

## 8.0 Burial Area #2 and North Field Drainage Area

Burial Area #2 was utilized in the 1970's for the disposal of on-site generated industrial solid waste. During an investigation of this area in 1990, there were indications that radioactive waste materials were present in this buried waste. Remediation of this area began in 1991. Additional Option #2 soil may still be present in this area and will be characterized and removed as required.

The North Field Drainage Area collects runoff from a portion of the restricted area. This drainage area was included in the 1979 scoping survey. A final survey will be performed when all of the Option-2 material is removed and all affected areas have been remediated.

### A. Characterization Data:

This area was included in the  $\mu\text{R/hr}$  survey of the entire 1,100 acre site conducted in 1979. This survey data are shown on Drawing No. 79PRSBUR-0 which is included as an attachment to Section 6.0. A 10m x 10m grid was established in order to begin characterization of the area surrounding the Uranium Building Yard in 1990 (this included Burial Area #2). Initially, a  $\mu\text{R/hr}$  survey was completed for this area by Cimarron personnel using a Ludlum Model 12S Micro-R meter. The readings at the surface and at one meter were essentially at or just above background readings. These survey results are shown on Drawings No. 90PRUYUR-0 and 90PRUYUR-1. A gamma survey also was performed by Cimarron personnel in 1990 using a Ludlum 2220 Meter with a lead-shielded 3 in. x 0.5 in. NaI detector. The survey results of this survey are shown on Drawing No. 90PRUY3D-0.

Composited soil samples were collected in May, 1990 on the 10m x 10m grid at depths of 0 to 4 feet in one-foot intervals. The soil samples were analyzed at the Cimarron facility laboratory for total uranium. The sample results, shown on Drawings No. 90PRB2SS-0 through 90PRB2SS-4, indicated several areas requiring remediation. Fifteen soil samples had concentrations greater than the guideline value of 30 pCi/g total uranium (the highest being 373 pCi/g total uranium). As a result, a 5m x 5m grid was established for this same area and sampled to a depth of 6 feet. The samples were collected in one-foot increments and composited for analysis at the Cimarron Facility laboratory. The soil sample results are shown on Drawings No. 91PRB2SS-1 through 91PRB2SS-6. These soil samples were analyzed also for

total thorium. As noted on the drawings, numerous areas exceeded the guideline value of 30 pCi/g uranium, (4 areas exceeded 1,000 pCi/g). Additionally, a soil sample at grid 75E x 300N (0 to 1 ft. in depth) had a total thorium concentration of 14 pCi/g; 15 pCi/g for a sample from 1 to 2 feet, and 13 pCi/g for a sample from 4 to 5 feet in depth.

Cimarron personnel cored and sampled two other areas in the North Field Drainage Area in 1992 on a 5m x 5m grid; one area west of Burial Area #2 and the other area south of Burial Area #2. The corings were completed down to 6 ft.; the sample results are shown on Drawings No. 92PRB2SS-1 through 92PRB2SS-6. As noted on these drawings, all sample results were less than the maximum Option #1 guideline values for uranium and thorium.

#### B. Remediation

Remediation in this area began in 1991. Approximately 20,000 ft<sup>3</sup> of waste with an average activity of 300 pCi/g uranium was shipped off-site for disposal at a commercial LLRW disposal facility. The 20,000 ft<sup>3</sup> of waste contained approximately 47 kg of U-235. Sample results from this area showed uranium present at greater than 5% enrichment and thorium concentrations up to 150 pCi/g. As stated above, these materials were removed and shipped off-site for disposal. Cimarron personnel believe that all Option #4 material has been removed from Burial Area #2. The maximum concentration for enriched uranium Option #4 material is 1000 pCi/g (soluble) and 2500 pCi/g (insoluble). Additionally, Cimarron has excavated the remaining Option #2 material and stockpiled the soil on site for anticipated on-site disposal. A final survey of this area is presently underway.

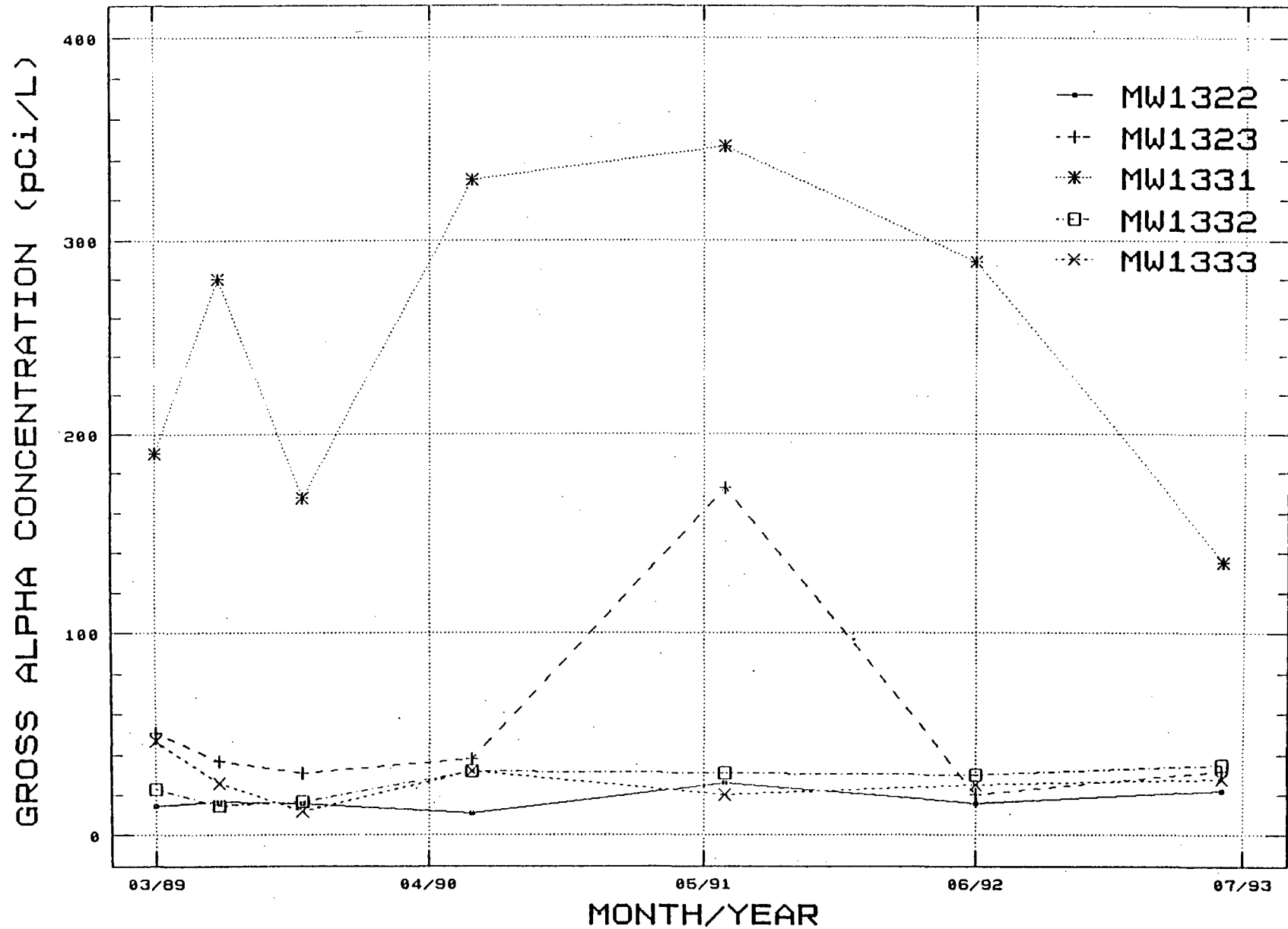
#### C. Environmental Data

Wells #1322, #1323, #1331, #1332, and #1333 are located in the vicinity of Burial Ground #2. Wells #1322 and #1333 are located south of this area, well #1331 is located to the north, and wells #1332 and #1333 are located to the northeast. In addition to influences from Burial Area #2, groundwater quality in these wells could also be influenced by the Uranium Plant areas and the Sanitary Lagoons.

Gross alpha concentrations for these five wells are graphed in Figure 8.1. "Less than" values are plotted in figures at the upper bound concentration. Concentrations ranged from 11 pCi/L at well

Figure 8.1

KERR MCGEE--CIMARRON--GROSS ALPHA  
WELLS 1322, 1323, 1331, 1332, AND 1333



#1322 in June, 1990 to 347 pCi/L in well #1331 in June, 1991. Gross alpha activity remained low throughout the 1989 through 1993 monitoring period at wells #1322, #1332, and #1333. Well #1323 peaked at 172 pCi/L in June, 1991, then decreased to near background in 1992 and 1993. Well #1331 remained elevated throughout the 1989 to 1993 monitoring periods.

Figure 8.2 shows gross beta concentrations for wells #1322, #1323, #1331, #1332, and #1333. Concentrations were less than detectable or near background in wells #1322, #1323, #1332, and #1333. A maximum concentration of 62 pCi/L was observed in well #1331 (October, 1989). Concentrations in well #1331 decreased to less than detectable for the 1992 and 1993 monitoring periods.

Graphs of total uranium activity versus time are shown in Figure 8.3. Total uranium reportedly ranged from less than 0.005 mg/L to 13.1 mg/L (well #1332, October, 1989). This value is suspect due to the reported isotopic uranium and gross alpha data. The result given for March, 1989 at well #1332 is also suspect. Total uranium data for other samples are reasonably consistent with results obtained via alpha spectroscopy. Total uranium in well #1331 appears to be trending toward background concentrations as of the 1993 monitoring period.



Figure 8.2

KERR MCGEE--CIMARRON--GROSS BETA  
WELLS 1322, 1323, 1331, 1332, AND 1333

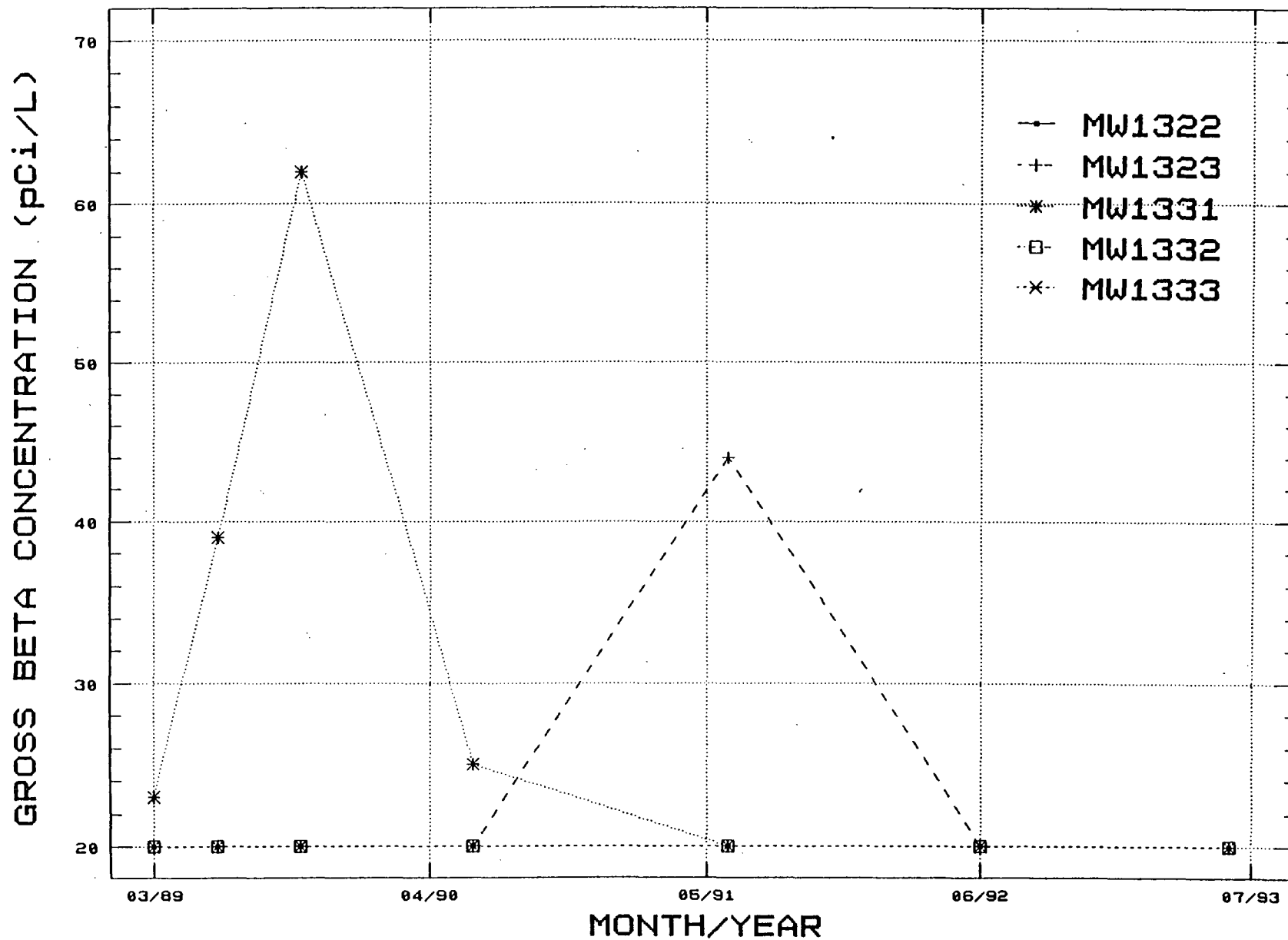
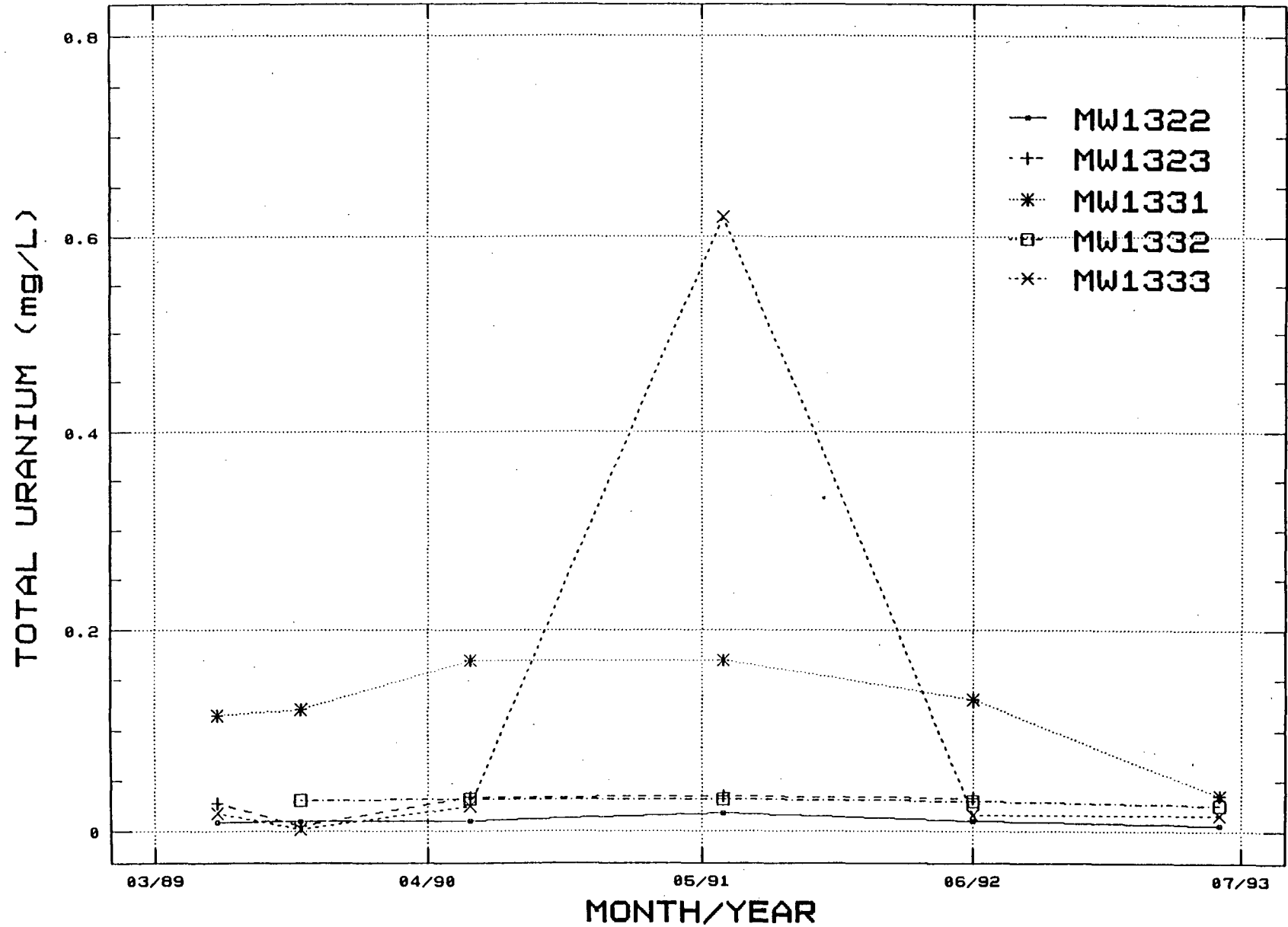
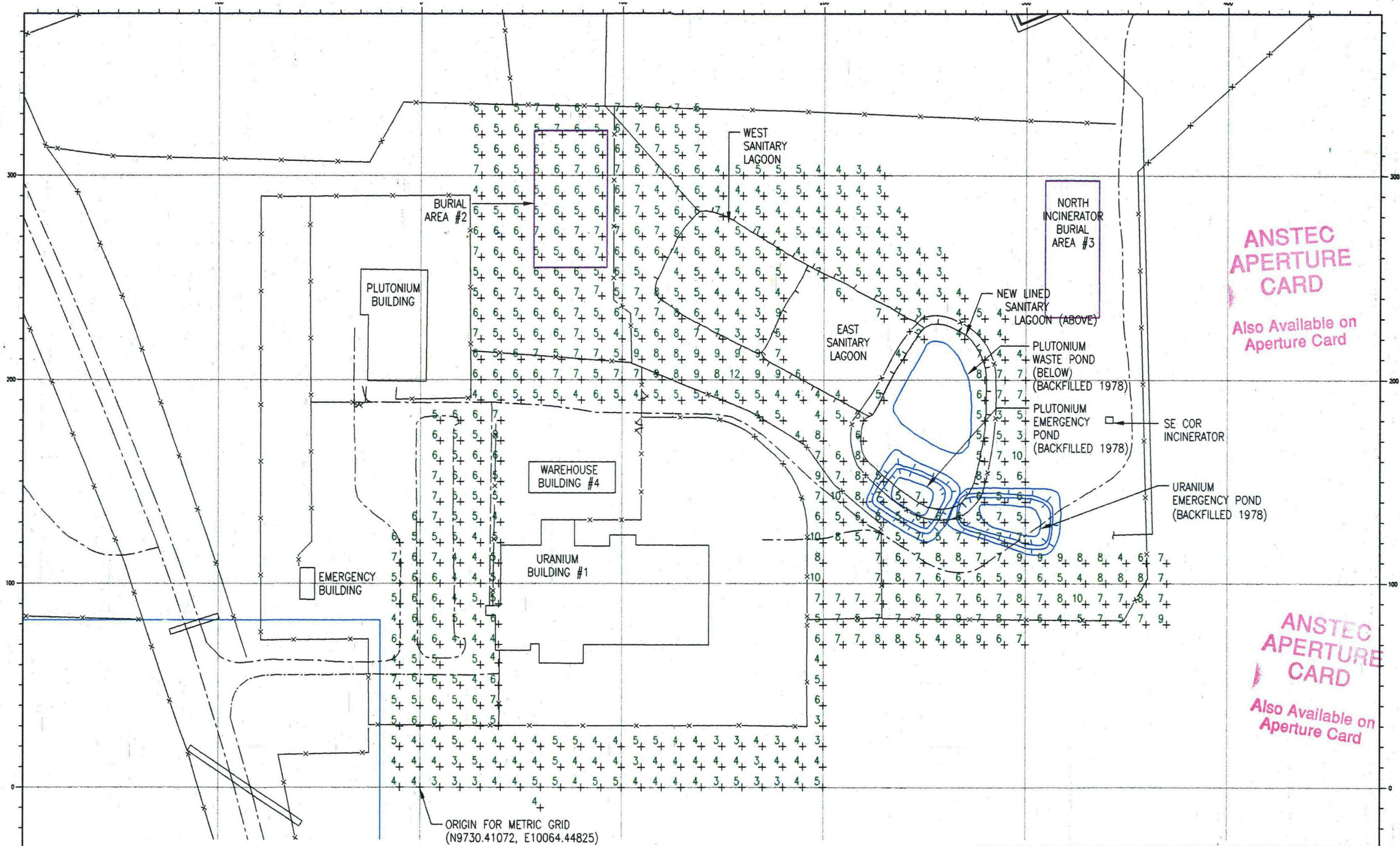


Figure 8.3

KERR MCGEE--CIMARRON--TOTAL URANIUM  
WELLS 1322, 1323, 1331, 1332, AND 1333





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READINGS ARE IN MICRO-R/H. ( $\mu R/H$ .)

