

CIMARRON CORPORATION - CIMARRON FACILITY

SUB-AREA "H" - SURFACE

TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) ²
1	10	-1.76	3.10
2	12	0.24	0.06
3	13	1.24	1.53
4	4	-7.76	60.24
5	4	-7.76	60.24
6	5	-6.76	45.72
7	11	-0.76	0.58
8	11	-0.76	0.58
9	7	-4.76	22.67
10	7	-4.76	22.67
11	6	-5.76	33.20
12	14	2.24	5.01
13	12	0.24	0.06
14	14	2.24	5.01
15	9	-2.76	7.63
16	24	12.24	149.77
17	16	4.24	17.96
18	30	18.24	332.63
19	13	1.24	1.53
20	8	-3.76	14.15
21	11	-0.76	0.58
22	12	0.24	0.06
23	24	12.24	149.77
24	20	8.24	67.87
25	20	8.24	67.87
26	18	6.24	38.92
27	26	14.24	202.73
28	14	2.24	5.01
29	24	12.24	149.77
30	15	3.24	10.49
31	27	15.24	232.20
32	13	1.24	1.53
33	22	10.24	104.82
34	21	9.24	85.35
35	23	11.24	126.30
36	10	-1.76	3.10
37	13	1.24	1.53
38	22	10.24	104.82
39	13	1.24	1.53
40	22	10.24	104.82
41	21	9.24	85.35
42	32	20.24	409.59
43	11	-0.76	0.58
44	20	8.24	67.87
45	9	-2.76	7.63
46	18	6.24	38.92
47	27	15.24	232.20
48	20	8.24	67.87
49	26	14.24	202.73
50	15	3.24	10.49
	650		572.66
	638		922.94
	484		891.57
	522		881.67
	499		853.71
	160		356.68
	0		0.00
	0		0.00
	3752		7845.89
	Sum(n)		Sum(n-N) ²

No. of Samples (x) : 319

COUNT TIME: 5 MINUTES

Sample Mean (N) = Sum(n) ÷ (x)

Sample Mean (N) : 11.76

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

Standard Deviation: 5.0

2 Std Deviations: 9.9

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

(df) = 1.652

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

(Aμ) = 12.22

GUIDELINE VALUE: 30

Acceptable Level: 34.0

(30 PLUS BACKGROUND)

pCi/gU TOTAL U

pCi/gU TOTAL U

pCi/gU TOTAL U

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) 400 is (B) 1.649 95%

(df) low value(Y) 120 is (A) 1.658 95%

Desired value(df) (X) 318 is calculated as follow:

EXP[(Ln(B) - Ln(A)) ÷ (Z - Y)] (X - Y) + Ln(A)

The (df) value for (X) 318 1.652 95%

PERFORMED BY: *L. Smith*

DATE: 10-7-58

REVIEWED BY: *W. A. Royce*

DATE: 10-7-98

CIMARRON CORPORATION - CIMARRON FACILITY

SUB-AREA THP - SURFACE

TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) ²
51	14	2.24	5.01
52	14	2.24	5.01
53	15	3.24	10.49
54	14	2.24	5.01
55	16	4.24	17.96
56	9	-2.76	7.63
57	10	-1.76	3.10
58	10	-1.76	3.10
59	9	-2.76	7.63
60	12	0.24	0.06
61	13	1.24	1.53
62	9	-2.76	7.63
63	12	0.24	0.06
64	16	4.24	17.96
65	13	1.24	1.53
66	14	2.24	5.01
67	14	2.24	5.01
68	12	0.24	0.06
69	8	-3.76	14.15
70	7	-4.76	22.67
71	18	6.24	38.92
72	13	1.24	1.53
73	11	-0.76	0.58
74	17	5.24	27.44
75	18	6.24	38.92
76	17	5.24	27.44
77	8	-3.76	14.15
78	13	1.24	1.53
79	17	5.24	27.44
80	12	0.24	0.06
81	15	3.24	10.49
82	13	1.24	1.53
83	12	0.24	0.06
84	16	4.24	17.96
85	17	5.24	27.44
86	13	1.24	1.53
87	13	1.24	1.53
88	16	4.24	17.96
89	11	-0.76	0.58
90	15	3.24	10.49
91	20	8.24	67.87
92	17	5.24	27.44
93	14	2.24	5.01
94	14	2.24	5.01
95	5	-6.76	45.72
96	11	-0.76	0.58
97	10	-1.76	3.10
98	13	1.24	1.53
99	11	-0.76	0.58
100	9	-2.76	7.63
	650		572.66
	Sum(n)		Sum(n-N) ²

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) ²
101	10	-1.76	3.10
102	10	-1.76	3.10
103	18	6.24	38.92
104	12	0.24	0.06
105	6	-5.76	33.20
106	11	-0.76	0.58
107	13	1.24	1.53
108	6	-5.76	33.20
109	12	0.24	0.06
110	8	-3.76	14.15
111	17	5.24	27.44
112	18	6.24	38.92
113	6	-5.76	33.20
114	11	-0.76	0.58
115	6	-5.76	33.20
116	12	0.24	0.06
117	12	0.24	0.06
118	10	-1.76	3.10
119	10	-1.76	3.10
120	18	6.24	38.92
121	17	5.24	27.44
122	16	4.24	17.96
123	18	6.24	38.92
124	20	8.24	67.87
125	7	-4.76	22.67
126	16	4.24	17.96
127	16	4.24	17.96
128	17	5.24	27.44
129	9	-2.76	7.63
130	6	-5.76	33.20
131	19	7.24	52.39
132	14	2.24	5.01
133	20	8.24	67.87
134	18	6.24	38.92
135	15	3.24	10.49
136	16	4.24	17.96
137	7	-4.76	22.67
138	13	1.24	1.53
139	10	-1.76	3.10
140	17	5.24	27.44
141	14	2.24	5.01
142	11	-0.76	0.58
143	13	1.24	1.53
144	19	7.24	52.39
145	8	-3.76	14.15
146	11	-0.76	0.58
147	12	0.24	0.06
148	10	-1.76	3.10
149	9	-2.76	7.63
150	14	2.24	5.01
	638		922.94
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY

SUB-AREA "H" - SURFACE

TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE

n = pCi/g TOTAL U			
Number	n	(n-N)	(n-N) ²
151	18	6.24	38.92
152	14	2.24	5.01
153	18	6.24	38.92
154	14	2.24	5.01
155	15	3.24	10.49
156	14	2.24	5.01
157	13	1.24	1.53
158	12	0.24	0.06
159	15	3.24	10.49
160	16	4.24	17.96
161	7	-4.76	22.67
162	12	0.24	0.06
163	8	-3.76	14.15
164	10	-1.76	3.10
165	8	-3.76	14.15
166	9	-2.76	7.63
167	9	-2.76	7.63
168	6	-5.76	33.20
169	4	-7.76	60.24
170	9	-2.76	7.63
171	14	2.24	5.01
172	8	-3.76	14.15
173	10	-1.76	3.10
174	10	-1.76	3.10
175	7	-4.76	22.67
176	5	-6.76	45.72
177	12	0.24	0.06
178	7	-4.76	22.67
179	8	-3.76	14.15
180	17	5.24	27.44
181	8	-3.76	14.15
182	9	-2.76	7.63
183	5	-6.76	45.72
184	5	-6.76	45.72
185	5	-6.76	45.72
186	9	-2.76	7.63
187	7	-4.76	22.67
188	10	-1.76	3.10
189	10	-1.76	3.10
190	5	-6.76	45.72
191	7	-4.76	22.67
192	4	-7.76	60.24
193	13	1.24	1.53
194	8	-3.76	14.15
195	10	-1.76	3.10
196	6	-5.76	33.20
197	10	-1.76	3.10
198	10	-1.76	3.10
199	8	-3.76	14.15
200	6	-5.76	33.20
	484		891.57
	Sum(n)		Sum(n-N) ²

n = pCi/g TOTAL U			
Number	n	(n-N)	(n-N) ²
201	7	-4.76	22.67
202	7	-4.76	22.67
203	1	-10.76	115.82
204	9	-2.76	7.63
205	7	-4.76	22.67
206	10	-1.76	3.10
207	13	1.24	1.53
208	9	-2.76	7.63
209	11	-0.76	0.58
210	9	-2.76	7.63
211	9	-2.76	7.63
212	11	-0.76	0.58
213	15	3.24	10.49
214	9	-2.76	7.63
215	8	-3.76	14.15
216	6	-5.76	33.20
217	7	-4.76	22.67
218	8	-3.76	14.15
219	14	2.24	5.01
220	7	-4.76	22.67
221	7	-4.76	22.67
222	4	-7.76	60.24
223	17	5.24	27.44
224	14	2.24	5.01
225	8	-3.76	14.15
226	12	0.24	0.06
227	11	-0.76	0.58
228	10	-1.76	3.10
229	15	3.24	10.49
230	12	0.24	0.06
231	8	-3.76	14.15
232	13	1.24	1.53
233	17	5.24	27.44
234	20	8.24	67.87
235	11	-0.76	0.58
236	5	-6.76	45.72
237	11	-0.76	0.58
238	10	-1.76	3.10
239	14	2.24	5.01
240	12	0.24	0.06
241	17	5.24	27.44
242	6	-5.76	33.20
243	9	-2.76	7.63
244	9	-2.76	7.63
245	11	-0.76	0.58
246	13	1.24	1.53
247	14	2.24	5.01
248	5	-6.76	45.72
249	21	9.24	85.35
250	9	-2.76	7.63
	522		881.67
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY

SUB-AREA "H" - SURFACE

TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE

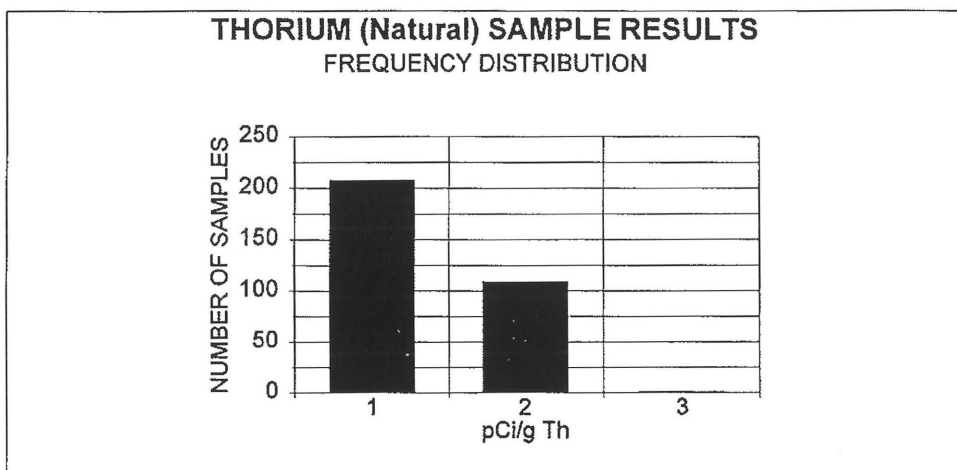
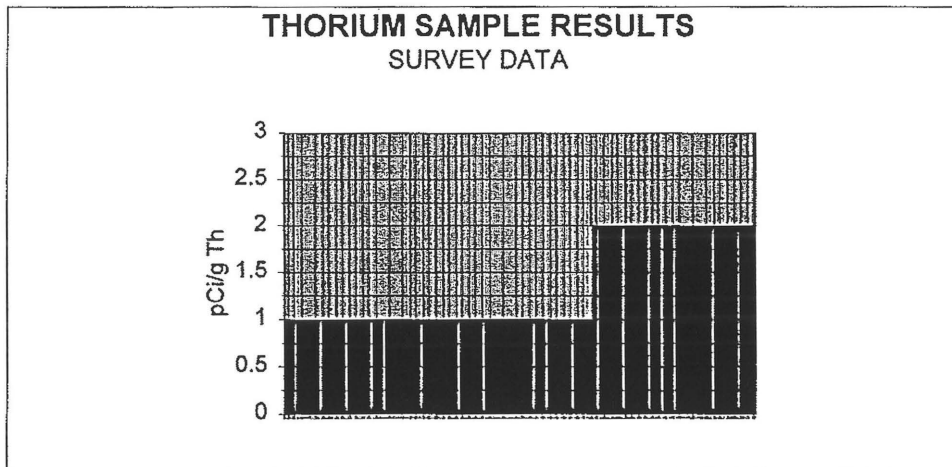
n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) ²
251	18	6.24	38.92
252	10	-1.76	3.10
253	6	-5.76	33.20
254	15	3.24	10.49
255	20	8.24	67.87
256	15	3.24	10.49
257	15	3.24	10.49
258	10	-1.76	3.10
259	10	-1.76	3.10
260	8	-3.76	14.15
261	5	-6.76	45.72
262	9	-2.76	7.63
263	10	-1.76	3.10
264	7	-4.76	22.67
265	7	-4.76	22.67
266	10	-1.76	3.10
267	11	-0.76	0.58
268	13	1.24	1.53
269	13	1.24	1.53
270	9	-2.76	7.63
271	17	5.24	27.44
272	11	-0.76	0.58
273	15	3.24	10.49
274	12	0.24	0.06
275	12	0.24	0.06
276	6	-5.76	33.20
277	7	-4.76	22.67
278	12	0.24	0.06
279	11	-0.76	0.58
280	9	-2.76	7.63
281	14	2.24	5.01
282	10	-1.76	3.10
283	10	-1.76	3.10
284	8	-3.76	14.15
285	10	-1.76	3.10
286	6	-5.76	33.20
287	4	-7.76	60.24
288	12	0.24	0.06
289	5	-6.76	45.72
290	9	-2.76	7.63
291	14	2.24	5.01
292	8	-3.76	14.15
293	2	-9.76	95.29
294	6	-5.76	33.20
295	8	-3.76	14.15
296	7	-4.76	22.67
297	6	-5.76	33.20
298	13	1.24	1.53
299	7	-4.76	22.67
300	7	-4.76	22.67
	499		853.71
	Sum(n)		Sum(n-N) ²

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) ²
301	6	-5.76	33.20
302	5	-6.76	45.72
303	15	3.24	10.49
304	6	-5.76	33.20
305	11	-0.76	0.58
306	8	-3.76	14.15
307	11	-0.76	0.58
308	9	-2.76	7.63
309	10	-1.76	3.10
310	12	0.24	0.06
311	8	-3.76	14.15
312	10	-1.76	3.10
313	10	-1.76	3.10
314	9	-2.76	7.63
315	4	-7.76	60.24
316	4	-7.76	60.24
317	8	-3.76	14.15
318	7	-4.76	22.67
319	7	-4.76	22.67
320		0.00	0.00
321		0.00	0.00
322		0.00	0.00
323		0.00	0.00
324		0.00	0.00
325		0.00	0.00
326		0.00	0.00
327		0.00	0.00
328		0.00	0.00
329		0.00	0.00
330		0.00	0.00
331		0.00	0.00
332		0.00	0.00
333		0.00	0.00
334		0.00	0.00
335		0.00	0.00
336		0.00	0.00
337		0.00	0.00
338		0.00	0.00
339		0.00	0.00
340		0.00	0.00
341		0.00	0.00
342		0.00	0.00
343		0.00	0.00
344		0.00	0.00
345		0.00	0.00
346		0.00	0.00
347		0.00	0.00
348		0.00	0.00
349		0.00	0.00
350		0.00	0.00
	160		356.68
	Sum(n)		Sum(n-N) ²

**PHASE II, SUB-AREA "H" - SURFACE
 DRAINAGE
 CIMARRON SOIL COUNTER
 THORIUM (NAT) SAMPLE RESULTS
 SITE BACKGROUND OF 1 pCi/g NOT SUBTRACTED**



NUMBER OF SAMPLES	319
AVERAGE SAMPLES	1
MINIMUM SAMPLE	1
MAXIMUM SAMPLES	3
STANDARD DEVIATION	0.5

CIMARRON CORPORATION - CIMARRON FACILITY

SUB-AREA "H" SURFACE

TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE

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

Number	n	(n-N)	(n-N) ²
1	2	0.65	0.43
2	2	0.65	0.43
3	1	-0.35	0.12
4	2	0.65	0.43
5	2	0.65	0.43
6	1	-0.35	0.12
7	1	-0.35	0.12
8	1	-0.35	0.12
9	1	-0.35	0.12
10	2	0.65	0.43
11	1	-0.35	0.12
12	1	-0.35	0.12
13	1	-0.35	0.12
14	1	-0.35	0.12
15	1	-0.35	0.12
16	2	0.65	0.43
17	1	-0.35	0.12
18	2	0.65	0.43
19	1	-0.35	0.12
20	1	-0.35	0.12
21	1	-0.35	0.12
22	1	-0.35	0.12
23	1	-0.35	0.12
24	2	0.65	0.43
25	2	0.65	0.43
26	1	-0.35	0.12
27	2	0.65	0.43
28	1	-0.35	0.12
29	2	0.65	0.43
30	1	-0.35	0.12
31	2	0.65	0.43
32	1	-0.35	0.12
33	1	-0.35	0.12
34	1	-0.35	0.12
35	1	-0.35	0.12
36	1	-0.35	0.12
37	1	-0.35	0.12
38	1	-0.35	0.12
39	1	-0.35	0.12
40	1	-0.35	0.12
41	1	-0.35	0.12
42	2	0.65	0.43
43	1	-0.35	0.12
44	1	-0.35	0.12
45	1	-0.35	0.12
46	1	-0.35	0.12
47	1	-0.35	0.12
48	1	-0.35	0.12
49	2	0.65	0.43
50	1	-0.35	0.12
	64		10.311
	85		18.697
	76		13.960
	55		7.574
	67		11.223
	19		2.300
	0		0.000
	0		0.000
	430		74.376
	Sum(n)		Sum(n-N) ²

No. of Samples (x) : 319

COUNT TIME: 5 MINUTES

Sample Mean (N) = Sum(n) ÷ (x)

Sample Mean (N) : 1.35

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

Standard Deviation: 0.48

2 Std Deviations: 0.97

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

(df) = 1.652

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

(Aμ) = 1.39 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) 400 is (B) 1.649 95%

(df) low value(Y) 120 is (A) 1.658 95%

Desired value(df) (X) 318 is calculated as follow:

$EXP[(Ln(B) - Ln(A)) ÷ (Z - Y)] (X - Y) + Ln(A)$

The (df) value for (X) 318 1.652 95%

PERFORMED BY: *L. Smith*

DATE: 10-7-98

REVIEWED BY: *W. G. Rogers*

DATE: 10-7-98

CIMARRON CORPORATION - CIMARRON FACILITY

SUB-AREA "H" - SURFACE

TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE

n = pCi/g Th (NAT)

Number	n	(n-N)	(n-N) ²
51	1	-0.35	0.12
52	1	-0.35	0.12
53	1	-0.35	0.12
54	1	-0.35	0.12
55	1	-0.35	0.12
56	1	-0.35	0.12
57	1	-0.35	0.12
58	1	-0.35	0.12
59	2	0.65	0.43
60	1	-0.35	0.12
61	1	-0.35	0.12
62	1	-0.35	0.12
63	1	-0.35	0.12
64	1	-0.35	0.12
65	1	-0.35	0.12
66	1	-0.35	0.12
67	1	-0.35	0.12
68	1	-0.35	0.12
69	1	-0.35	0.12
70	2	0.65	0.43
71	1	-0.35	0.12
72	1	-0.35	0.12
73	1	-0.35	0.12
74	1	-0.35	0.12
75	1	-0.35	0.12
76	1	-0.35	0.12
77	1	-0.35	0.12
78	2	0.65	0.43
79	1	-0.35	0.12
80	2	0.65	0.43
81	2	0.65	0.43
82	1	-0.35	0.12
83	2	0.65	0.43
84	1	-0.35	0.12
85	2	0.65	0.43
86	1	-0.35	0.12
87	1	-0.35	0.12
88	1	-0.35	0.12
89	1	-0.35	0.12
90	2	0.65	0.43
91	2	0.65	0.43
92	2	0.65	0.43
93	1	-0.35	0.12
94	2	0.65	0.43
95	1	-0.35	0.12
96	1	-0.35	0.12
97	2	0.65	0.43
98	1	-0.35	0.12
99	2	0.65	0.43
100	2	0.65	0.43
	64		10.311
	Sum(n)		Sum(n-N) ²

n = pCi/g Th (NAT)

Number	n	(n-N)	(n-N) ²
101	1	-0.35	0.12
102	2	0.65	0.43
103	2	0.65	0.43
104	2	0.65	0.43
105	2	0.65	0.43
106	2	0.65	0.43
107	1	-0.35	0.12
108	2	0.65	0.43
109	1	-0.35	0.12
110	2	0.65	0.43
111	2	0.65	0.43
112	1	-0.35	0.12
113	1	-0.35	0.12
114	1	-0.35	0.12
115	2	0.65	0.43
116	1	-0.35	0.12
117	1	-0.35	0.12
118	1	-0.35	0.12
119	2	0.65	0.43
120	1	-0.35	0.12
121	2	0.65	0.43
122	1	-0.35	0.12
123	2	0.65	0.43
124	2	0.65	0.43
125	2	0.65	0.43
126	2	0.65	0.43
127	1	-0.35	0.12
128	2	0.65	0.43
129	1	-0.35	0.12
130	2	0.65	0.43
131	2	0.65	0.43
132	1	-0.35	0.12
133	1	-0.35	0.12
134	2	0.65	0.43
135	3	1.65	2.73
136	2	0.65	0.43
137	2	0.65	0.43
138	2	0.65	0.43
139	2	0.65	0.43
140	2	0.65	0.43
141	2	0.65	0.43
142	2	0.65	0.43
143	2	0.65	0.43
144	2	0.65	0.43
145	1	-0.35	0.12
146	2	0.65	0.43
147	2	0.65	0.43
148	2	0.65	0.43
149	2	0.65	0.43
150	2	0.65	0.43
	85		18.697
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY

SUB-AREA "H" - SURFACE

TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
151	2	0.65	0.43
152	2	0.65	0.43
153	2	0.65	0.43
154	2	0.65	0.43
155	2	0.65	0.43
156	2	0.65	0.43
157	2	0.65	0.43
158	2	0.65	0.43
159	2	0.65	0.43
160	2	0.65	0.43
161	2	0.65	0.43
162	2	0.65	0.43
163	1	-0.35	0.12
164	2	0.65	0.43
165	1	-0.35	0.12
166	1	-0.35	0.12
167	2	0.65	0.43
168	2	0.65	0.43
169	1	-0.35	0.12
170	1	-0.35	0.12
171	2	0.65	0.43
172	2	0.65	0.43
173	1	-0.35	0.12
174	2	0.65	0.43
175	1	-0.35	0.12
176	1	-0.35	0.12
177	1	-0.35	0.12
178	1	-0.35	0.12
179	2	0.65	0.43
180	1	-0.35	0.12
181	2	0.65	0.43
182	2	0.65	0.43
183	1	-0.35	0.12
184	1	-0.35	0.12
185	1	-0.35	0.12
186	1	-0.35	0.12
187	2	0.65	0.43
188	2	0.65	0.43
189	1	-0.35	0.12
190	1	-0.35	0.12
191	1	-0.35	0.12
192	1	-0.35	0.12
193	2	0.65	0.43
194	1	-0.35	0.12
195	1	-0.35	0.12
196	1	-0.35	0.12
197	2	0.65	0.43
198	2	0.65	0.43
199	1	-0.35	0.12
200	1	-0.35	0.12
	76		13.960
	Sum(n)		Sum(n-N) ²

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
201	1	-0.35	0.12
202	1	-0.35	0.12
203	1	-0.35	0.12
204	1	-0.35	0.12
205	1	-0.35	0.12
206	1	-0.35	0.12
207	1	-0.35	0.12
208	1	-0.35	0.12
209	1	-0.35	0.12
210	1	-0.35	0.12
211	1	-0.35	0.12
212	1	-0.35	0.12
213	1	-0.35	0.12
214	1	-0.35	0.12
215	1	-0.35	0.12
216	1	-0.35	0.12
217	1	-0.35	0.12
218	1	-0.35	0.12
219	1	-0.35	0.12
220	1	-0.35	0.12
221	1	-0.35	0.12
222	1	-0.35	0.12
223	1	-0.35	0.12
224	1	-0.35	0.12
225	1	-0.35	0.12
226	1	-0.35	0.12
227	1	-0.35	0.12
228	1	-0.35	0.12
229	1	-0.35	0.12
230	1	-0.35	0.12
231	1	-0.35	0.12
232	1	-0.35	0.12
233	1	-0.35	0.12
234	1	-0.35	0.12
235	1	-0.35	0.12
236	1	-0.35	0.12
237	2	0.65	0.43
238	1	-0.35	0.12
239	1	-0.35	0.12
240	1	-0.35	0.12
241	1	-0.35	0.12
242	1	-0.35	0.12
243	1	-0.35	0.12
244	1	-0.35	0.12
245	2	0.65	0.43
246	2	0.65	0.43
247	2	0.65	0.43
248	1	-0.35	0.12
249	2	0.65	0.43
250	1	-0.35	0.12
	55		7.574
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY

SUB-AREA "H" - SURFACE

TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE

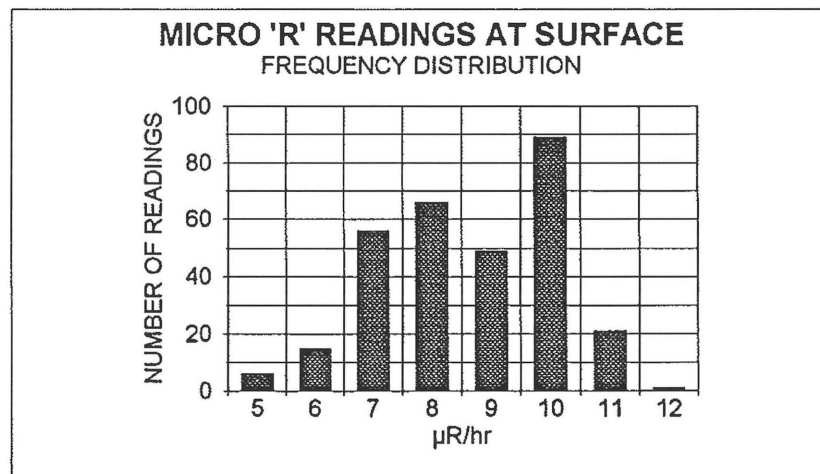
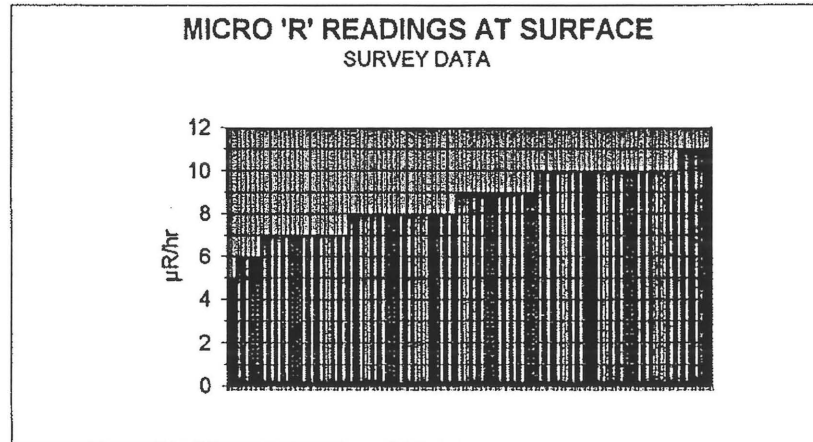
n = pCi/g Th (NAT)

Number	n	(n-N)	(n-N) ²
251	2	0.65	0.43
252	2	0.65	0.43
253	2	0.65	0.43
254	1	-0.35	0.12
255	2	0.65	0.43
256	2	0.65	0.43
257	1	-0.35	0.12
258	1	-0.35	0.12
259	2	0.65	0.43
260	1	-0.35	0.12
261	2	0.65	0.43
262	1	-0.35	0.12
263	2	0.65	0.43
264	2	0.65	0.43
265	2	0.65	0.43
266	1	-0.35	0.12
267	2	0.65	0.43
268	1	-0.35	0.12
269	1	-0.35	0.12
270	2	0.65	0.43
271	2	0.65	0.43
272	2	0.65	0.43
273	1	-0.35	0.12
274	1	-0.35	0.12
275	1	-0.35	0.12
276	1	-0.35	0.12
277	1	-0.35	0.12
278	1	-0.35	0.12
279	1	-0.35	0.12
280	1	-0.35	0.12
281	1	-0.35	0.12
282	1	-0.35	0.12
283	2	0.65	0.43
284	1	-0.35	0.12
285	1	-0.35	0.12
286	1	-0.35	0.12
287	1	-0.35	0.12
288	1	-0.35	0.12
289	1	-0.35	0.12
290	2	0.65	0.43
291	2	0.65	0.43
292	1	-0.35	0.12
293	1	-0.35	0.12
294	1	-0.35	0.12
295	1	-0.35	0.12
296	1	-0.35	0.12
297	1	-0.35	0.12
298	1	-0.35	0.12
299	1	-0.35	0.12
300	1	-0.35	0.12
	67		11.223
	Sum(n)		Sum(n-N) ²

n = pCi/g Th (NAT)

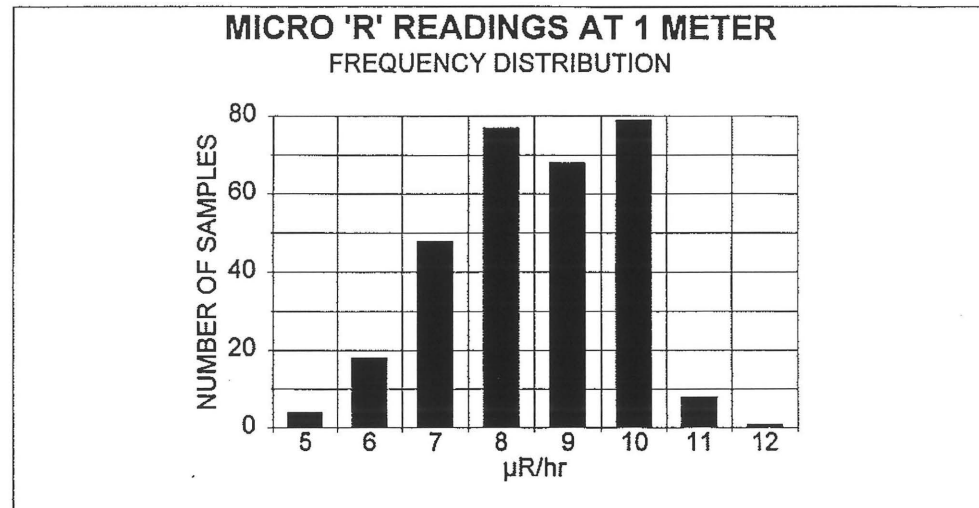
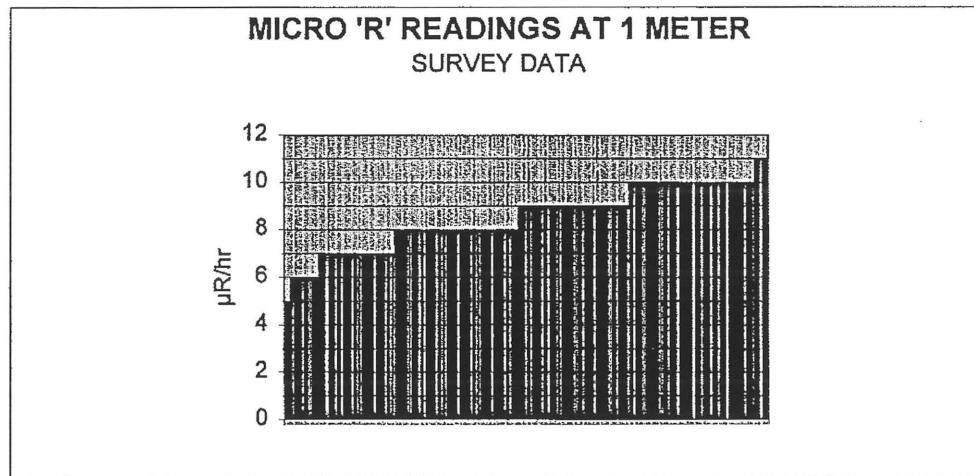
Number	n	(n-N)	(n-N) ²
301	1	-0.35	0.12
302	1	-0.35	0.12
303	1	-0.35	0.12
304	1	-0.35	0.12
305	1	-0.35	0.12
306	1	-0.35	0.12
307	1	-0.35	0.12
308	1	-0.35	0.12
309	1	-0.35	0.12
310	1	-0.35	0.12
311	1	-0.35	0.12
312	1	-0.35	0.12
313	1	-0.35	0.12
314	1	-0.35	0.12
315	1	-0.35	0.12
316	1	-0.35	0.12
317	1	-0.35	0.12
318	1	-0.35	0.12
319	1	-0.35	0.12
320		0.00	0.00
321		0.00	0.00
322		0.00	0.00
323		0.00	0.00
324		0.00	0.00
325		0.00	0.00
326		0.00	0.00
327		0.00	0.00
328		0.00	0.00
329		0.00	0.00
330		0.00	0.00
331		0.00	0.00
332		0.00	0.00
333		0.00	0.00
334		0.00	0.00
335		0.00	0.00
336		0.00	0.00
337		0.00	0.00
338		0.00	0.00
339		0.00	0.00
340		0.00	0.00
341		0.00	0.00
342		0.00	0.00
343		0.00	0.00
344		0.00	0.00
345		0.00	0.00
346		0.00	0.00
347		0.00	0.00
348		0.00	0.00
349		0.00	0.00
350		0.00	0.00
	19		2.300
	Sum(n)		Sum(n-N) ²

**PHASE II, SUB-AREA "H" - SURFACE
DRAINAGE
MICRO 'R' READINGS AT SURFACE
LUDLUM MODEL 19, S/N111299
RESULTS IN $\mu\text{R/hr}$
SEPTEMBER 1998**



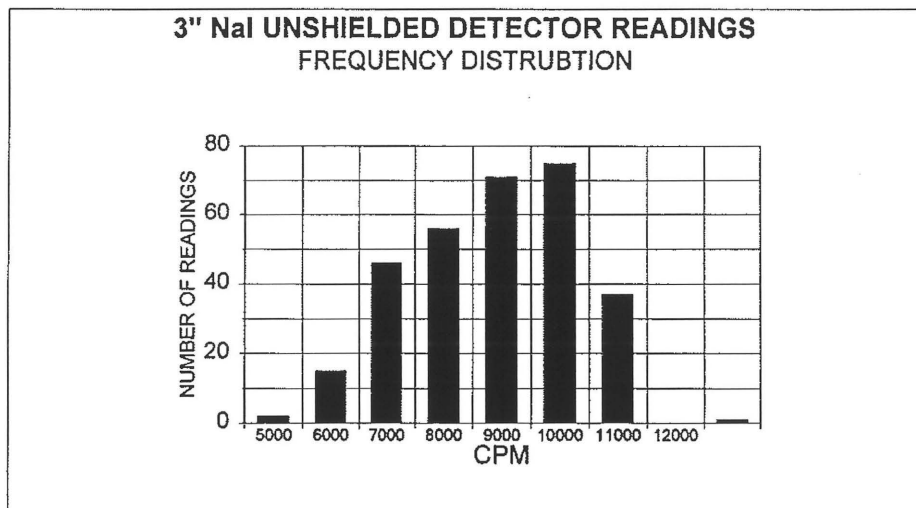
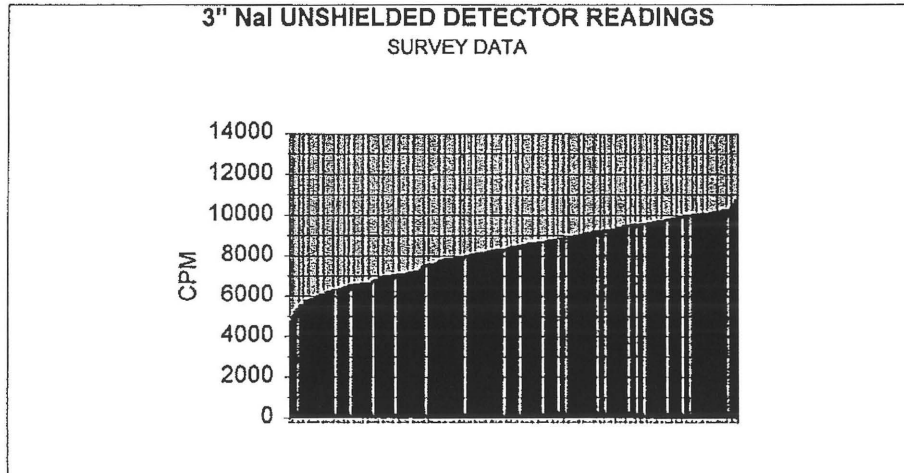
NUMBER OF READINGS	303
AVERAGE READING	9
MINIMUM READING	5
MAXIMUM READING	12
STANDARD DEVIATION	1

**PHASE II, SUB-AREA "H" - SURFACE
DRAINAGE
MICRO 'R' READINGS AT 1 METER ABOVE SURFACE
LUDLUM MODEL 19, S/N111299
RESULTS IN $\mu\text{R/hr}$
SEPTEMBER 1998**



NUMBER OF READINGS	303
AVERAGE READINGS	9
MINIMUM READING	5
MAXIMUM READING	12
STANDARD DEVIATION	1

**PHASE II, SUB-AREA "H" - SURFACE
DRAINAGE
'LUDLUM MODEL 2220, UNSHIELDED S/N 97264
BACKGROUND AVERAGE: 6244
SEPTEMBER 1998**



NUMBER OF READINGS	303
AVERAGE READING	8321
MINIMUM READING	4952
MAXIMUM READING	12620
STANDARD DEVIATION	1453

CIMARRON CORPORATION
CIMARRON FACILITY
SUB-AREA "H" - DRAINAGE

DATE: 08/13/98

LN #	GRID NUMBER	3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	pCi/g									
					0 - 6"		6" - 1'		1' - 2'		2' - 3'		3' - 4'	
					Total U	Th (Nat)	Total U	Th (Nat)	Total U	Th (Nat)	Total U	Th (Nat)	Total U	Th (Nat)
1	65E - 390N	6416	5	7	11	1	10	1	ROCK	ROCK				
2	75E - 415N	8544	10	9	12	1	18	1	23	1	14	1		
3	75E - 420E	8818	9	8	24	1	24	1	18	1	18	1	11	1
* 4	75E - 425N	4540	13	12	20	1	12	1	14	1	10	1	9	1
5	75E - 430N	7604	8	8	20	2	11	1	19	1	14	1	13	1
6	75E - 435N	8592	9	8	18	1	16	2	14	1	11	1	11	1
* 7	75E - 440N	4620	13	12	17	1	10	1	11	1	13	1	16	1
8	80E - 415N	8190	7	7	22	2	28	1	13	1	7	1		
* 9	80E - 420N	4580	12	11	17	1	7	1	2	1	3	1	6	1
10	80E - 425N	8892	9	8	15	1	19	2	14	2	10	1	10	1
*11	80E - 430N	4500	13	13	19	1	18	1	14	1	3	1	5	1
12	80E - 435N	8126	7	8	13	1	15	1	14	1	9	2	10	1
*13	80E - 440N	4340	12	13	23	1	6	1	9	1	5	1	5	1
14	80E - 445N	8118	9	7	21	1	13	1	6	1	13	1	13	1
15	85E - 430N	7978	7	8	13	1	20	1	11	2	8	2	14	1
16	85E - 435N	8196	9	9	22	1	12	1	12	2	11	2	9	1
17	85E - 440N	8686	9	9	13	1	9	1	19	1	11	1	9	1
18	85E - 445N	9016	10	9	22	1	20	1	6	1	7	1	11	1
19														
20														

INSTRUMENTS:

LUDLUM MICRO 'R' METER MODEL 19 S/N 111299

LUDLUM 2220, UNSHIELDED 3" X 1/2" NaI DETECTOR S/N 97264

*LUDLUM 2221, SHIELDED 3" X 1/2" NaI DETECTOR S/N 48395

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

BACKGROUND NOT SUBTRACTED

PAGE 1

FILE: HDDEPTH

RESULTS IN

µr/hr

CPM

pCi/G

BACKGROUND

7

7582

4000

Total U 4

Th (Nat) 1.5

MDA

2

N/A

N/A

10

1

REVIEWED BY:

W. A. Rogers

DATE:

8-13-98

CIMARRON CORPORATION
CIMARRON FACILITY
SUB-AREA "H" - DRAINAGE

DATE: 08/13/98

LN #	GRID NUMBER	3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	pCi/g									
					0 - 6"		6" - 1'		1' - 2'		2' - 3'		3' - 4'	
					Total U	Th (Nat)	Total U	Th (Nat)	Total U	Th (Nat)	Total U	Th (Nat)	Total U	Th (Nat)
1	90E - 435N	8830	10	8	9	1	8	1	ROCK	ROCK				
* 2	90E - 440N	4350	13	12	13	1	7	1	9	1	6	1	3	1
3	90E - 444N	7954	8	7	18	1	18	1	14	1	9	1	8	2
4	90E - 445N	8292	9	9	27	1	14	2	12	1	14	2	9	3
5	90E - 450N	7450	7	7	20	1	9	1	7	1	6	1	9	1
6	95E - 440N	8508	9	8	17	1	31	2	19	1	16	1	13	1
7	95E - 445N	9052	9	8	19	1	34	1	14	1	10	1	13	1
* 8	95E - 450N	4790	13	13	15	1	15	1	3	1	6	1	9	1
9	140E - 410N	8046	8	8	12	1	11	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
10	150E - 505N	8152	8	8	13	1	8	1	10	1	10	1	10	2
11	155E - 509N	8088	9	8	15	2	8	2	15	1	9	2		
12	155E - 511N	8666	9	9	16	2	15	1	7	1	9	2		
13	156E - 510N	8132	8	8	15	2	8	1	8	1	11	1		
14	166E - 515N	9138	9	9	11	1	14	2	17	1	10	2		
15	166E - 516N	8526	8	8	19	2	6	1	12	2	9	1		
*16	175E - 530N	4680	13	13	12	1	10	1	11	1	8	1	7	1
17	200E - 350N	7760	9	8	9	1	9	1	7	1				
*18	200E - 355N	3180	11	12	4	1	6	1	10	1	8	1	6	1
19	205E - 345N	8510	8	8	14	1	7	1	8	1				
20	205E - 350N	7722	9	8	11	2	12	1	10	1				

INSTRUMENTS:

LUDLUM MICRO 'R' METER MODEL 19 S/N 111299

LUDLUM 2220, UNSHIELDED 3" X 1/2" NaI DETECTOR S/N 97264

*LUDLUM 2221, SHIELDED 3" X 1/2" NaI DETECTOR S/N 48395

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

BACKGROUND NOT SUBTRACTED

PAGE 2

FILE: HDDEPTH

REVIEWED BY: W.A. Rogers

DATE: 8-13-98

RESULTS IN

µr/hr

CPM

pCi/G

BACKGROUND

7

7582

4000

Total U 4

Th (Nat) 1.5

MDA

2

N/A

N/A

10

1

CIMARRON CORPORATION
CIMARRON FACILITY
SUB-AREA "H" - DRAINAGE

DATE: 08/13/98

LN #	GRID NUMBER	3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	pCi/g									
					0 - 6"		6" - 1'		1' - 2'		2' - 3'		3' - 4'	
					Total U	Th (Nat)	Total U	Th (Nat)	Total U	Th (Nat)	Total U	Th (Nat)	Total U	Th (Nat)
1	205E - 355N	8280	9	9	9	1	7	1	7	1				
2	205E - 360N	9262	10	9	20	2	15	2	11	1				
3	210E - 345N	8002	9	8	12	1	12	1	10	1				
4	210E - 350N	7582	7	9	13	2	6	1	6	1				
5	210E - 355N	7618	7	7	18	2	5	1	5	1				
6	210E - 360N	8210	9	8	15	2	7	1	9	1				
* 7	210E - 365N	4960	13	14	10	1	6	2	9	1	4	1	2	1
* 8	215E - 345N	3720	11	11	10	1	6	1	10	1	7	1	8	1
9	215E - 350N	8036	10	8	14	2	10	1	7	1				
*10	215E - 355N	4240	12	11	9	1	6	1	11	1	7	1	5	1
11	215E - 360N	8106	9	8	15	1	13	2	15	2	11	1	7	1
12	215E - 365N	9446	11	9	8	1	17	2	8	1				
13	215E - 540N	9038	10	10	6	2	10	2	8	1	6	2	6	2
14	220E - 330N	7558	8	8	—	—	5	1	4	1				
15	220E - 335N	7440	7	7	20	1	8	1	11	1				
16	220E - 340N	7928	7	7	11	2	7	1	5	1				
17	220E - 345N	7850	7	7	6	1	8	1	9	1				
18	220E - 350N	7290	9	8	5	1	7	1	12	1				
19	220E - 355N	7786	7	7	6	2	8	1	7	1	7	1	8	1
20														

INSTRUMENTS:

LUDLUM MICRO 'R' METER MODEL 19 S/N 111299

LUDLUM 2220, UNSHIELDED 3" X 1/2" NaI DETECTOR S/N 97264

*LUDLUM 2221, SHIELDED 3" X 1/2" NaI DETECTOR S/N 48395

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

BACKGROUND NOT SUBTRACTED

PAGE 3

FILE: HDDEPTH

REVIEWED BY:

W. A. Rogers

DATE:

8-13-98

RESULTS IN

μr/hr

CPM

pCi/G

BACKGROUND

7

7582

4000

Total U 4

Th (Nat) 1.5

MDA

2

N/A

N/A

10

1

**CIMARRON CORPORATION
CIMARRON FACILITY
SUB-AREA "H" - DRAINAGE**

DATE: 08/13/98

LN #	GRID NUMBER	3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	pCi/g									
					0 - 6"		6" - 1'		1' - 2'		2' - 3'		3' - 4'	
					Total U	Th (Nat)	Total U	Th (Nat)	Total U	Th (Nat)	Total U	Th (Nat)	Total U	Th (Nat)
1	225E - 330N	7790	7	7	--	--	6	1	6	1				
2	225E - 335N	7820	9	8	11	1	9	1	10	1				
3	225E - 340N	7352	7	8	10	1	10	1	9	1				
4	225E - 345N	7370	6	7	9	1	5	1	5	1				
5	235E - 330N	7568	8	8	17	1	18	1	ROCK	ROCK				
6	255E - 565N	WATER	WATER	WATER	7	2	9	2	7	1	11	1	9	1
7	297E - 230N	6872	7	8	9	1	8	1	8	1	ROCK	ROCK		
8	305E - 580N	WATER	WATER	WATER	11	2	7	1	9	2	5	1	5	1
* 9	355E - 600N	3270	12	12	3	1	8	1	4	1	6	1	6	1
10	365E - 525N	7876	8	8	11	1	7	1	ROCK	ROCK				
11	365E - 715N	8554	9	9	10	2	14	2	11	2	11	1	5	1
12														
13														
14														
15														
16														
17														
18														
19														
20														

INSTRUMENTS:

LUDLUM MICRO 'R' METER MODEL 19 S/N 111299
LUDLUM 2220, UNSHIELDED 3" X 1/2" NaI DETECTOR S/N 97264
*LUDLUM 2221, SHIELDED 3" X 1/2" NaI DETECTOR S/N 48395

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

BACKGROUND NOT SUBTRACTED

PAGE 4

FILE: HDDEPTH

REVIEWED BY:

W.A. Rogers

DATE:

8-13-98

RESULTS IN

μr/hr

CPM

pCi/G

BACKGROUND

7

7582

4000

Total U 4

Th (Nat) 1.5

MDA

2

N/A

N/A

10

1

CIMARRON CORPORATION
CIMARRON FACILITY
SUB-AREA "H" - DRAINAGE

DATE: 06/26/98

LN #	GRID NUMBER	3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	pCi/g									
					0 - 6"		6" - 1'		1' - 2'		2' - 3'		3' - 4'	
					Total U	Th (Nat)	Total U	Th (Nat)	Total U	Th (Nat)	Total U	Th (Nat)	Total U	Th (Nat)
1	120E - 467N	3560	13	12	7	1	12	1	6	1	6	1	6	1
2	140E - 483N	4760	13	12	7	2	8	1	8	1	6	1	6	1
3	190E - 538N	4860	13	13	12	2	9	1	6	1	13	1	8	1
4	240E - 560N	4700	15	12	13	1	15	1	8	1	8	1	6	1
5	280E - 576N	5230	13	12	15	1	22	1	12	1	10	1	8	1
6	330E - 589N	4810	14	12	9	1	16	1	13	1	13	1	8	1
7	350E - 591N	3890	12	12	8	1	4	1	10	1	10	1	8	1
8	365E - 650N	4040	13	13	3	1	8	1	8	1	7	1	7	1
9	365E - 681N	5030	13	12	6	1	5	1	15	1	8	1	8	1
10	370E - 620N	3440	11	11	9	1	6	2	7	1	8	1	6	1
11														
12														
13														
14														
15														
16														
17														
18														
19														
20														

INSTRUMENTS:

LUDLUM MICRO 'R' METER MODEL 19 S/N 138420

LUDLUM 2220, SHIELDED 3" X 1/2" NaI DETECTOR S/N 48395

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

BACKGROUND NOT SUBTRACTED

PAGE 5

FILE: HDDEPTH

RESULTS IN

µr/hr

CPM

pCi/G

BACKGROUND

7-10

3500

Total U 4

Th (Nat) 1.5

MDA

2

N/A

5

1

REVIEWED BY:

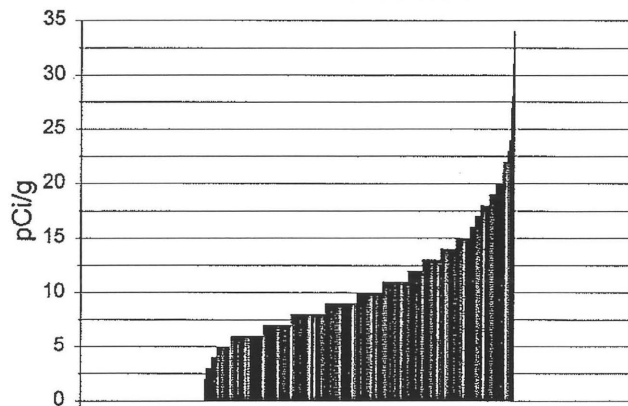
W.A. Rogers

DATE:

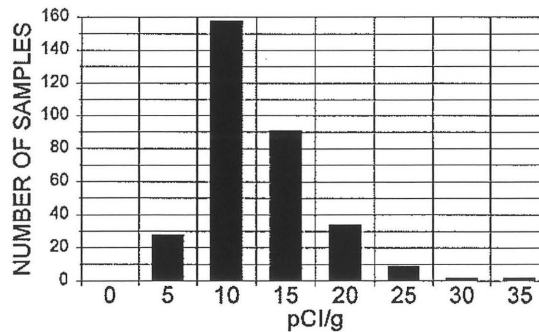
8-13-98

**PHASE II, SUB-AREA "H" - DEPTH
 DRAINAGE WAY
 CIMARRON SOIL COUNTER
 TOTAL URANIUM SAMPLE RESULTS
 SITE BACKGROUND OF 4 pCi/g NOT SUBTRACTED
 SEPTEMBER 1998**

