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**CONTAMINATED SOILS ADJACENT TO THE
SEWAGE TREATMENT PLANT INCINERATOR
REMOVAL ACTION 14 DRAFT WORK PLAN
ADDENDUM JANUARY 1993**

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ADDENDUM**

**CONTAMINATED SOILS
ADJACENT TO THE SEWAGE
TREATMENT PLANT
INCINERATOR**

4037

**Removal Action 14
Draft Work Plan Addendum**

January 1993

**U. S. DEPARTMENT OF ENERGY
FERNALD FIELD OFFICE**

**Contaminated Soils Adjacent to the Sewage
Treatment Plant Incinerator**

Removal Action 14

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1.0 INTRODUCTION

This document is being submitted as an addendum to the Environmental Protection Agency (EPA)-approved Removal Action Work Plan (RAWP) for Removal Action 14 - Contaminated Soils Adjacent to the Sewage Treatment Plant Incinerator. The original RAWP was submitted to the U. S. and Ohio EPAs in January, 1992. On May 20, 1992, the U. S. Department of Energy (DOE) was given a conditional approval from the U. S. EPA pending incorporation of EPA's comments. This final revision was submitted to EPA in July, 1992. Phase I activities called out in the July submittal included instrument correlation, performing off-property soil sampling, performing a radiological walkover survey with the correlated SPA-3 detector to highlight areas which exceed 100 picocuries per gram (pCi/g) total uranium, and excavating and containerizing the soil on-property with a total uranium concentration exceeding 100 pCi/g.

As the radiological walkover survey progressed it became evident that the area with a total uranium concentration in soil exceeding 100 pCi/g was much broader than estimated. Due to the large quantity of soil which would be generated by excavating all soil with a total uranium concentration exceeding 100 pCi/g, DOE presented a revised approach to the EPAs on August 19, 1992, this revised approach was documented to the U. S. and Ohio EPA in letter addendum dated August 28, 1992. As a result of details in this letter addendum and subsequent EPA comments, Phase I was redefined to include completion of the initial off-property soil sampling and the radiological walkover survey outlining the 100 pCi/g total uranium boundary; Phase II was redefined to include the completion of additional on- and off-property soil sampling and on-property excavation activities primarily in areas exhibiting a total uranium concentration in soil greater than 300 pCi/g. At this time, DOE felt it prudent to take a proactive approach in developing the additional sampling methodology and performing the additional sampling prior to submittal of this Work Plan Addendum. It is also important to note, with the submission of this Work Plan Addendum (WPA), Phases III and IV, as detailed in the referenced letter addendum, will be redefined.

In addition to detailing all actions to date, this Work Plan Addendum will also provide detail on the need for future actions. Future actions will include excavating all soil exceeding 100 pCi/g total uranium outside the Sewage Treatment Plant fence and the soil off-property adjacent to the FEMP property line exceeding 35 pCi/g, while leaving the soil exceeding 100 pCi/g total uranium inside the Sewage Treatment Plant fence in place until the final remediation of the area. It is important to note that to attain the 100 pCi/g total uranium action level within the Sewage Treatment Plant fence, the structural integrity of the existing structures within the area would be threatened. In addition, the Hazardous Waste Management Unit within the Sewage Treatment Plant fence would require closure.

1.1 BACKGROUND

The Sewage Treatment Plant is located on the eastern edge of the Fernald Environmental Management Project (FEMP). The FEMP Sewage Treatment Plant became operational in 1952 for the treatment of FEMP sanitary wastewater. The system was later transitioned to receive both sanitary and process related wastewaters. The practice of employing the Sewage Treatment Plant to treat process-related wastewaters was discontinued recently with the installation and start-up of the biodenitrification effluent treatment system. Also located at the Sewage Treatment Plant is an abandoned-in-place solid waste incinerator. The incinerator operated from 1954 until 1979, burning contaminated and uncontaminated combustible trash. The Sewage Treatment Plant, associated facilities and the abandoned incinerator are contained within a six foot chain link fence.

A Removal Site Evaluation (RSE) examined the conditions present in the soil at the Sewage Treatment Plant to determine if a removal action was warranted (the RSE was included as an appendix to the July, 1992 submittal of the RAWP). The RSE evaluated the source term associated with the contaminated soils adjacent to the Sewage Treatment Plant Incinerator based on the routine Environmental Monitoring Program (EMP) data and the RI/FS data which were available at the time. The EMP data discussed in the RSE consisted of both soil sampling data and air sampling data; while, the RI/FS data discussed consisted of surface soil and soil boring data. Although the EMP data reviewed showed above background concentrations of uranium in the soil and at the nearest air monitoring station, the levels were not as significant as the subsequent RI/FS soil characterization data.