INSTRUMENT: LUDLUM MICRO-R METER

MODEL NO: 125

SERIAL NO: 9081

ESTABLISHED SITE BACKGROUND OF  $7 \mu R/H$ . NOT SUBTRACTED.

SAMPLES TAKEN ON A 10 METER BY 10 METER GRID

READINGS TAKEN BEFORE REMEDIATION, (EXCEPT FOR WEST SANITARY LAGOON).

DATE: 9/14/94

BY: JA

DATE: 10/1/94

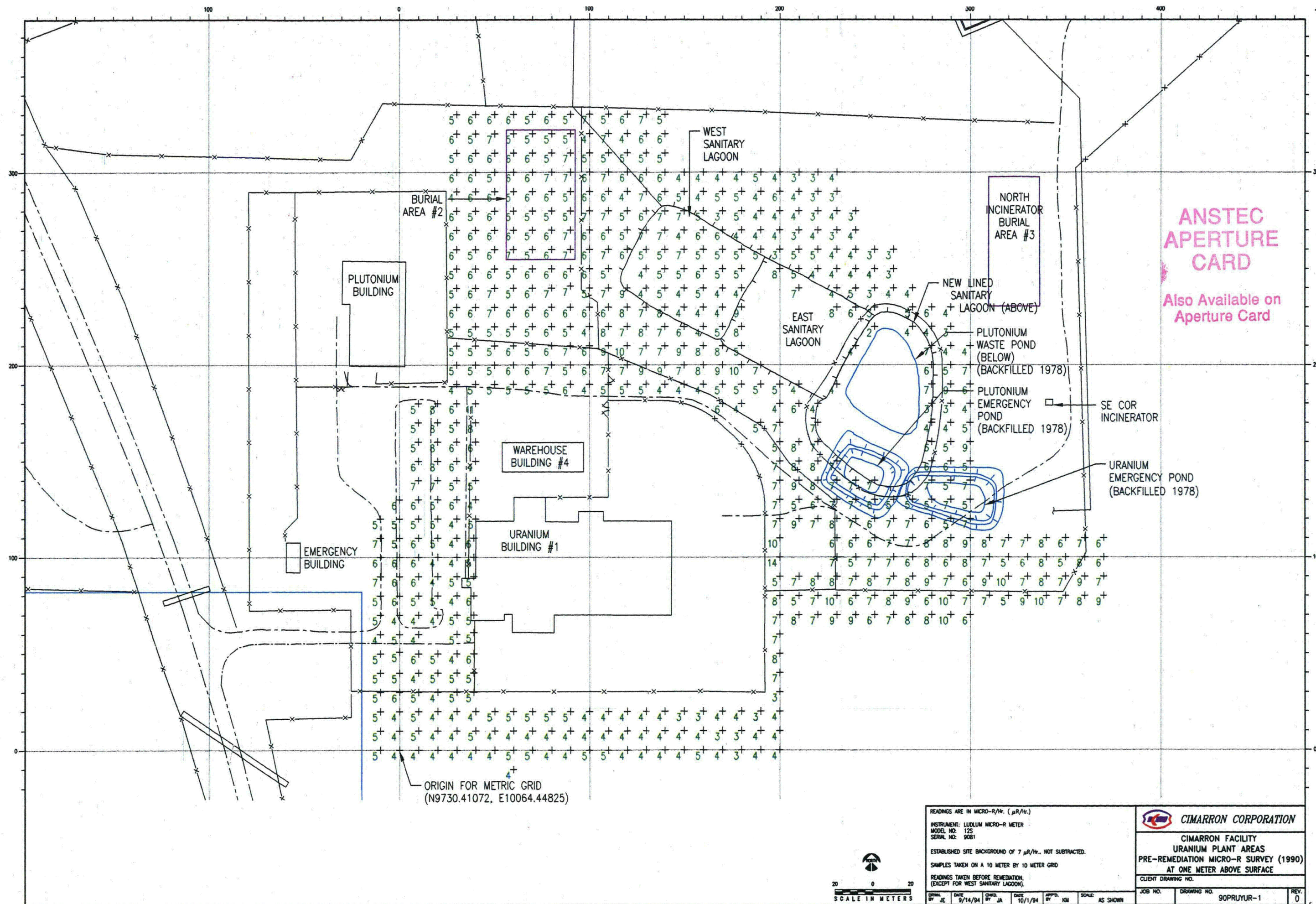
BY: KM

SCALE: AS SHOWN

<b>CIMARRON CORPORATION</b>		
<b>CIMARRON FACILITY</b> <b>URANIUM PLANT AREAS</b> <b>PRE-REMEDIATION MICRO-R SURVEY (1990)</b> <b>AT LAND SURFACE</b>		
CLIENT DRAWING NO.		
JOB NO.	DRAWING NO.	REV.
	90PRUYUR-0	0

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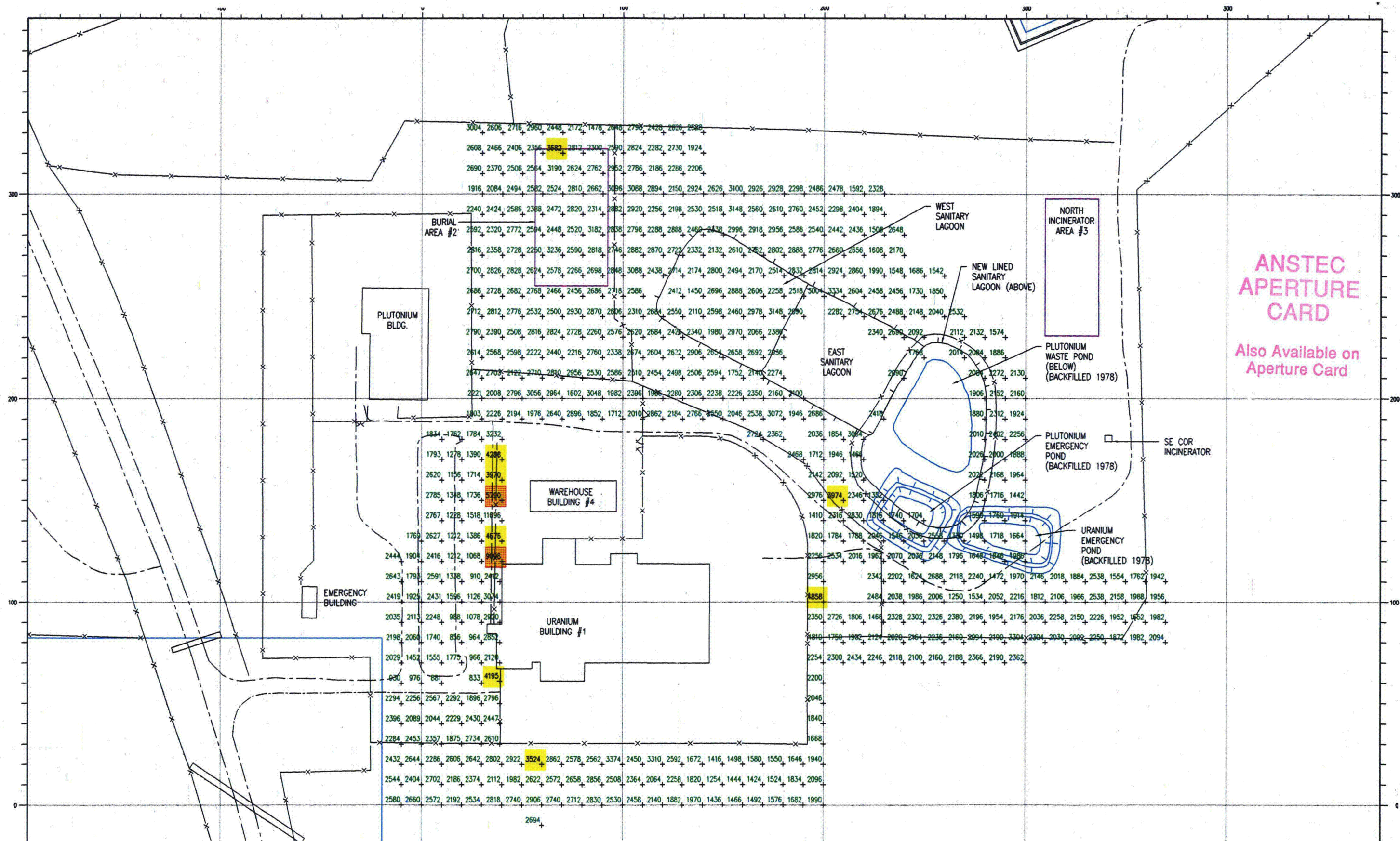




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INSTRUMENT: LUDLUM 2220 S/N 48385,  
LEAD SHIELDED 5" X 1 1/2" NaI DETECTOR.

READINGS TAKEN ON A 10 METER X 10 METER GRID.

SURVEY PERFORMED BEFORE REMEDIATION.

**LEGEND**  
2300 < 3500 CPM  
3500 - 5000 CPM  
> 5000 CPM

20 0 20  
SCALE IN METERS

**CIMARRON CORPORATION**

CIMARRON FACILITY  
URANIUM PLANT AREAS  
PRE-REMEDIATION GAMMA SURVEY (1990)  
READINGS IN CPM (3" DET.)

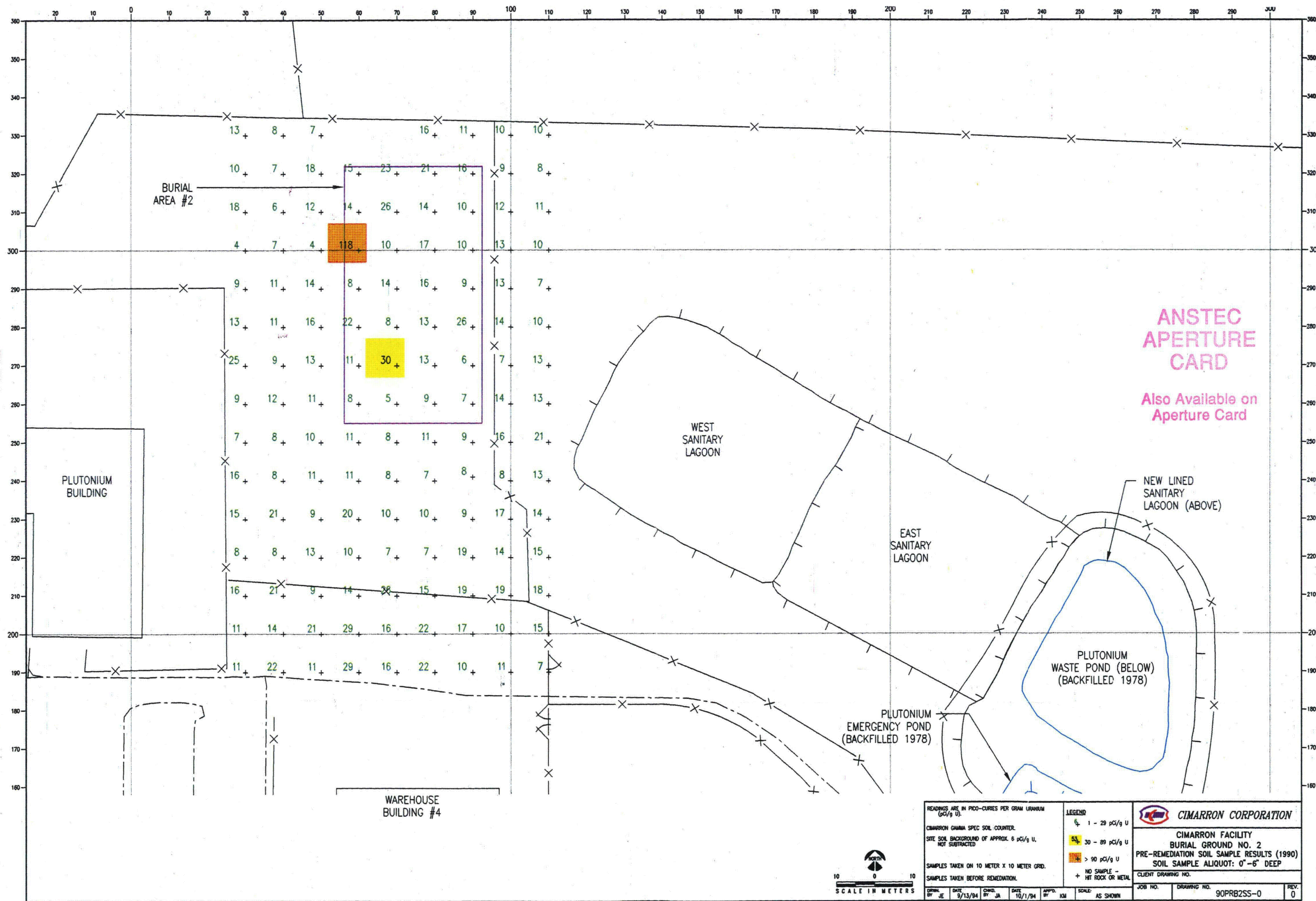
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JOB NO. DRAWING NO. 90PRUY3D-0 REV. 0

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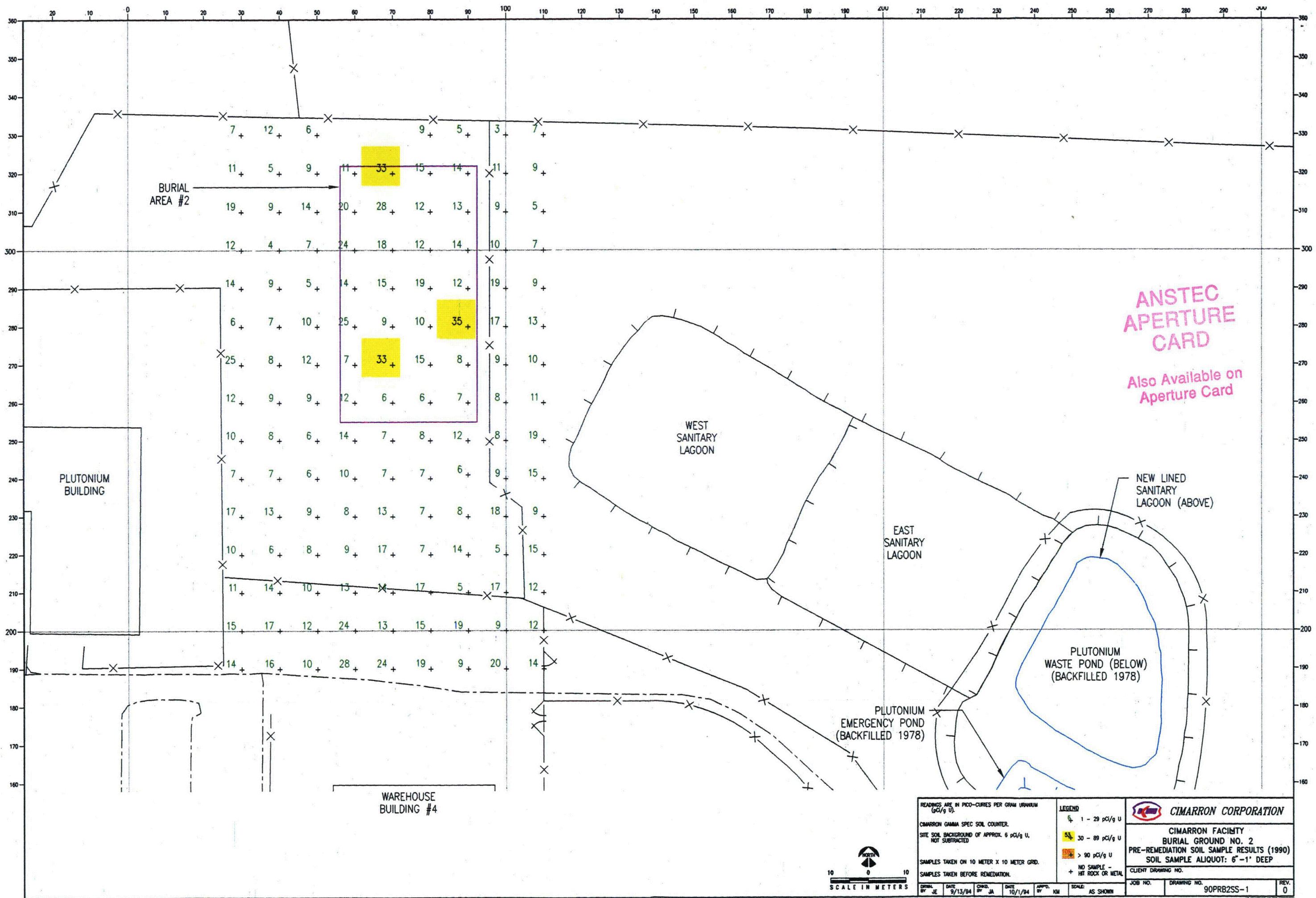
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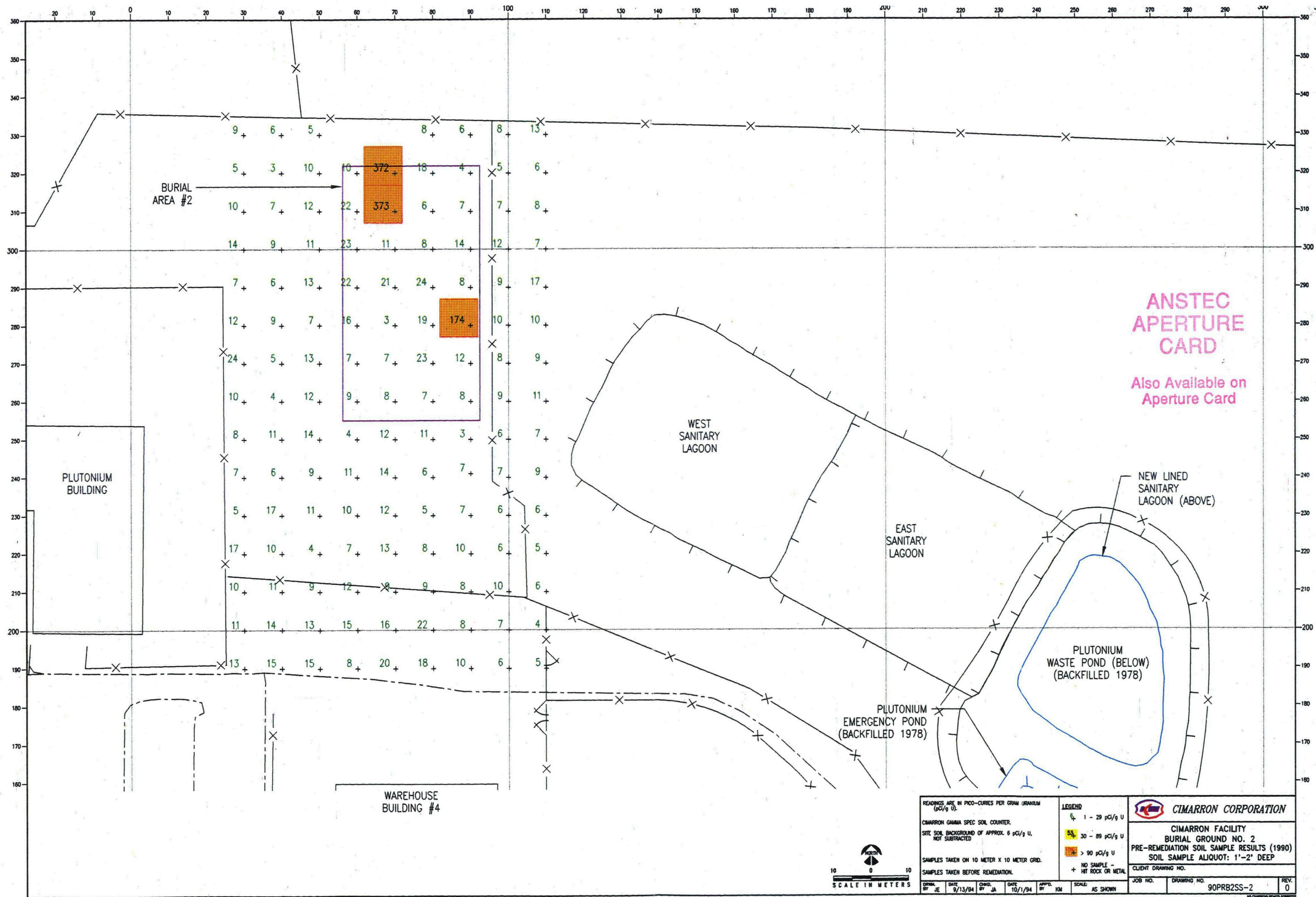


