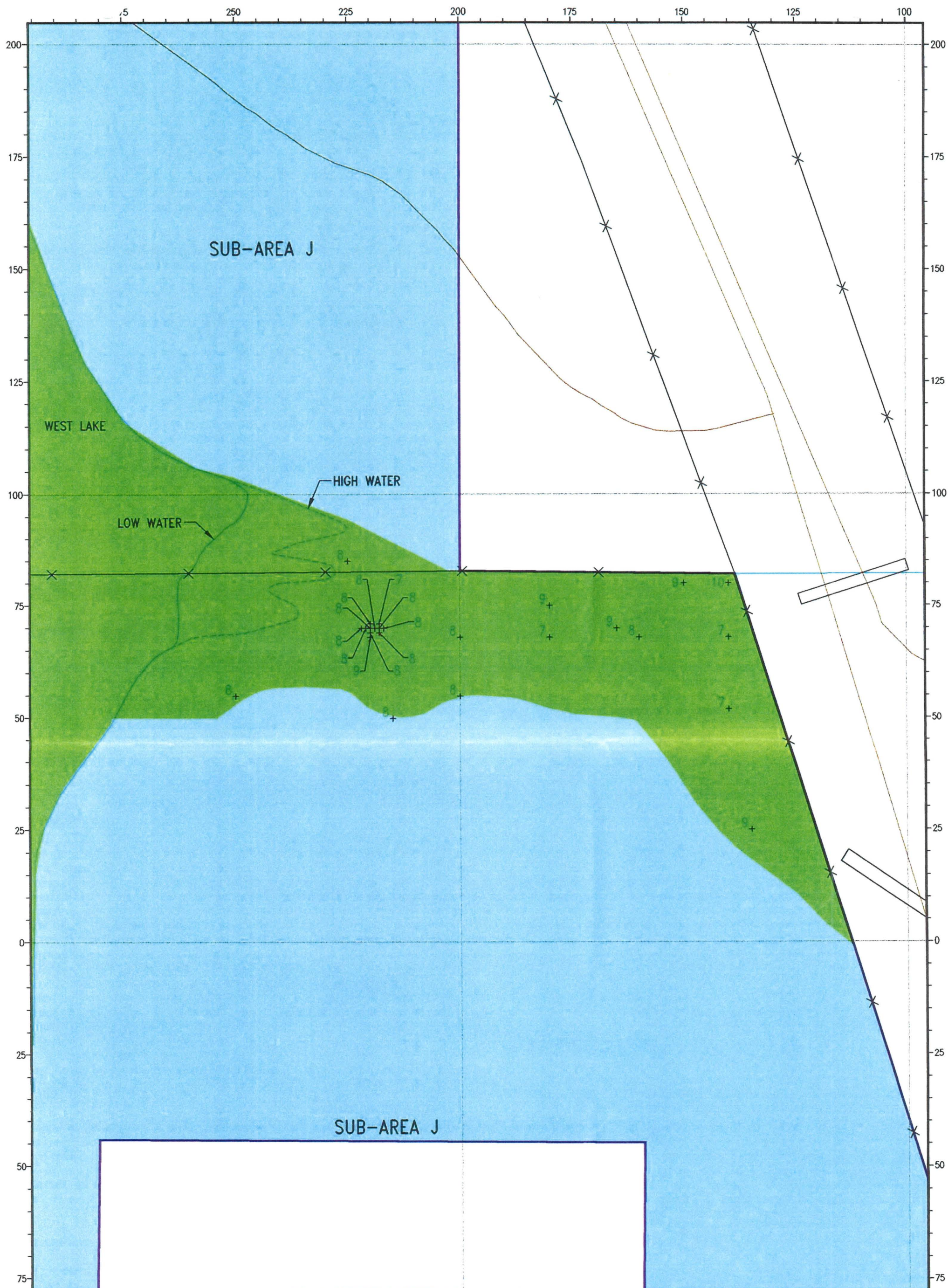


CIMARRON CORPORATION

**CIMARRON FACILITY
PHASE II - SUB-AREA J
POST REMEDIATION AFFECTED AREA
CONFIRMATORY MICRO-R SURVEY (1997)
AT LAND SURFACE**