The RI/FS surface soil samples and the soil borings collected in the vicinity of the incinerator showed considerably higher concentrations than previously observed under the EMP. Twelve of the 24 samples were above background and six of these 12 exceeded the guidance for unrestricted use (this guidance was used as a point of comparison in the development and evaluation of the RSE). The two highest samples, closest to the incinerator, showed 25,670 pCi/g and 2,376 pCi/g of uranium-238. Although the highest concentrations for uranium were shown by the RI/FS data to be in the immediate vicinity of the incinerator, the 12 above background samples also showed a range of variability, from a low of 13.6 pCi/g uranium-238 to the high of 25,670 pCi/g. Data from the limited number of soil borings showed uranium contamination in places to be at 20 feet, suggesting that contaminant particle sizes were small enough (or soluble enough) to penetrate deeply into the soil, and other places to be at or near background uranium concentrations. Therefore, the RSE concluded, relative to potential excavations, no soil removal would be required in some areas, while other areas may require that a foot or more of soil be removed, depending on the action level used. The RSE, as a point of comparison, used the NRC Branch Technical Position guidance (see reference in RSE) of 35 pCi/g for depleted

analytically measured uranium concentrations. Twenty-one biased measurement and sampling locations in and around the Sewage Treatment Plant were selected based on walkover readings (see Appendix I, Figure 1). The objective was to obtain a range of concentrations and instrument readings.

Once the locations were selected, surface radiation measurements were made using a SPA-3 detector suspended five inches from grade and shielded with 3/8 inch of lead. This configuration is easily reproducible and has a viewing diameter of approximately fourteen inches. After three two-minute readings were recorded and averaged, the result was then converted to counts per minute (cpm) and recorded as the gross reading. In order to determine the radiation detected by the shielded SPA-3 from sources other than the soil, a delta-gamma technique was used by placing seventy pounds of steel shot directly beneath the shielded SPA-3. Three two-minute readings were recorded and averaged, and the result was subtracted from the gross reading to calculate the net reading of radiation detected from the soil by the shielded SPA-3.

A low-energy scintillation detector (FIDLER) was also used to obtain radiation measurements at the twenty-one selected sample locations. After taking three two-minute readings with the FIDLER at grade, the average was converted to cpm. FIDLER readings were also correlated to surface soil concentrations.

Once the surface readings were taken at each of the twenty-one locations, one liter composited soil samples were taken from each location at a depth of four inches and a diameter of approximately fourteen inches. The results of the radiation detection measurements are listed in Appendix I, Table 1. Appendix I, Figures 2-9 show the correlation plots for the SPA-3 and the FIDLER. The best correlation occurred with the shielded SPA-3.

2.1 RADIOLOGICAL WALKOVER RESULTS

With the correlation of the SPA-3 complete, the radiological walkover survey, meant to highlight the localized "hot spots" began. A twenty-five foot grid was established over the entire study area, and two-minute readings were recorded at these grid points, from the two-minute readings, cpm were determined and are shown on the map included as Appendix II, Enclosure I. Appendix II, Table 1 provides all the data collected during this radiological walkover survey. Appendix II, Enclosure I shows that 5000 cpm corresponds to a total uranium concentration of 100 pCi/g. This enclosure also shows the large areal extent of soil contamination with a total uranium concentration exceeding 100 pCi/g. It became evident that the original premise, of discrete, isolated "hot spots" of 100 pCi/g total uranium was inaccurate. The distribution which was found in the soil in the vicinity of the Sewage Treatment Plant Incinerator had a higher, more uniform concentration of uranium than originally thought. Based on these progressive findings, the DOE presented an alternative preliminary course of action in the letter addendum referenced above.

uranium to determine whether a Removal Action was warranted. Based on the RSE, DOE determined that a Removal Action was warranted and an Action Memorandum was signed directing the development of the Removal Action Work Plan (RAWP).

In the RAWP DOE presented an approach, which was subsequently approved by the U. S. EPA and Ohio EPA, to selectively excavate and containerize the most highly contaminated soils and leave the residual contamination associated with the incinerator for remediation under Operable Unit 5 (OU 5). Based on the EMP data and the RI/FS data the contamination was believed to be primarily uranium-238 localized in discrete "hot spots" in the immediate vicinity of the incinerator. As a result, DOE proposed a focused approach for addressing these contaminated soils by recommending an action level of 100 pCi/g total uranium for all the on-property excavations and 35 pCi/g total uranium for all off-property excavations. The 100 pCi/g level was chosen as the action level because it more easily facilitated the use of the correlated field survey instrument and was also felt to be sufficient to mitigate any potential threats to the public health and the environment from the contamination in the interim to final remediation under OU 5.

1.2 PURPOSE OF WORK PLAN ADDENDUM

The methodology described in the approved RAWP for addressing the contaminated soil adjacent to the Sewage Treatment Plant Incinerator, was based on small discrete areas of relatively high uranium contamination, greater than 100 pCi/g. The radiological walkover survey showed that the 100 pCi/g boundary for total uranium concentration was much more extensive than originally envisioned. Therefore, additional sampling and analysis were performed to more accurately define the vertical extent of contamination. In concert with the additional sampling, preliminary excavations were initiated to expedite the removal action goal of mitigating potential health and environmental impacts from high levels of surface soil uranium contamination.