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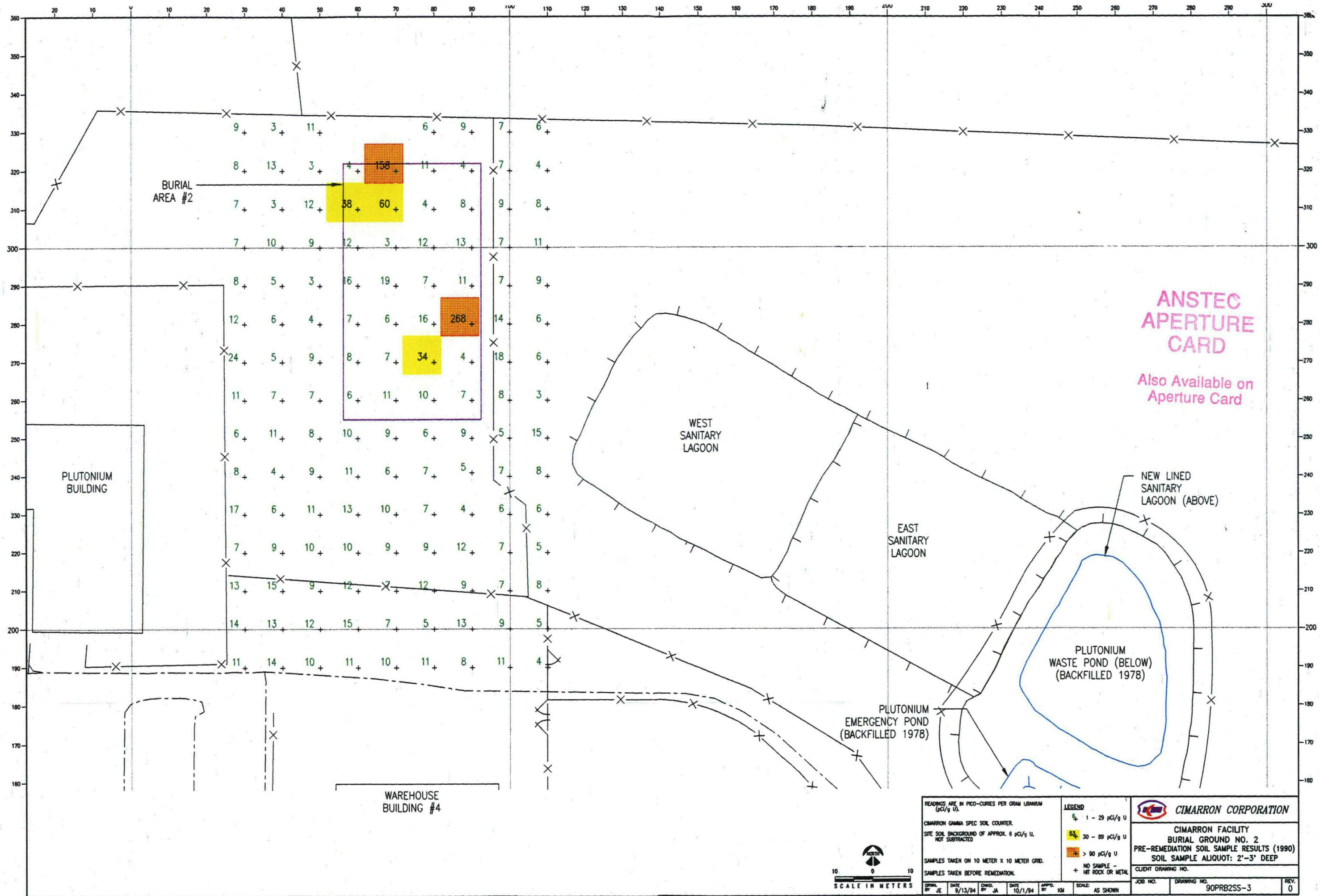




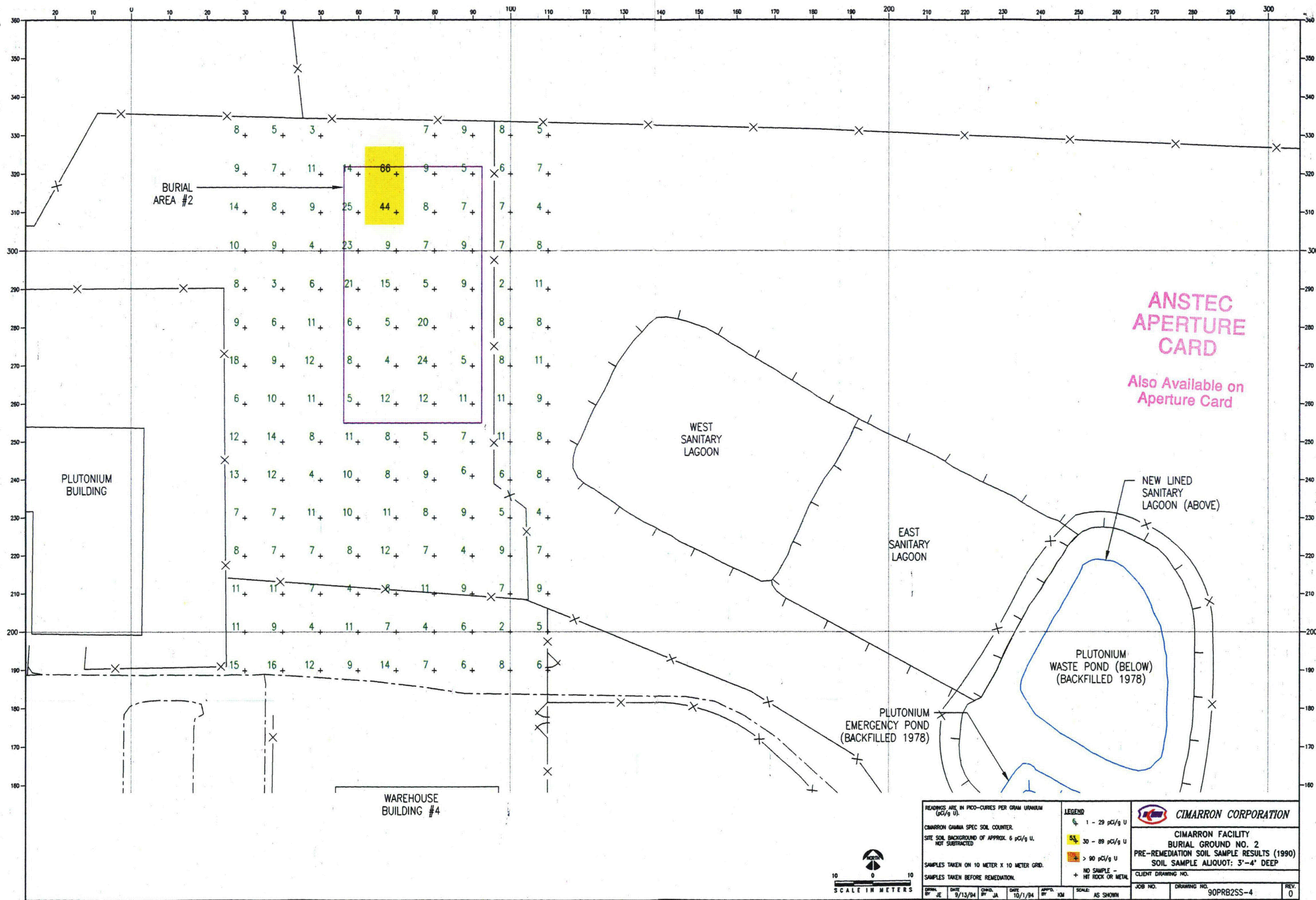


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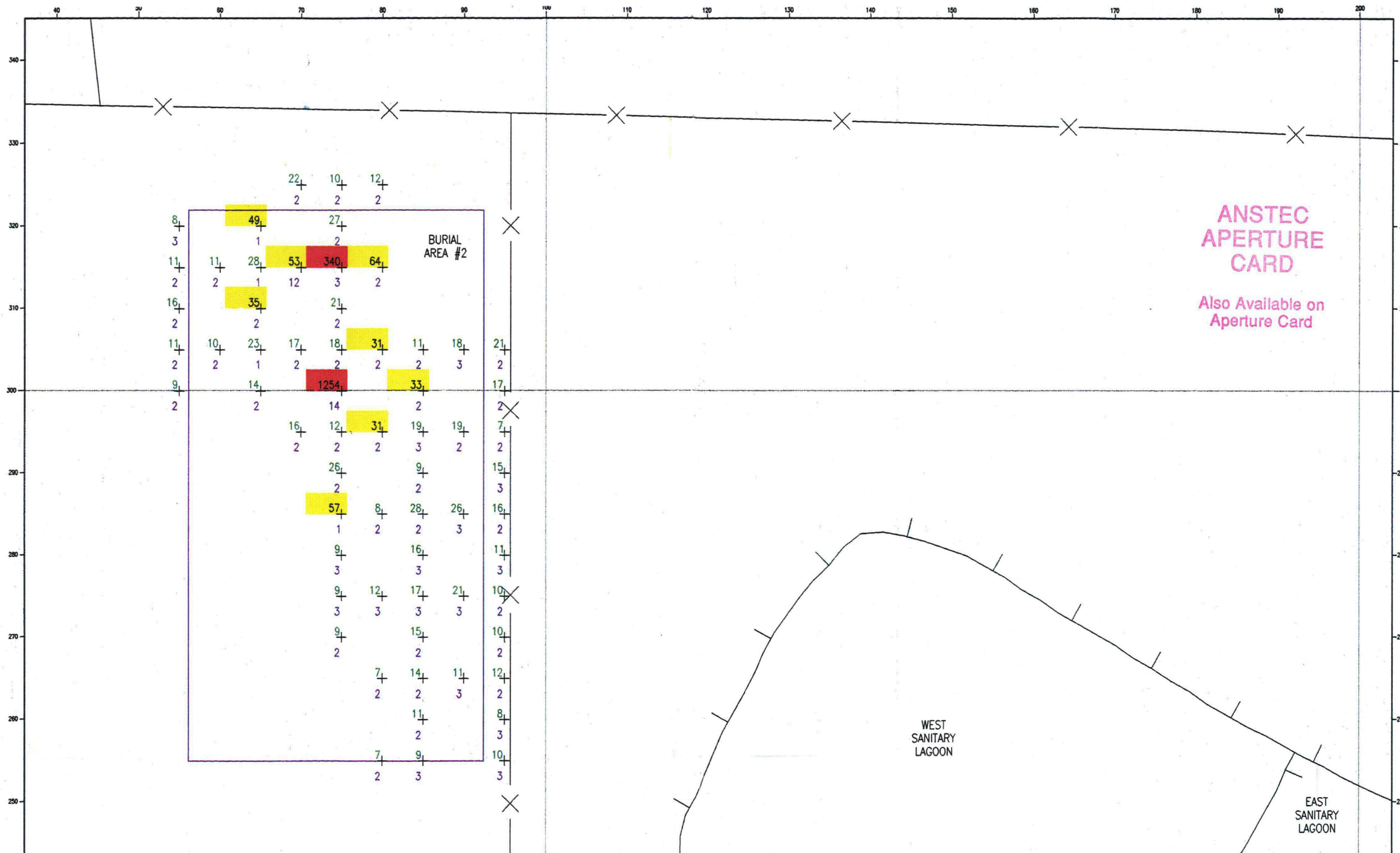






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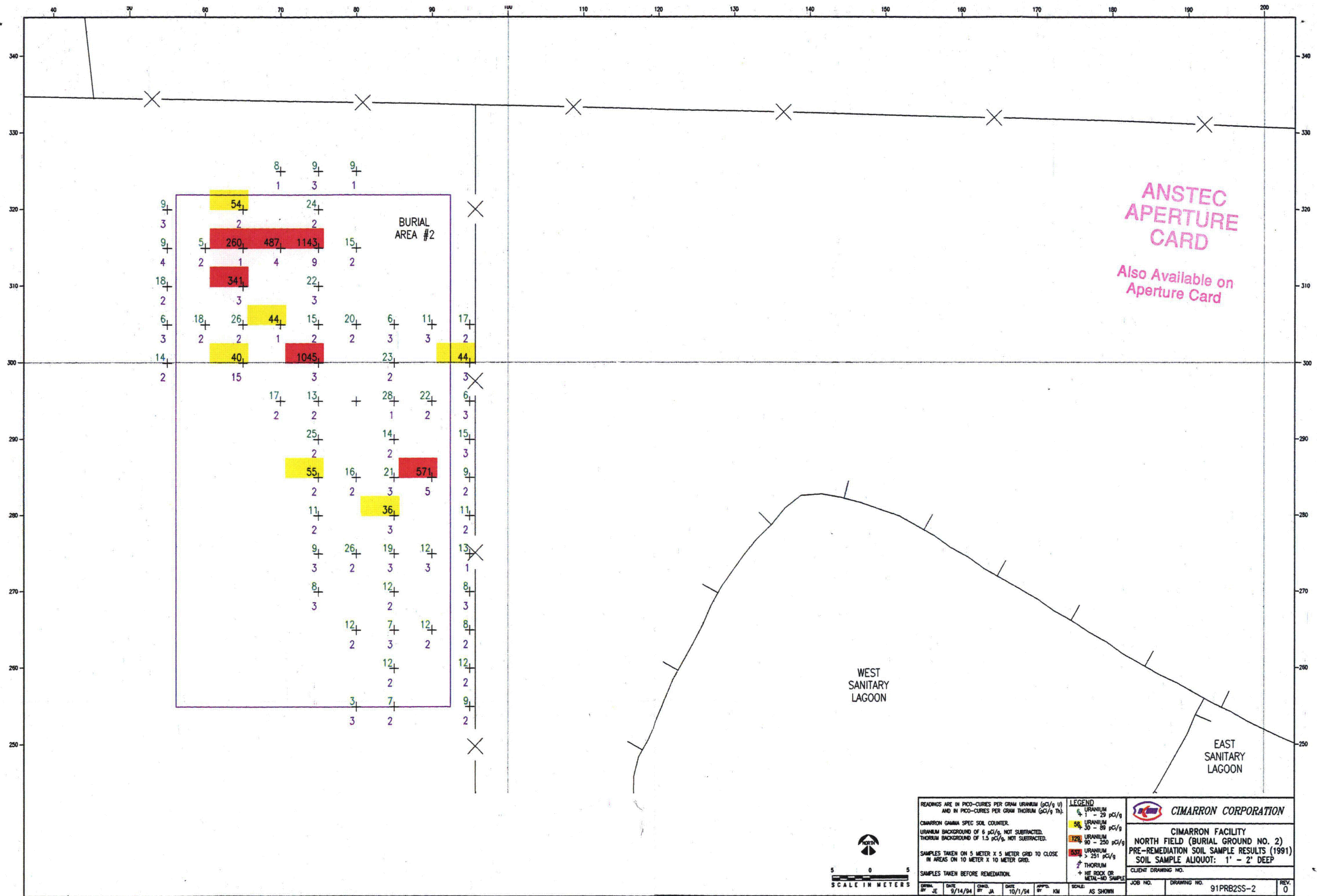
Also Available on  
Aperture Card