**URANIUM SAMPLE RESULTS
 SURVEY DATA**



**URANIUM SAMPLE RESULTS
 FREQUENCY DISTRIBUTION**



NUMBER OF SAMPLES	324
AVERAGE SAMPLES	11
MINIMUM SAMPLE	2
MAXIMUM SAMPLE	34
STANDARD DEVIATION	5

CIMARRON CORPORATION - CIMARRON FACILITY

SUB-AREA "H" DRAINAGE

TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) ²
1	11	0.28	0.08
2	12	1.28	1.64
3	24	13.28	176.38
4	20	9.28	86.13
5	20	9.28	86.13
6	18	7.28	53.01
7	17	6.28	39.45
8	22	11.28	127.26
9	17	6.28	39.45
10	15	4.28	18.33
11	19	8.28	68.57
12	13	2.28	5.20
13	23	12.28	150.82
14	21	10.28	105.70
15	13	2.28	5.20
16	22	11.28	127.26
17	13	2.28	5.20
18	22	11.28	127.26
19	10	-0.72	0.52
20	18	7.28	53.01
21	24	13.28	176.38
22	12	1.28	1.64
23	11	0.28	0.08
24	16	5.28	27.89
25	10	-0.72	0.52
26	28	17.28	298.63
27	7	-3.72	13.83
28	19	8.28	68.57
29	18	7.28	53.01
30	15	4.28	18.33
31	6	-4.72	22.27
32	13	2.28	5.20
33	20	9.28	86.13
34	12	1.28	1.64
35	9	-1.72	2.96
36	20	9.28	86.13
37	23	12.28	150.82
38	18	7.28	53.01
39	14	3.28	10.76
40	19	8.28	68.57
41	14	3.28	10.76
42	11	0.28	0.08
43	13	2.28	5.20
44	2	-8.72	76.02
45	14	3.28	10.76
46	14	3.28	10.76
47	14	3.28	10.76
48	9	-1.72	2.96
49	6	-4.72	22.27
50	11	0.28	0.08
	595		1194.22
	560		1615.56
	493		788.93
	408		716.18
	445		889.96
	200		271.94
	0		0.00
	0		0.00
	3473		8049.44
	Sum(n)		Sum(n-N) ²

No. of Samples (x) : 324

COUNT TIME: 5 MINUTES

Sample Mean (N) = Sum(n) ÷ (x)

Sample Mean (N) : 10.72

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

Standard Deviation: 5.0

2 Std Deviations: 10.0

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

(df) = 1.651

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

(Aμ) = 11.18

GUIDELINE VALUE: 30

Acceptable Level: 34.0

(30 PLUS BACKGROUND)

pCi/gU TOTAL U

pCi/gU TOTAL U

pCi/gU TOTAL U

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) 400 is (B) 1.649 95%

(df) low value(Y) 120 is (A) 1.658 95%

Desired value(df) (X) 323 is calculated as follow:

EXP[(Ln(B) - Ln(A)) ÷ (Z - Y) (X - Y) + Ln(A)]

The (df) value for (X) 323 1.651 95%

PERFORMED BY: L. Smith

DATE: 10-6-98

REVIEWED BY: W.C. Rogers

DATE: 10-6-98

CIMARRON CORPORATION - CIMARRON FACILITY

SUB-AREA "H" DRAINAGE

TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE

n = pCi/g TOTAL U			
Number	n	(n-N)	(n-N) ²
51	12	1.28	1.64
52	19	8.28	68.57
53	6	-4.72	22.27
54	14	3.28	10.76
55	18	7.28	53.01
56	10	-0.72	0.52
57	14	3.28	10.76
58	11	0.28	0.08
59	13	2.28	5.20
60	7	-3.72	13.83
61	3	-7.72	59.59
62	10	-0.72	0.52
63	3	-7.72	59.59
64	9	-1.72	2.96
65	5	-5.72	32.71
66	13	2.28	5.20
67	8	-2.72	7.39
68	11	0.28	0.08
69	11	0.28	0.08
70	7	-3.72	13.83
71	11	0.28	0.08
72	9	-1.72	2.96
73	13	2.28	5.20
74	11	0.28	0.08
75	16	5.28	27.89
76	6	-4.72	22.27
77	10	-0.72	0.52
78	5	-5.72	32.71
79	10	-0.72	0.52
80	5	-5.72	32.71
81	13	2.28	5.20
82	14	3.28	10.76
83	9	-1.72	2.96
84	9	-1.72	2.96
85	11	0.28	0.08
86	9	-1.72	2.96
87	13	2.28	5.20
88	18	7.28	53.01
89	27	16.28	265.07
90	20	9.28	86.13
91	17	6.28	39.45
92	19	8.28	68.57
93	15	4.28	18.33
94	12	1.28	1.64
95	13	2.28	5.20
96	15	4.28	18.33
97	16	5.28	27.89
98	15	4.28	18.33
99	11	0.28	0.08
100	19	8.28	68.57
	595		1194.22
	Sum(n)		Sum(n-N) ²

n = pCi/g TOTAL U			
Number	n	(n-N)	(n-N) ²
101	12	1.28	1.64
102	9	-1.72	2.96
103	4	-6.72	45.15
104	14	3.28	10.76
105	11	0.28	0.08
106	8	-2.72	7.39
107	7	-3.72	13.83
108	18	7.28	53.01
109	14	3.28	10.76
110	9	-1.72	2.96
111	31	20.28	411.31
112	34	23.28	542.00
113	15	4.28	18.33
114	11	0.28	0.08
115	8	-2.72	7.39
116	8	-2.72	7.39
117	15	4.28	18.33
118	8	-2.72	7.39
119	14	3.28	10.76
120	6	-4.72	22.27
121	10	-0.72	0.52
122	9	-1.72	2.96
123	6	-4.72	22.27
124	7	-3.72	13.83
125	12	1.28	1.64
126	9	-1.72	2.96
127	14	3.28	10.76
128	12	1.28	1.64
129	7	-3.72	13.83
130	19	8.28	68.57
131	14	3.28	10.76
132	3	-7.72	59.59
133	10	-0.72	0.52
134	15	4.28	18.33
135	7	-3.72	13.83
136	8	-2.72	7.39
137	17	6.28	39.45
138	12	1.28	1.64
139	11	0.28	0.08
140	7	-3.72	13.83
141	10	-0.72	0.52
142	8	-2.72	7.39
143	10	-0.72	0.52
144	6	-4.72	22.27
145	9	-1.72	2.96
146	14	3.28	10.76
147	6	-4.72	22.27
148	16	5.28	27.89
149	10	-0.72	0.52
150	6	-4.72	22.27
	560		1615.56
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY

SUB-AREA "H" DRAINAGE

TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE

n = pCi/g TOTAL U			
Number	n	(n-N)	(n-N) ²
151	10	-0.72	0.52
152	9	-1.72	2.96
153	9	-1.72	2.96
154	11	0.28	0.08
155	10	-0.72	0.52
156	9	-1.72	2.96
157	8	-2.72	7.39
158	8	-2.72	7.39
159	3	-7.72	59.59
160	8	-2.72	7.39
161	9	-1.72	2.96
162	9	-1.72	2.96
163	13	2.28	5.20
164	13	2.28	5.20
165	9	-1.72	2.96
166	10	-0.72	0.52
167	7	-3.72	13.83
168	6	-4.72	22.27
169	9	-1.72	2.96
170	20	9.28	86.13
171	12	1.28	1.64
172	13	2.28	5.20
173	18	7.28	53.01
174	15	4.28	18.33
175	10	-0.72	0.52
176	10	-0.72	0.52
177	14	3.28	10.76
178	9	-1.72	2.96
179	15	4.28	18.33
180	8	-2.72	7.39
181	6	-4.72	22.27
182	20	9.28	86.13
183	11	0.28	0.08
184	6	-4.72	22.27
185	5	-5.72	32.71
186	6	-4.72	22.27
187	7	-3.72	13.83
188	15	4.28	18.33
189	12	1.28	1.64
190	6	-4.72	22.27
191	5	-5.72	32.71
192	7	-3.72	13.83
193	6	-4.72	22.27
194	6	-4.72	22.27
195	10	-0.72	0.52
196	6	-4.72	22.27
197	13	2.28	5.20
198	17	6.28	39.45
199	10	-0.72	0.52
200	5	-5.72	32.71
	493		788.93
	Sum(n)		Sum(n-N) ²

n = pCi/g TOTAL U			
Number	n	(n-N)	(n-N) ²
201	8	-2.72	7.39
202	7	-3.72	13.83
203	8	-2.72	7.39
204	7	-3.72	13.83
205	8	-2.72	7.39
206	7	-3.72	13.83
207	11	0.28	0.08
208	10	-0.72	0.52
209	6	-4.72	22.27
210	5	-5.72	32.71
211	9	-1.72	2.96
212	9	-1.72	2.96
213	10	-0.72	0.52
214	7	-3.72	13.83
215	11	0.28	0.08
216	15	4.28	18.33
217	8	-2.72	7.39
218	8	-2.72	7.39
219	4	-6.72	45.15
220	11	0.28	0.08
221	5	-5.72	32.71
222	9	-1.72	2.96
223	12	1.28	1.64
224	7	-3.72	13.83
225	4	-6.72	45.15
226	7	-3.72	13.83
227	7	-3.72	13.83
228	11	0.28	0.08
229	6	-4.72	22.27
230	7	-3.72	13.83
231	2	-8.72	76.02
232	8	-2.72	7.39
233	5	-5.72	32.71
234	7	-3.72	13.83
235	6	-4.72	22.27
236	8	-2.72	7.39
237	11	0.28	0.08
238	10	-0.72	0.52
239	9	-1.72	2.96
240	17	6.28	39.45
241	7	-3.72	13.83
242	9	-1.72	2.96
243	11	0.28	0.08
244	3	-7.72	59.59
245	11	0.28	0.08
246	10	-0.72	0.52
247	6	-4.72	22.27
248	9	-1.72	2.96
249	10	-0.72	0.52
250	5	-5.72	32.71
	408		716.18
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY

SUB-AREA "H" DRAINAGE

TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE

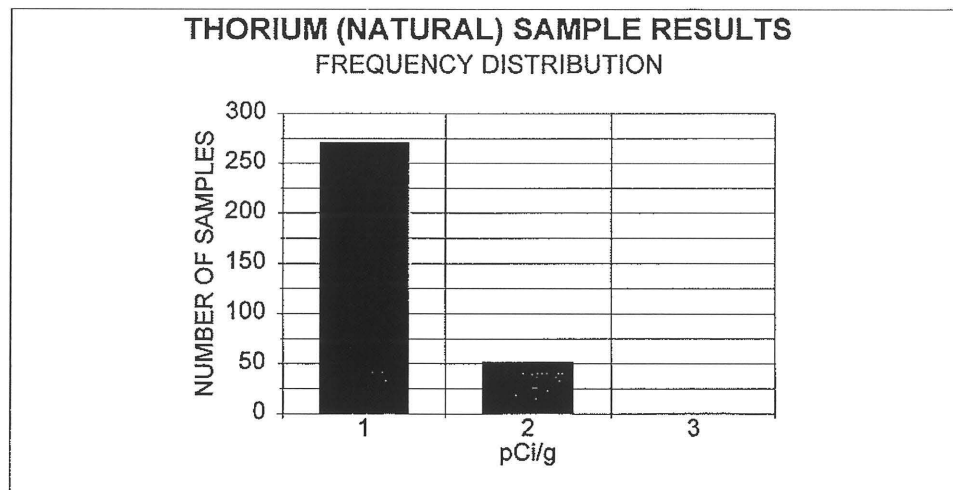
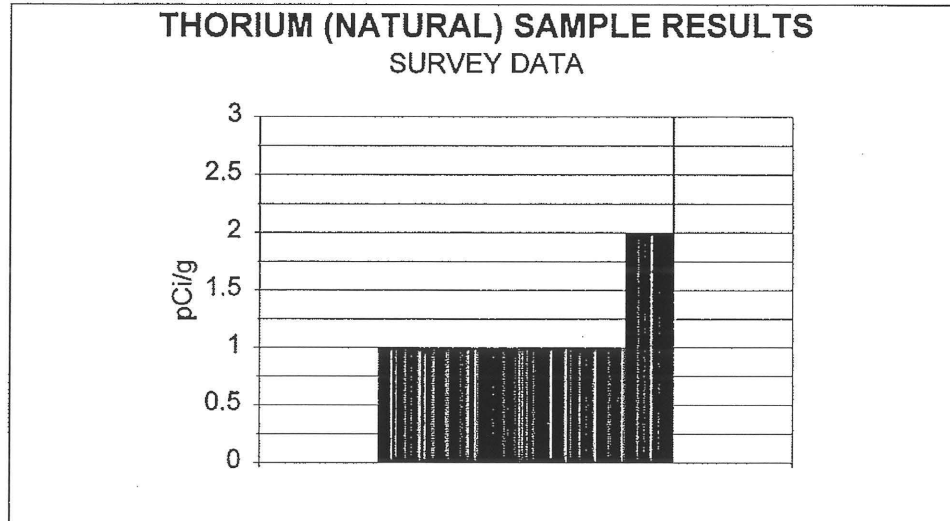
n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) ²
251	18	7.28	53.01
252	9	-1.72	2.96
253	8	-2.72	7.39
254	7	-3.72	13.83
255	8	-2.72	7.39
256	7	-3.72	13.83
257	14	3.28	10.76
258	6	-4.72	22.27
259	10	-0.72	0.52
260	9	-1.72	2.96
261	5	-5.72	32.71
262	7	-3.72	13.83
263	8	-2.72	7.39
264	9	-1.72	2.96
265	4	-6.72	45.15
266	11	0.28	0.08
267	11	0.28	0.08
268	5	-5.72	32.71
269	6	-4.72	22.27
270	11	0.28	0.08
271	9	-1.72	2.96
272	5	-5.72	32.71
273	6	-4.72	22.27
274	5	-5.72	32.71
275	7	-3.72	13.83
276	7	-3.72	13.83
277	12	1.28	1.64
278	13	2.28	5.20
279	15	4.28	18.33
280	9	-1.72	2.96
281	8	-2.72	7.39
282	3	-7.72	59.59
283	6	-4.72	22.27
284	9	-1.72	2.96
285	12	1.28	1.64
286	8	-2.72	7.39
287	9	-1.72	2.96
288	15	4.28	18.33
289	22	11.28	127.26
290	16	5.28	27.89
291	4	-6.72	45.15
292	8	-2.72	7.39
293	5	-5.72	32.71
294	6	-4.72	22.27
295	6	-4.72	22.27
296	8	-2.72	7.39
297	6	-4.72	22.27
298	8	-2.72	7.39
299	12	1.28	1.64
300	13	2.28	5.20
	445		889.96
	Sum(n)		Sum(n-N) ²

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) ²
301	10	-0.72	0.52
302	8	-2.72	7.39
303	15	4.28	18.33
304	7	-3.72	13.83
305	6	-4.72	22.27
306	6	-4.72	22.27
307	13	2.28	5.20
308	8	-2.72	7.39
309	10	-0.72	0.52
310	13	2.28	5.20
311	10	-0.72	0.52
312	7	-3.72	13.83
313	8	-2.72	7.39
314	8	-2.72	7.39
315	6	-4.72	22.27
316	6	-4.72	22.27
317	8	-2.72	7.39
318	6	-4.72	22.27
319	8	-2.72	7.39
320	8	-2.72	7.39
321	8	-2.72	7.39
322	7	-3.72	13.83
323	8	-2.72	7.39
324	6	-4.72	22.27
325		0.00	0.00
326		0.00	0.00
327		0.00	0.00
328		0.00	0.00
329		0.00	0.00
330		0.00	0.00
331		0.00	0.00
332		0.00	0.00
333		0.00	0.00
334		0.00	0.00
335		0.00	0.00
336		0.00	0.00
337		0.00	0.00
338		0.00	0.00
339		0.00	0.00
340		0.00	0.00
341		0.00	0.00
342		0.00	0.00
343		0.00	0.00
344		0.00	0.00
345		0.00	0.00
346		0.00	0.00
347		0.00	0.00
348		0.00	0.00
349		0.00	0.00
350		0.00	0.00
	200		271.94
	Sum(n)		Sum(n-N) ²

**PHASE II, SUB-AREA "H" - DEPTH
 DRAINAGE
 CIMARRON SOIL COUNTER
 THORIUM (NAT) SAMPLE RESULTS
 SITE BACKGROUND OF 1.5 pCi/g NOT SUBTRACTED**



NUMBER OF SAMPLES	324
AVERAGE SAMPLES	1
MINIMUM SAMPLE	1
MAXIMUM SAMPLE	3
STANDARD DEVIATION	0.4

CIMARRON CORPORATION - CIMARRON FACILITY

SUB-AREA "H" DRAINAGE

TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE

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

Number	n	(n-N)	(n-N) ²
1	1	-0.17	0.03
2	1	-0.17	0.03
3	1	-0.17	0.03
4	1	-0.17	0.03
5	2	0.83	0.69
6	1	-0.17	0.03
7	1	-0.17	0.03
8	2	0.83	0.69
9	1	-0.17	0.03
10	1	-0.17	0.03
11	1	-0.17	0.03
12	1	-0.17	0.03
13	1	-0.17	0.03
14	1	-0.17	0.03
15	1	-0.17	0.03
16	1	-0.17	0.03
17	1	-0.17	0.03
18	1	-0.17	0.03
19	1	-0.17	0.03
20	1	-0.17	0.03
21	1	-0.17	0.03
22	1	-0.17	0.03
23	1	-0.17	0.03
24	2	0.83	0.69
25	1	-0.17	0.03
26	1	-0.17	0.03
27	1	-0.17	0.03
28	2	0.83	0.69
29	1	-0.17	0.03
30	1	-0.17	0.03
31	1	-0.17	0.03
32	1	-0.17	0.03
33	1	-0.17	0.03
34	1	-0.17	0.03
35	1	-0.17	0.03
36	1	-0.17	0.03
37	1	-0.17	0.03
38	1	-0.17	0.03
39	1	-0.17	0.03
40	1	-0.17	0.03
41	1	-0.17	0.03
42	1	-0.17	0.03
43	1	-0.17	0.03
44	1	-0.17	0.03
45	2	0.83	0.69
46	1	-0.17	0.03
47	1	-0.17	0.03
48	1	-0.17	0.03
49	1	-0.17	0.03
50	2	0.83	0.69
58			6.722
57			6.056
70			16.722
56			5.389
57			6.056
24			0.667
0			0.000
0			0.000
378			47.000
Sum(n)			Sum(n-N) ²

No. of Samples (x) : 324

COUNT TIME: 5 MINUTES

Sample Mean (N) = Sum(n) ÷ (x)

Sample Mean (N) : 1.17

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

Standard Deviation: 0.38

2 Std Deviations: 0.76

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

(df) = 1.651

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

(Aμ) = 1.20 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) 400 is (B) 1.649 95%

(df) low value(Y) 120 is (A) 1.658 95%

Desired value(df) (X) 323 is calculated as follow:

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

The (df) value for (X) 323 1.651 95%

PERFORMED BY: *[Signature]*

DATE: 10-6-99

REVIEWED BY: *[Signature]*

DATE: 10-6-98

CIMARRON CORPORATION - CIMARRON FACILITY

SUB-AREA "H" DRAINAGE

TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE

n = pCi/g Th (NAT)				n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²	Number	n	(n-N)	(n-N) ²
51	2	0.83	0.69	101	1	-0.17	0.03
52	1	-0.17	0.03	102	1	-0.17	0.03
53	1	-0.17	0.03	103	1	-0.17	0.03
54	1	-0.17	0.03	104	1	-0.17	0.03
55	1	-0.17	0.03	105	2	0.83	0.69
56	1	-0.17	0.03	106	1	-0.17	0.03
57	1	-0.17	0.03	107	1	-0.17	0.03
58	1	-0.17	0.03	108	1	-0.17	0.03
59	1	-0.17	0.03	109	2	0.83	0.69
60	1	-0.17	0.03	110	1	-0.17	0.03
61	1	-0.17	0.03	111	2	0.83	0.69
62	1	-0.17	0.03	112	1	-0.17	0.03
63	1	-0.17	0.03	113	1	-0.17	0.03
64	2	0.83	0.69	114	1	-0.17	0.03
65	1	-0.17	0.03	115	1	-0.17	0.03
66	1	-0.17	0.03	116	2	0.83	0.69
67	2	0.83	0.69	117	1	-0.17	0.03
68	2	0.83	0.69	118	1	-0.17	0.03
69	1	-0.17	0.03	119	2	0.83	0.69
70	1	-0.17	0.03	120	1	-0.17	0.03
71	1	-0.17	0.03	121	1	-0.17	0.03
72	1	-0.17	0.03	122	1	-0.17	0.03
73	1	-0.17	0.03	123	1	-0.17	0.03
74	1	-0.17	0.03	124	1	-0.17	0.03
75	1	-0.17	0.03	125	1	-0.17	0.03
76	1	-0.17	0.03	126	1	-0.17	0.03
77	1	-0.17	0.03	127	1	-0.17	0.03
78	1	-0.17	0.03	128	1	-0.17	0.03
79	1	-0.17	0.03	129	1	-0.17	0.03
80	1	-0.17	0.03	130	1	-0.17	0.03
81	1	-0.17	0.03	131	1	-0.17	0.03
82	1	-0.17	0.03	132	1	-0.17	0.03
83	1	-0.17	0.03	133	1	-0.17	0.03
84	1	-0.17	0.03	134	1	-0.17	0.03
85	1	-0.17	0.03	135	1	-0.17	0.03
86	1	-0.17	0.03	136	1	-0.17	0.03
87	1	-0.17	0.03	137	1	-0.17	0.03
88	1	-0.17	0.03	138	2	0.83	0.69
89	1	-0.17	0.03	139	1	-0.17	0.03
90	1	-0.17	0.03	140	1	-0.17	0.03
91	1	-0.17	0.03	141	1	-0.17	0.03
92	1	-0.17	0.03	142	1	-0.17	0.03
93	1	-0.17	0.03	143	1	-0.17	0.03
94	1	-0.17	0.03	144	1	-0.17	0.03
95	1	-0.17	0.03	145	1	-0.17	0.03
96	2	0.83	0.69	146	2	0.83	0.69
97	2	0.83	0.69	147	1	-0.17	0.03
98	2	0.83	0.69	148	1	-0.17	0.03
99	1	-0.17	0.03	149	1	-0.17	0.03
100	2	0.83	0.69	150	1	-0.17	0.03
	58		6.722		57		6.056
	Sum(n)		Sum(n-N) ²		Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY

SUB-AREA "H" DRAINAGE

TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
151	1	-0.17	0.03
152	2	0.83	0.69
153	2	0.83	0.69
154	1	-0.17	0.03
155	2	0.83	0.69
156	1	-0.17	0.03
157	1	-0.17	0.03
158	1	-0.17	0.03
159	1	-0.17	0.03
160	2	0.83	0.69
161	3	1.83	3.36
162	1	-0.17	0.03
163	1	-0.17	0.03
164	1	-0.17	0.03
165	1	-0.17	0.03
166	2	0.83	0.69
167	1	-0.17	0.03
168	1	-0.17	0.03
169	1	-0.17	0.03
170	2	0.83	0.69
171	1	-0.17	0.03
172	2	0.83	0.69
173	2	0.83	0.69
174	2	0.83	0.69
175	1	-0.17	0.03
176	1	-0.17	0.03
177	2	0.83	0.69
178	1	-0.17	0.03
179	1	-0.17	0.03
180	1	-0.17	0.03
181	2	0.83	0.69
182	1	-0.17	0.03
183	2	0.83	0.69
184	1	-0.17	0.03
185	1	-0.17	0.03
186	2	0.83	0.69
187	1	-0.17	0.03
188	2	0.83	0.69
189	1	-0.17	0.03
190	1	-0.17	0.03
191	1	-0.17	0.03
192	1	-0.17	0.03
193	2	0.83	0.69
194	1	-0.17	0.03
195	1	-0.17	0.03
196	1	-0.17	0.03
197	2	0.83	0.69
198	2	0.83	0.69
199	2	0.83	0.69
200	1	-0.17	0.03
	70		16.722
	Sum(n)		Sum(n-N) ²

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
201	1	-0.17	0.03
202	1	-0.17	0.03
203	1	-0.17	0.03
204	1	-0.17	0.03
205	1	-0.17	0.03
206	1	-0.17	0.03
207	1	-0.17	0.03
208	1	-0.17	0.03
209	1	-0.17	0.03
210	1	-0.17	0.03
211	1	-0.17	0.03
212	1	-0.17	0.03
213	1	-0.17	0.03
214	1	-0.17	0.03
215	1	-0.17	0.03
216	2	0.83	0.69
217	1	-0.17	0.03
218	1	-0.17	0.03
219	1	-0.17	0.03
220	1	-0.17	0.03
221	1	-0.17	0.03
222	1	-0.17	0.03
223	1	-0.17	0.03
224	1	-0.17	0.03
225	1	-0.17	0.03
226	1	-0.17	0.03
227	1	-0.17	0.03
228	1	-0.17	0.03
229	2	0.83	0.69
230	1	-0.17	0.03
231	1	-0.17	0.03
232	1	-0.17	0.03
233	1	-0.17	0.03
234	1	-0.17	0.03
235	2	0.83	0.69
236	1	-0.17	0.03
237	1	-0.17	0.03
238	1	-0.17	0.03
239	1	-0.17	0.03
240	1	-0.17	0.03
241	2	0.83	0.69
242	1	-0.17	0.03
243	2	0.83	0.69
244	1	-0.17	0.03
245	1	-0.17	0.03
246	2	0.83	0.69
247	1	-0.17	0.03
248	1	-0.17	0.03
249	1	-0.17	0.03
250	1	-0.17	0.03
	56		5.389
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY

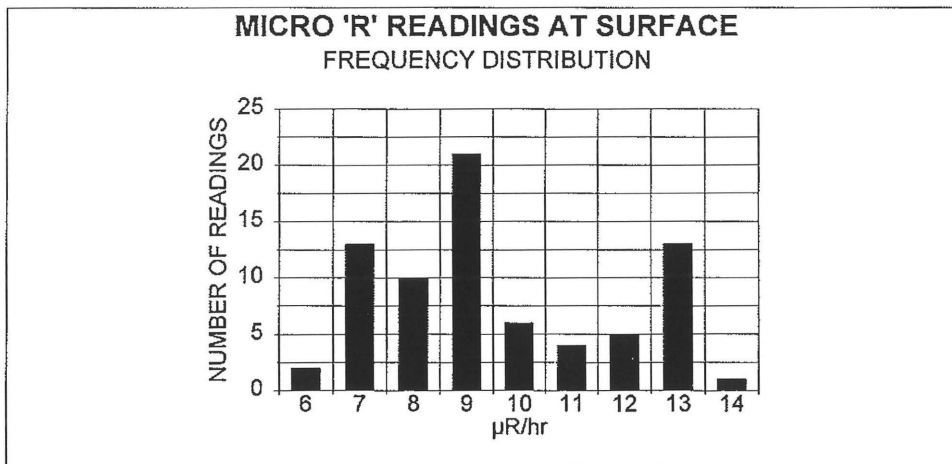
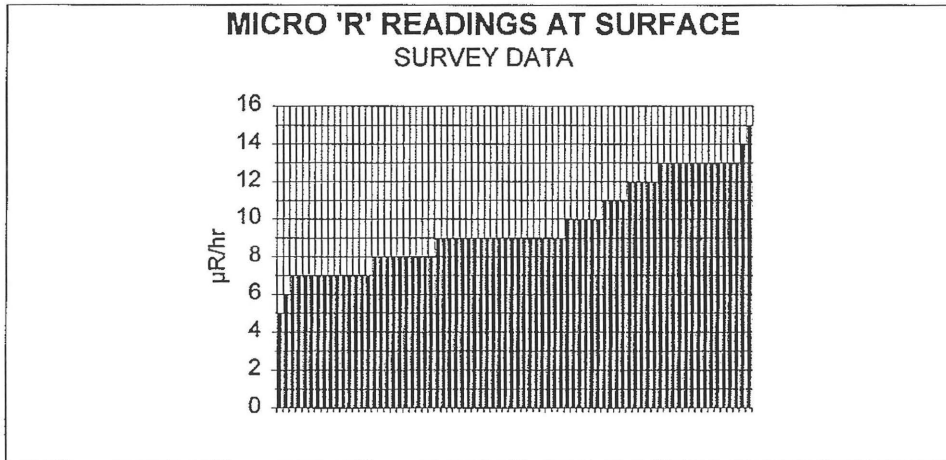
SUB-AREA "H" DRAINAGE

TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
251	1	-0.17	0.03
252	2	0.83	0.69
253	1	-0.17	0.03
254	1	-0.17	0.03
255	1	-0.17	0.03
256	1	-0.17	0.03
257	2	0.83	0.69
258	1	-0.17	0.03
259	1	-0.17	0.03
260	1	-0.17	0.03
261	1	-0.17	0.03
262	1	-0.17	0.03
263	1	-0.17	0.03
264	2	0.83	0.69
265	1	-0.17	0.03
266	2	0.83	0.69
267	1	-0.17	0.03
268	1	-0.17	0.03
269	1	-0.17	0.03
270	1	-0.17	0.03
271	1	-0.17	0.03
272	1	-0.17	0.03
273	1	-0.17	0.03
274	1	-0.17	0.03
275	1	-0.17	0.03
276	2	0.83	0.69
277	2	0.83	0.69
278	1	-0.17	0.03
279	1	-0.17	0.03
280	1	-0.17	0.03
281	1	-0.17	0.03
282	1	-0.17	0.03
283	1	-0.17	0.03
284	1	-0.17	0.03
285	1	-0.17	0.03
286	1	-0.17	0.03
287	1	-0.17	0.03
288	1	-0.17	0.03
289	1	-0.17	0.03
290	1	-0.17	0.03
291	1	-0.17	0.03
292	1	-0.17	0.03
293	1	-0.17	0.03
294	2	0.83	0.69
295	1	-0.17	0.03
296	1	-0.17	0.03
297	1	-0.17	0.03
298	1	-0.17	0.03
299	1	-0.17	0.03
300	1	-0.17	0.03
	57		6.056
	Sum(n)		Sum(n-N) ²

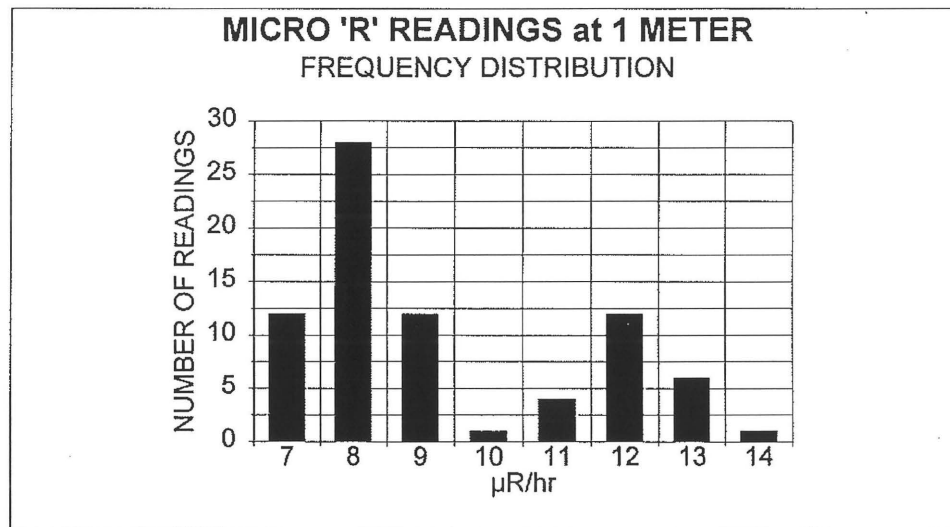
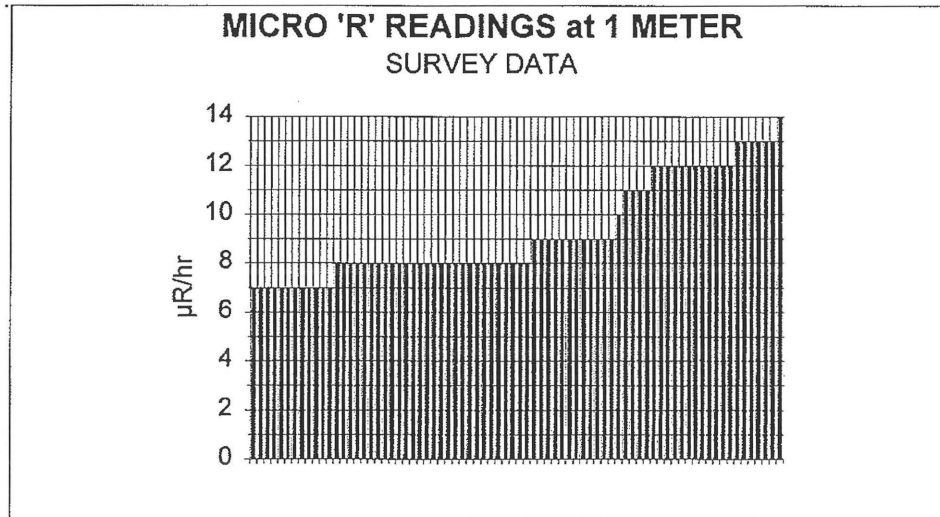
n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
301	1	-0.17	0.03
302	1	-0.17	0.03
303	1	-0.17	0.03
304	1	-0.17	0.03
305	1	-0.17	0.03
306	1	-0.17	0.03
307	1	-0.17	0.03
308	1	-0.17	0.03
309	1	-0.17	0.03
310	1	-0.17	0.03
311	1	-0.17	0.03
312	1	-0.17	0.03
313	1	-0.17	0.03
314	1	-0.17	0.03
315	1	-0.17	0.03
316	1	-0.17	0.03
317	1	-0.17	0.03
318	1	-0.17	0.03
319	1	-0.17	0.03
320	1	-0.17	0.03
321	1	-0.17	0.03
322	1	-0.17	0.03
323	1	-0.17	0.03
324	1	-0.17	0.03
325		0.00	0.00
326		0.00	0.00
327		0.00	0.00
328		0.00	0.00
329		0.00	0.00
330		0.00	0.00
331		0.00	0.00
332		0.00	0.00
333		0.00	0.00
334		0.00	0.00
335		0.00	0.00
336		0.00	0.00
337		0.00	0.00
338		0.00	0.00
339		0.00	0.00
340		0.00	0.00
341		0.00	0.00
342		0.00	0.00
343		0.00	0.00
344		0.00	0.00
345		0.00	0.00
346		0.00	0.00
347		0.00	0.00
348		0.00	0.00
349		0.00	0.00
350		0.00	0.00
	24		0.667
	Sum(n)		Sum(n-N) ²

PHASE II, SUB-AREA "H" - DEPTH
DRAINAGE
MICRO 'R' READINGS AT SURFACE
LUDLUM MODEL 19, S/N 111299
RESULTS IN $\mu\text{R/hr}$
SEPTEMBER 1998



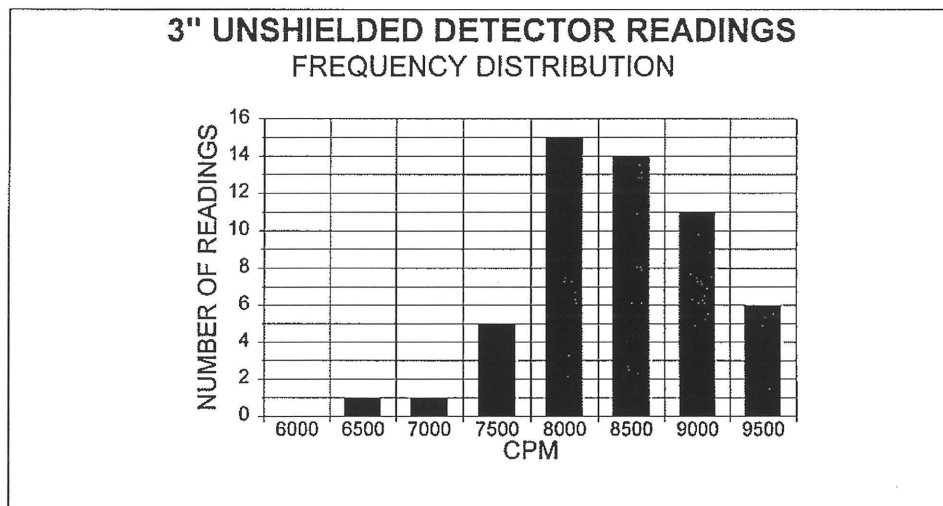
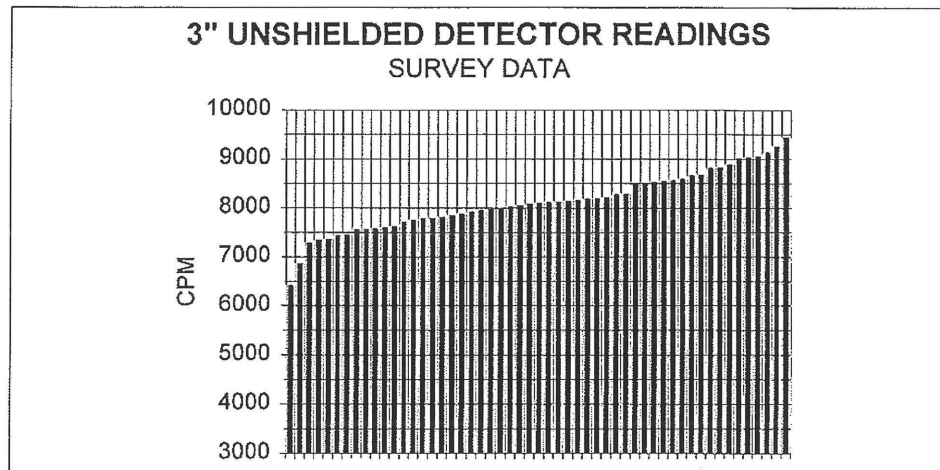
NUMBER OF READINGS	76
AVERAGE READING	10
MINIMUM READING	5
MAXIMUM READING	15
STANDARD DEVIATION	2

MICRO 'R' READINGS AT 1 METER ABOVE SURFACE
LUDLUM MODEL 19, S/N111299
RESULTS IN $\mu\text{R/hr}$
SEPTEMBER 1998



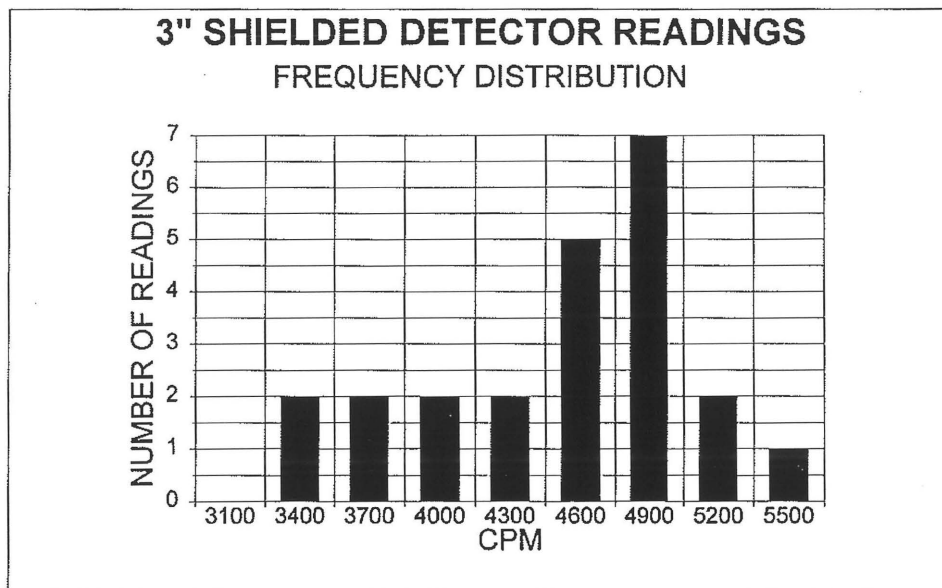
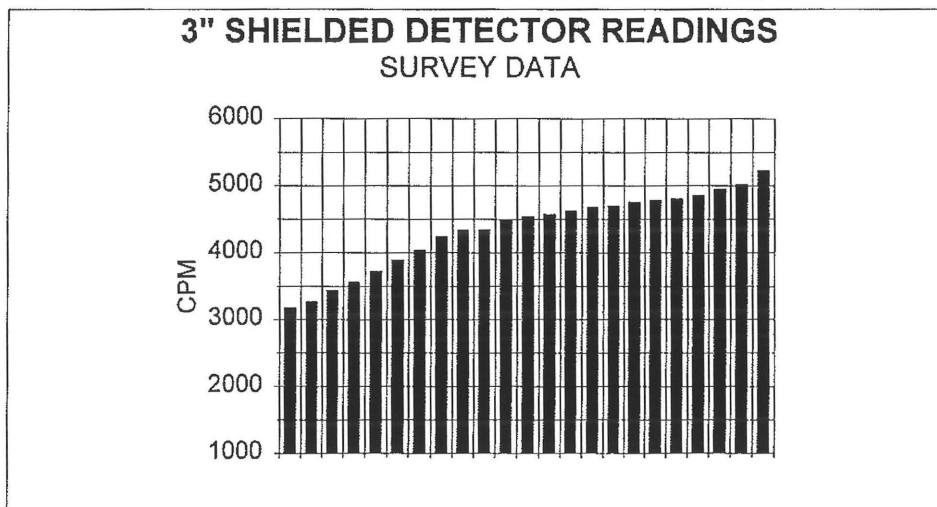
NUMBER OF READINGS	76
AVERAGE READING	9
MINIMUM READING	7
MAXIMUM READING	14
STANDARD DEVIATION	2

**PHASE II, SUB-AREA "H" - DEPTH
DRAINAGE
GROSS GAMMA READINGS IN CPM
LUDLUM MODEL 2220, S/N 97264
SEPTEMBER 1998**



NUMBER OF READINGS	53
AVERAGE READING	8125
MINIMUM READING	6416
MAXIMUM READING	9446
STANDARD DEVIATION	606

**PHASE II, SUB-AREA "H" - DEPTH
 DRAINAGE
 GROSS GAMMA READINGS IN CPM
 LUDLUM MODEL 2221, S/N 48395
 SEPTEMBER 1998**



NUMBER OF READINGS	23
AVERAGE READING	4352
MINIMUM READING	3180
MAXIMUM READING	5230
STANDARD DEVIATION	573

CIMARRON CORPORATION
CIMARRON FACILITY
SUB-AREA "H" - DRAINAGE/BOUNDARY CROSSECTIONS

DATE: 08/27/98

LN #	GRID NUMBER	3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	pCi/g							
					0 - 1'		1' - 2'		2' - 3'		3' - 4'	
					Total U	Th (Nat)	Total U	Th (Nat)	Total U	Th (Nat)	Total U	Th (Nat)
1	145 E - 509 N	4510	12	13	15	1	6	1	5	1	7	2
2	146 E - 506 N	4000	11	11	12	1	6	1	9	1	12	1
3	146 E - 507 N	4470	13	12	12	1	9	1	8	1	10	1
4	146 E - 508 N	3610	14	11	16	1	7	1	8	1	10	1
5	147 E - 506 N	4470	12	12	13	1	10	1	7	1	9	2
6	148 E - 506 N	4510	12	12	9	1	9	1	12	1	12	1
7	150 E - 505 N	3920	13	12	10	1	8	1	11	1	8	1
8	152 E - 505 N	3660	12	10	9	1	10	1	10	1	9	1
9	153 E - 504 N	3630	12	11	11	1	10	1	11	1	10	1
10	154 E - 504 N	4130	12	11	17	1	11	1	15	1	11	1
11	155 E - 503 N	4470	13	12	8	1	5	1	5	1	9	1
12	156 E - 502 N	4240	13	12	6	1	7	1	7	1	8	1
13	157 E - 501 N	4130	12	13	5	1	6	1	4	1	7	1
14	158 E - 500 N	4810	13	14	6	1	3	1	5	1	9	1
15	215 E - 534 N	5210	14	15	5	1	5	1	7	1	6	1
16	215 E - 535 N	4630	14	14	8	1	8	1	8	2	8	1
17	215 E - 536 N	4360	15	14	5	1	7	1	9	1	9	1
18	215 E - 537 N	4450	13	13	8	1	8	1	9	1	9	1
19	215 E - 538 N	5110	13	13	4	1	5	1	6	2	7	1
20	215 E - 539 N	4810	14	14	9	1	7	1	9	1	9	1

INSTRUMENTS:

LUDLUM MICRO 'R' METER MODEL 19 S/N 111299
LUDLUM 2221, SHIELDED 3" X 1/2" NaI DETECTOR S/N 48395

RESULTS IN

μr/hr
CPM

pCi/G

BACKGROUND

7
3000

Total U 4
Th (Nat) 1.5

MDA

2
N/A

5
1

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

BACKGROUND NOT SUBTRACTED

PAGE 1

FILE: HDHBCS

REVIEWED BY:

W. G. Rogers

DATE: 8-27-98

CIMARRON CORPORATION
CIMARRON FACILITY
SUB-AREA "H" - DRAINAGE/BOUNDARY CROSSECTIONS

DATE: 08/27/98

LN #	GRID NUMBER	3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	pCi/g							
					0 - 1'		1' - 2'		2' - 3'		3' - 4'	
					Total U	Th (Nat)	Total U	Th (Nat)	Total U	Th (Nat)	Total U	Th (Nat)
1	215 E - 540 N	4790	14	14	8	1	9	1	7	1	9	1
2	215 E - 541 N	4930	13	13	7	1	8	1	7	1	6	1
3	215 E - 542 N	5150	13	13	10	1	11	1	10	1	9	1
4	215 E - 543 N	5070	13	13	9	1	8	1	8	1	6	1
5	215 E - 544 N	5030	14	13	4	1	10	1	8	1	6	1
6	215 E - 545 N	4790	14	15	7	1	16	1	10	1	6	1
7	215 E - 546 N	4770	13	13	9	1	12	1	6	1	6	1
8	215 E - 547 N	5160	14	14	13	1	14	1	6	1	4	1
9	215 E - 548 N	5380	14	13	12	1	12	1	9	1	7	1
10	215 E - 549 N	4740	14	13	12	1	15	1	6	1	4	1
11	215 E - 550 N	5460	15	15	12	1	12	1	8	1	7	1
12	215 E - 551 N	4620	14	14	12	1	8	1	11	1	8	2
13	338 E - 581 N	4550	14	14	6	1	7	1	7	1	7	1
14	338 E - 582 N	4840	11	12	5	1	8	1	5	1	10	1
15	338 E - 583 N	4550	12	12	8	1	9	1	6	1	8	1
16	338 E - 584 N	5040	12	13	5	1	5	1	4	2	8	1
17	338 E - 585 N	4990	14	14	10	1	8	1	8	2	6	1
18	338 E - 586 N	4450	14	13	14	1	7	1	9	1	8	1
19	338 E - 587 N	4480	12	12	11	2	8	1	10	1	7	1
20	338 E - 588 N	4860	13	12	10	1	9	1	11	1	9	1

INSTRUMENTS:

LUDLUM MICRO 'R' METER MODEL 19 S/N 111299
LUDLUM 2221, SHIELDED 3" X 1/2" NaI DETECTOR S/N 48395

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

BACKGROUND NOT SUBTRACTED

PAGE 2

FILE: HDHBCS

RESULTS IN

µr/hr

CPM

pCi/G

BACKGROUND

7

3000

Total U 4

Th (Nat) 1.5

MDA

2

N/A

5

1

REVIEWED BY:

W. A. Rogers

DATE: 8-27-98

CIMARRON CORPORATION
CIMARRON FACILITY
SUB-AREA "H" - DRAINAGE/BOUNDARY CROSSECTIONS

DATE: 08/27/98

LN #	GRID NUMBER	3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	pCi/g							
					0 - 1'		1' - 2'		2' - 3'		3' - 4'	
					Total U	Th (Nat)	Total U	Th (Nat)	Total U	Th (Nat)	Total U	Th (Nat)
1	338 E - 589 N	4640	12	12	8	1	9	1	14	1	8	1
2	338 E - 590 N	4840	11	12	9	1	9	1	7	1	9	1
3	338 E - 591 N	4980	13	13	12	1	10	1	11	1	9	1
4	338 E - 592 N	4800	13	12	13	1	8	1	10	1	6	1
5	338 E - 593 N	4710	12	12	9	1	9	1	5	1	9	1
6	338 E - 594 N	4730	12	13	12	1	5	1	7	1	7	1
7	364 E - 625 N	4920	13	13	3	1	2	1	3	1	5	1
8	365 E - 625 N	4230	12	13	5	1	3	1	5	1	8	1
9	366 E - 625 N	4320	12	12	6	1	5	1	9	1	8	1
10	367 E - 625 N	3650	11	11	5	1	6	1	4	1	9	1
11	368 E - 625 N	3400	12	12	5	1	8	1	6	1	10	1
12	369 E - 625 N	2770	10	12	7	1	7	1	7	1	7	1
13	370 E - 625 N	3090	10	10	5	1	6	1	5	1	8	1
14	371 E - 625 N	2820	10	10	9	1	9	1	9	1	10	1
15	372 E - 625 N	3290	10	12	6	1	4	1	5	1	6	1
16	373 E - 625 N	3730	11	11	4	1	4	1	4	2	8	1
17	374 E - 625 N	3240	9	11	3	1	3	1	3	1	8	1
18	375 E - 625 N	3670	12	12	6	1	8	1	9	1	9	1
19	376 E - 625 N	4110	12	12	6	1	4	1	9	1	6	1
20	377 E - 625 N	3450	12	12	5	2	7	1	8	1	9	1
21	378 E - 625 N	3430	13	12	6	1	7	1	9	1	7	1
22	379 E - 625 N	3780	12	12	6	1	8	1	6	1	11	1
23	380 E - 625 N	3870	11	12	8	1	5	1	7	1	7	1

INSTRUMENTS:

LUDLUM MICRO 'R' METER MODEL 19 S/N 111299
LUDLUM 2221, SHIELDED 3" X 1/2" NaI DETECTOR S/N 48395

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

BACKGROUND NOT SUBTRACTED

PAGE 3

FILE: HDHBCS

RESULTS IN

µr/hr

CPM

pCi/G

BACKGROUND

7

3000

Total U 4

Th (Nat) 1.5

MDA

2

N/A

5

1

REVIEWED BY:

W. A. Rogers

DATE:

8-27-98

CIMARRON CORPORATION
CIMARRON FACILITY
PHASE II- SUB AREA H
DRAINAGE / BOUNDARY

QAQC-158
REV.1

SAMPLE LOCATION :

GRID LOCATION :

DATE: 9/16/98

LN #	GRID NUMBER	3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	pCi/g							
					0' - 1'		1' - 2'		2' - 3'		3' - 4'	
					Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)
1	364E - 685N	5280	14	13	7	1	7	2	7	1	8	2
2	365E - 385N	5040	14	12	4	2	8	2	9	1	7	1
3	366E - 685N	5170	13	14	5	1	15	2	11	1	9	1
4	367E - 685N	5370	15	14	6	1	14	2	13	1	8	1
5	368E - 685N	5240	14	13	1	1	11	1	9	1	8	1
6	369E - 685N	4590	13	13	9	1	11	2	10	2	9	2
7	370E - 685N	4770	14	13	3	1	12	1	11	1	8	2
8	371E - 685N	4810	14	14	8	2	14	2	12	1	8	1
9	372E - 685N	4800	15	14	7	2	20	1	10	2	7	1
10	373E - 685N	4940	13	13	7	1	11	2	5	2	9	2
11	374E - 685N	4790	15	14	11	1	6	1	10	1	5	2
12												
13												
14												
15												
16												
17												
18												

INSTRUMENTS:

RESULTS IN

BACKGROUND

MDA

LUDLUM MICRO 'R' METER -

µr/hr

7- 10

2

LUDLUM 2220, LEAD SHIELDED 3" X 1/2" NaI DETECTOR

CPM

4630

N/A

Total U 4.0

5

Th (Nat) 1.5

1

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

pCi/G

BACKGROUND NOT SUBTRACTED

PAGE 1

FILE: AHBOUND

REVIEWED BY:

W. A. Rogers

DATE:

9-16-98

CIMARRON CORPORATION
CIMARRON FACILITY
PHASE II- SUB AREA H
DRAINAGE / BOUNDARY

QAQC-158
REV.1

SAMPLE LOCATION :

GRID LOCATION :

DATE: 9/16/98

LN #	GRID NUMBER	3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	pCi/g							
					0' - 1'		1' - 2'		2' - 3'		3' - 4'	
					Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)
1	364E - 700N	5560	14	13	13	1	8	1	9	1	8	1
2	365E - 700N	5620	13	13	10	2	11	2	5	2	9	1
3	366E - 700N	5420	14	13	14	2	12	1	9	2	7	1
4	367E - 700N	5970	15	15	10	2	10	2	4	1	8	1
5	368E - 700N	5720	14	13	8	1	14	1	11	1	9	1
6	369E - 700N	4980	13	13	7	1	9	1	10	2	9	1
7	370E - 700N	5160	13	13	13	1	11	1	9	2	11	1
8	371E - 700N	5110	13	13	9	1	26	1	20	1	10	1
9	372E - 700N	4770	15	13	9	1	31	1	15	1	11	1
10	373E - 700N	5260	14	13	4	2	18	2	8	2	12	1
11	374E - 700N	4480	13	12	8	1	13	2	9	1	10	1
12												
13												
14												
15												
16												
17												
18												

INSTRUMENTS:

RESULTS IN

BACKGROUND

MDA

LUDLUM MICRO 'R' METER -

µr/hr

7- 10

2

LUDLUM 2220, LEAD SHIELDED 3" X 1/2" NaI DETECTOR

CPM

4630

N/A

Total U 4.0

5

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

pCi/G

Th (Nat) 1.5

1

BACKGROUND NOT SUBTRACTED

PAGE 1

FILE: AHBOUND

REVIEWED BY:

W. A. Rogers

DATE:

10-12-98

CIMARRON CORPORATION
CIMARRON FACILITY
PHASE II- SUB AREA H
DRAINAGE / BOUNDARY

QAQC-158
REV.1

SAMPLE LOCATION :

GRID LOCATION :

DATE: 10/12/98

LN #	GRID NUMBER	3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	pCi/g							
					0" - 1'		1' - 2'		2' - 3'		3' - 4'	
					Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)
1	368E - 690N	4740	13	14	9	1	15	1	10	1	12	1
2	369E - 688N	5220	14	14	8	1	19	1	8	1	10	1
3	370E - 686N	4720	13	13	10	1	26	2	9	1	9	1
4	370E - 687N	5360	13	12	10	1	32	2	8	1	8	1
5	370E - 688N	4930	13	14	13	1	29	1	12	1	11	1
6	370E - 692N	4810	13	13	8	1	18	1	8	1	5	1
7	371E - 688N	4960	13	12	11	1	20	1	15	1	8	1
8	372E - 690N	5170	14	13	5	1	19	1	15	1	14	1
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												

INSTRUMENTS:

RESULTS IN

BACKGROUND

MDA

LUDLUM MICRO 'R' METER -

µr/hr

7- 10

2

LUDLUM 2220, LEAD SHIELDED 3" X 1/2" NaI DETECTOR

48395

CPM

4630

N/A

Total U 4.0

5

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

1138420

pCi/G

Th (Nat) 1.5

1

BACKGROUND NOT SUBTRACTED

PAGE 1

FILE: AHBOUND

REVIEWED BY:

W.A. Rogers

DATE: 10-12-98

CIMARRON CORPORATION
CIMARRON FACILITY
PHASE II, SUB-AREA "H"

DATE: 07/27/98

LN #	GRID NUMBER	3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	pCi/g									
					0-6" Sample		6" - 1'		1' - 2'		2' - 3'		3' - 4'	
					Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)
* 1	369E - 690N	4130	11	13	9.8	0.9	6.8	0.8	14	1.1	16.7	1.2	10.1	0.9
2	370E - 600N	6420	7	6	9	0.7								
3	370E - 605N	6804	7	7	7.2	1								
4	370E - 610N	7562	8	7	8.6	0.7								
5	370E - 615N	7850	8	7	8.5	1								
6	370E - 620N	7814	8	7	7.2	1.1								
7	370E - 625N	8002	8	7	7.1	1								
8	370E - 630N	8180	8	8	6.5	1.1								
9	370E - 635N	8512	9	9	8.8	1								
10	370E - 640N	8464	9	8	10.1	1.2								
11	370E - 645N	7654	8	7	10.3	0.5								
12	370E - 650N	7004	7	7	5.1	0.8								
13	370E - 655N	7100	8	7	8.5	1								
14	370E - 660N	7316	7	8	7.1	0.7								
15	370E - 665N	7356	7	7	8.9	0.8								
16	370E - 670N	7408	8	7	7.7	0.8								
17	370E - 675N	8382	8	9	7.9	0.8								
18	370E - 680N	8528	8	7	10.5	0.9								
19	370E - 685N	8306	8	9	8	0.9								
*20	370E - 689N	3980	12	12	6.1	0.8	7.3	0.9	8.6	0.8	21	1.2	12.3	0.7

INSTRUMENTS:

LUDLUM MICRO 'R' METER - MODEL 19 S/N 138420

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

* LUDLUM 2220, SHIELDED 3"X1/2" NaI DETECTOR #48395

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

BACKGROUND NOT SUBTRACTED

PAGE 1

FILE: AREAH

RESULTS IN:

µR/hr

CPM

pCi/g

BACKGROUND

7

6940

3780

Total U 4

Th(Nat) 1.5

MDA

2

N/A

4

0.5

REVIEWED BY:

W.A. Rogers

DATE:

7-27-98

CIMARRON CORPORATION
CIMARRON FACILITY
PHASE II, SUB-AREA "H"

DATE: 7/27/98

LN #	GRID NUMBER	3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	pCi/g									
					0-6" Sample		6" - 1'		1' - 2'		2' - 3'		3' - 4'	
					Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)
*1	370E - 690N	4760	13	13	9.2	0.9	8.0	1.0	10.0	1.0	11.0	1.0	9.0	1.0
*2	370E - 691N	4490	13	12	7.3	0.9	7.6	0.9	14.2	0.9	13.5	1.1	12.7	0.9
*3	370E - 695N	3920	12	12	10.5	1.2								
*4	370E - 700N	4460	13	13	7.9	1.3								
*5	370E - 705N	4430	11	11	10.1	1.1								
*6	370E - 710N	3850	11	11	11.9	0.7								
*7	370E - 715N	4460	14	14	11.2	1.3	16.3	0.9	7.6	0.9				
*8	370E - 720N	4510	12	12	8.6	1.1								
*9	370E - 725N	4140	15	15	13.1	1.2								
*10	370E - 730N	4570	13	11	8.5	1.4								
*11	370E - 735N	4490	13	13	8.2	1.1								
*12	370E - 740N	4790	13	11	9.2	1.2								
*13	371E - 690N	4210	13	13	7.3	1	8.7	0.8	25.7	1	13.7	1.1	7.6	0.8
14	375E - 600N	6414	7	7	7.6	0.7								
15	375E - 605N	6316	7	6	5.6	0.8								
16	375E - 610N	6638	7	7	8.2	0.8								
17	375E - 615N	6910	7	7	9.7	0.7								
18	375E - 620N	6364	7	6	8.9	0.8								
19	375E - 625N	6738	7	7	7.8	0.7								
20	375E - 630N	6694	7	7	5.5	0.8								

INSTRUMENTS:

LUDLUM MICRO 'R' METER - MODEL 12 S/N #9081

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

* LUDLUM 2220, SHIELDED 3"X1/2" NaI DETECTOR #48395

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

BACKGROUND NOT SUBTRACTED

PAGE 2

FILE: AREAH

RESULTS IN:

µR/hr
CPM

pCi/g

BACKGROUND

7
6940
3780
Total U 4
Th(Nat) 1.5

MDA

2
N/A
4
0.5

REVIEWED BY:

W. A. Rogers

DATE:

7-27-98

CIMARRON CORPORATION
CIMARRON FACILITY
PHASE II, SUB-AREA "H"

DATE: 07/27/98

LN #	GRID NUMBER	3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	pCi/g									
					0-6" Sample		6" - 1'		1' - 2'		2' - 3'		3' - 4'	
					Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)
1	375E - 635N	5912	6	6	5.3	0.5								
2	375E - 640N	6702	7	7	8.8	0.6								
3	375E - 645N	7062	7	8	7.9	0.9								
4	375E - 650N	7106	7	8	8.6	1.1								
5	375E - 655N	7424	7	7	9.4	1.1								
6	375E - 660N	7872	8	7	8	1								
7	375E - 665N	8082	7	7	8.3	1								
8	375E - 670N	8422	7	7	6.7	1.2								
9	375E - 675N	8454	8	8	9.6	1.1								
10	375E - 680N	8752	9	8	8.9	1.3								
11	375E - 685N	8770	8	9	11.2	1.2								
*12	375E - 690N	4590	13	12	12.4	1.1								
*13	375E - 695N	4230	13	11	8.7	1								
*14	375E - 700N	4380	13	11	10.8	1								
*15	375E - 705N	3980	13	12	11.5	1.1								
*16	375E - 710N	3730	13	14	11.2	1.1	8.4	0.8	15.3	1.3				
*17	375E - 715N	4840	13	11	12.3	1.2								
*18	375E - 720N	4740	12	14	10.2	1.2								
*19	375E - 725N	4260	14	12	9.4	1.3								
*20	375E - 730N	4810	14	14	10.4	1.4								

INSTRUMENTS:

LUDLUM MICRO 'R' METER - MODEL 12 S/N #9081

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

* LUDLUM 2220, SHIELDED 3"X1/2" NaI DETECTOR #48395

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

BACKGROUND NOT SUBTRACTED

PAGE 3

FILE: AREA H

RESULTS IN:

μR/hr

CPM

pCi/g

BACKGROUND

7

6940

3780

Total U 4

Th(Nat) 1.5

MDA

2

N/A

4

0.5

REVIEWED BY:

W. a. Rogers

DATE:

7-29-98

CIMARRON CORPORATION
CIMARRON FACILITY
PHASE II, SUB-AREA "H"

DATE: 07/27/98

LN #	GRID NUMBER	3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	pCi/g									
					0-6" Sample		6" - 1'		1' - 2'		2' - 3'		3' - 4'	
					Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)
* 1	375E - 735N	4840	14	13	10.9	1.3	11.7	1	10.9	0.9				
* 2	375E - 740N	4570	14	14	12.4	1.3								
3	380E - 600N	7062	7	8	7.3	0.8								
4	380E - 605N	7598	7	7	8.9	0.9								
5	380E - 610N	6554	6	6	7.5	0.8								
6	380E - 615N	6346	7	7	8.4	0.7								
7	380E - 620N	6950	7	8	6.9	0.8								
8	380E - 625N	7064	7	6	9.5	0.7								
9	380E - 630N	6342	7	6	7.8	0.7								
10	380E - 635N	7040	7	7	7.8	0.8								
11	380E - 640N	7746	7	7	7.5	0.9								
12	380E - 645N	7312	7	8	8.8	0.9								
13	380E - 650N	7526	7	8	7	1								
14	380E - 655N	7870	8	7	9.1	1.1								
15	380E - 660N	8054	10	9	12.2	1	9.1	1	10	0.8				
16	380E - 665N	7856	8	8	10.1	1.1								
17	380E - 670N	8164	10	9	10.6	1								
18	380E - 675N	8674	10	8	12.2	1.1								
19	380E - 680N	9088	9	9	8.4	0.9								
20	380E - 685N	9230	9	9	11.4	1.3								

INSTRUMENTS:

LUDLUM MICRO 'R' METER - MODEL 12 S/N #9081
LUDLUM 2221, UNSHIELDED 3" X 1/2" NaI DETECTOR #97264
 * LUDLUM 2220, SHIELDED 3"X1/2" NaI DETECTOR #48395

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

BACKGROUND NOT SUBTRACTED

PAGE 4

FILE: AREA H

RESULTS IN:

µR/hr
CPM

pCi/g

BACKGROUND

7
6940
3780
 Total U 4
 Th(Nat) 1.5

MDA

2
N/A

 4
 0.5

REVIEWED BY: W. G. Rogers

DATE: 7-29-98

CIMARRON CORPORATION
CIMARRON FACILITY
PHASE II, SUB-AREA "H"

DATE: 07/27/98

LN #	GRID NUMBER	3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	pCi/g									
					0-6" Sample		6" - 1'		1' - 2'		2' - 3'		3' - 4'	
					Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)
1	380E - 690N	7986	13	14	6.6	1								
2	380E - 695N	7734	14	12	8.1	0.9								
3	380E - 700N	7420	14	14	7.2	0.9								
4	380E - 705N	7764	15	13	5.8	1								
5	380E - 710N	6894	14	13	6.1	0.7								
6	380E - 715N	8486	9	9	11	1.2								
7	380E - 720N	9550	10	10	13.5	1.6								
8	380E - 725N	7546	12	11	5.2	1.1								
9	380E - 730N	9780	10	9	19.5	1.9								
10	380E - 735N	4920	15	15	12.3	1.2	13.2	1.4	6.9	0.5				
11	380E - 740N	9522	13	12	9.6	1.3								
12	380E - 745N	9476	13	13	9.4	1.5								
13	380E - 750N	9600	12	13	10.1	1.4								
14	380E - 755N	8944	13	12	12	0.9								
15														
16														
17														
18														
19														
20														

INSTRUMENTS:

LUDLUM MICRO 'R' METER - MODEL 12 S/N #9081

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

* LUDLUM 2220, SHIELDED 3"X1/2" NaI DETECTOR #48395

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

BACKGROUND NOT SUBTRACTED

PAGE 5

FILE: AREAH

RESULTS IN:

μR/hr

CPM

pCi/g

BACKGROUND

7

6940

3780

Total U 4

Th(Nat) 1.5

MDA

2

N/A

4

0.5

REVIEWED BY:

W. C. Rogers

DATE: 7-29-98

CIMARRON CORPORATION
CIMARRON FACILITY
PHASE II, SUB-AREA "H"
AREA "H" BERM WITH OFFSET DATA

DATE: 7/21/98

LN #	GRID NUMBER	3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	pCi/g	
					0-6" Sample	
					Total-U	Th (Nat)
1	68E - 440N	4440	12	11	6.4	1
2	97E - 460N	4010	11	11	8	0.7
3	141E - 490N	4500	13	12	13.2	1
4	142E - 489N	4010	13	12	10.9	0.9
5	142E - 490N	4270	14	12	14.5	1.2
6	142E - 491N	3680	12	11	9.8	0.9
7	143E - 490N	4180	11	11	14.8	1.1
8	151E - 528N	4260	13	12	9.6	1
9	201E - 548N	4980	13	12	9.9	1
10	250E - 570N	4600	13	11	13.5	1.3
11	251E - 569N	4720	14	13	13.4	1.2
12	251E - 570N	4820	13	12	17.7	1.3
13	251E - 571N	5130	14	12	20.4	1.4
14	252E - 570N	4720	14	13	11.9	1.1
15	300E - 586N	4900	13	12	9.3	1.2
16	301E - 585N	5110	13	12	12.3	1.2
17	301E - 586N	4720	13	13	12.3	1.2
18	301E - 587N	4800	14	13	9.9	1.1
19	302E - 586N	5300	14	12	13.2	1.4
20	352E - 599N	3610	11	11	6	0.7

INSTRUMENTS:

RESULTS IN: BACKGROUND MDA

LUDLUM MICRO 'R' METER - MODEL 19 S/N 138420

μR/hr 9 2

LUDLUM 2221, SHIELDED 3" X 1/2" NaI DETECTOR S/N 48395

CPM 3660 N/A

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

Total U 4 10
pCi/g Th(Nat) 1.5 1

BACKGROUND NOT SUBTRACTED

PAGE 1

REVIEWED BY:

W.A. Rogers

DATE: 7-24-98

FILE: HBSSWOS

CIMARRON CORPORATION
 CIMARRON FACILITY
 PHASE II, SUB-AREA "H"
 AREA "H" BERM WITH OFFSET DATA

DATE: 7/21/98

LN #	GRID NUMBER	3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	pCi/g	
					0-6" Sample	
					Total-U	Th (Nat)
1	357E - 658N	4270	12	12	2	1
2	358E - 708N	4580	13	11	8	1
3	359E - 608N	3730	12	11	9	1
4	360E - 758N	4120	13	12	7	1
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

INSTRUMENTS:

RESULTS IN: BACKGROUND MDA

LUDLUM MICRO 'R' METER - MODEL 19 S/N 138420

μR/hr 9 2

LUDLUM 2221, SHIELDED 3" X 1/2" NaI DETECTOR S/N 48395

CPM 3660 N/A

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

Total U 4 10
 pCi/g Th(Nat) 1.5 1

BACKGROUND NOT SUBTRACTED

PAGE 2

REVIEWED BY: W.A. Rogers

DATE: 7-24-98

FILE: HBSSWOS

CIMARRON CORPORATION
CIMARRON FACILITY
PHASE II, SUB-AREA "H"
AREA "H" FENCELINE SOIL SAMPLES

DATE: 7/21/98

LN #	GRID NUMBER	3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	pCi/g	
					0-6" Sample	
					Total-U	Th (Nat)
1	148E - 528N	4160	11	11	6.2	1
2	153E - 530N	4570	13	12	6.4	0.9
3	157E - 532N	4020	12	12	4.8	1.3
4	162E - 533N	4150	12	12	5.4	0.9
5	167E - 535N	4500	12	12	9.1	0.8
6	172E - 537N	4680	12	12	8.9	0.9
7	176E - 539N	4190	12	11	8.1	0.9
8	181E - 541N	4250	13	12	6.4	1.3
9	186E - 543N	4180	12	11	10.3	0.8
10	190E - 545N	4560	13	12	8.3	1.3
11	195E - 547N	4320	14	13	5.2	1.1
12	200E - 548N	4530	12	12	8	1.1
13	204E - 550N	4740	12	11	10.8	0.9
14	209E - 552N	4870	12	13	7.9	1.1
15	214E - 554N	4890	13	13	11	1
16	218E - 556N	4730	13	12	9.2	1.3
17	223E - 558N	4670	14	12	6.4	1.1
18	228E - 560N	4670	13	12	5.4	1.4
19	232E - 562N	4350	13	11	6	1.3
20	237E - 564N	5130	13	13	8.1	0.9

INSTRUMENTS:

RESULTS IN:

MDA

LUDLUM MICRO 'R' METER - MODEL 19 S/N 138420

μR/hr

9

2

LUDLUM 2221, SHIELDED 3" X 1/2" NaI DETECTOR S/N 48395

CPM

3860

N/A

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

pCi/g

Total U

4

10

Th(Nat)

1.5

1

BACKGROUND NOT SUBTRACTED

PAGE 1

REVIEWED BY:

W.A. Rogers

DATE: 7-24-98

FILE: HFLSS

CIMARRON CORPORATION
CIMARRON FACILITY
PHASE II, SUB-AREA "H"
AREA "H" FENCELINE SOIL SAMPLES

DATE: 7/21/98

LN #	GRID NUMBER	3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	pCi/g	
					0-6" Sample	
					Total-U	Th (Nat)
1	241E - 566N	4760	12	12	9.4	1
2	246E - 568N	4690	13	12	6.5	1.1
3	251E - 570N	5010	12	12	6.7	1.2
4	255E - 572N	4980	14	13	7.8	1.3
5	260E - 574N	4770	13	12	6.2	1.1
6	265E - 575N	4830	13	12	6.1	1.2
7	270E - 577N	4870	14	12	9.6	1
8	275E - 578N	4740	13	11	12.8	1.3
9	280E - 580N	4560	13	11	12.6	1.2
10	284E - 581N	4840	13	12	9.7	1.1
11	289E - 583N	5000	13	12	10.5	1
12	294E - 584N	4940	14	12	11.1	1.3
13	299E - 586N	5320	13	12	9.7	1.4
14	304E - 587N	5190	13	12	13.2	1.4
15	309E - 589N	5180	13	11	11.7	1.3
16	313E - 590N	5140	14	13	11.8	1.2
17	318E - 592N	5280	13	11	7.1	1.3
18	323E - 593N	3010	12	10	12.9	1.2
19	328E - 595N	4100	12	12	9.7	1.4
20	333E - 596N	4650	12	11	8.9	1.1

INSTRUMENTS:

RESULTS IN: BACKGROUND MDA

LUDLUM MICRO 'R' METER - MODEL 19 S/N 138420

μR/hr 9 2

LUDLUM 2221, SHIELDED 3" X 1/2" NaI DETECTOR S/N 48395

CPM 3860 N/A

Total U 4 10

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

pCi/g Th(Nat) 1.5 1

BACKGROUND NOT SUBTRACTED

AGE 2

REVIEWED BY:

W.A. Rogers

DATE:

7-24-98

FILE: HFLSS

CIMARRON CORPORATION
 CIMARRON FACILITY
 PHASE II, SUB-AREA "H"
 AREA "H" FENCELINE SOIL SAMPLES

DATE: 7/21/98

LN #	GRID NUMBER	3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	pCi/g	
					0-6" Sample	
					Total-U	Th (Nat)
1	338E - 598N	4270	13	11	6.6	1.1
2	342E - 599N	4100	12	11	8.7	1.1
3	347E - 601N	4370	12	12	7.2	1
4	352E - 602N	4370	12	12	5.9	1.2
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

INSTRUMENTS:

RESULTS IN: BACKGROUND MDA

LUDLUM MICRO 'R' METER - MODEL 19 S/N 138420

μR/hr 9 2

LUDLUM 2221, SHIELDED 3" X 1/2" NaI DETECTOR S/N 48395

CPM 3860 N/A

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

Total U 4 10
pCi/g Th(Nat) 1.5 1

BACKGROUND NOT SUBTRACTED

PAGE 3

REVIEWED BY: *W. A. Rogers*

DATE: 7-24-98

FILE: HFLSS

CIMARRON CORPORATION
CIMARRON FACILITY
PHASE II, SUB-AREA "H"
AREA "H" NORTH OF FENCELINE

DATE: 07/27/98

LN #	GRID NUMBER	3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	pCi/g									
					0-6" Sample		6" - 1'		1' - 2'		2' - 3'		3' - 4'	
					Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)
1	123E - 528N	4820	13	13	5.2	1	3.9	1.1	6.7	0.8				
2	128E - 530N	4310	13	12	5.9	0.8								
3	133E - 532N	4040	13	12	4.6	1.2								
4	138E - 534N	4530	13	13	4	1.1								
5	143E - 536N	4410	13	12	5.5	1								
6	148E - 538N	4640	13	13	6.3	1.2								
7	153E - 540N	4850	13	12	4.1	1								
8	157E - 542N	4440	14	13	3.7	0.9								
9	162E - 543N	4380	13	13	4.7	0.7								
10	167E - 545N	4150	14	12	4	0.7								
11	172E - 547N	4180	13	12	4.7	0.9								
12	176E - 549N	4300	13	12	5.7	0.9	4.5	0.9	5.4	0.9				
13	181E - 551N	3980	13	13	5.6	0.9								
14	186E - 553N	4350	14	13	4.4	1.1								
15	190E - 555N	4460	14	12	5.1	1.1								
16	195E - 557N	4600	13	12	4.1	0.9								
17	200E - 558N	4350	13	13	3.7	0.9								
18	204E - 560N	4730	14	14	6.9	0.8								
19	209E - 562N	4070	14	13	3.4	0.9								
20	214E - 564N	4800	13	12	5.5	0.8								

INSTRUMENTS:

LUDLUM MICRO 'R' METER - MODEL 19 S/N 138420

LUDLUM 2221, SHIELDED 3" X 1/2" NaI DETECTOR #48395

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

BACKGROUND NOT SUBTRACTED

PAGE 1

FILE: HNFLSS

RESULTS IN:

µR/hr

CPM

pCi/g

BACKGROUND

9

3860

Total U 4

Th(Nat) 1.5

MDA

2

N/A

4

0.5

REVIEWED BY: W.A. Rogers

DATE: 7-29-98

CIMARRON CORPORATION
CIMARRON FACILITY
PHASE II, SUB-AREA "H"
AREA "H" NORTH OF FENCELINE

DATE: 07/27/98

LN #	GRID NUMBER	3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	pCi/g									
					0-6" Sample		6" - 1'		1' - 2'		2' - 3'		3' - 4'	
					Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)
1	218E - 566N	4590	14	14	3.5	0.9								
2	223E - 568N	4670	13	12	4.8	0.9	4.7	1	6.9	1				
3	228E - 570N	4820	14	13	4.8	0.9								
4	232E - 572N	4950	13	13	5.4	0.9								
5	237E - 574N	5070	15	15	5.6	1.2								
6	241E - 576N	4750	15	13	7.6	1.1								
7	246E - 578N	4720	13	13	7	1.2								
8	251E - 580N	4690	15	16	8.5	1.2								
9	255E - 582N	4950	15	13	3.7	1								
10	260E - 584N	5340	14	13	8.6	1.1								
11	265E - 585N	5060	14	15	6.5	1.1	7.6	1.2	9.7	1.1				
12	270E - 587N	5310	14	13	5.2	1.2								
13	275E - 588N	4850	15	13	9	1.2								
14	280E - 590N	5130	15	14	9.2	1.1								
15	284E - 591N	4920	13	14	8	1								
16	289E - 593N	4340	12	13	4.2	1								
17	294E - 594N	4760	14	13	8.1	0.8								
18	299E - 596N	4470	13	12	7.7	1								
19	304E - 597N	4530	14	14	5.5	1.2								
20	309E - 599N	4740	14	13	8.1	1.1								

INSTRUMENTS:

LUDLUM MICRO 'R' METER - MODEL 12 S/N #9081

LUDLUM 2221, SHIELDED 3" X 1/2" NaI DETECTOR #48395

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

BACKGROUND NOT SUBTRACTED

PAGE 2

FILE: HNFLSS

RESULTS IN:

µR/hr

CPM

pCi/g

BACKGROUND

9

3860

Total U 4

Th(Nat) 1.5

MDA

2

N/A

4

0.5

REVIEWED BY:

W. A. Brown

DATE: 7-29-98

CIMARRON CORPORATION
CIMARRON FACILITY
PHASE II, SUB-AREA "H"
AREA "H" NORTH OF FENCELINE

DATE: 07/27/98

LN #	GRID NUMBER	3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	pCi/g									
					0-6" Sample		6" - 1'		1' - 2'		2' - 3'		3' - 4'	
					Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)
1	313E - 600N	4560	13	13	8.5	1.1								
2	318E - 602N	4750	13	13	8.7	1								
3	323E - 603N	4880	13	12	7	1.2								
4	328E - 605N	5050	13	12	8.4	0.9								
5	333E - 606N	5410	14	14	7.7	1.1	7.2	0.8	7.5	0.9				
6	338E - 608N	4520	13	14	7.1	1								
7	342E - 609N	5290	14	13	6	0.9								
8	347E - 611N	4410	14	12	7.4	0.9								
9	352E - 612N	4870	12	13	7.8	0.7								
10														
11														
12														
13														
14														
15														
16														
17														
18														
19														
20														

INSTRUMENTS:

LUDLUM MICRO 'R' METER - MODEL 12 S/N #9081

LUDLUM 2221, SHIELDED 3" X 1/2" NaI DETECTOR #48395

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

BACKGROUND NOT SUBTRACTED

PAGE 3

FILE: HNFLSS

RESULTS IN:

μR/hr

CPM

pCi/g

BACKGROUND

9

3860

Total U 4

Th(Nat) 1.5

MDA

2

N/A

4

0.5

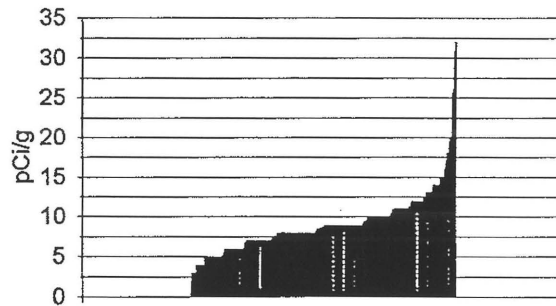
REVIEWED BY:

W. A. Rogers

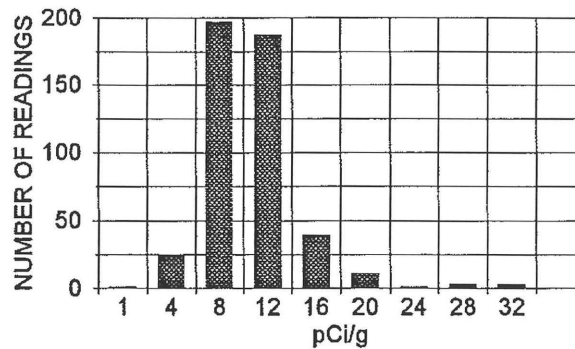
DATE: *7-29-98*

PHASE II - AREA H
 DRAINAGE/BOUNDARY (AFFECTED)
 CIMARRON SOIL COUNTER
 TOTAL URANIUM SOIL SAMPLE RESULTS
 SITE BACKGROUND OF 4 pCi/g NOT SUBTRACTED
 SEPTEMBER 1998

URANIUM SAMPLE DATA
 SURVEY DATA



URANIUM SAMPLE RESULTS
 FREQUENCY DISTRIBUTION



NUMBER OF SAMPLES	466
AVERAGE SAMPLE	9
MINIMUM SAMPLE	1
MAXIMUM SAMPLE	32
STANDARD DEVIATION	4

CIMARRON CORPORATION - CIMARRON FACILITY AREA H DRAINAGE/BOUNDARY (AFFECTED)
TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) ²
1	9.8	1.00	1.01
2	9.0	0.20	0.04
3	7.2	-1.60	2.55
4	8.6	-0.20	0.04
5	8.5	-0.30	0.09
6	7.2	-1.60	2.55
7	7.1	-1.70	2.87
8	6.5	-2.30	5.27
9	8.8	0.00	0.00
10	10.1	1.30	1.70
11	10.3	1.50	2.26
12	5.1	-3.70	13.66
13	8.5	-0.30	0.09
14	7.1	-1.70	2.87
15	8.9	0.10	0.01
16	7.7	-1.10	1.20
17	7.9	-0.90	0.80
18	10.5	1.70	2.91
19	8.0	-0.80	0.63
20	6.1	-2.70	7.27
21	9.2	0.40	0.16
22	7.3	-1.50	2.24
23	10.5	1.70	2.91
24	7.9	-0.90	0.80
25	10.1	1.30	1.70
26	11.9	3.10	9.64
27	11.2	2.40	5.78
28	8.6	-0.20	0.04
29	13.1	4.30	18.53
30	8.5	-0.30	0.09
31	8.2	-0.60	0.35
32	9.2	0.40	0.16
33	7.3	-1.50	2.24
34	7.6	-1.20	1.43
35	5.6	-3.20	10.21
36	8.2	-0.60	0.35
37	9.7	0.90	0.82
38	8.9	0.10	0.01
39	7.8	-1.00	0.99
40	5.5	-3.30	10.86
41	5.3	-3.50	12.22
42	8.8	0.00	0.00
43	7.9	-0.90	0.80
44	8.6	-0.20	0.04
45	9.4	0.60	0.37
46	8.0	-0.80	0.63
47	8.3	-0.50	0.25
48	6.7	-2.10	4.39
49	9.6	0.80	0.65
50	8.9	0.10	0.01
	477.2		564.68
	470		516.27
	599.6		3145.44
	461.6		673.44
	419		612.41
	443.9		554.23
	404.4		307.54
	402.3		202.23
	4098.7		6712.71
	Sum(n)		Sum(n-N) ²

No. of Samples (x) : 466

COUNT TIME: 5 MINUTES

Sample Mean (N) = Sum(n) ÷ (x)

Sample Mean (N) : 8.80

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

Standard Deviation: 3.8

2 Std Deviations: 7.6

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

(df) = 1.645

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

(Aμ) = 9.09

GUIDELINE VALUE: 30

Acceptable Level: 34.0

(30 PLUS BACKGROUND)

pCi/gU TOTAL U

pCi/gU TOTAL U

pCi/gU TOTAL U

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) Infinite is (B) 95%

(df) low value(Y) is (A) 95%

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

EXP[(Ln(B) - Ln(A)) ÷ (Z - Y) (X - Y) + Ln(A)]

The (df) value for (X) 1.645 95%

PERFORMED BY: W. A. Rogers

DATE: 10-27-98

REVIEWED BY: W. A. Rogers

DATE: 10-27-98

AREA H DRAINAGE/BOUNDARY (AFFECTED)

$$n = pCl/g \text{ TOTAL U}$$
$$n = pCi/g \text{ TOTAL U}$$
Page 2 of 6

CIMARRON CORPORATION - CIMARRON FACILITY

AREA H DRAINAGE/BOUNDARY (AFFECTED)

TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) ²
151	12.0	3.20	10.27
152	3.0	-5.80	33.59
153	5.0	-3.80	14.41
154	6.0	-2.80	7.81
155	5.0	-3.80	14.41
156	5.0	-3.80	14.41
157	7.0	-1.80	3.22
158	5.0	-3.80	14.41
159	9.0	0.20	0.04
160	6.0	-2.80	7.81
161	4.0	-4.80	23.00
162	3.0	-5.80	33.59
163	6.0	-2.80	7.81
164	6.0	-2.80	7.81
165	5.0	-3.80	14.41
166	6.0	-2.80	7.81
167	6.0	-2.80	7.81
168	8.0	-0.80	0.63
169	8.0	-0.80	0.63
170	11.0	2.20	4.86
171	12.0	3.20	10.27
172	10.0	1.20	1.45
173	14.0	5.20	27.09
174	9.0	0.20	0.04
175	11.0	2.20	4.86
176	26.0	17.20	296.00
177	31.0	22.20	493.04
178	18.0	9.20	84.72
179	13.0	4.20	17.68
180	7.0	-1.80	3.22
181	8.0	-0.80	0.63
182	15.0	6.20	38.50
183	14.0	5.20	27.09
184	11.0	2.20	4.86
185	11.0	2.20	4.86
186	12.0	3.20	10.27
187	14.0	5.20	27.09
188	20.0	11.20	125.54
189	11.0	2.20	4.86
190	6.0	-2.80	7.81
191	15.0	6.20	38.50
192	19.0	10.20	104.13
193	26.0	17.20	296.00
194	32.0	23.20	538.45
195	29.0	20.20	408.22
196	18.0	9.20	84.72
197	20.0	11.20	125.54
198	19.0	10.20	104.13
199	14.0	5.20	27.09
200	8.6	-0.20	0.04
	599.6		3145.44
	Sum(n)		Sum(n-N) ²

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) ²
201	10.0	1.20	1.45
202	14.2	5.40	29.21
203	7.6	-1.20	1.43
204	25.7	16.90	285.76
205	15.3	6.50	42.31
206	10.9	2.10	4.43
207	6.9	-1.90	3.59
208	6.0	-2.80	7.81
209	6.0	-2.80	7.81
210	9.0	0.20	0.04
211	7.0	-1.80	3.22
212	10.0	1.20	1.45
213	9.0	0.20	0.04
214	8.0	-0.80	0.63
215	10.0	1.20	1.45
216	10.0	1.20	1.45
217	11.0	2.20	4.86
218	5.0	-3.80	14.41
219	7.0	-1.80	3.22
220	6.0	-2.80	7.81
221	3.0	-5.80	33.59
222	5.0	-3.80	14.41
223	8.0	-0.80	0.63
224	7.0	-1.80	3.22
225	8.0	-0.80	0.63
226	5.0	-3.80	14.41
227	7.0	-1.80	3.22
228	9.0	0.20	0.04
229	8.0	-0.80	0.63
230	11.0	2.20	4.86
231	8.0	-0.80	0.63
232	10.0	1.20	1.45
233	16.0	7.20	51.90
234	12.0	3.20	10.27
235	14.0	5.20	27.09
236	12.0	3.20	10.27
237	15.0	6.20	38.50
238	12.0	3.20	10.27
239	8.0	-0.80	0.63
240	7.0	-1.80	3.22
241	8.0	-0.80	0.63
242	9.0	0.20	0.04
243	5.0	-3.80	14.41
244	8.0	-0.80	0.63
245	7.0	-1.80	3.22
246	8.0	-0.80	0.63
247	9.0	0.20	0.04
248	9.0	0.20	0.04
249	9.0	0.20	0.04
250	10.0	1.20	1.45
	461.6		673.44
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY

AREA H DRAINAGE/BOUNDARY (AFFECTED)

TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) ²
251	8.0	-0.80	0.63
252	9.0	0.20	0.04
253	5.0	-3.80	14.41
254	2.0	-6.80	46.18
255	3.0	-5.80	33.59
256	5.0	-3.80	14.41
257	6.0	-2.80	7.81
258	8.0	-0.80	0.63
259	7.0	-1.80	3.22
260	6.0	-2.80	7.81
261	9.0	0.20	0.04
262	4.0	-4.80	23.00
263	4.0	-4.80	23.00
264	3.0	-5.80	33.59
265	8.0	-0.80	0.63
266	4.0	-4.80	23.00
267	7.0	-1.80	3.22
268	7.0	-1.80	3.22
269	8.0	-0.80	0.63
270	5.0	-3.80	14.41
271	9.0	0.20	0.04
272	5.0	-3.80	14.41
273	9.0	0.20	0.04
274	4.0	-4.80	23.00
275	11.0	2.20	4.86
276	10.0	1.20	1.45
277	9.0	0.20	0.04
278	20.0	11.20	125.54
279	15.0	6.20	38.50
280	8.0	-0.80	0.63
281	9.0	0.20	0.04
282	7.0	-1.80	3.22
283	9.0	0.20	0.04
284	11.0	2.20	4.86
285	13.0	4.20	17.68
286	9.0	0.20	0.04
287	10.0	1.20	1.45
288	11.0	2.20	4.86
289	12.0	3.20	10.27
290	10.0	1.20	1.45
291	5.0	-3.80	14.41
292	10.0	1.20	1.45
293	10.0	1.20	1.45
294	8.0	-0.80	0.63
295	9.0	0.20	0.04
296	8.0	-0.80	0.63
297	12.0	3.20	10.27
298	8.0	-0.80	0.63
299	15.0	6.20	38.50
300	15.0	6.20	38.50
	419		612.41
	Sum(n)		Sum(n-N) ²

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) ²
301	16.7	7.90	62.48
302	21.0	12.20	148.95
303	11.0	2.20	4.86
304	13.5	4.70	22.13
305	13.7	4.90	24.05
306	5.0	-3.80	14.41
307	9.0	0.20	0.04
308	8.0	-0.80	0.63
309	8.0	-0.80	0.63
310	7.0	-1.80	3.22
311	12.0	3.20	10.27
312	11.0	2.20	4.86
313	10.0	1.20	1.45
314	11.0	2.20	4.86
315	15.0	6.20	38.50
316	5.0	-3.80	14.41
317	7.0	-1.80	3.22
318	4.0	-4.80	23.00
319	5.0	-3.80	14.41
320	7.0	-1.80	3.22
321	8.0	-0.80	0.63
322	9.0	0.20	0.04
323	9.0	0.20	0.04
324	6.0	-2.80	7.81
325	9.0	0.20	0.04
326	7.0	-1.80	3.22
327	7.0	-1.80	3.22
328	10.0	1.20	1.45
329	8.0	-0.80	0.63
330	8.0	-0.80	0.63
331	10.0	1.20	1.45
332	6.0	-2.80	7.81
333	6.0	-2.80	7.81
334	9.0	0.20	0.04
335	6.0	-2.80	7.81
336	8.0	-0.80	0.63
337	11.0	2.20	4.86
338	7.0	-1.80	3.22
339	5.0	-3.80	14.41
340	6.0	-2.80	7.81
341	4.0	-4.80	23.00
342	8.0	-0.80	0.63
343	9.0	0.20	0.04
344	10.0	1.20	1.45
345	11.0	2.20	4.86
346	14.0	5.20	27.09
347	7.0	-1.80	3.22
348	11.0	2.20	4.86
349	10.0	1.20	1.45
350	5.0	-3.80	14.41
	443.9		554.23
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY

AREA H DRAINAGE/BOUNDARY (AFFECTED)

TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) ²
351	7.0	-1.80	3.22
352	3.0	-5.80	33.59
353	5.0	-3.80	14.41
354	9.0	0.20	0.04
355	4.0	-4.80	23.00
356	6.0	-2.80	7.81
357	7.0	-1.80	3.22
358	5.0	-3.80	14.41
359	9.0	0.20	0.04
360	5.0	-3.80	14.41
361	4.0	-4.80	23.00
362	3.0	-5.80	33.59
363	9.0	0.20	0.04
364	9.0	0.20	0.04
365	8.0	-0.80	0.63
366	9.0	0.20	0.04
367	6.0	-2.80	7.81
368	7.0	-1.80	3.22
369	8.0	-0.80	0.63
370	9.0	0.20	0.04
371	7.0	-1.80	3.22
372	8.0	-0.80	0.63
373	9.0	0.20	0.04
374	9.0	0.20	0.04
375	11.0	2.20	4.86
376	10.0	1.20	1.45
377	11.0	2.20	4.86
378	12.0	3.20	10.27
379	10.0	1.20	1.45
380	8.0	-0.80	0.63
381	7.0	-1.80	3.22
382	9.0	0.20	0.04
383	8.0	-0.80	0.63
384	8.0	-0.80	0.63
385	9.0	0.20	0.04
386	8.0	-0.80	0.63
387	8.0	-0.80	0.63
388	7.0	-1.80	3.22
389	9.0	0.20	0.04
390	5.0	-3.80	14.41
391	12.0	3.20	10.27
392	10.0	1.20	1.45
393	9.0	0.20	0.04
394	8.0	-0.80	0.63
395	11.0	2.20	4.86
396	5.0	-3.80	14.41
397	8.0	-0.80	0.63
398	14.0	5.20	27.09
399	10.1	1.30	1.70
400	12.3	3.50	12.28
	404.4		307.54
	Sum(n)		Sum(n-N) ²

n = pCi/g TOTAL U

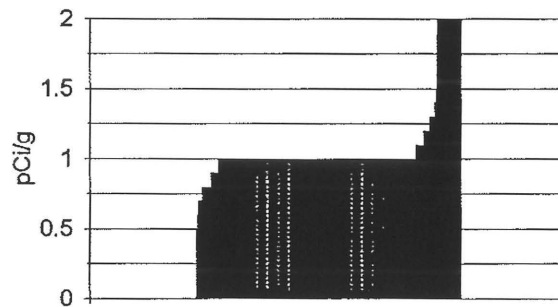
Number	n	(n-N)	(n-N) ²
401	9.0	0.20	0.04
402	12.7	3.90	15.25
403	7.0	-1.80	3.22
404	7.6	-1.20	1.43
405	12.0	3.20	10.27
406	10.0	1.20	1.45
407	10.0	1.20	1.45
408	9.0	0.20	0.04
409	12.0	3.20	10.27
410	8.0	-0.80	0.63
411	9.0	0.20	0.04
412	10.0	1.20	1.45
413	11.0	2.20	4.86
414	9.0	0.20	0.04
415	8.0	-0.80	0.63
416	7.0	-1.80	3.22
417	9.0	0.20	0.04
418	6.0	-2.80	7.81
419	8.0	-0.80	0.63
420	9.0	0.20	0.04
421	9.0	0.20	0.04
422	7.0	-1.80	3.22
423	9.0	0.20	0.04
424	9.0	0.20	0.04
425	6.0	-2.80	7.81
426	9.0	0.20	0.04
427	6.0	-2.80	7.81
428	6.0	-2.80	7.81
429	6.0	-2.80	7.81
430	6.0	-2.80	7.81
431	4.0	-4.80	23.00
432	7.0	-1.80	3.22
433	4.0	-4.80	23.00
434	7.0	-1.80	3.22
435	8.0	-0.80	0.63
436	7.0	-1.80	3.22
437	10.0	1.20	1.45
438	8.0	-0.80	0.63
439	8.0	-0.80	0.63
440	6.0	-2.80	7.81
441	8.0	-0.80	0.63
442	7.0	-1.80	3.22
443	9.0	0.20	0.04
444	8.0	-0.80	0.63
445	9.0	0.20	0.04
446	9.0	0.20	0.04
447	6.0	-2.80	7.81
448	9.0	0.20	0.04
449	7.0	-1.80	3.22
450	5.0	-3.80	14.41
	402.3		202.23
	Sum(n)		Sum(n-N) ²

$$n = pC / \rho_g \text{ TOTAL } U$$

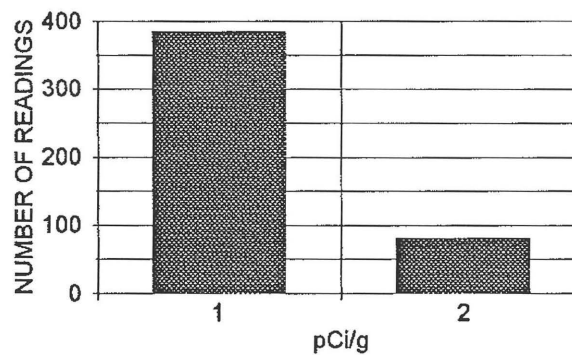
Number	n	(n-N)	(n-N) ²
501		0.00	0.00
502		0.00	0.00
503		0.00	0.00
504		0.00	0.00
505		0.00	0.00
506		0.00	0.00
507		0.00	0.00
508		0.00	0.00
509		0.00	0.00
510		0.00	0.00
511		0.00	0.00
512		0.00	0.00
513		0.00	0.00
514		0.00	0.00
515		0.00	0.00
516		0.00	0.00
517		0.00	0.00
518		0.00	0.00
519		0.00	0.00
520		0.00	0.00
521		0.00	0.00
522		0.00	0.00
523		0.00	0.00
524		0.00	0.00
525		0.00	0.00
526		0.00	0.00
527		0.00	0.00
528		0.00	0.00
529		0.00	0.00
530		0.00	0.00
531		0.00	0.00
532		0.00	0.00
533		0.00	0.00
534		0.00	0.00
535		0.00	0.00
536		0.00	0.00
537		0.00	0.00
538		0.00	0.00
539		0.00	0.00
540		0.00	0.00
541		0.00	0.00
542		0.00	0.00
543		0.00	0.00
544		0.00	0.00
545		0.00	0.00
546		0.00	0.00
547		0.00	0.00
548		0.00	0.00
549		0.00	0.00
550		0.00	0.00
	0		0.00
	Sum(n)		Sum(n-N)

PHASE II - AREA H
DRAINAGE/BOUNDARY (AFFECTED)
CIMARRON SOIL COUNTER
THORIUM (NAT)SOIL SAMPLE RESULTS
SITE BACKGROUND OF 1.5 pCi/g NOT SUBTRACTED
SEPTEMBER 1998

THORIUM SAMPLE RESULTS
SURVEY DATA



THORIUM SAMPLE RESULTS
FREQUENCY DISTRIBUTION



NUMBER OF SAMPLES	466
AVERAGE SAMPLE	1.1
MINIMUM SAMPLE	0.5
MAXIMUM SAMPLE	2.0
STANDARD DEVIATION	0.3

CIMARRON CORPORATION - CIMARRON FACILITY **AREA H DRAINAGE/BOUNDARY (AFFECTED)**
TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
1	0.9	-0.16	0.03
2	0.7	-0.36	0.13
3	1.0	-0.06	0.00
4	0.7	-0.36	0.13
5	1.0	-0.06	0.00
6	1.1	0.04	0.00
7	1.0	-0.06	0.00
8	1.1	0.04	0.00
9	1.0	-0.06	0.00
10	1.2	0.14	0.02
11	0.5	-0.56	0.31
12	0.8	-0.26	0.07
13	1.0	-0.06	0.00
14	0.7	-0.36	0.13
15	0.8	-0.26	0.07
16	0.8	-0.26	0.07
17	0.8	-0.26	0.07
18	0.9	-0.16	0.03
19	0.9	-0.16	0.03
20	0.8	-0.26	0.07
21	0.9	-0.16	0.03
22	0.9	-0.16	0.03
23	1.2	0.14	0.02
24	1.3	0.24	0.06
25	1.1	0.04	0.00
26	0.7	-0.36	0.13
27	1.3	0.24	0.06
28	1.1	0.04	0.00
29	1.2	0.14	0.02
30	1.4	0.34	0.12
31	1.1	0.04	0.00
32	1.2	0.14	0.02
33	1.0	-0.06	0.00
34	0.7	-0.36	0.13
35	0.8	-0.26	0.07
36	0.8	-0.26	0.07
37	0.7	-0.36	0.13
38	0.8	-0.26	0.07
39	0.7	-0.36	0.13
40	0.8	-0.26	0.07
41	0.5	-0.56	0.31
42	0.6	-0.46	0.21
43	0.9	-0.16	0.03
44	1.1	0.04	0.00
45	1.1	0.04	0.00
46	1.0	-0.06	0.00
47	1.0	-0.06	0.00
48	1.2	0.14	0.02
49	1.1	0.04	0.00
50	1.3	0.24	0.06
60.6			8.016
51			1.053
63.9			12.602
49.5			0.597
58			7.239
54.6			3.734
55.6			5.618
52.7			2.905
493.1			44,679
Sum(n)			Sum(n-N) ²

No. of Samples (x) : 466

COUNT TIME: 5 MINUTES

Sample Mean (N) = Sum(n) ÷ (x)

Sample Mean (N) : 1.06

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

Standard Deviation: 0.31

2 Std Deviations: 0.62

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

(df) = 1.645

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

(Aμ) = 1.08 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) Infinite is (B) 95%

(df) low value(Y) is (A) 95%

Desired value(df) (X) 465 is calculated as follow:

EXP[(Ln(B) - Ln(A)) ÷ (Z - Y)] (X - Y) + Ln(A)]

The (df) value for (X) 465 1.645 95%

PERFORMED BY: Marka Lott

DATE: 10-27-98

REVIEWED BY: W.A. Rogers

DATE: 10-27-98

CIMARRON CORPORATION - CIMARRON FACILITY

AREA H DRAINAGE/BOUNDARY (AFFECTED)

TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
51	1.2	0.14	0.02
52	1.1	0.04	0.00
53	1.0	-0.06	0.00
54	1.0	-0.06	0.00
55	1.1	0.04	0.00
56	1.1	0.04	0.00
57	1.2	0.14	0.02
58	1.2	0.14	0.02
59	1.3	0.24	0.06
60	1.4	0.34	0.12
61	1.3	0.24	0.06
62	1.3	0.24	0.06
63	1.9	0.84	0.71
64	1.2	0.14	0.02
65	1.3	0.24	0.06
66	1.5	0.44	0.20
67	0.8	-0.26	0.07
68	0.9	-0.16	0.03
69	1.0	-0.06	0.00
70	0.9	-0.16	0.03
71	0.9	-0.16	0.03
72	0.8	-0.26	0.07
73	0.8	-0.26	0.07
74	1.0	-0.06	0.00
75	1.4	0.34	0.12
76	1.0	-0.06	0.00
77	2.0	0.94	0.89
78	2.0	0.94	0.89
79	2.0	0.94	0.89
80	1.0	-0.06	0.00
81	1.0	-0.06	0.00
82	1.0	-0.06	0.00
83	1.0	-0.06	0.00
84	1.0	-0.06	0.00
85	2.0	0.94	0.89
86	1.0	-0.06	0.00
87	1.0	-0.06	0.00
88	2.0	0.94	0.89
89	1.0	-0.06	0.00
90	1.0	-0.06	0.00
91	1.0	-0.06	0.00
92	1.0	-0.06	0.00
93	1.0	-0.06	0.00
94	2.0	0.94	0.89
95	2.0	0.94	0.89
96	1.0	-0.06	0.00
97	1.0	-0.06	0.00
98	1.0	-0.06	0.00
99	1.0	-0.06	0.00
100	1.0	-0.06	0.00
	60.6		8.016
	Sum(n)		Sum(n-N) ²