This WPA will detail all field activities accomplished to date, all available radiological walkover and analytical data, and will provide an evaluation of these activities, data, and the need for further action both on- and off-property. To simplify the content of this WPA, an attempt was made to minimize duplication from the approved RAWP (e.g. maps).

2.0 RADIOLOGICAL WALKOVER SURVEY AND INITIAL OFF-PROPERTY SOIL SAMPLING

As part of Phase I activities, a radiological walkover survey was performed in the vicinity of the Incinerator at the Sewage Treatment Plant. The original goal of this survey was to highlight the localized areas in which the soil exhibited a total uranium concentration greater than 100 pCi/g. In order to accomplish this, a correlation was performed between radiation instrument response reading (cpm) and the subsequent

3.1 ON-PROPERTY PRELIMINARY EXCAVATIONS

Appendix IV, Figure 1 shows the preliminary excavation boundaries. These boundaries were established employing the shielded SPA-3, just as the 100 pCi/g boundary was established.

Once the initial boundary was established, the top six inches were excavated and placed into white metal boxes (wmb). After the top six inches had been removed, additional readings were taken with the shielded SPA-3 within each excavation at the six-inch depth. Any reading which exceeded the field action level was marked, and a boundary provided for the next six-inch excavation. This excavation activity proceeded in six-inch lifts until the surface soil exhibited a total uranium concentration less than the preliminary field action level (300 pCi/g in most cases). Appendix IV, Table 1 provides detail on the quantities of soil excavated from each of the areas (A-J), the maximum excavation depth per area, and the field action level utilized for each area. Each wmb was filled to its fullest capacity - three cubic yards/wmb. These boxes were sent to the storage pad west of the Pilot Plant pending a RCRA determination. In order to adequately characterize the excavated soil, ten percent of the containers from each of the excavated areas will be sampled and analyzed for the constituents called out in the DQOs from the original RAWP.

Once the preliminary excavation activities were complete, several related field activities were performed. Post-excavation verification samples were taken within each area, Section 4.1 provides details and results from this activity. All excavated areas (A-J) were bermed using soil immediately adjacent to each area. This berming was performed to limit run-off from other areas entering the excavated areas thereby creating a ponding problem. These areas were also seeded to prevent erosion due to wind or water. In addition to work performed within the excavations, two hydrants within the study area, and one within an excavated area (area F), were repaired to eliminate their contribution to contaminant migration due to leakage onto the ground.

3.2 ADDITIONAL SOIL SAMPLING

Table 1 below details the sampling activities which were outlined in the Removal Action Work Plan and the letter addendum. Which detailed the progressive findings. Also, Table 1 details the additional sampling which was developed subsequent to the letter addendum to better define the vertical extent of uranium contamination. After the progressive finding from the radiological walkover survey, the original sampling scheme detailed in the RAWP was revised. This table facilitates an easy comparison between the initial sampling scheme and the subsequent revisions.

2.2 INITIAL OFF-PROPERTY SOIL SAMPLING RESULTS

Within the scope of Phase I activities, off-property soil samples were taken. There were eight initial off-property locations chosen between the FEMP property line and the off-property study area boundary. Appendix III, Figure 1 shows the locations and analytical results of the off-property soil sampling. Only the northern-most sample location had a total uranium concentration which exceeded the off-property action level of 35 pCi/g. As a result of this data point, and EPA comments on the letter addendum, additional off-property samples in the area surrounding this point were incorporated into the sampling methodology. Section 3.3 details this additional off-property sampling.

2.3 DATA GAPS

The radiological walkover survey provided the boundary defining the horizontal extent of contamination; however, limited data existed to aid in determining vertical extent. Due to the potential for a large horizontal extent of contamination across the survey boundary, additional data was needed to provide a more accurate depth and quantity estimate. Section 3.3 below details the additional soil sampling performed and Section 4.2 provides a quantity estimate based on this additional data.

3.0 PRELIMINARY EXCAVATIONS AND ADDITIONAL SOIL SAMPLING

After the submittal of the letter addendum, discussing alternative options for excavating the 100 pCi/g boundary, DOE and EPA agreed that the most prudent course of action, in the interim to collecting the additional data, would be to excavate the areas exhibiting the highest levels of contamination. Primarily these were the areas which exhibited total uranium concentrations greater than 300 pCi/g. There were a few other isolated areas with total uranium concentrations less than 300 pCi/g, but greater than 100 pCi/g, which were also excavated due to their isolated location or their proximity to the FEMP property line.

Based on the data collected during the original radiological walkover survey, performed to highlight the 100 pCi/g boundary, and additional walkover data collected at this time, the boundaries for these preliminary excavations were established. They are shown on Appendix IV, Figure 1. In addition, controls were put in place around the 100 pCi/g boundary to limit access/exposure.

In concert with these preliminary excavations, the additional soil samples, both on- and off-property, were taken. The depth of these samples ranged from six to forty-eight inches. The samples taken from twenty-four to forty-eight inches were archived for possible future analysis, based on the results from the sample from eighteen to twenty-four inches.