WEST  
SANITARY  
LAGOON

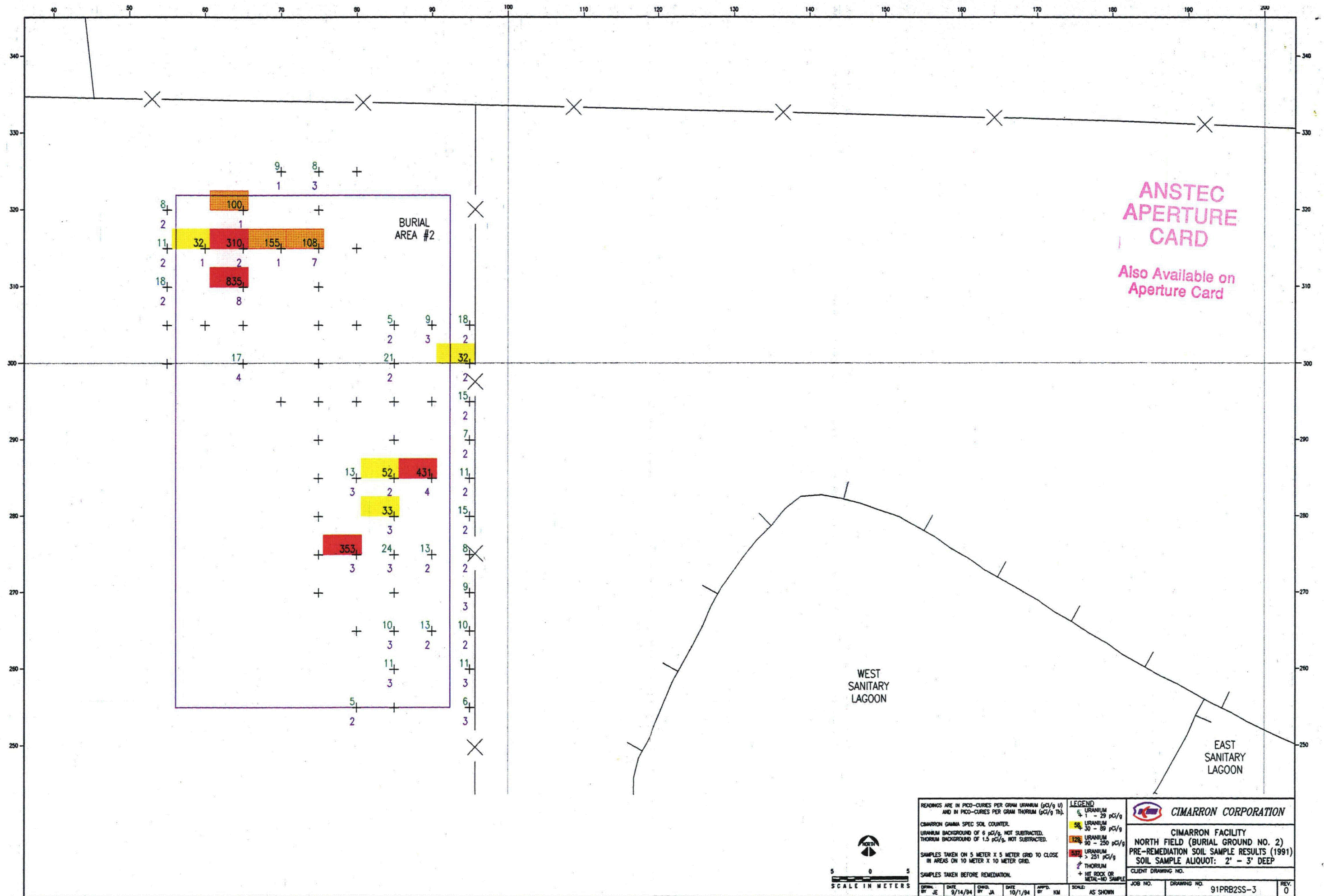
EAST  
SANITARY  
LAGOON

READINGS ARE IN PICO-CURIES PER GRAM URANIUM (pCi/g U) AND IN PICO-CURIES PER GRAM THORIUM (pCi/g Th). CIMARRON GAMMA SPEC SOIL COUNTER. URANIUM BACKGROUND OF 6 pCi/g. NOT SUBTRACTED. THORIUM BACKGROUND OF 1.5 pCi/g. NOT SUBTRACTED. SAMPLES TAKEN ON 5 METER X 5 METER GRID TO CLOSE IN AREAS ON 10 METER X 10 METER GRID. SAMPLES TAKEN BEFORE REMEDIATION.				<b>LEGEND</b> 6 URANIUM 1 - 29 pCi/g 54 URANIUM 30 - 89 pCi/g 125 URANIUM 90 - 250 pCi/g 534 URANIUM > 251 pCi/g 2 THORIUM + HIT ROCK OR METAL-NO SAMPLE	<b>CIMARRON CORPORATION</b> CIMARRON FACILITY NORTH FIELD (BURIAL GROUND NO. 2) PRE-REMEDIATION SOIL SAMPLE RESULTS (1991) SOIL SAMPLE ALIQUOT: 0-1' DEEP CLIENT DRAWING NO.
DRAWN BY: JE DATE: 9/14/94 CHECKED BY: JA DATE: 10/1/94 APP'D BY: KM SCALE: AS SHOWN	JOB NO. DRAWING NO. 91PRB2SS-1 REV. 0				

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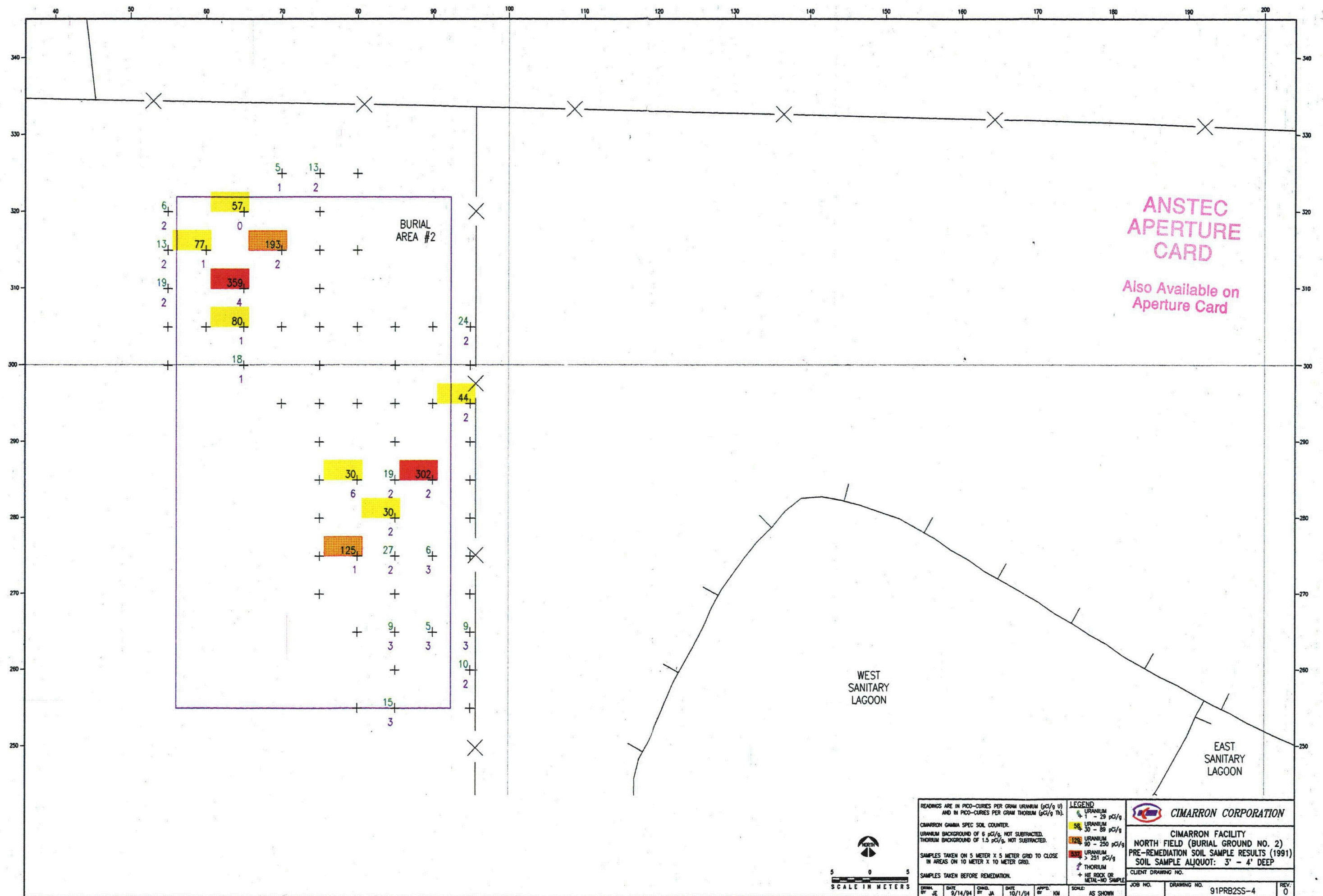




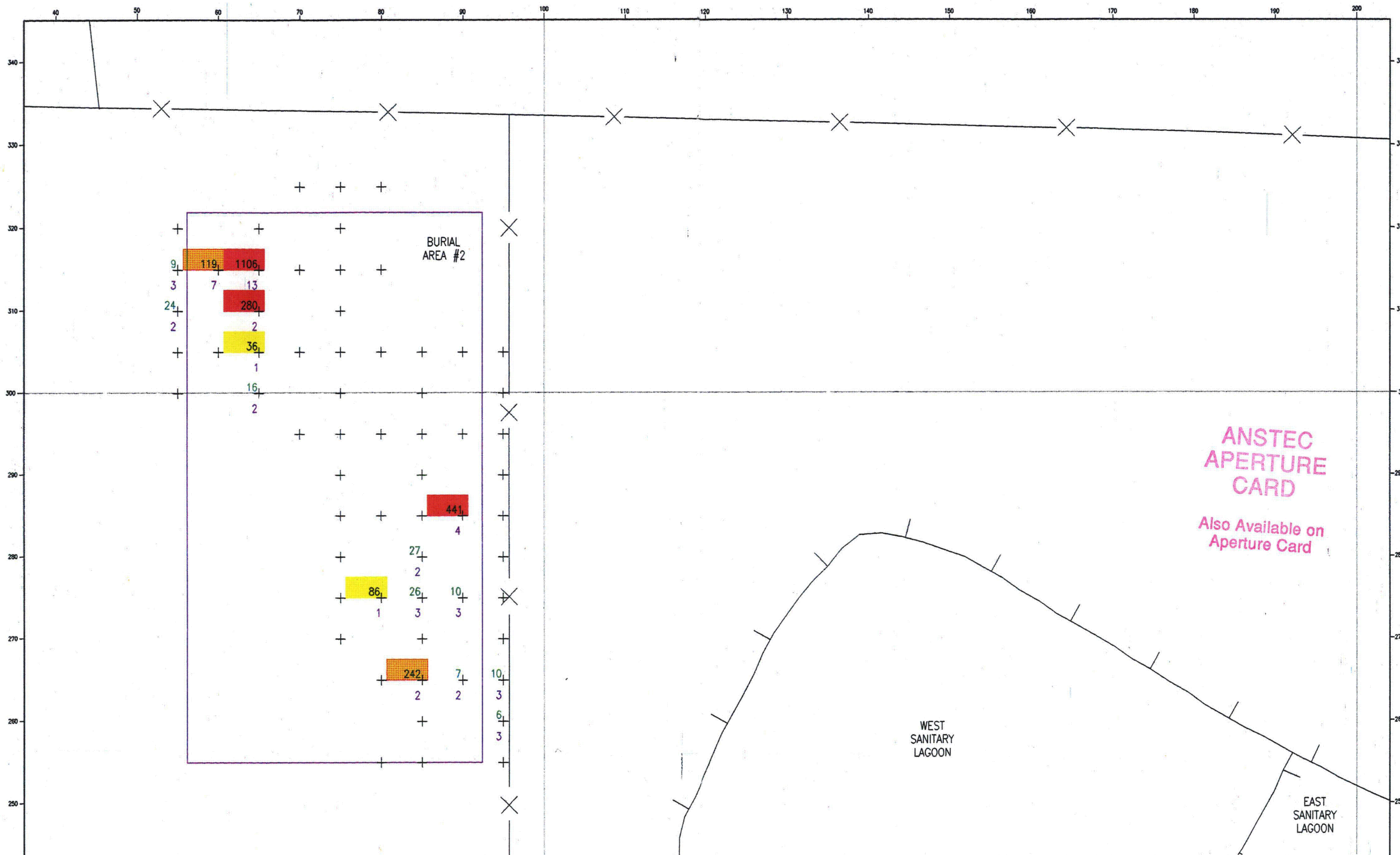


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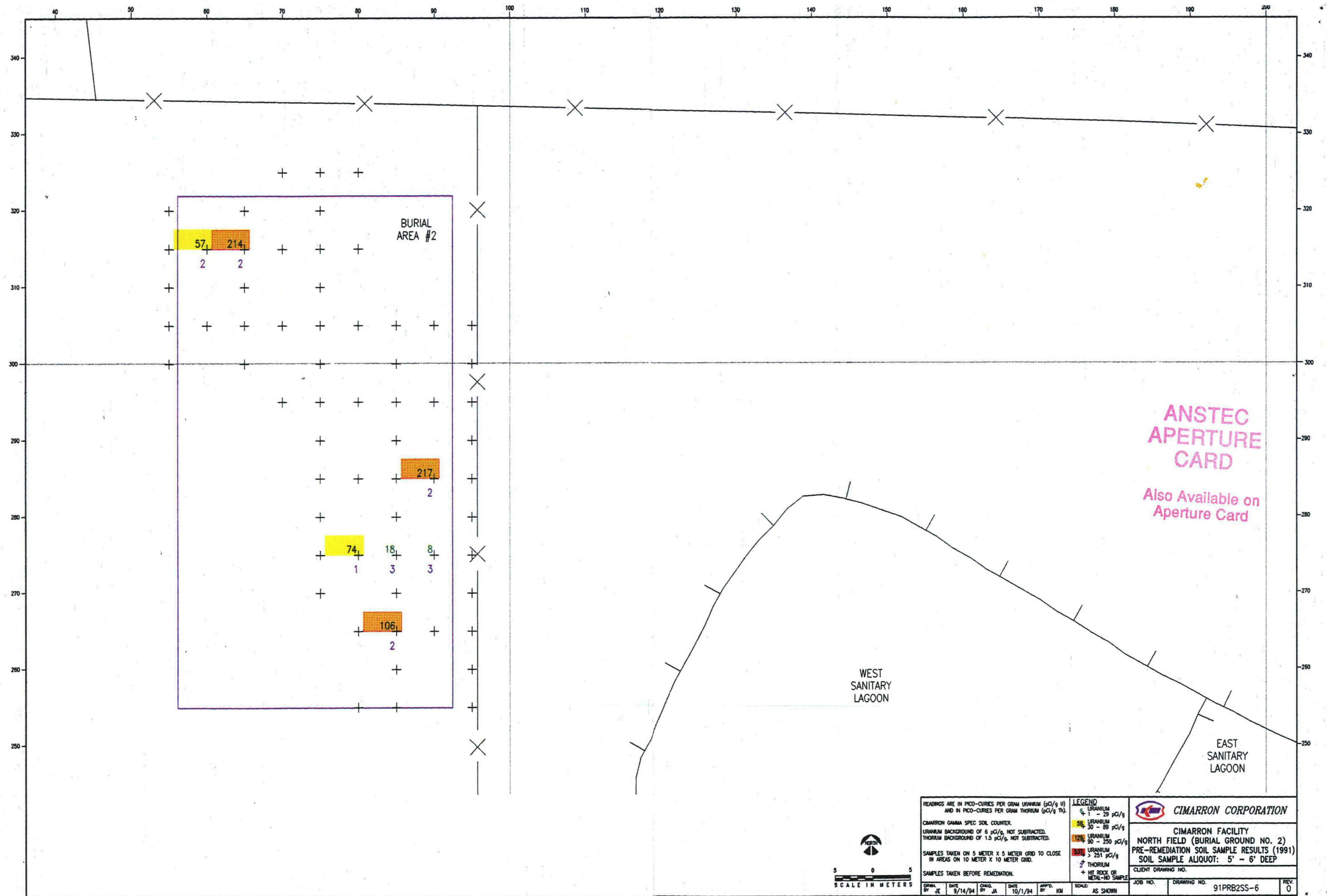


READINGS ARE IN PICO-CURIES PER GRAM URANIUM (pCi/g U) AND IN PICO-CURIES PER GRAM THORIUM (pCi/g Th). CIMARRON GAMMA SPEC SOIL COUNTER. URANIUM BACKGROUND OF 6 pCi/g. NOT SUBTRACTED. THORIUM BACKGROUND OF 1.5 pCi/g. NOT SUBTRACTED. SAMPLES TAKEN ON 5 METER X 5 METER GRID TO CLOSE IN AREAS ON 10 METER X 10 METER GRID. SAMPLES TAKEN BEFORE REMEDIATION.				<b>LEGEND</b> URANIUM 1 - 29 pCi/g 30 - 89 pCi/g 90 - 250 pCi/g > 251 pCi/g THORIUM HIT ROCK OR METAL-NO SAMPLE		<b>CIMARRON CORPORATION</b> CIMARRON FACILITY NORTH FIELD (BURIAL GROUND NO. 2) PRE-REMEDIATION SOIL SAMPLE RESULTS (1991) SOIL SAMPLE ALIQUOT: 4" - 5" DEEP CLIENT DRAWING NO.	
JOB NO. 91PRB2SS-5	DRAWING NO. 91PRB2SS-5	REV. 0	SCALE: AS SHOWN				