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
101	1.0	-0.06	0.00
102	1.0	-0.06	0.00
103	1.0	-0.06	0.00
104	1.0	-0.06	0.00
105	1.0	-0.06	0.00
106	1.0	-0.06	0.00
107	1.0	-0.06	0.00
108	1.0	-0.06	0.00
109	1.0	-0.06	0.00
110	1.0	-0.06	0.00
111	1.0	-0.06	0.00
112	1.0	-0.06	0.00
113	1.0	-0.06	0.00
114	1.0	-0.06	0.00
115	1.0	-0.06	0.00
116	1.0	-0.06	0.00
117	1.0	-0.06	0.00
118	1.0	-0.06	0.00
119	1.0	-0.06	0.00
120	1.0	-0.06	0.00
121	1.0	-0.06	0.00
122	1.0	-0.06	0.00
123	1.0	-0.06	0.00
124	1.0	-0.06	0.00
125	1.0	-0.06	0.00
126	1.0	-0.06	0.00
127	1.0	-0.06	0.00
128	1.0	-0.06	0.00
129	1.0	-0.06	0.00
130	1.0	-0.06	0.00
131	1.0	-0.06	0.00
132	1.0	-0.06	0.00
133	1.0	-0.06	0.00
134	1.0	-0.06	0.00
135	1.0	-0.06	0.00
136	1.0	-0.06	0.00
137	1.0	-0.06	0.00
138	1.0	-0.06	0.00
139	1.0	-0.06	0.00
140	1.0	-0.06	0.00
141	1.0	-0.06	0.00
142	1.0	-0.06	0.00
143	1.0	-0.06	0.00
144	2.0	0.94	0.89
145	1.0	-0.06	0.00
146	1.0	-0.06	0.00
147	1.0	-0.06	0.00
148	1.0	-0.06	0.00
149	1.0	-0.06	0.00
150	1.0	-0.06	0.00
	51		1.053
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY

AREA H DRAINAGE/BOUNDARY (AFFECTED)

TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
151	1.0	-0.06	0.00
152	1.0	-0.06	0.00
153	1.0	-0.06	0.00
154	1.0	-0.06	0.00
155	1.0	-0.06	0.00
156	1.0	-0.06	0.00
157	1.0	-0.06	0.00
158	1.0	-0.06	0.00
159	1.0	-0.06	0.00
160	1.0	-0.06	0.00
161	1.0	-0.06	0.00
162	1.0	-0.06	0.00
163	1.0	-0.06	0.00
164	1.0	-0.06	0.00
165	2.0	0.94	0.89
166	1.0	-0.06	0.00
167	1.0	-0.06	0.00
168	1.0	-0.06	0.00
169	1.0	-0.06	0.00
170	2.0	0.94	0.89
171	1.0	-0.06	0.00
172	2.0	0.94	0.89
173	1.0	-0.06	0.00
174	1.0	-0.06	0.00
175	1.0	-0.06	0.00
176	1.0	-0.06	0.00
177	1.0	-0.06	0.00
178	2.0	0.94	0.89
179	2.0	0.94	0.89
180	2.0	0.94	0.89
181	2.0	0.94	0.89
182	2.0	0.94	0.89
183	2.0	0.94	0.89
184	1.0	-0.06	0.00
185	2.0	0.94	0.89
186	1.0	-0.06	0.00
187	2.0	0.94	0.89
188	1.0	-0.06	0.00
189	2.0	0.94	0.89
190	1.0	-0.06	0.00
191	1.0	-0.06	0.00
192	1.0	-0.06	0.00
193	2.0	0.94	0.89
194	2.0	0.94	0.89
195	1.0	-0.06	0.00
196	1.0	-0.06	0.00
197	1.0	-0.06	0.00
198	1.0	-0.06	0.00
199	1.1	0.04	0.00
200	0.8	-0.26	0.07
	63.9		12.602
	Sum(n)		Sum(n-N) ²

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
201	1.0	-0.06	0.00
202	0.9	-0.16	0.03
203	0.9	-0.16	0.03
204	1.0	-0.06	0.00
205	1.3	0.24	0.06
206	0.9	-0.16	0.03
207	0.5	-0.56	0.31
208	1.0	-0.06	0.00
209	1.0	-0.06	0.00
210	1.0	-0.06	0.00
211	1.0	-0.06	0.00
212	1.0	-0.06	0.00
213	1.0	-0.06	0.00
214	1.0	-0.06	0.00
215	1.0	-0.06	0.00
216	1.0	-0.06	0.00
217	1.0	-0.06	0.00
218	1.0	-0.06	0.00
219	1.0	-0.06	0.00
220	1.0	-0.06	0.00
221	1.0	-0.06	0.00
222	1.0	-0.06	0.00
223	1.0	-0.06	0.00
224	1.0	-0.06	0.00
225	1.0	-0.06	0.00
226	1.0	-0.06	0.00
227	1.0	-0.06	0.00
228	1.0	-0.06	0.00
229	1.0	-0.06	0.00
230	1.0	-0.06	0.00
231	1.0	-0.06	0.00
232	1.0	-0.06	0.00
233	1.0	-0.06	0.00
234	1.0	-0.06	0.00
235	1.0	-0.06	0.00
236	1.0	-0.06	0.00
237	1.0	-0.06	0.00
238	1.0	-0.06	0.00
239	1.0	-0.06	0.00
240	1.0	-0.06	0.00
241	1.0	-0.06	0.00
242	1.0	-0.06	0.00
243	1.0	-0.06	0.00
244	1.0	-0.06	0.00
245	1.0	-0.06	0.00
246	1.0	-0.06	0.00
247	1.0	-0.06	0.00
248	1.0	-0.06	0.00
249	1.0	-0.06	0.00
250	1.0	-0.06	0.00
	49.5		0.597
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY

AREA H DRAINAGE/BOUNDARY (AFFECTED)

TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
251	1.0	-0.06	0.00
252	1.0	-0.06	0.00
253	1.0	-0.06	0.00
254	1.0	-0.06	0.00
255	1.0	-0.06	0.00
256	1.0	-0.06	0.00
257	1.0	-0.06	0.00
258	1.0	-0.06	0.00
259	1.0	-0.06	0.00
260	1.0	-0.06	0.00
261	1.0	-0.06	0.00
262	1.0	-0.06	0.00
263	1.0	-0.06	0.00
264	1.0	-0.06	0.00
265	1.0	-0.06	0.00
266	1.0	-0.06	0.00
267	1.0	-0.06	0.00
268	1.0	-0.06	0.00
269	1.0	-0.06	0.00
270	1.0	-0.06	0.00
271	1.0	-0.06	0.00
272	2.0	0.94	0.89
273	2.0	0.94	0.89
274	1.0	-0.06	0.00
275	1.0	-0.06	0.00
276	2.0	0.94	0.89
277	2.0	0.94	0.89
278	1.0	-0.06	0.00
279	1.0	-0.06	0.00
280	2.0	0.94	0.89
281	1.0	-0.06	0.00
282	1.0	-0.06	0.00
283	1.0	-0.06	0.00
284	1.0	-0.06	0.00
285	1.0	-0.06	0.00
286	1.0	-0.06	0.00
287	2.0	0.94	0.89
288	1.0	-0.06	0.00
289	1.0	-0.06	0.00
290	2.0	0.94	0.89
291	2.0	0.94	0.89
292	1.0	-0.06	0.00
293	1.0	-0.06	0.00
294	1.0	-0.06	0.00
295	1.0	-0.06	0.00
296	1.0	-0.06	0.00
297	1.0	-0.06	0.00
298	1.0	-0.06	0.00
299	1.0	-0.06	0.00
300	1.0	-0.06	0.00
	58		7.239
	Sum(n)		Sum(n-N) ²

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
301	1.2	0.14	0.02
302	1.2	0.14	0.02
303	1.0	-0.06	0.00
304	1.1	0.04	0.00
305	1.1	0.04	0.00
306	1.0	-0.06	0.00
307	1.0	-0.06	0.00
308	1.0	-0.06	0.00
309	1.0	-0.06	0.00
310	1.0	-0.06	0.00
311	1.0	-0.06	0.00
312	1.0	-0.06	0.00
313	1.0	-0.06	0.00
314	1.0	-0.06	0.00
315	1.0	-0.06	0.00
316	1.0	-0.06	0.00
317	1.0	-0.06	0.00
318	1.0	-0.06	0.00
319	1.0	-0.06	0.00
320	1.0	-0.06	0.00
321	2.0	0.94	0.89
322	1.0	-0.06	0.00
323	1.0	-0.06	0.00
324	2.0	0.94	0.89
325	1.0	-0.06	0.00
326	1.0	-0.06	0.00
327	1.0	-0.06	0.00
328	1.0	-0.06	0.00
329	1.0	-0.06	0.00
330	1.0	-0.06	0.00
331	1.0	-0.06	0.00
332	1.0	-0.06	0.00
333	1.0	-0.06	0.00
334	1.0	-0.06	0.00
335	1.0	-0.06	0.00
336	1.0	-0.06	0.00
337	1.0	-0.06	0.00
338	1.0	-0.06	0.00
339	1.0	-0.06	0.00
340	1.0	-0.06	0.00
341	2.0	0.94	0.89
342	2.0	0.94	0.89
343	1.0	-0.06	0.00
344	1.0	-0.06	0.00
345	1.0	-0.06	0.00
346	1.0	-0.06	0.00
347	1.0	-0.06	0.00
348	1.0	-0.06	0.00
349	1.0	-0.06	0.00
350	1.0	-0.06	0.00
	54.6		3.734
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY

AREA H DRAINAGE/BOUNDARY (AFFECTED)

TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
351	1.0	-0.06	0.00
352	1.0	-0.06	0.00
353	1.0	-0.06	0.00
354	1.0	-0.06	0.00
355	1.0	-0.06	0.00
356	1.0	-0.06	0.00
357	1.0	-0.06	0.00
358	1.0	-0.06	0.00
359	1.0	-0.06	0.00
360	1.0	-0.06	0.00
361	2.0	0.94	0.89
362	1.0	-0.06	0.00
363	1.0	-0.06	0.00
364	1.0	-0.06	0.00
365	1.0	-0.06	0.00
366	1.0	-0.06	0.00
367	1.0	-0.06	0.00
368	1.0	-0.06	0.00
369	1.0	-0.06	0.00
370	1.0	-0.06	0.00
371	1.0	-0.06	0.00
372	1.0	-0.06	0.00
373	1.0	-0.06	0.00
374	1.0	-0.06	0.00
375	1.0	-0.06	0.00
376	1.0	-0.06	0.00
377	1.0	-0.06	0.00
378	1.0	-0.06	0.00
379	1.0	-0.06	0.00
380	2.0	0.94	0.89
381	1.0	-0.06	0.00
382	1.0	-0.06	0.00
383	1.0	-0.06	0.00
384	1.0	-0.06	0.00
385	2.0	0.94	0.89
386	2.0	0.94	0.89
387	1.0	-0.06	0.00
388	1.0	-0.06	0.00
389	2.0	0.94	0.89
390	2.0	0.94	0.89
391	1.0	-0.06	0.00
392	1.0	-0.06	0.00
393	1.0	-0.06	0.00
394	1.0	-0.06	0.00
395	1.0	-0.06	0.00
396	1.0	-0.06	0.00
397	1.0	-0.06	0.00
398	1.0	-0.06	0.00
399	0.9	-0.16	0.03
400	0.7	-0.36	0.13
	55.6		5.618
	Sum(n)		Sum(n-N) ²

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
401	1.0	-0.06	0.00
402	0.9	-0.16	0.03
403	0.8	-0.26	0.07
404	2.0	0.94	0.89
405	1.0	-0.06	0.00
406	1.0	-0.06	0.00
407	1.0	-0.06	0.00
408	2.0	0.94	0.89
409	1.0	-0.06	0.00
410	1.0	-0.06	0.00
411	1.0	-0.06	0.00
412	1.0	-0.06	0.00
413	1.0	-0.06	0.00
414	1.0	-0.06	0.00
415	1.0	-0.06	0.00
416	1.0	-0.06	0.00
417	1.0	-0.06	0.00
418	1.0	-0.06	0.00
419	1.0	-0.06	0.00
420	1.0	-0.06	0.00
421	1.0	-0.06	0.00
422	1.0	-0.06	0.00
423	1.0	-0.06	0.00
424	1.0	-0.06	0.00
425	1.0	-0.06	0.00
426	1.0	-0.06	0.00
427	1.0	-0.06	0.00
428	1.0	-0.06	0.00
429	1.0	-0.06	0.00
430	1.0	-0.06	0.00
431	1.0	-0.06	0.00
432	1.0	-0.06	0.00
433	1.0	-0.06	0.00
434	1.0	-0.06	0.00
435	2.0	0.94	0.89
436	1.0	-0.06	0.00
437	1.0	-0.06	0.00
438	1.0	-0.06	0.00
439	1.0	-0.06	0.00
440	1.0	-0.06	0.00
441	1.0	-0.06	0.00
442	1.0	-0.06	0.00
443	1.0	-0.06	0.00
444	1.0	-0.06	0.00
445	1.0	-0.06	0.00
446	1.0	-0.06	0.00
447	1.0	-0.06	0.00
448	1.0	-0.06	0.00
449	1.0	-0.06	0.00
450	1.0	-0.06	0.00
	52.7		2.905
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY

AREA H DRAINAGE/BOUNDARY (AFFECTED)

TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE

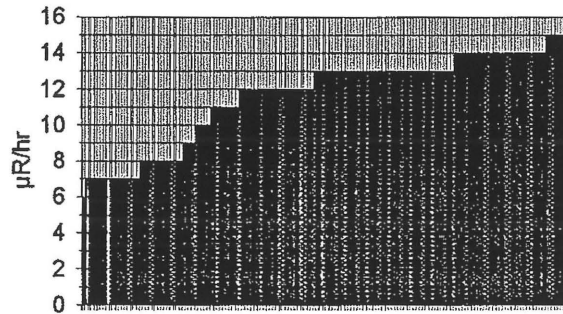
n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
451	1.0	-0.06	0.00
452	1.0	-0.06	0.00
453	1.0	-0.06	0.00
454	1.0	-0.06	0.00
455	1.0	-0.06	0.00
456	1.0	-0.06	0.00
457	1.0	-0.06	0.00
458	1.0	-0.06	0.00
459	1.0	-0.06	0.00
460	1.0	-0.06	0.00
461	1.0	-0.06	0.00
462	1.0	-0.06	0.00
463	1.0	-0.06	0.00
464	1.0	-0.06	0.00
465	1.0	-0.06	0.00
466	1.0	-0.06	0.00
467		0.00	0.00
468		0.00	0.00
469		0.00	0.00
470		0.00	0.00
471		0.00	0.00
472		0.00	0.00
473		0.00	0.00
474		0.00	0.00
475		0.00	0.00
476		0.00	0.00
477		0.00	0.00
478		0.00	0.00
479		0.00	0.00
480		0.00	0.00
481		0.00	0.00
482		0.00	0.00
483		0.00	0.00
484		0.00	0.00
485		0.00	0.00
486		0.00	0.00
487		0.00	0.00
488		0.00	0.00
489		0.00	0.00
490		0.00	0.00
491		0.00	0.00
492		0.00	0.00
493		0.00	0.00
494		0.00	0.00
495		0.00	0.00
496		0.00	0.00
497		0.00	0.00
498		0.00	0.00
499		0.00	0.00
500		0.00	0.00
	16		0.054
	Sum(n)		Sum(n-N) ²

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
501		0.00	0.00
502		0.00	0.00
503		0.00	0.00
504		0.00	0.00
505		0.00	0.00
506		0.00	0.00
507		0.00	0.00
508		0.00	0.00
509		0.00	0.00
510		0.00	0.00
511		0.00	0.00
512		0.00	0.00
513		0.00	0.00
514		0.00	0.00
515		0.00	0.00
516		0.00	0.00
517		0.00	0.00
518		0.00	0.00
519		0.00	0.00
520		0.00	0.00
521		0.00	0.00
522		0.00	0.00
523		0.00	0.00
524		0.00	0.00
525		0.00	0.00
526		0.00	0.00
527		0.00	0.00
528		0.00	0.00
529		0.00	0.00
530		0.00	0.00
531		0.00	0.00
532		0.00	0.00
533		0.00	0.00
534		0.00	0.00
535		0.00	0.00
536		0.00	0.00
537		0.00	0.00
538		0.00	0.00
539		0.00	0.00
540		0.00	0.00
541		0.00	0.00
542		0.00	0.00
543		0.00	0.00
544		0.00	0.00
545		0.00	0.00
546		0.00	0.00
547		0.00	0.00
548		0.00	0.00
549		0.00	0.00
550		0.00	0.00
	0		0.000
	Sum(n)		Sum(n-N) ²

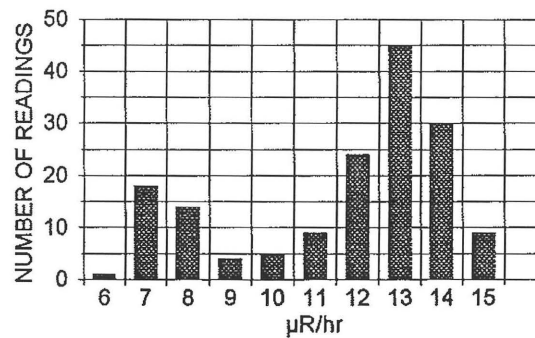
PHASE II - AREA H
DRAINAGE/BOUNDARY (AFFECTED)
MICRO-R METER READINGS AT SURFACE
LUDLUM MODEL 19 S/N 111299

RESULTS IN $\mu\text{R/hr}$
SEPTEMBER 1998

MICRO "R" READINGS AT SURFACE
SURVEY DATA



MICRO "R" READINGS AT SURFACE
FREQUENCY DISTRIBUTION

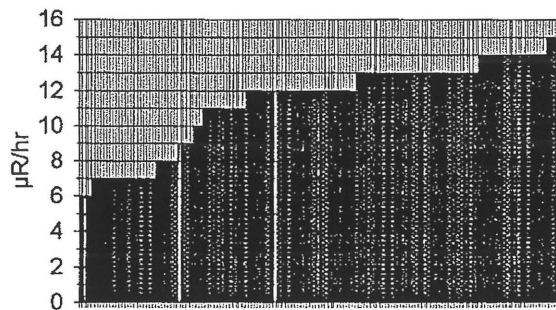


NUMBER OF SAMPLES	159
AVERAGE SAMPLE	12
MINIMUM SAMPLE	6
MAXIMUM SAMPLE	15
STANDARD DEVIATION	3

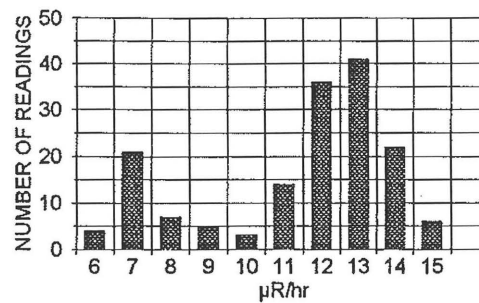
PHASE II - AREA H
DRAINAGE/BOUNDARY (AFFECTED)
MICRO-R METER READINGS AT ONE METER ABOVE SURFACE
LUDLUM MODEL 19 S/N 111299

RESULTS IN $\mu\text{R/hr}$
SEPTEMBER 1998

MICRO "R" READINGS AT 1 METER
SURVEY DATA



MICRO "R" READINGS AT 1 METER
FREQUENCY DISTRIBUTION

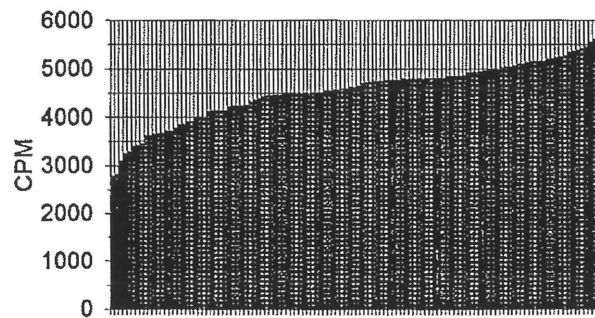


NUMBER OF SAMPLES	159
AVERAGE SAMPLE	11
MINIMUM SAMPLE	6
MAXIMUM SAMPLE	15
STANDARD DEVIATION	2

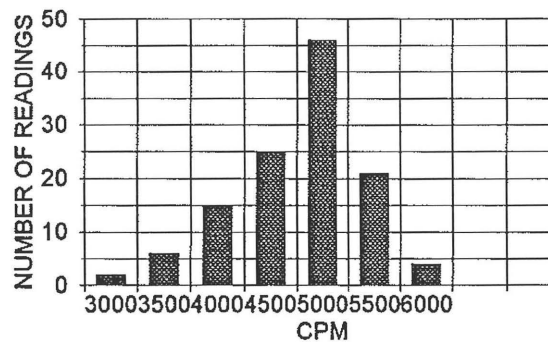
PHASE II - AREA H
DRAINAGE/BOUNDARY (AFFECTED)
GROSS GAMMA READINGS IN CPM
LUDLUM MODEL 2221 S/N 48395 (SHIELDED)

SEPTEMBER 1998

SHIELDED "3" NaI DETECTOR READINGS
SURVEY DATA



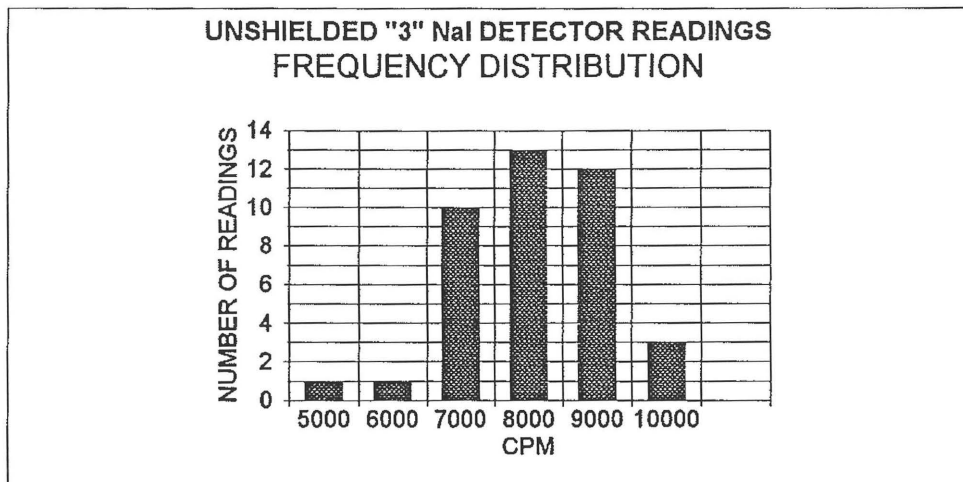
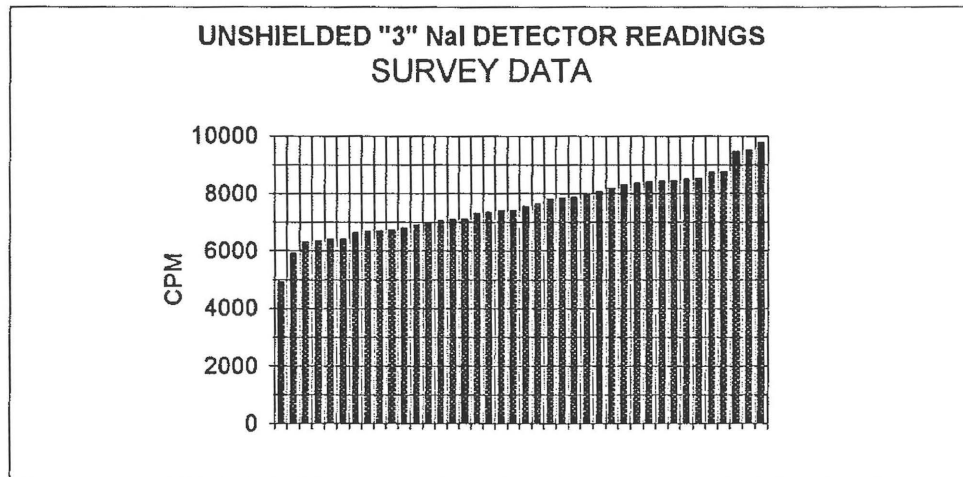
SHIELDED "3" NaI DETECTOR READINGS
FREQUENCY DISTRIBUTION



NUMBER OF SAMPLES	119
AVERAGE SAMPLE	4556
MINIMUM SAMPLE	2770
MAXIMUM SAMPLE	5970
STANDARD DEVIATION	605

PHASE II - AREA H
DRAINAGE/BOUNDARY (AFFECTED)
GROSS GAMMA READINGS IN CPM
LUDLUM MODEL 2221 S/N 97264 (UNSHIELDED)

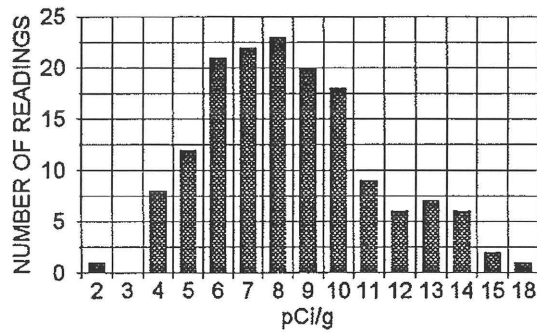
SEPTEMBER 1998



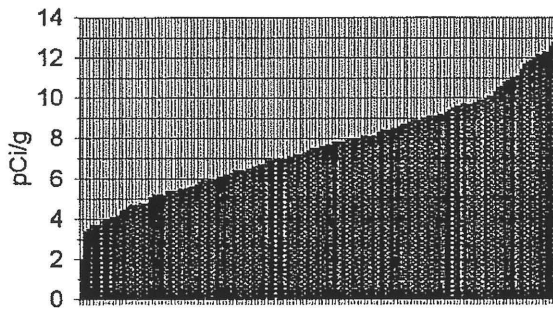
NUMBER OF SAMPLES	40
AVERAGE SAMPLE	7575
MINIMUM SAMPLE	4920
MAXIMUM SAMPLE	9780
STANDARD DEVIATION	1028