OVERVIEW OF SOIL SAMPLING, CONTINUED

DESCRIPTION	REMOVAL ACTION WORK PLAN	LETTER ADDENDUM	WORK PLAN ADDENDUM
POST-EXCAVATION SAMPLES ALONG ESTABLISHED GRID	20 SOIL SAMPLES 0 - 6" TABLE 1A (RAWP) 8 SOIL SAMPLES 0 - 6" RADIOLOGICAL AND HSL FROM TABLE 1A (RAWP) 4 SOIL SAMPLES 0 - 6" TABLE 1A (RAWP)	7 SOIL SAMPLES FROM ON-PROPERTY OUTSIDE STP FENCE (SAMPLE #s 1 - 7 IN WPA) FROM 0 - 18" 5 FOR RADIOLOGICAL 2 FOR TABLE 1A (WORK PLAN) 12 SOIL BORINGS FROM ON-PROPERTY WITHIN STP FENCE (SAMPLE #s 8 - 19 IN WPA) FROM 0 - 48" 4 PER QUADRANT WITH 1/QUAD FOR RAD/HSL 3/QUAD FOR RAD. 20 SOIL SAMPLES FROM OFF-PROPERTY (C-1 THRU C-10 AND D-1 THRU D-10) FROM 0 - 6", RADIOLOGICAL AND TOTAL URANIUM SEE APPENDIX IV, FIGURE 2 (WORK PLAN ADDENDUM)	13 ADDITIONAL SOIL SAMPLES FROM ON-PROPERTY (SAMPLE #s 20 - 32 IN WPA) FOR TOTAL U ONLY SAMPLE #s 20 - 26 (IN WPA) FROM INSIDE STP FENCE SURFACE TO 48" SAMPLE #s 27 - 32 (IN WPA) FROM OUTSIDE STP FENCE FROM 0 - 18" SEE APPENDIX IV, FIGURE 2 (WORK PLAN ADDENDUM)

OVERVIEW OF SOIL SAMPLING

DESCRIPTION	REMOVAL ACTION WORK PLAN	LETTER ADDENDUM	WORK PLAN ADDENDUM
CORRELATION SAMPLES	21 SOIL SAMPLES ANALYZED FOR TOTAL U - SEE APPENDIX I, FIGURE 1 SHOWN IN WORK PLAN ADDENDUM	UNCHANGED	UNCHANGED
INITIAL OFF-PROPERTY SAMPLES	8 OFF-PROPERTY SOIL SAMPLES FROM 0 - 6" 6 RADIOLOGICAL 2 RADIOLOGICAL/HSL SEE APPENDIX III, FIGURE 1 SHOWN IN WORK PLAN ADDENDUM	UNCHANGED	UNCHANGED
CONTAINERIZED SOIL	ALL CONTAINERS - CONSTITUENTS IN TABLE 1A (RAWP) + TCLP METALS	UNCHANGED	SAMPLE 10% OF CONTAINERS PER EXCAVATED AREA (A-J) TABLE 1A (RAWP) + TCLP METALS
POST-EXCAVATION VERIFICATION SAMPLES FROM CENTER OF EXCAVATIONS	1 SAMPLE PER EXCAVATION FROM 0 -6" - TOTAL URANIUM ANALYSIS (RAWP)	UNCHANGED	BASED ON SIZE OF EXCAVATION, RANGED FROM 1 TO 7 SAMPLES PER EXCAVATION (SAMPLE #s 33 - 58 IN WPA) FROM 0 - 6" - TOTAL URANIUM, SEE APPENDIX IV, FIGURE 1 SHOWN IN WORK PLAN ADDENDUM

3.3 OFF-PROPERTY PRELIMINARY EXCAVATIONS

Once the results from the additional off-property soil sampling were available, it became evident that there were samples in both Area C and Area D (see Appendix IV, Figure 2) with soil exhibiting total uranium concentrations exceeding 35 pCi/g. In Area C, these samples are in a heavily wooded strip which separates two fields. In Area D, there is one sample location (D-2) along the FEMP property line which exhibits a total uranium concentration greater than 35 pCi/g.

Since the sample locations with soil concentrations exceeding 35 pCi/g total uranium in Area C are presently in an undisturbed heavily wooded area, and the highest concentration is below 100 pCi/g, DOE recommends not to disturb this area. The heavy vegetation and relatively low level of total uranium indicate that the potential for migration is small. The dense brush makes it difficult for human receptors to come into contact with the contaminants either by ingestion or external radiation. In addition, this wooded strip separates two open fields and provides shelter for many types of wildlife.

With one sample in Area D exhibiting a total uranium soil concentration greater than 35 pCi/g and located in an open area adjacent to an active field, it was felt prudent to go after this off-property contamination as soon as possible. An access agreement has been negotiated with the property owner, but due to weather conditions, the initial 35 pCi/g survey has not been made. This off-property area is relatively flat and lower than the surrounding areas. In order for the SPA-3 instrument to provide guidance at these low levels, standing water can not be present. Once weather permits, this excavation activity will be carried out in the same manner as the on-property excavation, although with the lower action level of 35 pCi/g.