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SCALE IN METERS

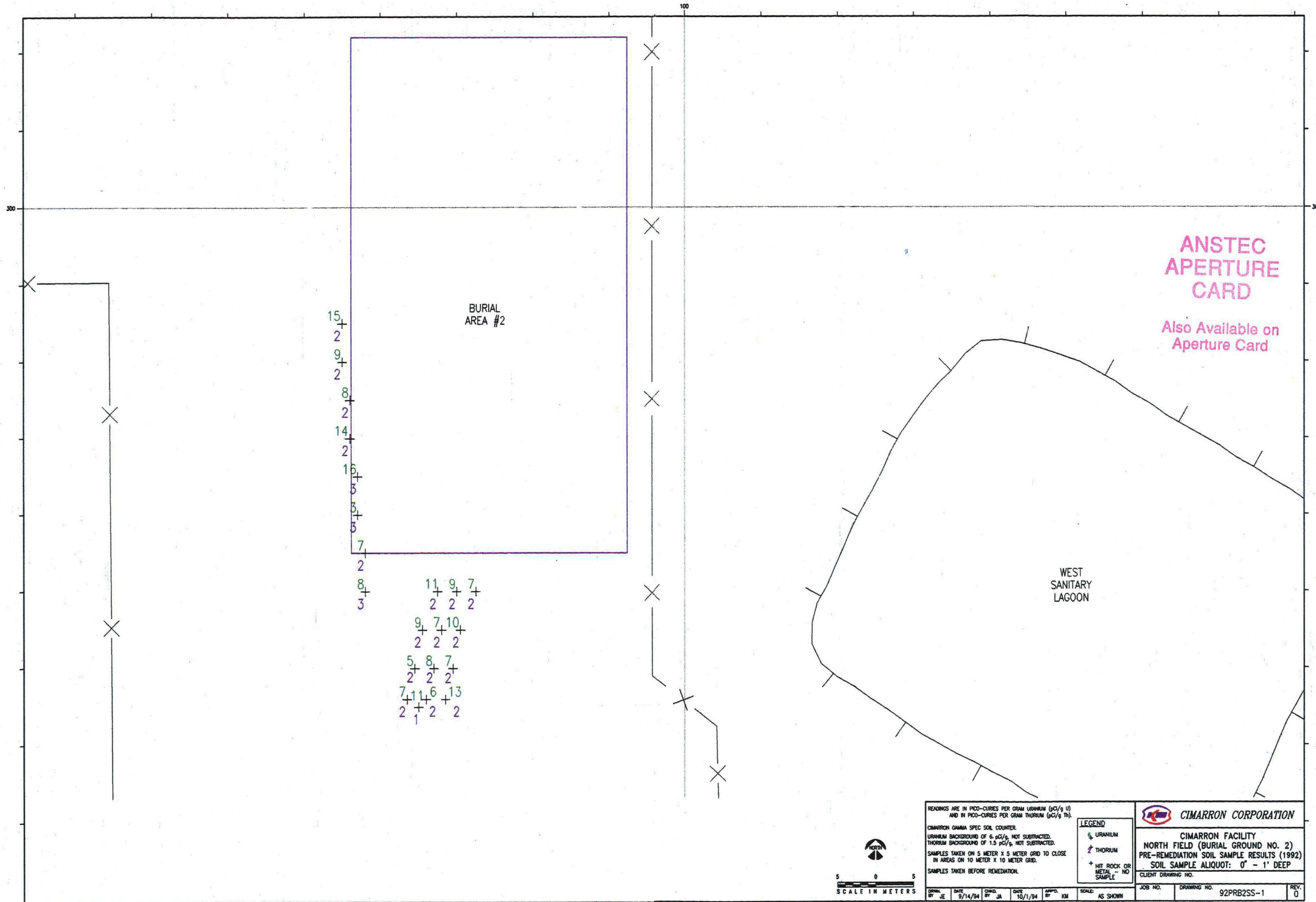
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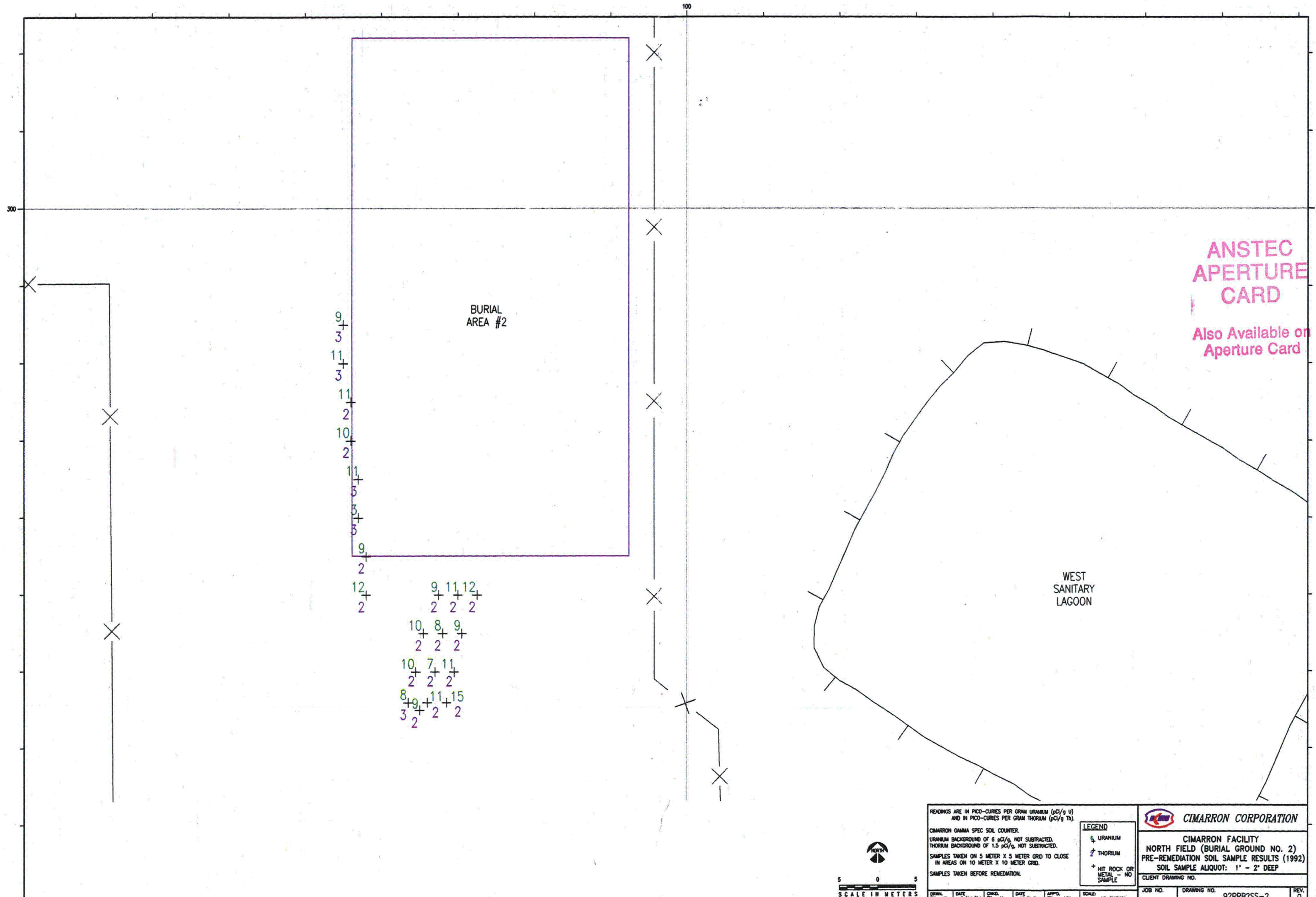
31



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BURIAL  
AREA #2

WEST  
SANITARY  
LAGOON

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

CIMARRON GAMMA SPEC SOIL COUNTER.

URANIUM BACKGROUND OF 6 pCi/g. NOT SUBTRACTED.

THORIUM BACKGROUND OF 1.5 pCi/g. NOT SUBTRACTED.

SAMPLES TAKEN ON 5 METER X 5 METER GRID TO CLOSE  
IN AREAS ON 10 METER X 10 METER GRID.

SAMPLES TAKEN BEFORE REMEDIATION.

LEGEND

U URANIUM

Th THORIUM

+ HIT ROCK OR  
METAL - NO  
SAMPLE

CIMARRON CORPORATION

CIMARRON FACILITY

NORTH FIELD (BURIAL GROUND NO. 2)

PRE-REMEDIATION SOIL SAMPLE RESULTS (1992)

SOIL SAMPLE ALIQUOT: 1' - 2" DEEP

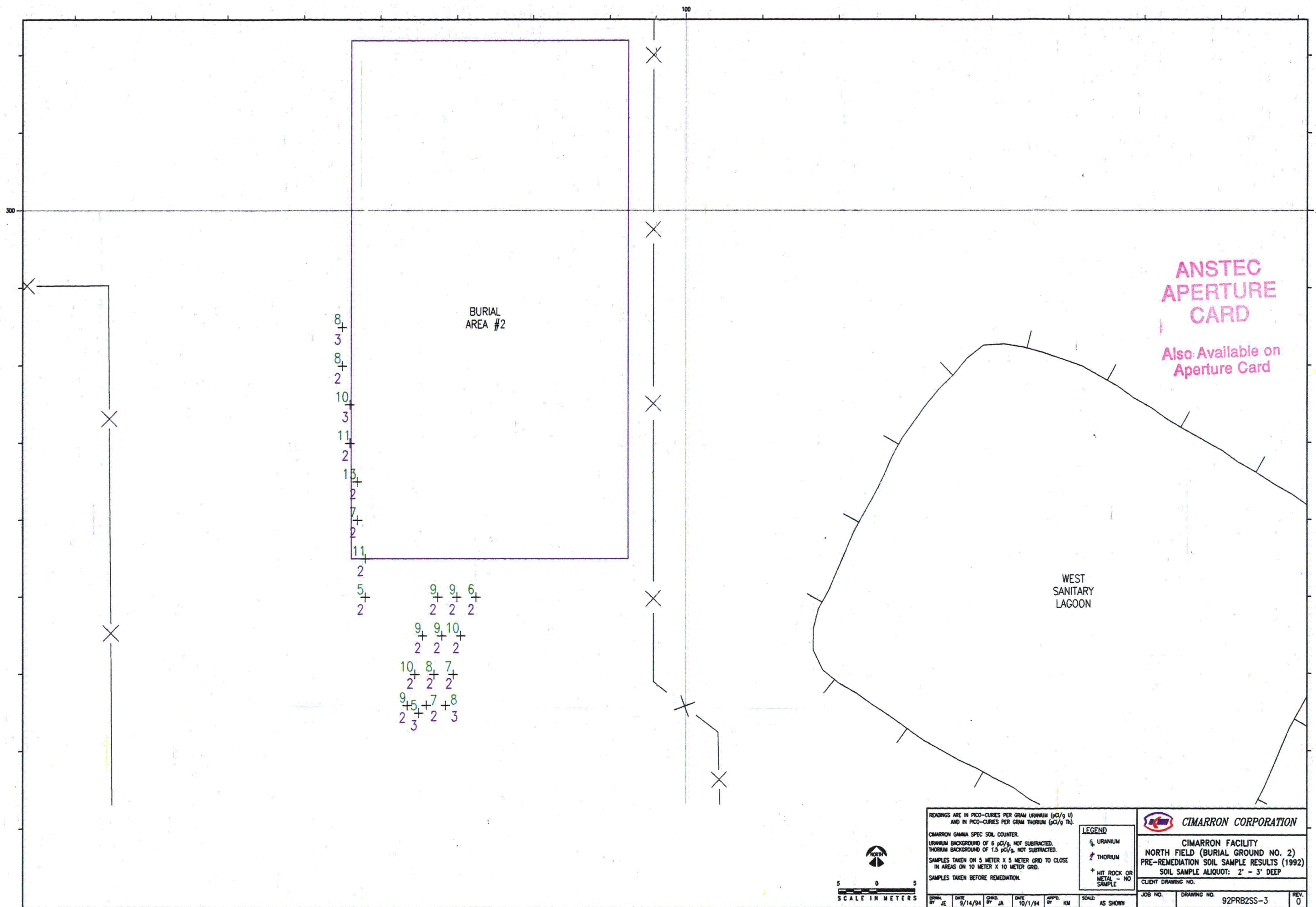
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BY	JE	BY	JA	BY	JA	BY	JA	BY	JA
SCALE	AS SHOWN								
JOB NO.	92PRB2SS-2								
DRAWING NO.	92PRB2SS-2								
REV.	0								

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34





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

CIMARRON GAMMA SPEC SOIL COUNTER.  
URANIUM BACKGROUND OF 6 pCi/g, NOT SUBTRACTED.  
THORIUM BACKGROUND OF 1.5 pCi/g, NOT SUBTRACTED.  
SAMPLES TAKEN ON 5 METER X 5 METER GRID TO CLOSE  
IN AREAS ON 10 METER X 10 METER GRID.  
SAMPLES TAKEN BEFORE REMEDIATION.

**LEGEND**

- U URANIUM
- Th THORIUM
- + HIT ROCK OR METAL - NO SAMPLE

**CIMARRON CORPORATION**

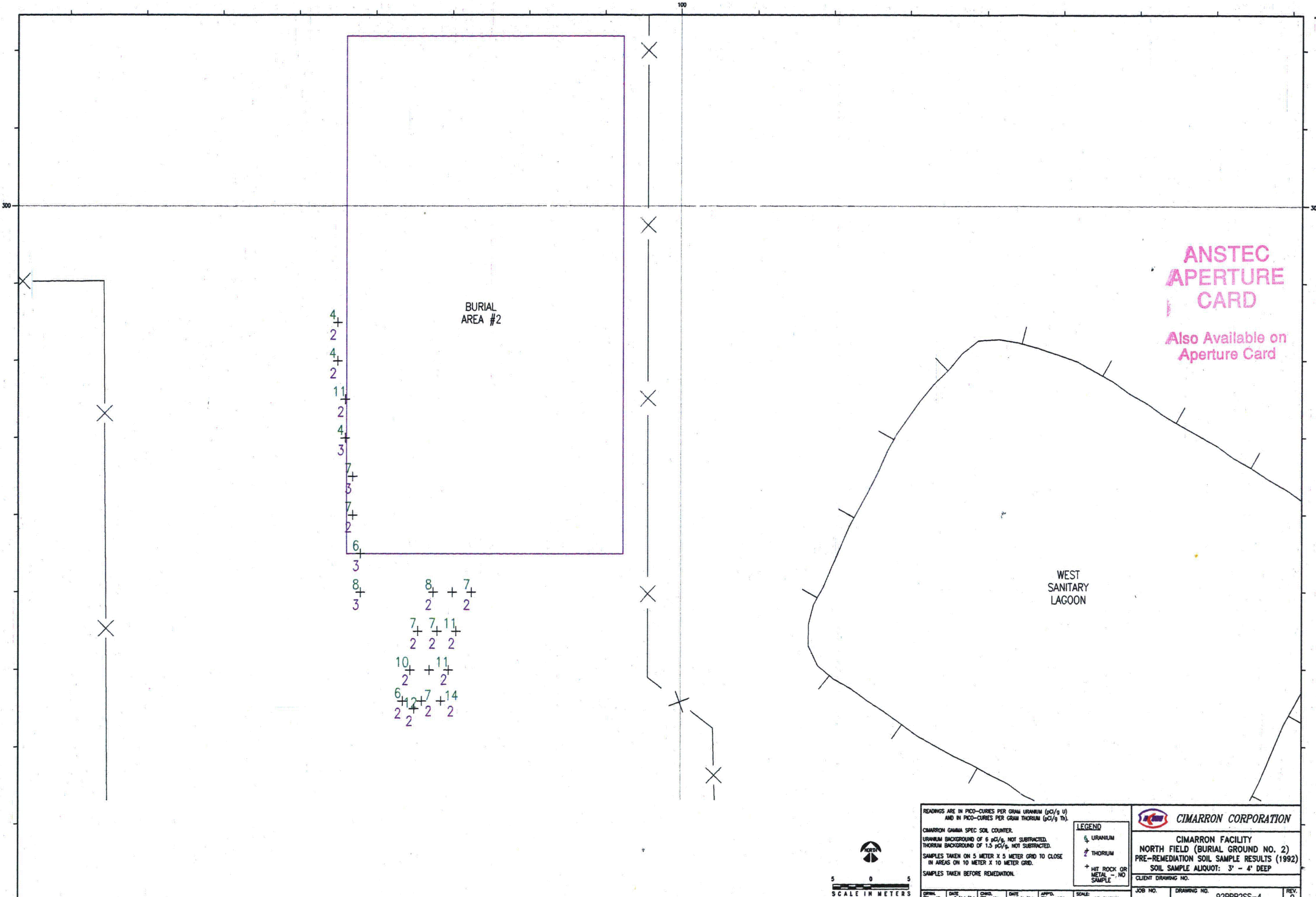
CIMARRON FACILITY  
NORTH FIELD (BURIAL GROUND NO. 2)  
PRE-REMEDIATION SOIL SAMPLE RESULTS (1992)  
SOIL SAMPLE ALIQUOT: 2' - 3' DEEP

CLIENT DRAWING NO.

DATE	9/14/94	DATE	10/1/94	DATE	10/1/94	DATE	10/1/94	DATE	10/1/94
BY	JE	BY	JA	BY	JA	BY	JA	BY	JA

SCALE: AS SHOWN

JOB NO.	DRAWING NO.	REV.
	92PRB2SS-3	0



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BURIAL  
AREA #2

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LAGOON

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11+  
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4+  
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7+  
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7+  
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6+  
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8+  
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8+  
2  
7+  
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7+  
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11+  
2  
10+  
2  
6+  
2  
7+  
2  
14+  
2

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

CIMARRON GAMMA SPEC SOIL COUNTER.  
URANIUM BACKGROUND OF 6 pCi/g, NOT SUBTRACTED.  
THORIUM BACKGROUND OF 1.5 pCi/g, NOT SUBTRACTED.  
SAMPLES TAKEN ON 5 METER X 5 METER GRID TO CLOSE  
IN AREAS ON 10 METER X 10 METER GRID.  
SAMPLES TAKEN BEFORE REMEDIATION.

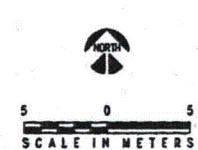
**LEGEND**  
 U URANIUM  
 Th THORIUM  
 + HIT ROCK OR METAL SAMPLE

**CIMARRON CORPORATION**  
 CIMARRON FACILITY  
 NORTH FIELD (BURIAL GROUND NO. 2)  
 PRE-REMEDIATION SOIL SAMPLE RESULTS (1992)  
 SOIL SAMPLE ALIQUOT: 3' - 4" DEEP  
 CLIENT DRAWING NO.

DATE	9/14/94	DATE	10/1/94	DATE	10/1/94	DATE	10/1/94
BY	JE	BY	JA	BY	JA	BY	JA

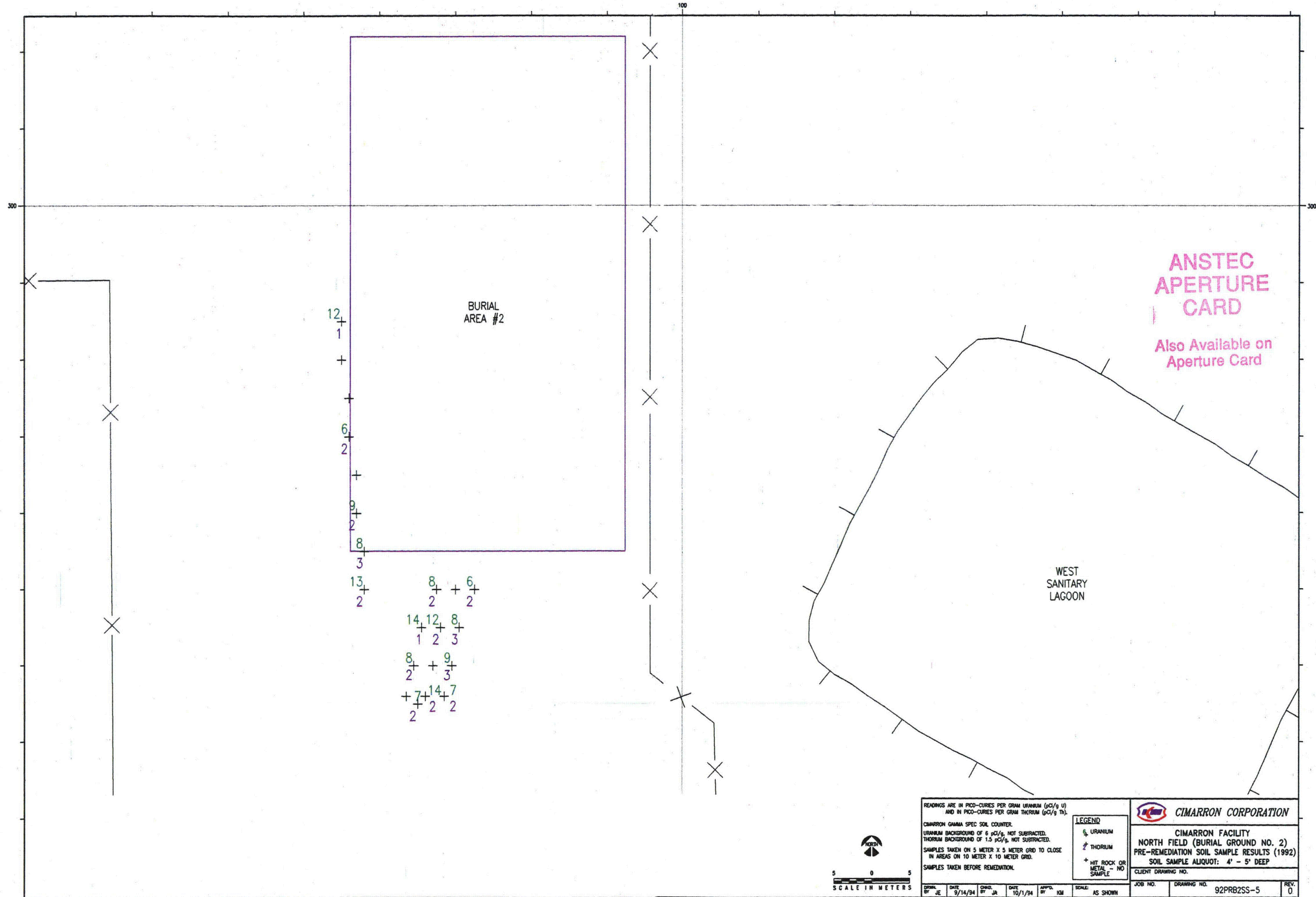
SCALE: AS SHOWN

JOB NO. DRAWING NO. 92PRB2SS-4 REV. 0



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

CIMARRON GAMMA SPEC SOIL COUNTER.  
URANIUM BACKGROUND OF 6 pCi/g, NOT SUBTRACTED.  
THORIUM BACKGROUND OF 1.5 pCi/g, NOT SUBTRACTED.  
SAMPLES TAKEN ON 5 METER X 5 METER GRID TO CLOSE  
IN AREAS ON 10 METER X 10 METER GRID.  
SAMPLES TAKEN BEFORE REMEDIATION.