PHASE II - AREA H
DRAINAGE/BOUNDARY (UNAFFECTED)
CIMARRON SOIL COUNTER
TOTAL URANIUM SOIL SAMPLE RESULTS
SITE BACKGROUND OF 4 pCi/g NOT SUBTRACTED
SEPTEMBER 1998

URANIUM SAMPLE RESULTS
FREQUENCY DISTRIBUTION



URANIUM SAMPLE DATA
SURVEY DATA



NUMBER OF SAMPLES	157
AVERAGE SAMPLE	8
MINIMUM SAMPLE	2
MAXIMUM SAMPLE	20
STANDARD DEVIATION	3

CIMARRON CORPORATION - CIMARRON FACILITY

AREA H DRAINAGE/BOUNDARY (UNAFFECTED)

TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) ²
1	6.4	-1.67	2.78
2	8.0	-0.07	0.00
3	13.2	5.13	26.36
4	10.9	2.83	8.03
5	14.5	6.43	41.39
6	9.8	1.73	3.01
7	14.8	6.73	45.34
8	9.6	1.53	2.35
9	9.9	1.83	3.36
10	13.5	5.43	29.53
11	13.4	5.33	28.45
12	17.7	9.63	92.81
13	20.4	12.33	152.12
14	11.9	3.83	14.70
15	9.3	1.23	1.52
16	12.3	4.23	17.92
17	12.3	4.23	17.92
18	9.9	1.83	3.36
19	13.2	5.13	26.36
20	6.0	-2.07	4.27
21	2.0	-6.07	36.80
22	8.0	-0.07	0.00
23	9.0	0.93	0.87
24	7.0	-1.07	1.14
25	6.2	-1.87	3.48
26	6.4	-1.67	2.78
27	4.8	-3.27	10.67
28	5.4	-2.67	7.11
29	9.1	1.03	1.07
30	8.9	0.83	0.70
31	8.1	0.03	0.00
32	6.4	-1.67	2.78
33	10.3	2.23	4.99
34	8.3	0.23	0.05
35	5.2	-2.87	8.22
36	8.0	-0.07	0.00
37	10.8	2.73	7.47
38	7.9	-0.17	0.03
39	11.0	2.93	8.61
40	9.2	1.13	1.29
41	6.4	-1.67	2.78
42	5.4	-2.67	7.11
43	6.0	-2.07	4.27
44	8.1	0.03	0.00
45	9.4	1.33	1.78
46	6.5	-1.57	2.45
47	6.7	-1.37	1.87
48	7.8	-0.27	0.07
49	6.2	-1.87	3.48
50	6.1	-1.97	3.87
	348		465.47
	403.3		216.05
	57.5		20.48
	0		0.00
	0		0.00
	0		0.00
	0		0.00
	0		0.00
	1266.4		1349.31
	Sum(n)		Sum(n-N) ²

No. of Samples (x) : 157

COUNT TIME: 5 MINUTES

Sample Mean (N) = Sum(n) ÷ (x)

Sample Mean (N) : 8.07

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

Standard Deviation: 2.9

2 Std Deviations: 5.9

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

(df) = 1.657

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

(Aμ) = 8.46

pCi/gU TOTAL U

GUIDELINE VALUE: 30

pCi/gU TOTAL U

Acceptable Level: 34.0

pCi/gU TOTAL U

(30 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)	400	is (B)	1.649	95%
(df) low value(Y)	120	is (A)	1.658	95%

Desired value(df) (X) 156 is calculated as follow:

EXP[(Ln(B) - Ln(A)) ÷ (Z - Y) (X - Y) + Ln(A)]

The (df) value for (X) 156 1.657 95%

PERFORMED BY: M. H. H. H.

DATE: 10-27-98

REVIEWED BY: W. G. Rogers

DATE: 10-27-98

AREA H DRAINAGE/BOUNDARY (UNAFFECTED)

TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE

	n = pCl/g TOTAL U		
Number	n	(n-N)	(n-N) ²
51	9.6	1.53	2.35
52	12.8	4.73	22.41
53	12.6	4.53	20.55
54	9.7	1.63	2.67
55	10.5	2.43	5.92
56	11.1	3.03	9.20
57	9.7	1.63	2.67
58	13.2	5.13	26.36
59	11.7	3.63	13.20
60	11.8	3.73	13.94
61	7.1	-0.97	0.93
62	12.9	4.83	23.37
63	9.7	1.63	2.67
64	8.9	0.83	0.70
65	6.6	-1.47	2.15
66	8.7	0.63	0.40
67	7.2	-0.87	0.75
68	5.9	-2.17	4.69
69	5.2	-2.87	8.22
70	5.9	-2.17	4.69
71	4.6	-3.47	12.01
72	4.0	-4.07	16.53
73	5.5	-2.57	6.59
74	6.3	-1.77	3.12
75	4.1	-3.97	15.73
76	3.7	-4.37	19.06
77	4.7	-3.37	11.33
78	4.0	-4.07	16.53
79	4.7	-3.37	11.33
80	5.7	-2.37	5.60
81	5.6	-2.47	6.08
82	4.4	-3.67	13.44
83	5.1	-2.97	8.80
84	4.1	-3.97	15.73
85	3.7	-4.37	19.06
86	6.9	-1.17	1.36
87	3.4	-4.67	21.77
88	5.5	-2.57	6.59
89	3.5	-4.57	20.85
90	4.8	-3.27	10.67
91	4.8	-3.27	10.67
92	5.4	-2.67	7.11
93	5.8	-2.47	6.08
94	7.6	-0.47	0.22
95	7.0	-1.07	1.14
96	8.5	0.43	0.19
97	3.7	-4.37	19.06
98	8.6	0.53	0.28
99	6.5	-1.57	2.45
100	5.2	-2.87	8.22
	348		465.47
	Sum(n)		Sum(n-N) ²

n = pCi/g TOTAL U			
Number	n	(n-N)	(n-N) ²
101	9.0	0.93	0.87
102	9.2	1.13	1.29
103	8.0	-0.07	0.00
104	4.2	-3.87	14.95
105	8.1	0.03	0.00
106	7.7	-0.37	0.13
107	5.5	-2.57	6.59
108	8.1	0.03	0.00
109	8.5	0.43	0.19
110	8.7	0.63	0.40
111	7.0	-1.07	1.14
112	8.4	0.33	0.11
113	7.7	-0.37	0.13
114	7.1	-0.97	0.93
115	6.0	-2.07	4.27
116	7.4	-0.67	0.44
117	7.8	-0.27	0.07
118	10.1	2.03	4.14
119	12.0	3.93	15.47
120	7.3	-0.77	0.59
121	8.9	0.83	0.70
122	7.5	-0.57	0.32
123	8.4	0.33	0.11
124	6.9	-1.17	1.36
125	9.5	1.43	2.06
126	7.8	-0.27	0.07
127	7.8	-0.27	0.07
128	7.5	-0.57	0.32
129	8.8	0.73	0.54
130	7.0	-1.07	1.14
131	9.1	1.03	1.07
132	12.2	4.13	17.09
133	10.1	2.03	4.14
134	10.6	2.53	6.42
135	12.2	4.13	17.09
136	8.4	0.33	0.11
137	11.4	3.33	11.11
138	6.6	-1.47	2.15
139	8.1	0.03	0.00
140	7.2	-0.87	0.75
141	5.8	-2.27	5.14
142	6.1	-1.97	3.87
143	11.0	2.93	8.61
144	13.5	5.43	29.53
145	5.2	-2.87	8.22
146	3.9	-4.17	17.36
147	4.5	-3.57	12.72
148	4.7	-3.37	11.33
149	7.6	-0.47	0.22
150	7.2	-0.87	0.75
	403.3		216.05
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY

AREA H DRAINAGE/BOUNDARY (UNAFFECTED)

TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE

n = pCi/g TOTAL U

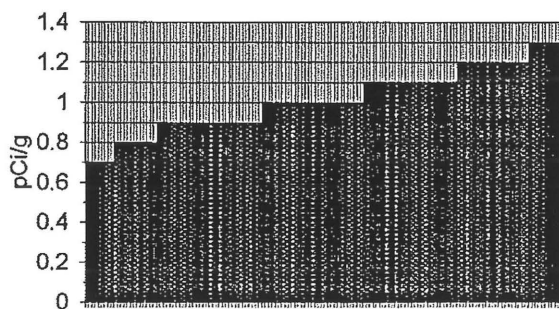
Number	n	(n-N)	(n-N) ²
151	9.1	1.03	1.07
152	6.7	-1.37	1.87
153	5.4	-2.67	7.11
154	6.9	-1.17	1.36
155	9.7	1.63	2.67
156	9.7	1.63	2.67
157	10.0	1.93	3.74
158		0.00	0.00
159		0.00	0.00
160		0.00	0.00
161		0.00	0.00
162		0.00	0.00
163		0.00	0.00
164		0.00	0.00
165		0.00	0.00
166		0.00	0.00
167		0.00	0.00
168		0.00	0.00
169		0.00	0.00
170		0.00	0.00
171		0.00	0.00
172		0.00	0.00
173		0.00	0.00
174		0.00	0.00
175		0.00	0.00
176		0.00	0.00
177		0.00	0.00
178		0.00	0.00
179		0.00	0.00
180		0.00	0.00
181		0.00	0.00
182		0.00	0.00
183		0.00	0.00
184		0.00	0.00
185		0.00	0.00
186		0.00	0.00
187		0.00	0.00
188		0.00	0.00
189		0.00	0.00
190		0.00	0.00
191		0.00	0.00
192		0.00	0.00
193		0.00	0.00
194		0.00	0.00
195		0.00	0.00
196		0.00	0.00
197		0.00	0.00
198		0.00	0.00
199		0.00	0.00
200		0.00	0.00
	57.5		20.48
	Sum(n)		Sum(n-N) ²

n = pCi/g TOTAL U

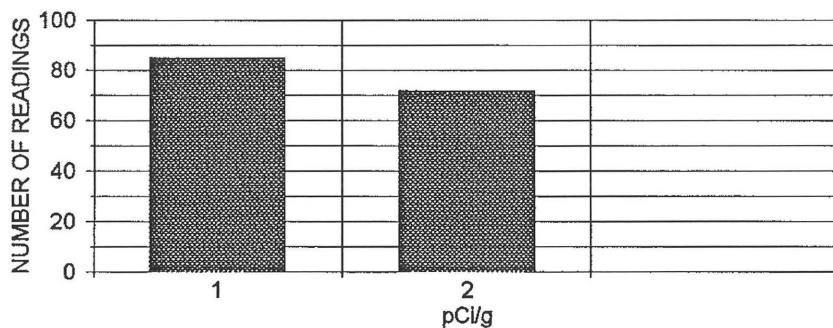
Number	n	(n-N)	(n-N) ²
201		0.00	0.00
202		0.00	0.00
203		0.00	0.00
204		0.00	0.00
205		0.00	0.00
206		0.00	0.00
207		0.00	0.00
208		0.00	0.00
209		0.00	0.00
210		0.00	0.00
211		0.00	0.00
212		0.00	0.00
213		0.00	0.00
214		0.00	0.00
215		0.00	0.00
216		0.00	0.00
217		0.00	0.00
218		0.00	0.00
219		0.00	0.00
220		0.00	0.00
221		0.00	0.00
222		0.00	0.00
223		0.00	0.00
224		0.00	0.00
225		0.00	0.00
226		0.00	0.00
227		0.00	0.00
228		0.00	0.00
229		0.00	0.00
230		0.00	0.00
231		0.00	0.00
232		0.00	0.00
233		0.00	0.00
234		0.00	0.00
235		0.00	0.00
236		0.00	0.00
237		0.00	0.00
238		0.00	0.00
239		0.00	0.00
240		0.00	0.00
241		0.00	0.00
242		0.00	0.00
243		0.00	0.00
244		0.00	0.00
245		0.00	0.00
246		0.00	0.00
247		0.00	0.00
248		0.00	0.00
249		0.00	0.00
250		0.00	0.00
	0		0.00
	Sum(n)		Sum(n-N) ²

PHASE II - AREA H
DRAINAGE/BOUNDARY (UNAFFECTED)
CIMARRON SOIL COUNTER
THORIUM (NAT)SOIL SAMPLE RESULTS
SITE BACKGROUND OF 1.5 pCi/g NOT SUBTRACTED
SEPTEMBER 1998

THORIUM SAMPLE RESULTS
SURVEY DATA



THORIUM SAMPLE RESULTS
FREQUENCY DISTRIBUTION



NUMBER OF SAMPLES	157
AVERAGE SAMPLE	1.0
MINIMUM SAMPLE	0.7
MAXIMUM SAMPLE	1.6
STANDARD DEVIATION	0.2

CIMARRON CORPORATION - CIMARRON FACILITY

AREA H DRAINAGE/BOUNDARY (UNAFFECTED)

TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE

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

Number	n	(n-N)	(n-N) ²
1	1.0	-0.04	0.00
2	0.7	-0.34	0.11
3	1.0	-0.04	0.00
4	0.9	-0.14	0.02
5	1.2	0.16	0.03
6	0.9	-0.14	0.02
7	1.1	0.06	0.00
8	1.0	-0.04	0.00
9	1.0	-0.04	0.00
10	1.3	0.26	0.07
11	1.2	0.16	0.03
12	1.3	0.26	0.07
13	1.4	0.36	0.13
14	1.1	0.06	0.00
15	1.2	0.16	0.03
16	1.2	0.16	0.03
17	1.2	0.16	0.03
18	1.1	0.06	0.00
19	1.4	0.36	0.13
20	0.7	-0.34	0.11
21	1.0	-0.04	0.00
22	1.0	-0.04	0.00
23	1.0	-0.04	0.00
24	1.0	-0.04	0.00
25	1.0	-0.04	0.00
26	0.9	-0.14	0.02
27	1.3	0.26	0.07
28	0.9	-0.14	0.02
29	0.8	-0.24	0.06
30	0.9	-0.14	0.02
31	0.9	-0.14	0.02
32	1.3	0.26	0.07
33	0.8	-0.24	0.06
34	1.3	0.26	0.07
35	1.1	0.06	0.00
36	1.1	0.06	0.00
37	0.9	-0.14	0.02
38	1.1	0.06	0.00
39	1.0	-0.04	0.00
40	1.3	0.26	0.07
41	1.1	0.06	0.00
42	1.4	0.36	0.13
43	1.3	0.26	0.07
44	0.9	-0.14	0.02
45	1.0	-0.04	0.00
46	1.1	0.06	0.00
47	1.2	0.16	0.03
48	1.3	0.26	0.07
49	1.1	0.06	0.00
50	1.2	0.16	0.03
51			
52			
53	53.1		1.585
54	49.4		1.822
55	6.5		0.159
56	0		0.000
57	0		0.000
58	0		0.000
59	0		0.000
60	0		0.000
61			
62			
63	163.1		5.233
64	Sum(n)		Sum(n-N) ²

No. of Samples (x) : 157

COUNT TIME: 5 MINUTES

Sample Mean (N) = $\text{Sum}(n) \div (x)$

Sample Mean (N) : 1.04

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

Standard Deviation: 0.18

2 Std Deviations: 0.37

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

(df) = 156

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

(A_μ) = 1.06 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)	400	is (B)	1.649	95%
(df) low value(Y)	120	is (A)	1.658	95%

Desired value(df) (X) 156 is calculated as follow:

$$\text{EXP}[(\ln(B) - \ln(A)) \div (Z - Y)] \times (X - Y) + \ln(A)$$

The (df) value for (X) 156 1.657 95%

PERFORMED BY: W. A. Rogers

DATE: 10-27-98

REVIEWED BY: W. A. Rogers

DATE: 10-27-98

CIMARRON CORPORATION - CIMARRON FACILITY

AREA H DRAINAGE/BOUNDARY (UNAFFECTED)

TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE

n = pCi/g Th (NAT)

Number	n	(n-N)	(n-N) ²
51	1.0	-0.04	0.00
52	1.3	0.26	0.07
53	1.2	0.16	0.03
54	1.1	0.06	0.00
55	1.0	-0.04	0.00
56	1.3	0.26	0.07
57	1.4	0.36	0.13
58	1.4	0.36	0.13
59	1.3	0.26	0.07
60	1.2	0.16	0.03
61	1.3	0.26	0.07
62	1.2	0.16	0.03
63	1.4	0.36	0.13
64	1.1	0.06	0.00
65	1.1	0.06	0.00
66	1.1	0.06	0.00
67	1.0	-0.04	0.00
68	1.2	0.16	0.03
69	1.0	-0.04	0.00
70	0.8	-0.24	0.06
71	1.2	0.16	0.03
72	1.1	0.06	0.00
73	1.0	-0.04	0.00
74	1.2	0.16	0.03
75	1.0	-0.04	0.00
76	0.9	-0.14	0.02
77	0.7	-0.34	0.11
78	0.7	-0.34	0.11
79	0.9	-0.14	0.02
80	0.9	-0.14	0.02
81	0.9	-0.14	0.02
82	1.1	0.06	0.00
83	1.1	0.06	0.00
84	0.9	-0.14	0.02
85	0.9	-0.14	0.02
86	0.8	-0.24	0.06
87	0.9	-0.14	0.02
88	0.8	-0.24	0.06
89	0.9	-0.14	0.02
90	0.9	-0.14	0.02
91	0.9	-0.14	0.02
92	0.9	-0.14	0.02
93	1.2	0.16	0.03
94	1.1	0.06	0.00
95	1.2	0.16	0.03
96	1.2	0.16	0.03
97	1.0	-0.04	0.00
98	1.1	0.06	0.00
99	1.1	0.06	0.00
100	1.2	0.16	0.03
	53.1		1.585
	Sum(n)		Sum(n-N) ²

n = pCi/g Th (NAT)

Number	n	(n-N)	(n-N) ²
101	1.2	0.16	0.03
102	1.1	0.06	0.00
103	1.0	-0.04	0.00
104	1.0	-0.04	0.00
105	0.8	-0.24	0.06
106	1.0	-0.04	0.00
107	1.2	0.16	0.03
108	1.1	0.06	0.00
109	1.1	0.06	0.00
110	1.0	-0.04	0.00
111	1.2	0.16	0.03
112	0.9	-0.14	0.02
113	1.1	0.06	0.00
114	1.0	-0.04	0.00
115	0.9	-0.14	0.02
116	0.9	-0.14	0.02
117	0.7	-0.34	0.11
118	1.4	0.36	0.13
119	0.9	-0.14	0.02
120	0.8	-0.24	0.06
121	0.9	-0.14	0.02
122	0.8	-0.24	0.06
123	0.7	-0.34	0.11
124	0.8	-0.24	0.06
125	0.7	-0.34	0.11
126	0.7	-0.34	0.11
127	0.8	-0.24	0.06
128	0.9	-0.14	0.02
129	0.9	-0.14	0.02
130	1.0	-0.04	0.00
131	1.1	0.06	0.00
132	1.0	-0.04	0.00
133	1.1	0.06	0.00
134	1.0	-0.04	0.00
135	1.1	0.06	0.00
136	0.9	-0.14	0.02
137	1.3	0.26	0.07
138	1.0	-0.04	0.00
139	0.9	-0.14	0.02
140	0.9	-0.14	0.02
141	1.0	-0.04	0.00
142	0.7	-0.34	0.11
143	1.2	0.16	0.03
144	1.6	0.56	0.31
145	1.1	0.06	0.00
146	1.1	0.06	0.00
147	0.9	-0.14	0.02
148	1.0	-0.04	0.00
149	1.2	0.16	0.03
150	0.8	-0.24	0.06
	49.4		1.822
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY

AREA H DRAINAGE/BOUNDARY (UNAFFECTED)

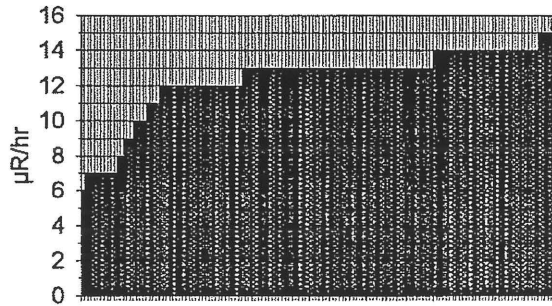
TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
151	1.0	-0.04	0.00
152	0.8	-0.24	0.06
153	0.9	-0.14	0.02
154	1.0	-0.04	0.00
155	1.1	0.06	0.00
156	0.9	-0.14	0.02
157	0.8	-0.24	0.06
158		0.00	0.00
159		0.00	0.00
160		0.00	0.00
161		0.00	0.00
162		0.00	0.00
163		0.00	0.00
164		0.00	0.00
165		0.00	0.00
166		0.00	0.00
167		0.00	0.00
168		0.00	0.00
169		0.00	0.00
170		0.00	0.00
171		0.00	0.00
172		0.00	0.00
173		0.00	0.00
174		0.00	0.00
175		0.00	0.00
176		0.00	0.00
177		0.00	0.00
178		0.00	0.00
179		0.00	0.00
180		0.00	0.00
181		0.00	0.00
182		0.00	0.00
183		0.00	0.00
184		0.00	0.00
185		0.00	0.00
186		0.00	0.00
187		0.00	0.00
188		0.00	0.00
189		0.00	0.00
190		0.00	0.00
191		0.00	0.00
192		0.00	0.00
193		0.00	0.00
194		0.00	0.00
195		0.00	0.00
196		0.00	0.00
197		0.00	0.00
198		0.00	0.00
199		0.00	0.00
200		0.00	0.00
	6.5		0.159
	Sum(n)		Sum(n-N) ²

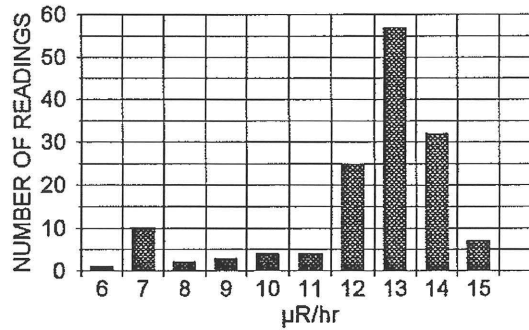
n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
201		0.00	0.00
202		0.00	0.00
203		0.00	0.00
204		0.00	0.00
205		0.00	0.00
206		0.00	0.00
207		0.00	0.00
208		0.00	0.00
209		0.00	0.00
210		0.00	0.00
211		0.00	0.00
212		0.00	0.00
213		0.00	0.00
214		0.00	0.00
215		0.00	0.00
216		0.00	0.00
217		0.00	0.00
218		0.00	0.00
219		0.00	0.00
220		0.00	0.00
221		0.00	0.00
222		0.00	0.00
223		0.00	0.00
224		0.00	0.00
225		0.00	0.00
226		0.00	0.00
227		0.00	0.00
228		0.00	0.00
229		0.00	0.00
230		0.00	0.00
231		0.00	0.00
232		0.00	0.00
233		0.00	0.00
234		0.00	0.00
235		0.00	0.00
236		0.00	0.00
237		0.00	0.00
238		0.00	0.00
239		0.00	0.00
240		0.00	0.00
241		0.00	0.00
242		0.00	0.00
243		0.00	0.00
244		0.00	0.00
245		0.00	0.00
246		0.00	0.00
247		0.00	0.00
248		0.00	0.00
249		0.00	0.00
250		0.00	0.00
	0		0.000
	Sum(n)		Sum(n-N) ²

PHASE II - AREA H
DRAINAGE/BOUNDARY (UNAFFECTED)
MICRO-R METER READINGS AT SURFACE
LUDLUM MODEL 19 S/N 138420
RESULTS IN $\mu\text{R/hr}$
SEPTEMBER 1998

MICRO "R" READINGS AT SURFACE
SURVEY DATA



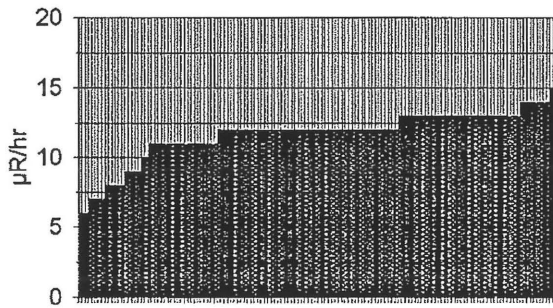
MICRO "R" READINGS AT SURFACE
FREQUENCY DISTRIBUTION



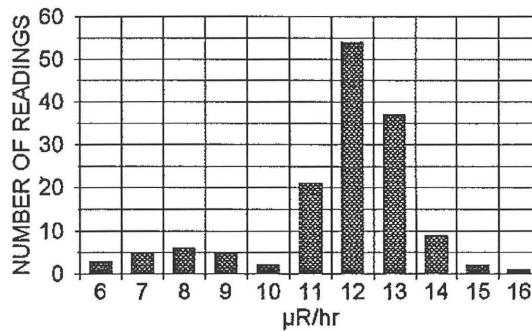
NUMBER OF SAMPLES	145
AVERAGE SAMPLE	12
MINIMUM SAMPLE	6
MAXIMUM SAMPLE	15
STANDARD DEVIATION	2

PHASE II - AREA H
DRAINAGE/BOUNDARY (UNAFFECTED)
MICRO-R METER READINGS AT ONE METER ABOVE SURFACE
LUDLUM MODEL 19 S/N 138420
RESULTS IN $\mu\text{R/hr}$
SEPTEMBER 1998

MICRO "R" READINGS AT 1 METER
SURVEY DATA



MICRO "R" READINGS AT 1 METER
FREQUENCY DISTRIBUTION



NUMBER OF SAMPLES	145
AVERAGE SAMPLE	12
MINIMUM SAMPLE	6
MAXIMUM SAMPLE	16
STANDARD DEVIATION	2