4.0 EVALUATION OF PRELIMINARY EXCAVATIONS AND ADDITIONAL SOIL SAMPLING RESULTS

Once the on-property excavation and additional soil sampling activities were complete, post-excavation samples were taken within each of the excavated areas. The selection of these sample locations was biased based on representativeness, and locating at least one at the maximum depth. Appendix IV, Figure 1 shows the post-excavation verification sample locations. These samples were taken from 0 - 6 inches and sent only to the on-site lab for total uranium analysis. The results are shown in Appendix IV, Table 4.

4.1 POST-EXCAVATION SOIL SAMPLING RESULTS

When comparing the post-excavation verification results with the field action levels for each area (Appendix IV, Table 1), it is evident that the preliminary action level was met in all areas and greatly exceeded in many.

1000

In order to more accurately define the vertical extent of soil exhibiting a total uranium concentration greater than 100 pCi/g, additional sampling was performed, both on- and off-property. Since the primary objective of this sampling was to quickly and accurately define the vertical extent of uranium contamination, grab samples were taken from all locations and sent directly to the on-site lab for total uranium analysis, duplicate grab samples were also taken and sent to an off-site laboratory for analysis based on the protocols in the RAWP. To date, only data from the on-site lab are available.

On-property, selection of the locations for the additional soil samples was biased, due to field logistics. They were chosen within the original 100 pCi/g boundary, and the depths were chosen based on the premise that the vertical extent of contamination would be greater within the Sewage Treatment Plant fence adjacent to the Incinerator and other associated structures. In addition, within the fence, the locations had to be field located to avoid the many structures and underground utilities in the area. The area inside the Sewage Treatment Plant fence was divided into four quadrants, and at least one sample per quadrant was analyzed for the HSL consistent with the approved RAWP. Appendix IV, Figure 2 shows the locations of all additional on-property soil samples. Appendix IV, Table 2 provides all available data from the additional on-property sampling activities.

Selection of off-property sample locations was also biased. The additional off-property samples were focused on two areas. The first area was the wooded section northeast of the incinerator (see Appendix III, Figure 1), which exhibited a total uranium concentration exceeding 35 pCi/g. The purpose of the sampling surrounding this point was to more clearly define both the horizontal and vertical extent of contamination in this area. A 250 ft. by 250 ft. grid was established with the northern-most initial sample point, as identified in the RAWP, as the center. Along this grid, 10 sample locations were chosen via a random number generator. The other off-property area requiring additional soil sampling was an area immediately adjacent to the FEMP property line. When the 100 pCi/g boundary was marked, there was an area immediately adjacent to the FEMP property line, on-property, which exceeded 100 pCi/g. Due to the proximity of this 100 pCi/g area, it was deemed necessary to initiate additional sampling off-property, immediately adjacent to this area. A 50 ft. (E-W) by 200 ft. (N-S) section was gridded into 25 ft. increments. Ten sample locations were chosen along this grid. The selection of these ten points was also biased. Appendix IV, Figure 2 shows the locations of all additional off-property soil samples. Appendix IV, Table 3 provides all available data from the additional off-property sampling activities.

potential for contaminant migration into the excavations residing outside the Sewage Treatment Plant fence along the fenceline.

The general drainage direction is to the west from the Sewage Treatment Plant compound. The soil berms will help to limit the migration of contaminants from inside the Sewage Treatment Plant fence (total uranium concentration exceeding 100 pCi/g) into areas outside the Sewage Treatment Plant fence (which will be under 100 pCi/g total uranium).

OFF-PROPERTY

There are two areas off-property which showed levels of uranium contamination above the action limit. The first area is adjacent to the former cattle path, along the property line. The second area is the dense wooded area northeast of the Sewage Treatment Plant compound. DOE is currently pursuing the removal of contaminated soil adjacent to the former cattle path to meet the off-property action level of 35 pCi/g total uranium. Weather constraints have delayed the initiation of field activities. DOE has committed to completing these off-property excavations by May, 1993 (see Section 5.1); however, as soon as field conditions permit, activities will be initiated. DOE recommends the densely wooded area to the northeast of the Sewage Treatment Plant compound remain undisturbed at this time.

5.1 SCHEDULE

The proposed schedule for complete and future activities is as follows:

PHASE	SCHEDULE	STATUS
Phase I - Completion of off-property surface soil sampling and initial radiological walkover survey.	8/18/92	Complete 8/4/92
Phase II - Completion of initial excavation (on-property) and additional sampling (on- and off-property).	10/30/92	Complete 10/15/92
Phase III - Estimated completion of off-property and additional on-property excavation.	5/15/93	
Phase IV - Submittal of Final Report	8/15/93	