**LEGEND**  
 • URANIUM  
 + THORIUM  
 + HIT ROCK OR METAL - NO SAMPLE

**CIMARRON CORPORATION**  
 CIMARRON FACILITY  
 NORTH FIELD (BURIAL GROUND NO. 2)  
 PRE-REMEDIATION SOIL SAMPLE RESULTS (1992)  
 SOIL SAMPLE ALIQUOT: 4' - 5' DEEP  
 CLIENT DRAWING NO.

DATE	9/14/94	DATE	10/1/94	DATE	10/1/94	DATE	10/1/94
BY	JE	BY	JA	BY	RM	BY	RM

SCALE: AS SHOWN

JOB NO.	DRAWING NO.	REV.
	92PRB2SS-5	0

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BURIAL  
AREA #2

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WEST  
SANITARY  
LAGOON

READINGS ARE IN PICO-CURIES PER GRAM URANIUM (pCi/g U)  
AND IN PICO-CURIES PER GRAM THORIUM (pCi/g Th).  
CIMARRON GAMMA SPEC SOIL COUNTER.  
URANIUM BACKGROUND OF 6 pCi/g, NOT SUBTRACTED.  
THORIUM BACKGROUND OF 1.5 pCi/g, NOT SUBTRACTED.  
SAMPLES TAKEN ON 5 METER X 5 METER GRID TO CLOSE  
IN AREAS ON 10 METER X 10 METER GRID.  
SAMPLES TAKEN BEFORE REMEDIATION.

LEGEND  
U URANIUM  
Th THORIUM  
+ HIT ROCK OR  
METAL - NO  
SAMPLE

CIMARRON CORPORATION  
CIMARRON FACILITY  
NORTH FIELD (BURIAL GROUND NO. 2)  
PRE-REMEDIATION SOIL SAMPLE RESULTS (1992)  
SOIL SAMPLE ALIQUOT: 5' - 6' DEEP  
CLIENT DRAWING NO.

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SCALE IN METERS

DRWN. BY JE DATE 9/14/94 CHGO. BY JA DATE 10/1/94 APPD. BY KM SCALE AS SHOWN

JOB NO. DRAWING NO. 92PRB2SS-6 REV. 0

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## 9.0 Burial Area #3 and Drainage Area

### 9.1 Burial Area #3

This area was originally constructed for disposal of non-radioactive solid waste materials. However, the 1990 soil sampling program and gamma survey completed within this area indicated that radioactive waste materials may be present in this buried waste. The initial 1990 survey led to a more in-depth characterization of the area, removal of radioactive waste materials, and the need for final characterization of this area in the future.

#### A. Characterization Data:

This area was included in the Micro-R survey of the entire 1,100-acre site conducted in 1979 and is shown on Drawing No. 79PRSBUR-0. This drawing is included as an attachment to Section 6.0. The soil sampling that was performed in 1990 on a 10m x 10m grid included Burial Area #3. This sampling was performed to a depth of 4 ft. The results of the sampling, shown on Drawings No. 90PRB3SS-0 through 90PRB3SS-4, indicates five samples exceeding the Option #1 guideline value of 30 pCi/g total uranium. In March, 1992, a 5m x 5m grid was established for this area and additional soil samples were collected (this included grid intersects not previously sampled) at depths from 0 to 6 ft. The soil samples were analyzed for total uranium, and the results were placed on Drawings No. 92PRB3SS-1 through 92PRB3SS-6. This second round of sampling resulted in several additional areas where soil uranium concentrations exceeded the Option #1 limit of 30 pCi/g total uranium. A random soil sampling program consisting of 30 samples was conducted in this area to supplement the existing data. This round of sampling also showed soil samples exceeding the Option #1 limit.

#### B. Remediation:

The soil sampling that had been completed prior to April, 1992 indicated several areas requiring remediation. Remediation of this area began in April, 1992, with radioactive waste materials found in drums of resin and on several pieces of scrap metal. These items were removed, packaged and transported off site to a licensed LLRW disposal facility. Approximately 100 ft<sup>3</sup> of LLRW was disposed of off site containing total uranium concentrations in the range of 1,500 pCi/g to 6,000 pCi/g. A limited volume of Option #2

material may be present in this area and will be removed once approval for on-site disposal is received. When remediation is completed, a final survey of this area will be conducted.

C. Environmental Data:

Monitoring Well #1311 is located in the vicinity of Burial Ground #3. This well is sampled annually and is discussed in greater detail in Section 12.0.

9.2 Drainage Area between the New Lined Sanitary Lagoon and the Incinerator/ Burial Area #3:

This drainage area receives surface runoff from Burial Area #3, the clean trash incinerator area, the on-site road, and the New Sanitary Lagoon berm. These areas are considered to be affected areas. The southern portion of this area was included in the 10m x 10m grid soil sampling program performed in 1990. The sample results are shown on Drawings No. 90PRB3SS-0 through 90PRB3SS-4. One soil sample in this area measuring 46 pCi/g total uranium exceeded the Option #1 limit. A final survey of this drainage area will be performed once the surrounding areas have been remediated.

A. Concrete Data:

Cimarron personnel began the decontamination and removal of concrete rubble from pads and building floors within the restricted area in 1986. All concrete removed from the restricted areas was surveyed to ensure that release limits were met. Prior to 1989, all concrete rubble was surveyed for alpha only. Concrete removed after 1989 was released based upon surveys conducted for both alpha and beta/gamma. In 1993, Cimarron utilized a gas proportional beta/gamma survey instrument to perform verification surveys on various pieces of concrete previously released by alpha survey alone. The result of this survey was that several pieces of concrete were located in this drainage area which had fixed contamination exceeding 15,000 dpm/100 cm<sup>2</sup> (beta/gamma). This drainage area may contain concrete rubble which exceeds the free release limit for beta/gamma. The concrete was placed in the drainage areas as rip rap to prevent on-site erosion.

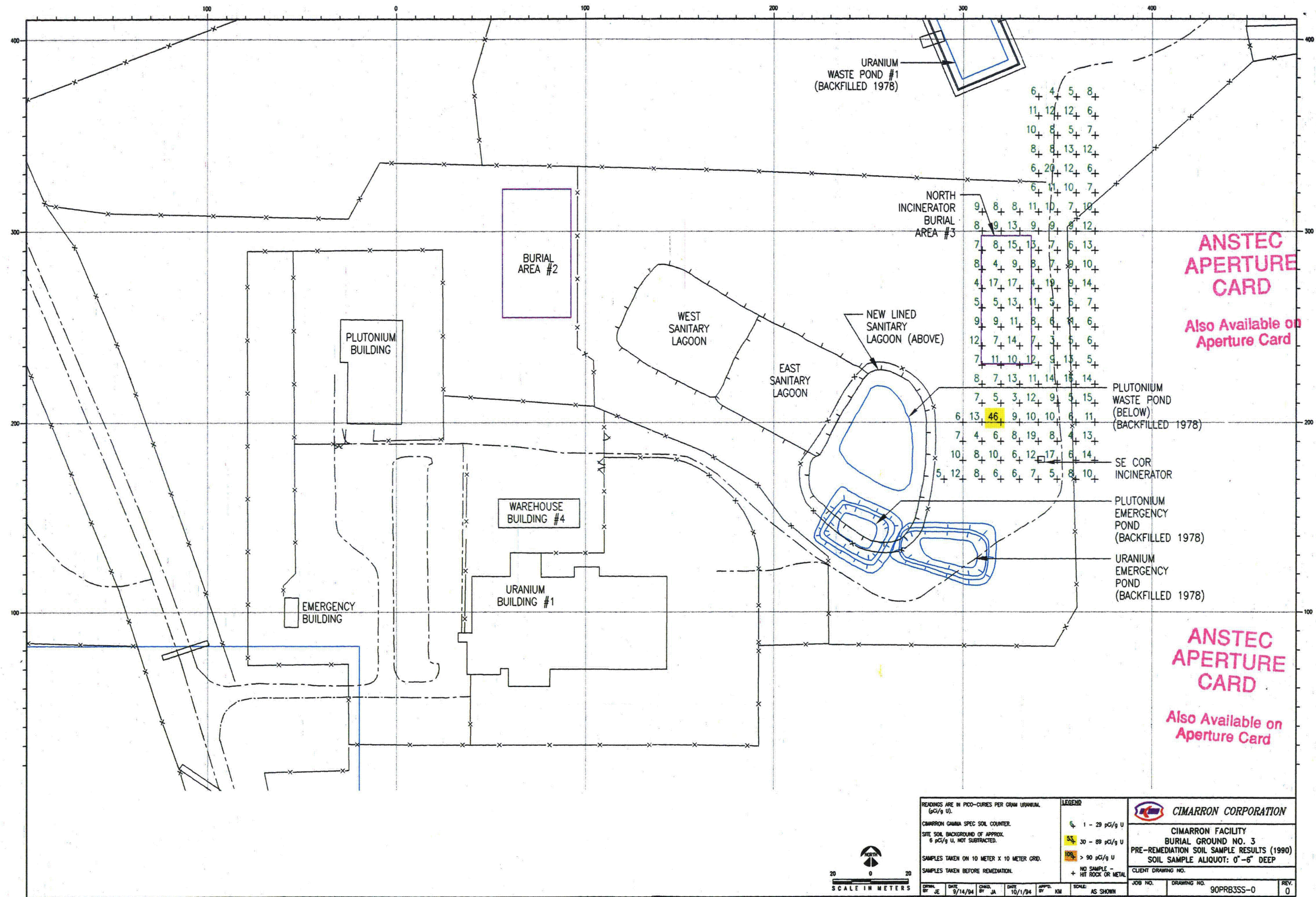


## B. Environmental Data:

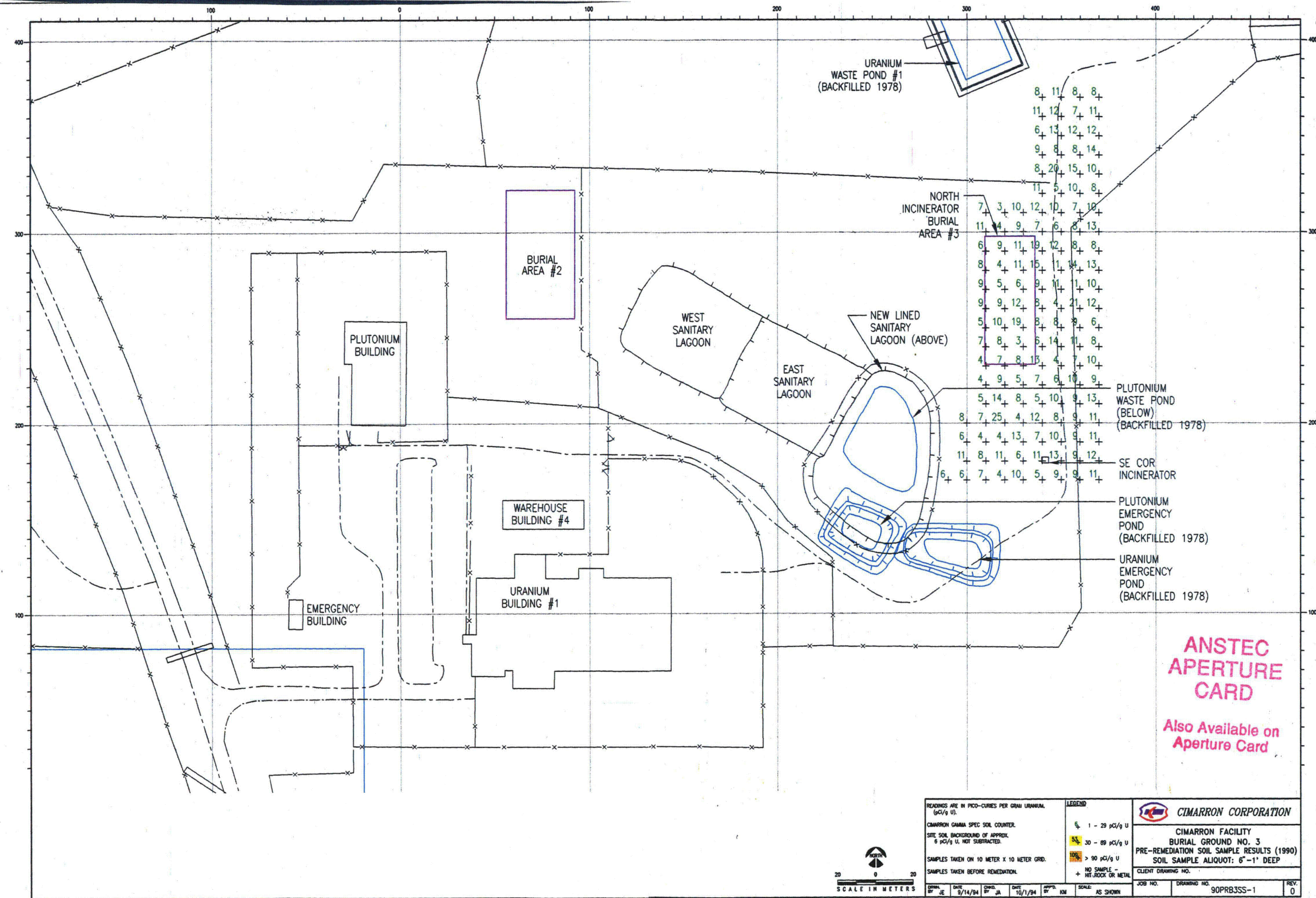
Environmental surface water sampling location #1206 has shown elevated levels of radioactivity in the past. This sampling point is located within this drainage area. Gross alpha concentrations at this surface water sampling location ranged from 11 pCi/L in 1992 to 330 pCi/L in 1988. The gross alpha concentration in 1993 was 126 pCi/L, and can be attributed to elevated concentrations of uranium. Gross beta concentrations at this surface water sampling location ranged from less than detectable (20 pCi/L) in 1987, 1992 and 1993 to 2,600 pCi/L in 1980. Gross beta concentrations have decreased to less than detectable levels since 1988. Total uranium concentrations at this surface water sampling location were elevated in 1993 at 0.093 mg/L (135 pCi/L based on 2.7 weight percent enrichment). Sample results ranged from less than 0.005 mg/L in 1992 to 0.106 mg/L (155 pCi/L) in 1988. Sample results are below the Table 2, Column 2 effluent concentrations listed in Appendix B of 10 CFR 20.

### 9.3 Incinerator (Clean Trash)

This incinerator was utilized for the incineration of nonradioactive materials released from restricted areas during site operations. It was located just east of the New Sanitary Lagoon. Due to significant concentration of materials caused by incineration, uranium concentrations slightly above background levels were present in the ash. The ash materials were surveyed, and if required, placed in drums and shipped off site to a commercial LLRW disposal facility in 1992. The incinerator was dismantled in 1992. Five soil samples were taken from beneath the incinerator and counted on site. The highest sample result was 13.07 pCi/g total uranium.



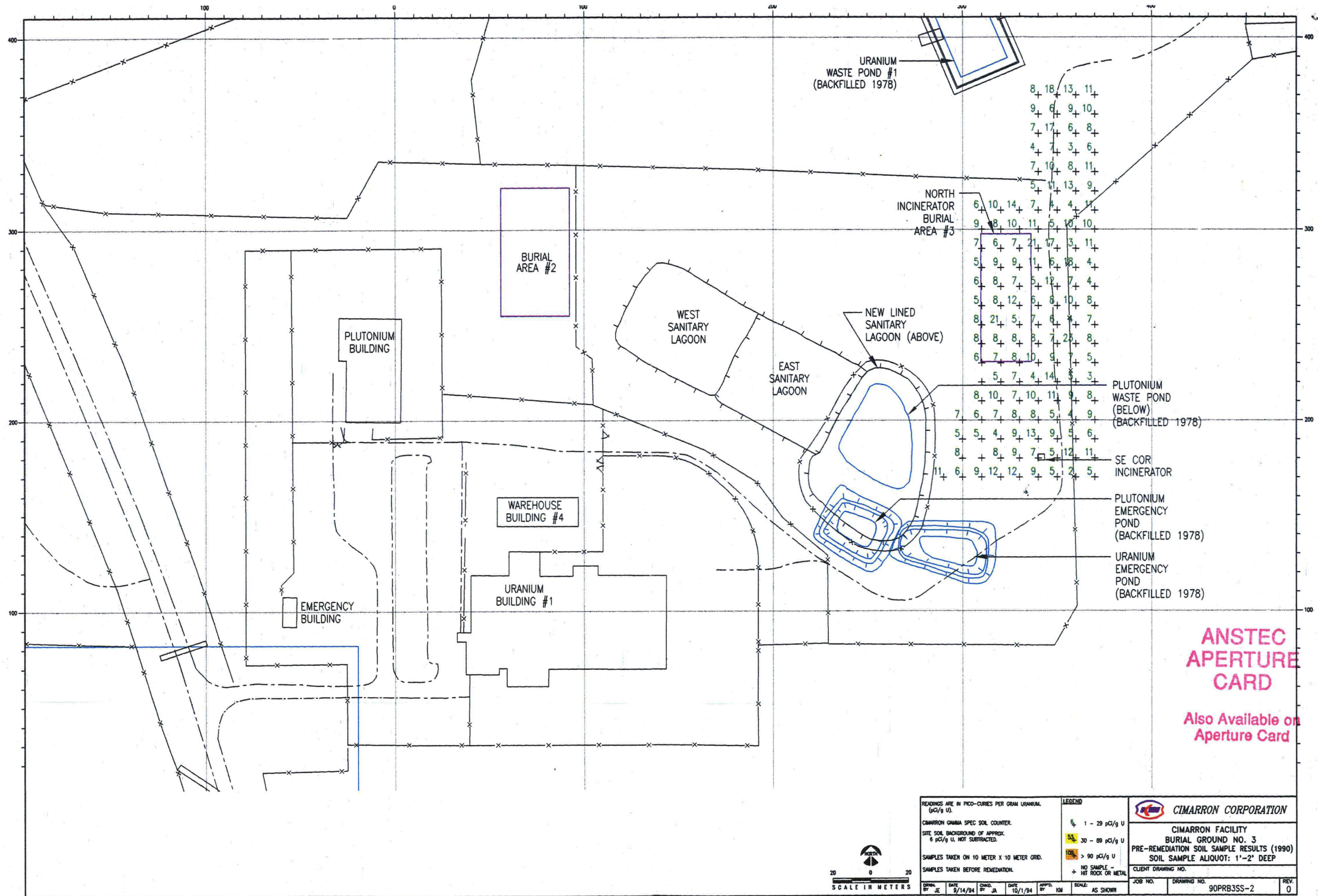




READINGS ARE IN PICO-CURIES PER GRAM URANIUM (pCi/g U). CIMARRON GAMMA SPEC SOIL COUNTER. SITE SOIL BACKGROUND OF APPROX. 6 pCi/g U. NOT SUBTRACTED. SAMPLES TAKEN ON 10 METER X 10 METER GRID. SAMPLES TAKEN BEFORE REMEDIATION.		<b>LEGEND</b> 6 1 - 29 pCi/g U 33 30 - 89 pCi/g U 100 > 90 pCi/g U NO SAMPLE - HIT ROCK OR METAL	<b>CIMARRON CORPORATION</b> <b>CIMARRON FACILITY</b> <b>BURIAL GROUND NO. 3</b> <b>PRE-REMEDIATION SOIL SAMPLE RESULTS (1990)</b> <b>SOIL SAMPLE ALIQUOT: 6"-1' DEEP</b> CLIENT DRAWING NO.
DRAWN BY JE DATE 9/14/94 CHECKED BY JA DATE 10/1/94 APPROVED BY KM SCALE AS SHOWN	JOB NO. 90PRB3SS-1 DRAWING NO. 90PRB3SS-1 REV. 0		