REV.	DESCRIPTION	DRWN BY:	CK'D BY:	APP'D BY:	DATE
0	DRAWING ISSUED.	JE	RS	JK	8/20/97

DRWN BY: JE	DATE: 7/9/97	SCALE: AS SHOWN
JOB NO.	DRAWING NO. 97POAJUR-CONF-0	REV. 0



NOTES:

READINGS ARE IN MICRO-R/Hr. ($\mu\text{R}/\text{Hr.}$)

INSTRUMENT: LUDLUM MICRO-R METER
MODEL NO.: 19
BACKGROUND: $7 \mu\text{R}/\text{Hr.}$

LEGEND



UNAFFECTED AREA (PHASE II)



AFFECTED AREA (PHASE II)



CIMARRON CORPORATION

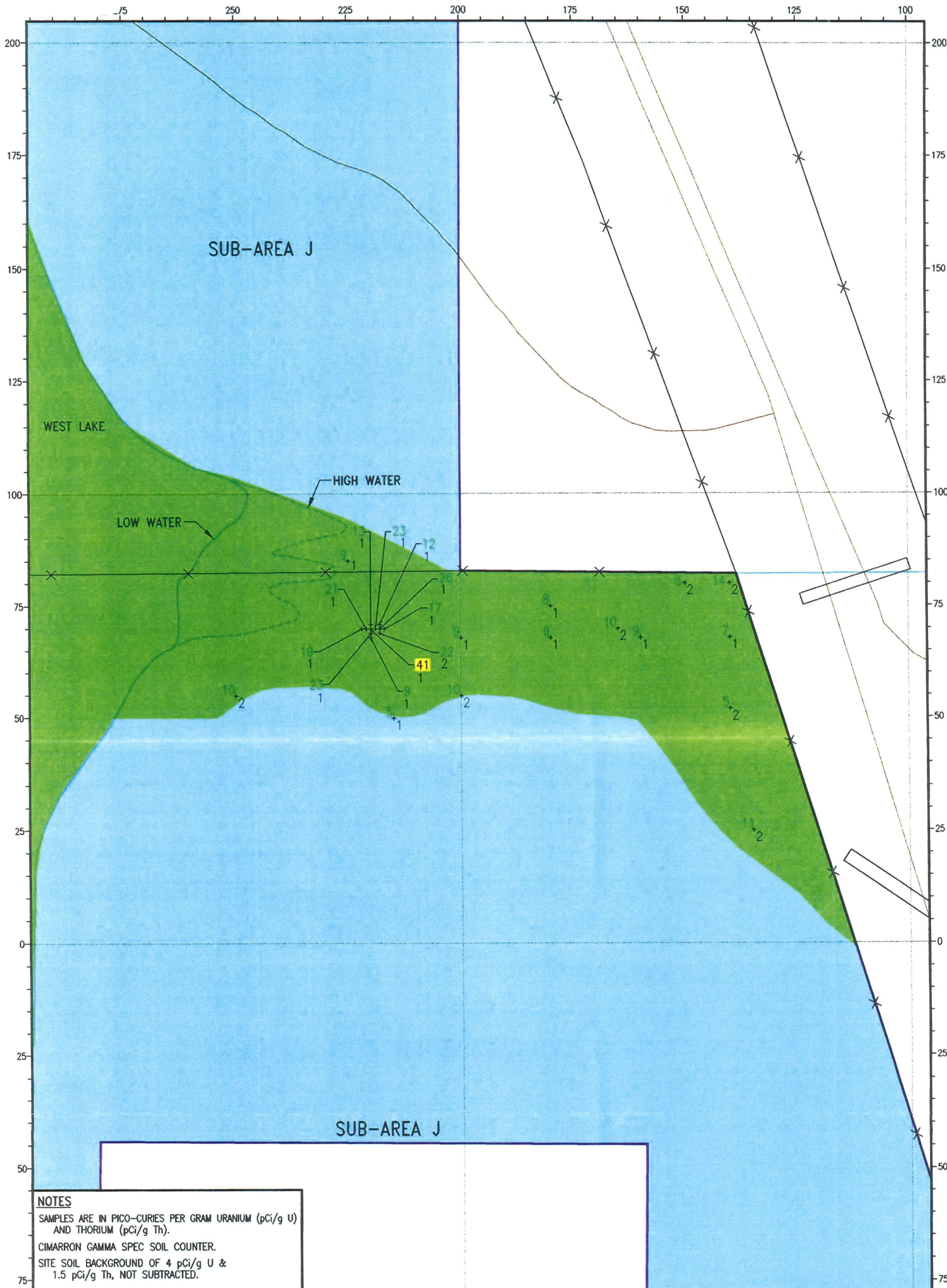
**CIMARRON FACILITY
PHASE II - SUB-AREA J
POST REMEDIATION AFFECTED AREA
CONFIRMATORY MICRO-R SURVEY (1997)
AT ONE METER ABOVE SURFACE**