4.2 QUANTITY ESTIMATE

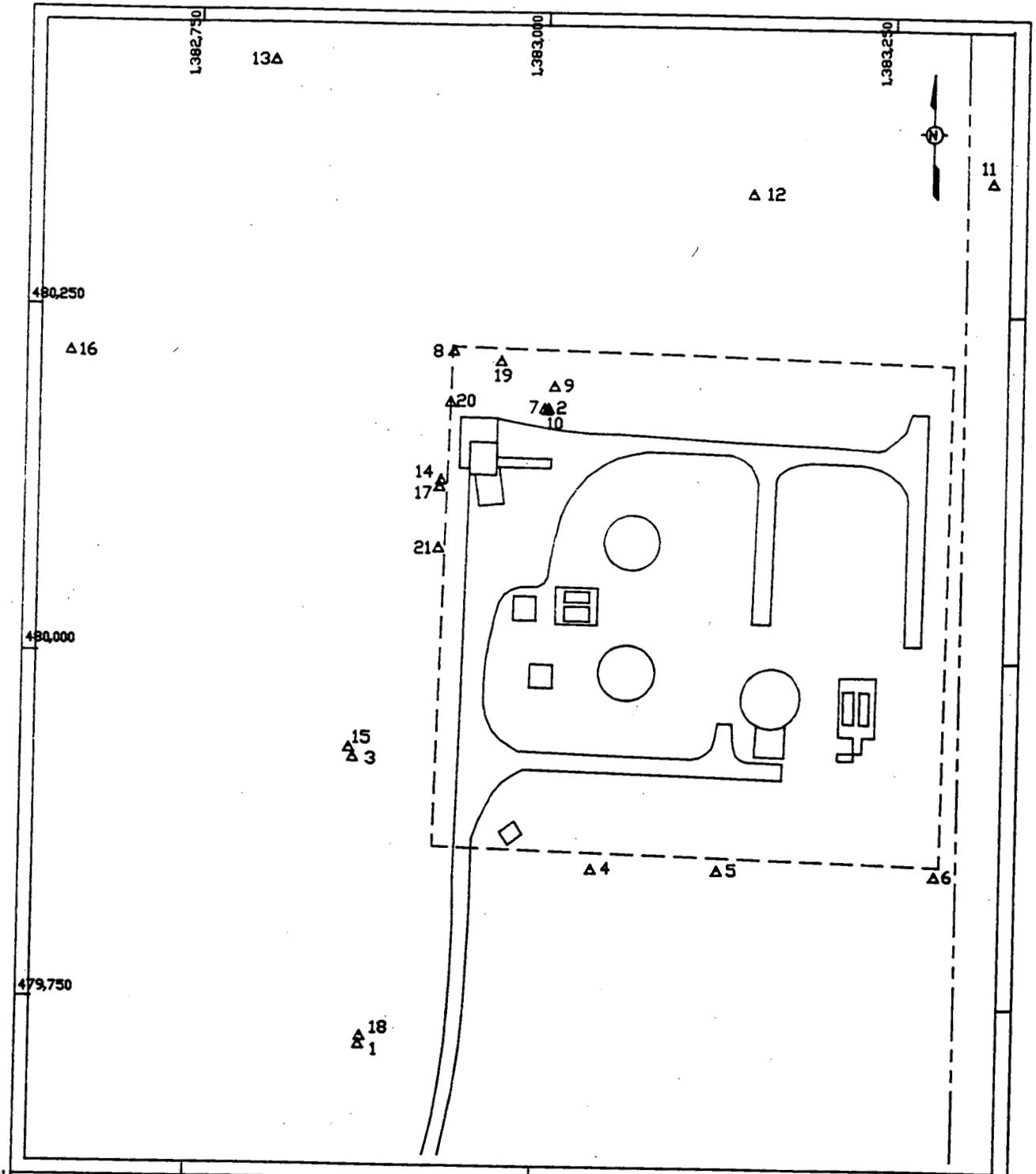
Based on the results from the additional soil sampling, 1374 additional cubic yards (c.y.) would need to be excavated and managed to achieve the 100 pCi/g action level detailed in the RAWP. This quantity was calculated using the locations and data shown on Appendix IV, Figure 3. The area was divided up into six sectors and the representative depth for 100 pCi/g total uranium concentration was calculated. The area of each sector was then multiplied by this representative depth to yield the volume of soil which would need to be excavated to achieve the 100 pCi/g total uranium level called out in the RAWP. The sectors outside the Sewage Treatment Plant fence (I and II) make up approximately 400 of the 1374 cubic yards.