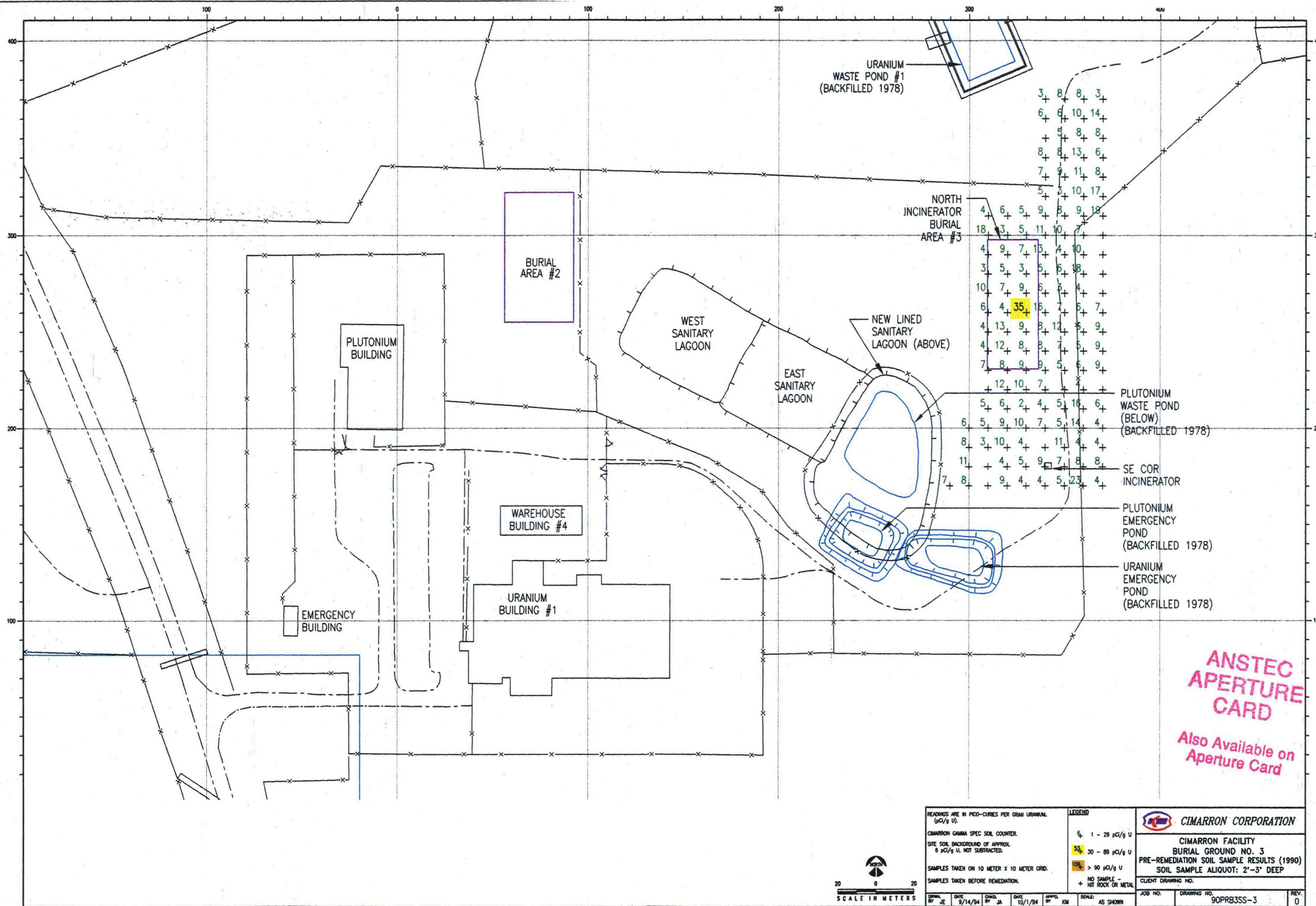
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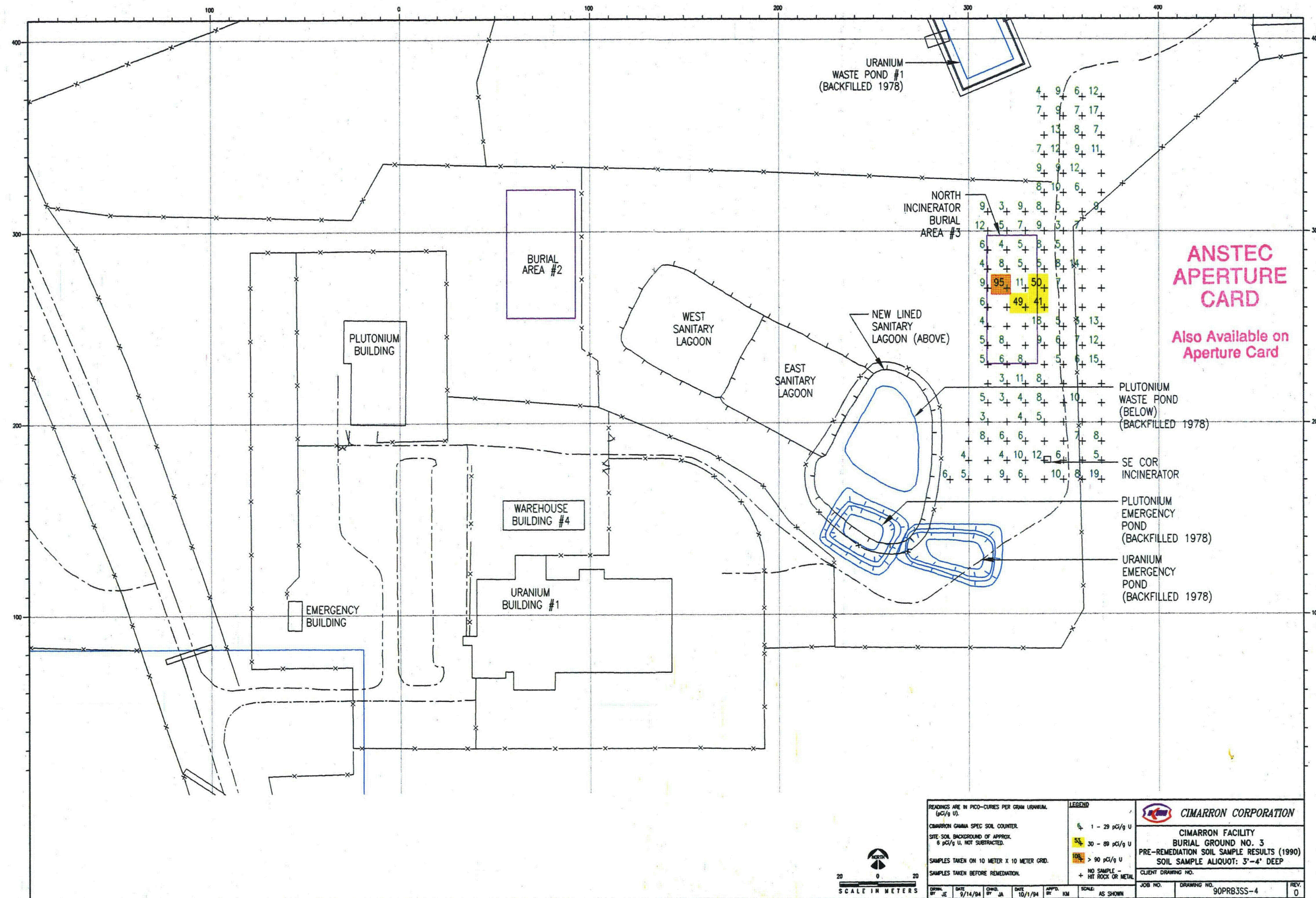




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READINGS ARE IN PICO-CURIES PER GRAM URANIUM (pCi/g U).

CIMARRON GAMMA SPEC SOIL COUNTER.

SITE SOIL BACKGROUND OF APPROX. 6 pCi/g U. NOT SUBTRACTED.

SAMPLES TAKEN ON 10 METER X 10 METER GRID.

SAMPLES TAKEN BEFORE REMEDIATION.

LEGEND

- 1 - 29 pCi/g U
- 30 - 89 pCi/g U
- > 90 pCi/g U
- NO SAMPLE - HIT ROCK OR METAL

CIMARRON CORPORATION

CIMARRON FACILITY

BURIAL GROUND NO. 3

PRE-REMEDIATION SOIL SAMPLE RESULTS (1990)

SOIL SAMPLE ALIQUOT: 3"-4" DEEP

CLIENT DRAWING NO.

JOB NO. DRAWING NO. 90PRB3SS-4 REV. 0

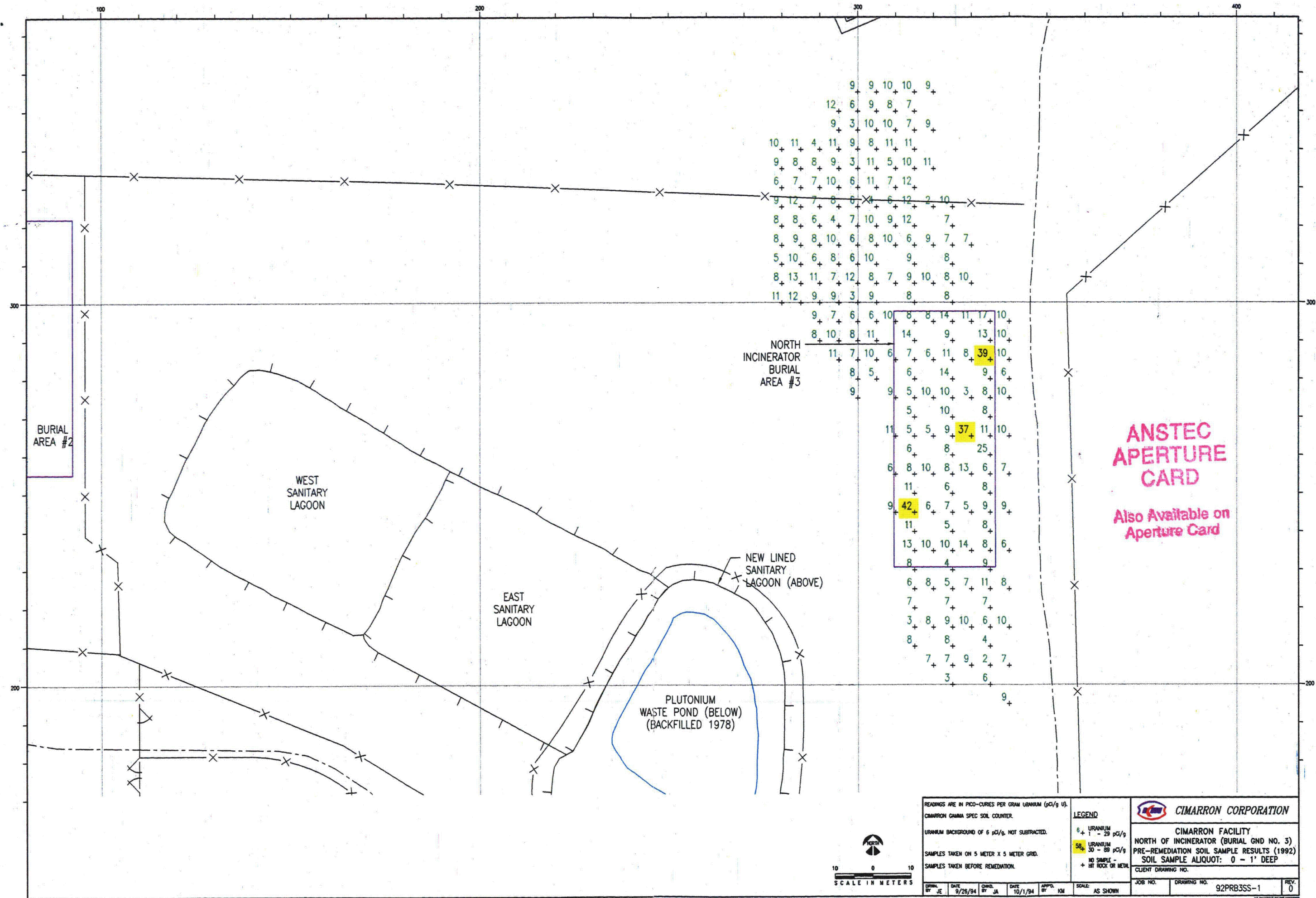
DATE 9/14/94

DATE 10/1/94

SCALE: AS SHOWN

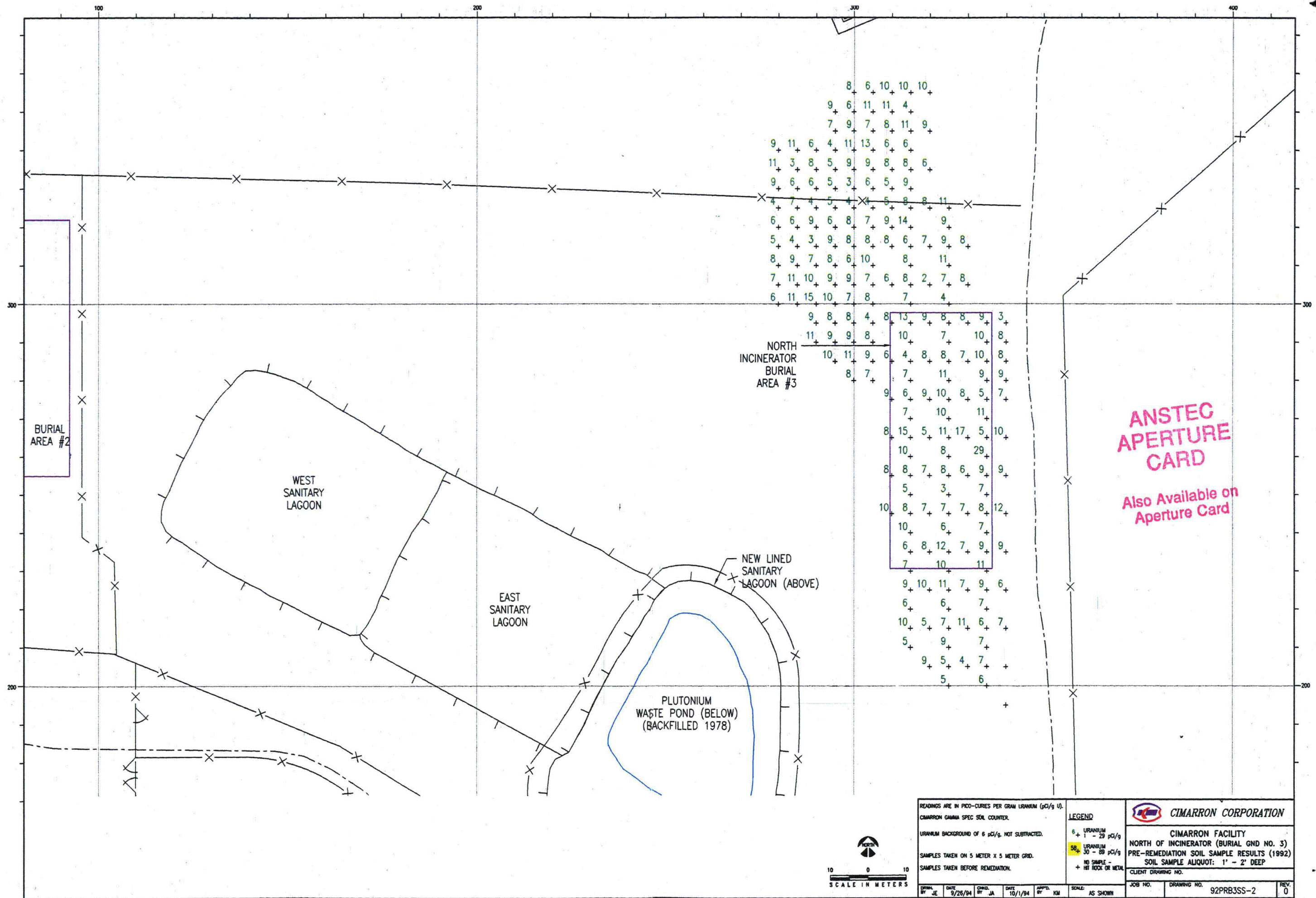
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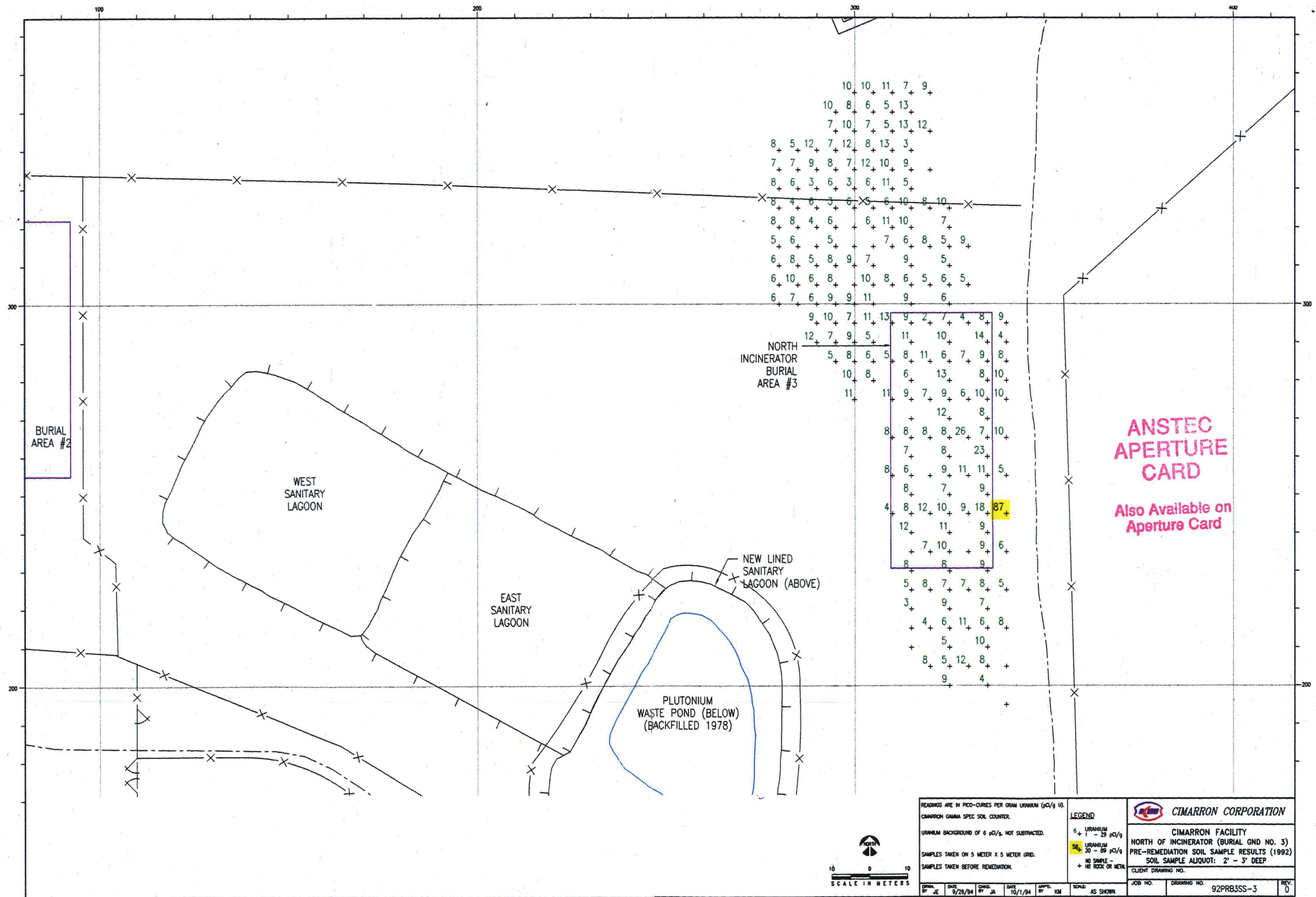




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READINGS ARE IN PICO-CURIES PER GRAM URANIUM (pCi/g U).  
CIMARRON GAMMA SPEC SOIL COUNTER.