20 0 20
SCALE IN METERS



REV.	DESCRIPTION	DRWN BY:	CHK'D BY:	APP'D BY:	DATE
0	DRAWING ISSUED.	JE	RS	JK	8/20/97

DRWN. BY: JE	DATE: 7/9/97	SCALE: AS SHOWN
JOB NO.	DRAWING NO. 97POAJUR-CONF-1	REV. 0



NOTES

SAMPLES ARE IN PICO-CURIES PER GRAM URANIUM (pCi/g U) AND THORIUM (pCi/g Th).

CIMARRON GAMMA SPEC SOIL COUNTER.

SITE SOIL BACKGROUND OF 4 pCi/g U & 1.5 pCi/g Th, NOT SUBTRACTED.

LEGEND

12+ URANIUM 1 - 30 pCi/g U -+ URANIUM HIT ROCK, NO SAMPLE
31+ URANIUM > 30 pCi/g U
+1 THORIUM < 10 pCi/g Th + THORIUM HIT ROCK, NO SAMPLE

20 0 20

SCALE IN METERS



LEGEND

UNAFECTED AREA (PHASE II)
AFFECTED AREA (PHASE II)

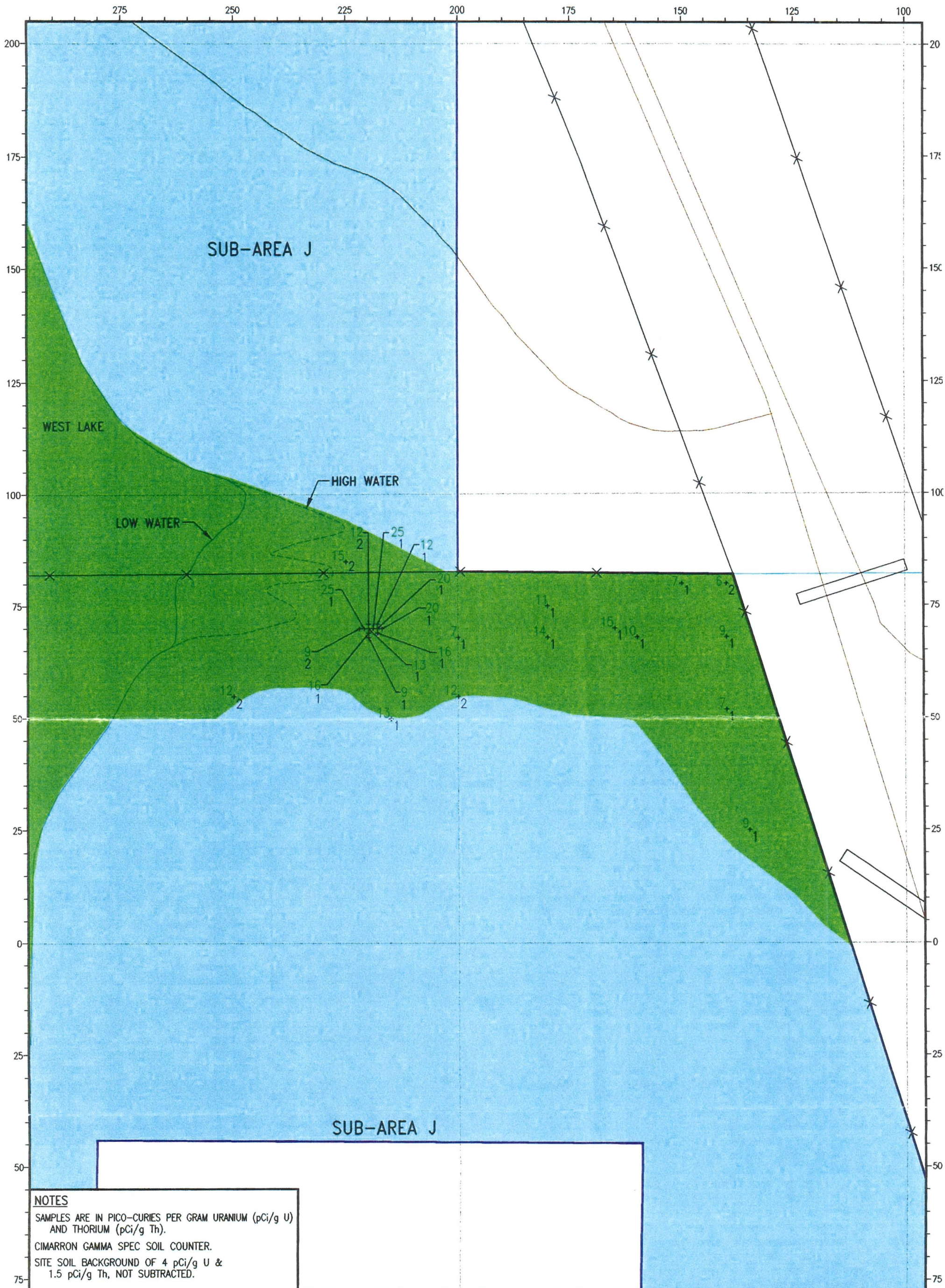


CIMARRON CORPORATION

CIMARRON FACILITY
PHASE II - SUB-AREA J
POST REMEDIATION AFFECTED AREA
CONFIRMATORY SOIL SAMPLE RESULTS (1997)
SOIL SAMPLE ALIQUOT: 0-6"

REV.	DESCRIPTION	DRWN BY:	CK'D BY:	APP'D BY:	DATE