5.0 FUTURE ACTIONS

ON-PROPERTY

The purpose of this work plan addendum was to evaluate the vertical extent of uranium contamination across the walk-over survey boundary in order to determine the quantity of soil which would have to be removed to attain the removal action goal of 100 pCi/g total uranium. As a result, additional segmented soil borings were taken across the survey boundary and analyzed for total uranium. The evaluation of these data revealed that approximately 1400 additional c.y. of soil would have to be removed from the study area to achieve the removal action goal. These additional 1400 c.y. of soil from the walk-over survey area are composed of approximately 1000 c.y. from within the Sewage Treatment Plant fenced area and approximately 400 c.y. from outside the Sewage Treatment Plant compound. Based on these characterization data, the Department of Energy (DOE) will pursue the removal of the 400 c.y. outside the fenced area in order to attain the removal action goal of 100 pCi/g total uranium across the survey boundary. However, DOE recommends the contaminated soils greater than 100 pCi/g total uranium within the controlled area of the Sewage Treatment Plant Incinerator compound be remediated either under future actions, such as a removal action addressing the facilities, or under the final remediation for OUs 3 and 5. To attain the removal action goal within the Sewage Treatment Plant compound would require the closure of the Hazardous Waste Management Unit within the Sewage Treatment Plant fence and the structural integrity of many structures within the Sewage Treatment Plant fence would be threatened. The excavation of the additional contaminated soils outside the Sewage Treatment Plant compound satisfies the goal of the removal action for the uncontrolled areas on-property. Furthermore, the level of contamination within the Sewage Treatment Plant compound, a controlled area, has been reduced considerably, from a maximum uranium-238 concentration of 25,000 pCi/g to a total uranium concentration of less than 300 pCi/g. In fact, the additional soil sampling from within the Sewage Treatment Plant compound indicates the highest concentration of total uranium is 228 pCi/g. Also, in order to further mitigate the potential for contaminant migration, DOE will establish soil berms inside the controlled area to limit the

APPENDIX I



LEGEND

- Δ15 SOIL SAMPLE LOCATIONS
- FENCE
- PROPERTY LINE



STP_SLOC.DWG 12-30-92

FIGURE 1

SOIL SAMPLE LOCATIONS
FOR INSTRUMENT CORRELATION

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FERNALD - Sewage Treatment Plant
Correlation Data

TABLE 1

Soil	ASI	SPA-3	SPA-3	SPA-3	SPA-3	FIDLER	Ru-106	Cs-137	Ac-227	Pa-231	Ra-224	Ra-226	Ra-228	Th-230	Th-234	U-235	U-Total	U-Total		
Sample I.D.	I.D.	Coord.	North	East	Depth (in.)	#2057 (cpm)	#1793 (cpm)	#1793 (cpm)	(pCi/g)											
1	102415	479720	1382874	0-4	23000	9567	7900	22000	<0.9	0.55	1.2	<3.6	1.34	10.3	1.05	48.9	17.8	1.55	64.3	43.08
2	102410	480179	1383003	0-4	105000	49250	46200	154910	<3.1	0.71	<1.6	<9.0	5.36	4.45	5.13	<64	2289	145	7572	5073.24
3	102403	479927	1382866	0-4	35000	15433	13000	38716	<1.3	0.55	3.95	5.04	1.27	27.6	1.36	108	35.6	3.2	122	81.74
4	102401	479848	1383040	0-4	13000	3763	2840	9188	<0.3	0.63	<0.2	<1.2	1.03	0.96	1.22	<6.9	10.6	0.56	39.5	26.47
5	102402	479848	1383130	0-4	12500	3450	2540	8423	<0.3	0.65	<0.2	<1.3	1.01	1	1.12	<8.7	10.8	0.78	39.5	26.47
6	102413	479846	1383288	0-4	10000	2410	1670	5490	<0.1	0.05	0.76	<0.7	0.31	0.73	0.33	<3.8	2.05	<0.1	7.26	4.86
7	102411	480180	1383001	0-4	73000	24267	21700	69335	<1.5	0.39	<0.8	<4.5	2.99	1.92	3.11	<36	456	27.9	1515	1015.05
8	102409	480221	1382934	0-4	16000	4250	3140	10632	<0.7	0.29	<0.4	<2.4	1.21	0.94	1.26	<10	15.3	1.05	57.5	38.53
9	102420	480196	1383008	0-4	21000	5683	4430	16093	<1.0	0.71	<0.6	<3.4	2.1	1.11	1.98	<17	86.2	4.74	278	186.26
10	102412	480180	1383004	0-4	75000	29067	26400	93139	<2.2	0.56	<1.2	<6.6	3.87	2.91	3.82	<53	1234	67.9	3623	2427.41
11	102421	480347	1383323	0-4	15000	4680	3710	11988	<0.3	1.2	<0.2	<1.4	1.37	1.11	1.47	<9.6	36.9	2.27	138	92.46
12	102419	480337	1383148	0-4	17000	5052	3950	12993	<0.8	0.8	<0.5	<2.9	1.58	1.05	1.68	<13	33.4	2.65	134	89.78
13	102417	480429	1382803	0-4	18000	4608	3490	11536	<0.4	0.78	<0.2	<1.5	1.19	1	1.35	<10	20.9	1.08	70.9	47.50
14	102407	480128	1382926	0-4	33000	10083	8000	25452	<1.0	0.68	<0.6	<3.7	3.83	1.57	5.05	<19	109	5.73	344	230.48
15	102404	479934	1382863	0-4	33000	13717	11600	31751	<0.9	0.68	2.8	<3.9	1.22	18.5	1.37	67.6	29.4	3	117	78.39
16	102416	480218	1382657	0-4	17000	4227	3200	11276	<0.3	0.74	<0.2	<1.3	1.21	0.92	1.4	<9.3	21.3	1.44	81.4	54.54
17	102406	480123	1382925	0-4	32000	10333	8460	27105	<1.1	0.57	<0.6	<4.0	5.02	2	6.43	<20	111	7.41	420	281.40
18	102414	479726	1382875	0-4	21200	6933	5330	15395	<0.9	0.75	0.65	<2.8	1.01	5.61	1.15	28	13.6	1.07	51.5	34.51
19	102418	480214	1382969	0-4	21500	5767	4530	15295	<0.3	0.76	<0.2	<1.5	1.46	1.23	1.73	<12	73.5	4.04	247	165.49
20	102408	480184	1382932	0-4	20500	5633	4430	15204	<0.9	0.66	<0.5	<3.5	1.65	1.17	1.73	<16	62.5	3.6	208.00	139.36
21	102405	480079	1382925	0-4	28000	8517	7020	24540	<1.0	0.08	<0.5	<3.1	1.45	1.13	1.53	<15	83.5	4.35	267	178.89