URANIUM BACKGROUND OF 6 pCi/g, NOT SUBTRACTED.

SAMPLES TAKEN ON 5 METER X 5 METER GRID.

SAMPLES TAKEN BEFORE REMEDIATION.

LEGEND

- 6+ URANIUM 1 - 25 pCi/g
- 58+ URANIUM 30 - 69 pCi/g
- NO SAMPLE -
- HI ROCK OR METAL

**CIMARRON CORPORATION**

**CIMARRON FACILITY**

**NORTH OF INCINERATOR (BURIAL GND NO. 3)**

**PRE-REMEDIATION SOIL SAMPLE RESULTS (1992)**

**SOIL SAMPLE ALIQUOT: 2" - 3" DEEP**

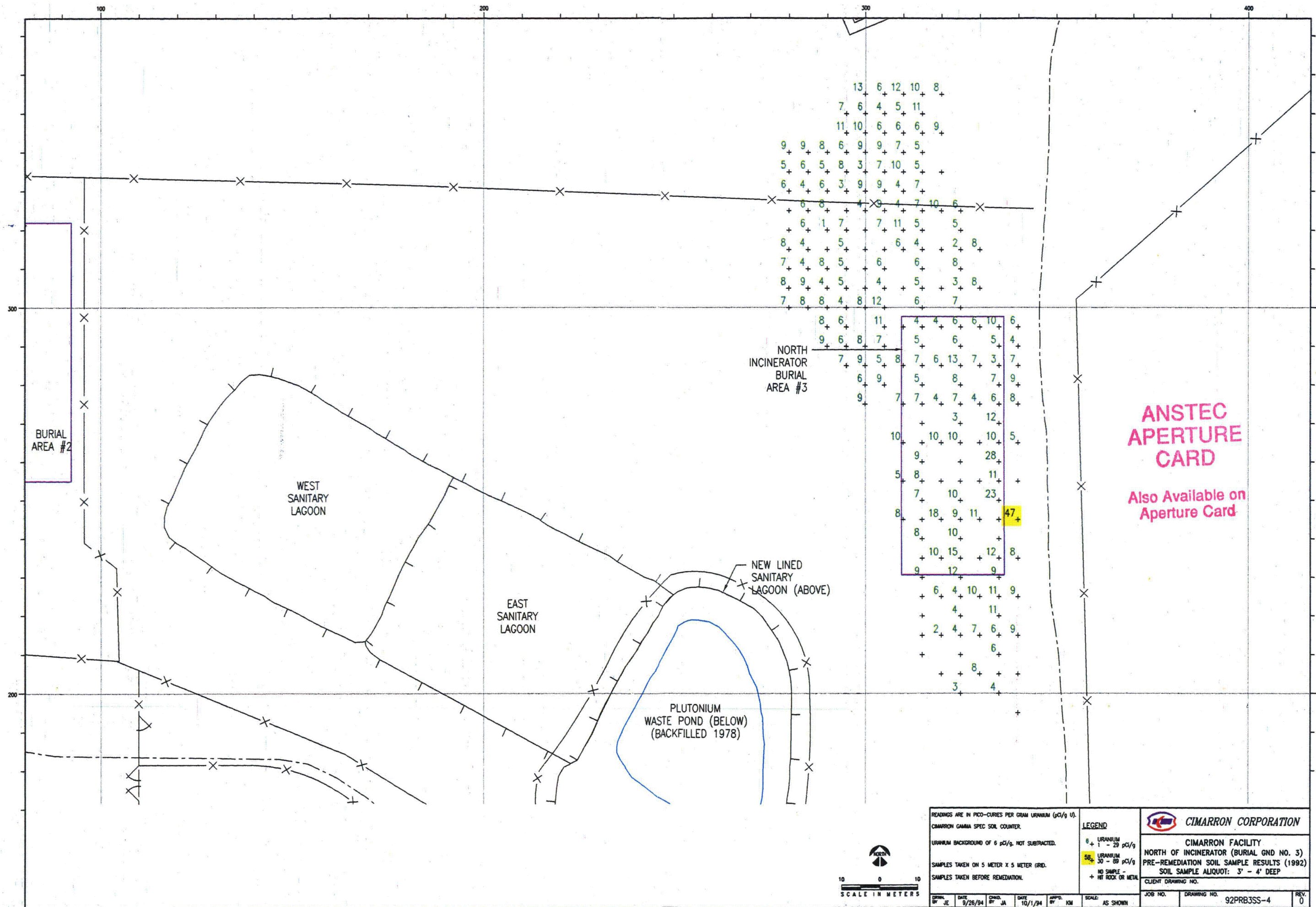
CLIENT DRAWING NO.

JOB NO.	DRAWING NO.	REV.
	92PRB3SS-3	0

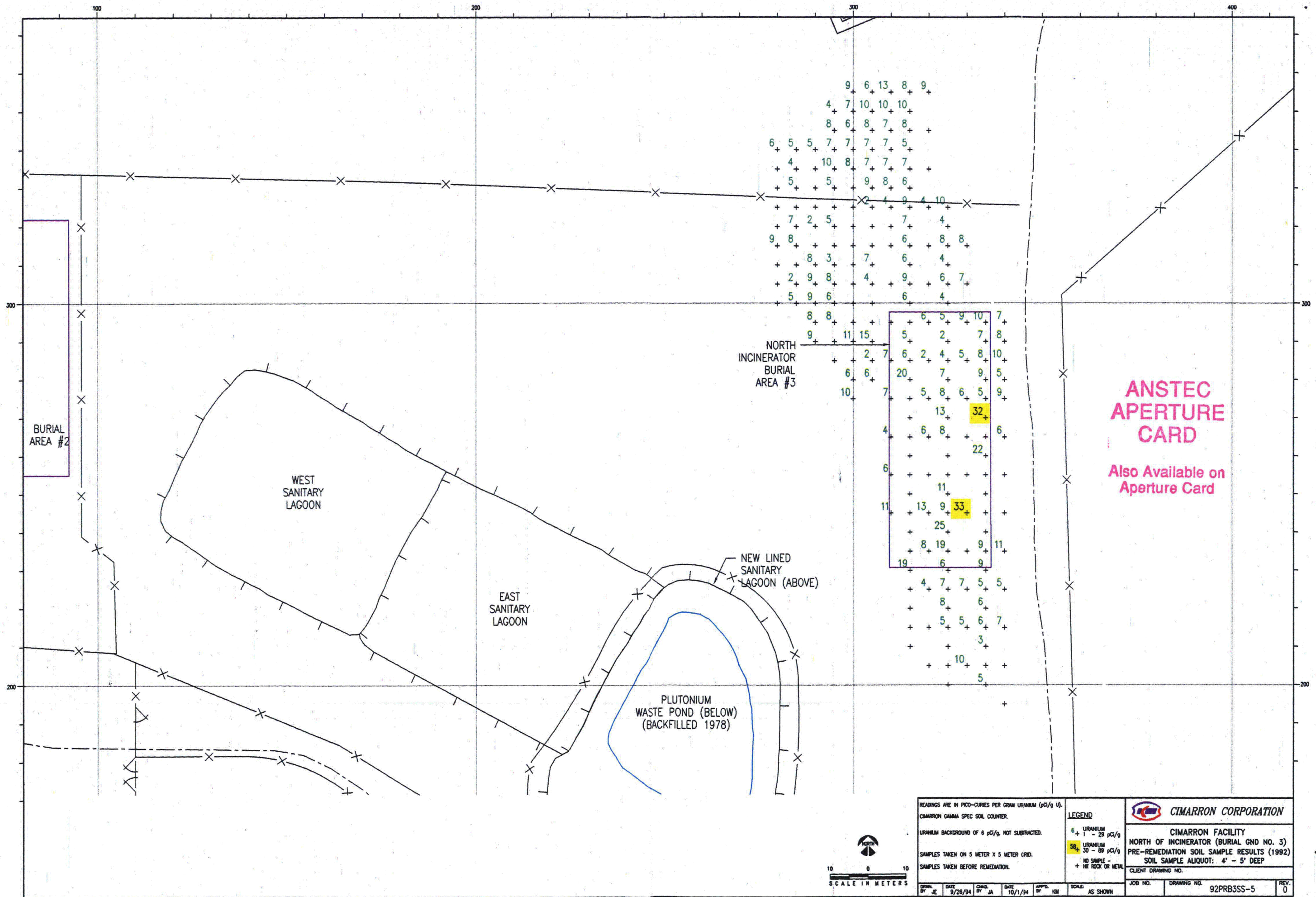
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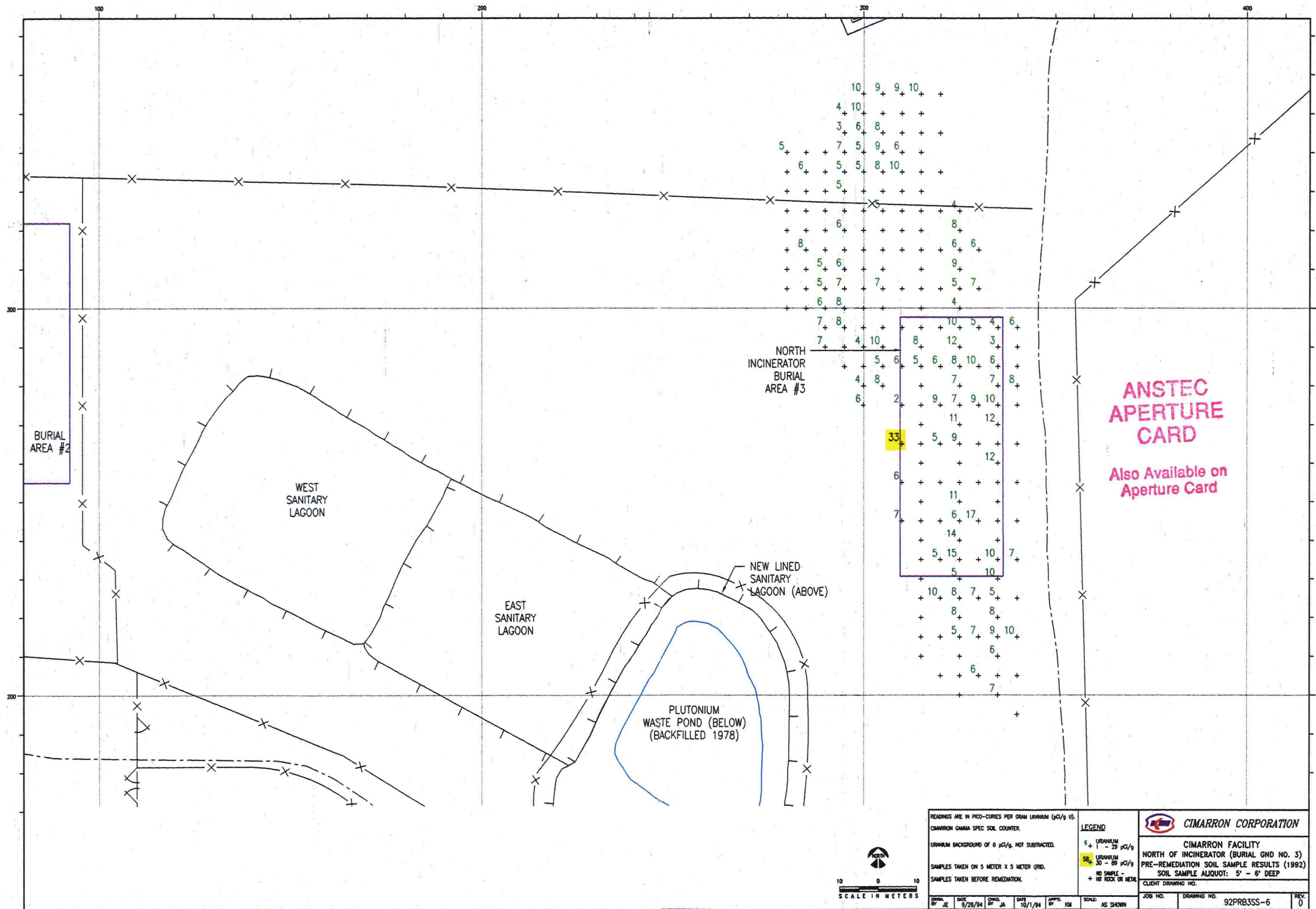




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## 10.0 New On-Site Burial Area

Cimarron has applied to the NRC for a license amendment to allow on-site disposal of Option #2 soil in accordance with the NRC's Branch Technical Position Paper, "Onsite Storage of Thorium or Uranium Waste from Past Operations"<sup>9</sup>. This document established guidelines for concentrations of uranium in soil that will limit maximum radiation received by the public under various conditions of future land usage. These maximum concentration values for enriched uranium are summarized below:

<u>Enriched Uranium</u>	<u>Option No.</u>			
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
Soluble (pCi/g)	30	100	-----	1,000
Insoluble (pCi/g)	30	250	-----	2,500

Cimarron personnel have been excavating, sorting and stockpiling Option #2 soils in anticipation of disposing of this material on site. A radiological survey report for the Option #2 stockpiles was submitted to the NRC on June 15, 1994.

A new trench was constructed for the on-site disposal of the excavated Option #2 materials. The as-built drawing for this burial area is shown on Drawing No. 94MOB4-TP1. The area designated for disposal was hydrologically characterized in 1989. The data generated from the field investigation was compiled in the 1989 "J.L. Grant & Associates Investigation Report", with responses to NRC interrogatories completed in 1990.

### A. Environmental Data:

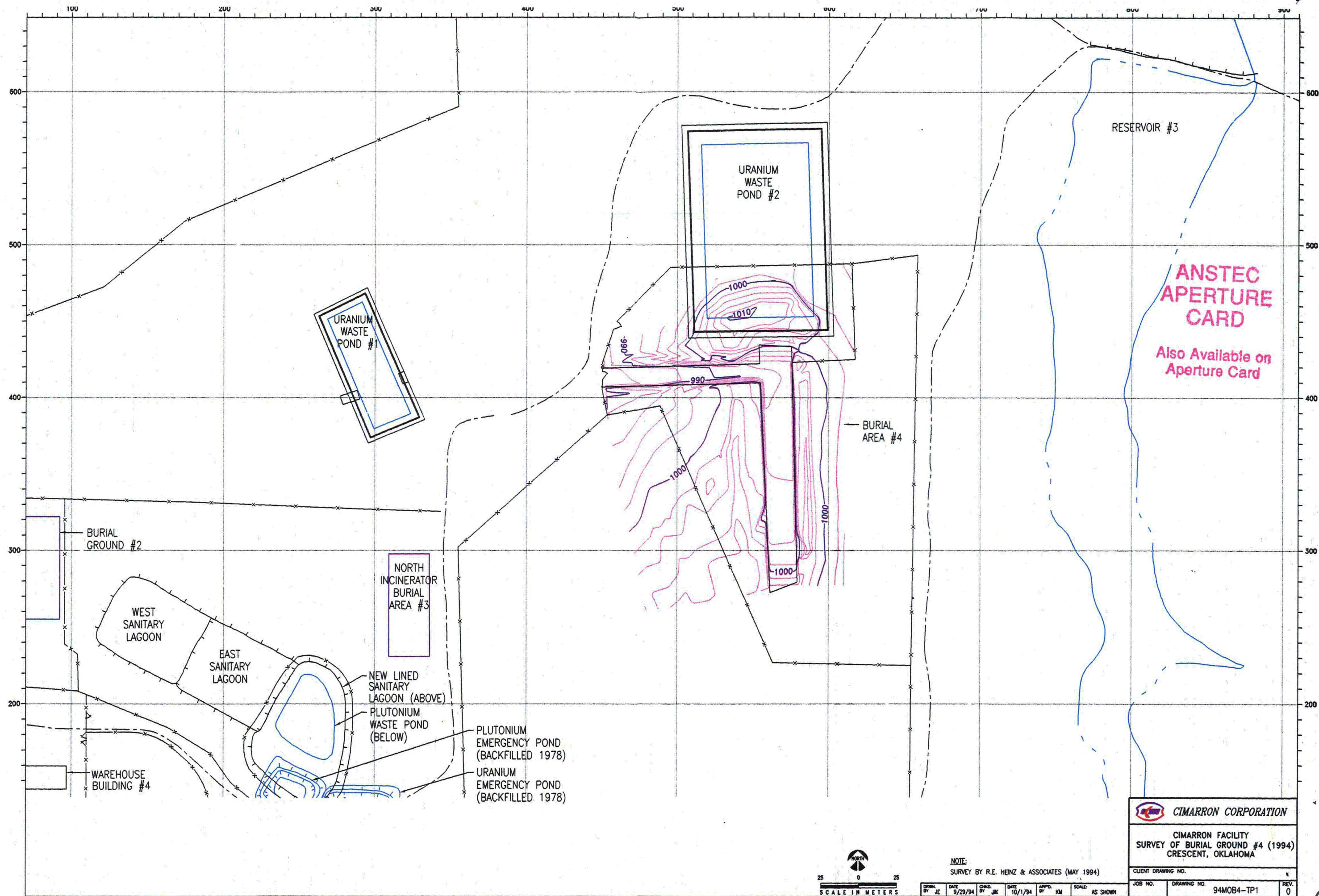
Several monitoring wells were installed in the vicinity of the New On-Site Burial Area (wells #1320, #1321, #1324, #1325 and #1335). These wells will be used to monitor the performance of the New On-Site Burial Area when Option #2 materials are disposed of in this area.

Environmental data for wells #1320 and #1321 are presented in Section 12.3 as these wells are also in close proximity to Uranium Waste Pond #2.

Groundwater in the New On-Site Burial Area is also monitored via wells #1324, #1325, and #1335. Gross alpha concentrations in all wells were less than the detection limit of 10 pCi/L. Gross beta

was above the "action level" and detection limit of 20 pCi/L in one instance at well #1325 during June, 1990 (24 pCi/L). Total uranium concentration was less than 0.005 pCi/L at the three wells except for the sample collected in June, 1989 that measured 0.006 mg/L (8.7 pCi/L). All isotopic measurements for uranium, thorium, and radium were at levels characteristic of background.





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