0	DRAWING ISSUED.	JE	RS	JK	8/20/97

DRWN BY	JE	DATE	7/9/97	SCALE	AS SHOWN
JOB NO.		DRAWING NO.	97POAJSS-CONF-0	REV.	0



NOTES
SAMPLES ARE IN PICO-CURIES PER GRAM URANIUM (pCi/g U) AND THORIUM (pCi/g Th).
CIMARRON GAMMA SPEC SOIL COUNTER.
SITE SOIL BACKGROUND OF 4 pCi/g U & 1.5 pCi/g Th, NOT SUBTRACTED.

LEGEND
12+ URANIUM 1 - 30 pCi/g U -+ URANIUM HIT ROCK, NO SAMPLE
31+ URANIUM > 30 pCi/g U
+1 THORIUM < 10 pCi/g Th +- THORIUM HIT ROCK, NO SAMPLE

LEGEND
UNAFFECTED AREA (PHASE II)
AFFECTED AREA (PHASE II)

CIMARRON CORPORATION

CIMARRON FACILITY
PHASE II - SUB-AREA J
POST REMEDIATION AFFECTED AREA
CONFIRMATORY SOIL SAMPLE RESULTS (1997)
SOIL SAMPLE ALIQUOT: 6"-1"

REV.	DESCRIPTION	DRWN BY:	CK'D BY:	APP'D BY:	DATE
0	DRAWING ISSUED.	JE	RS	JK	8/20/97

DRWN. BY: JE	DATE: 7/9/97	SCALE: AS SHOWN
JOB NO.	DRAWING NO. 97POAJSS-CONF-1	REV. 0