1 = SPA-3, #2057, without shielding
 2 = SPA-3, #1793, with shielding
 3 = SPA-3, #1793, with shielding, with steel shot shielding gamma from soil

7/24/92 corrdal2.wk1

FIGURE 2

Correlation of Total Uranium To Bare SPA-3

At FEMP Sewage Treatment Plant

SPA-3 #2057 w/o shielding (cpm)

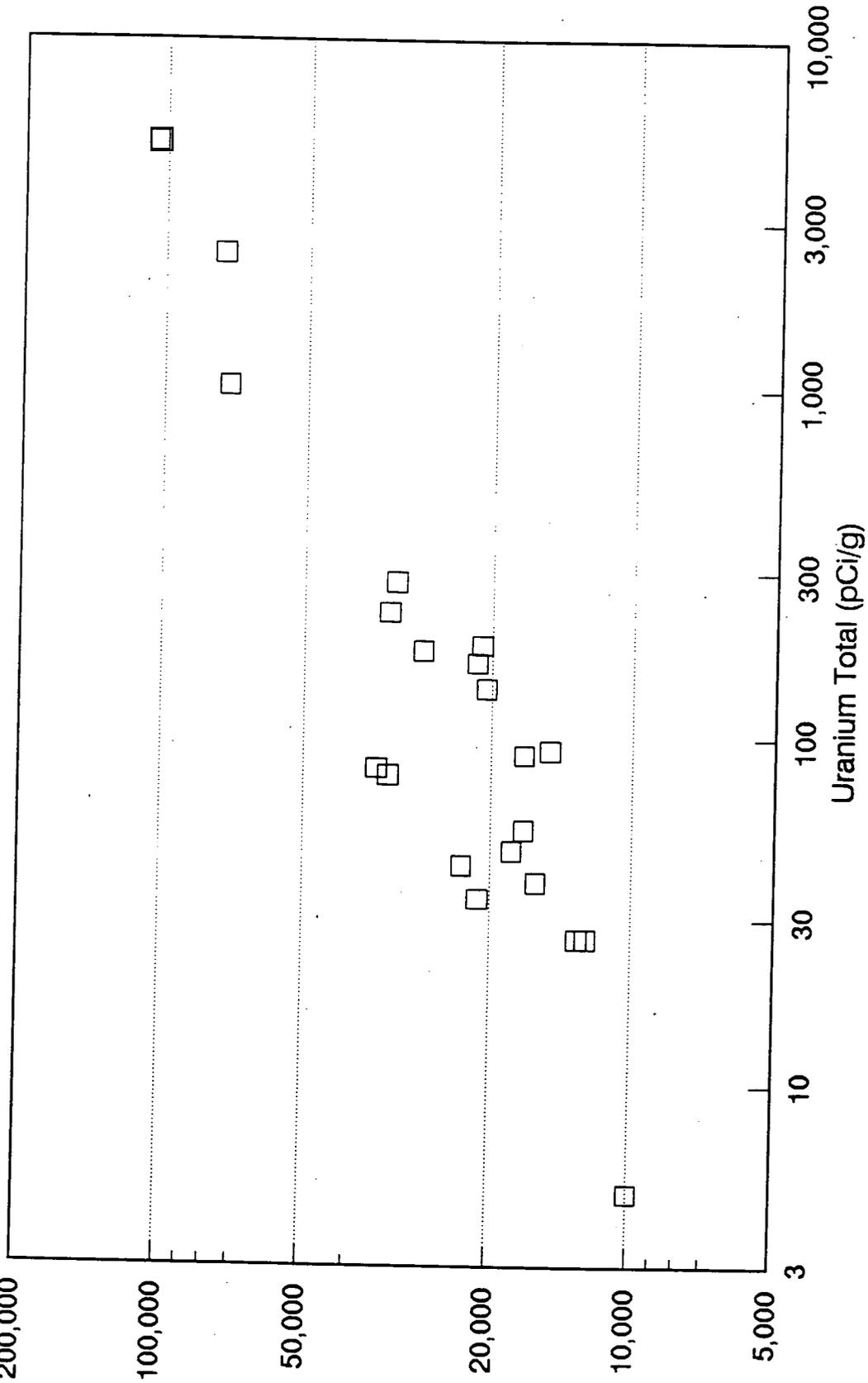
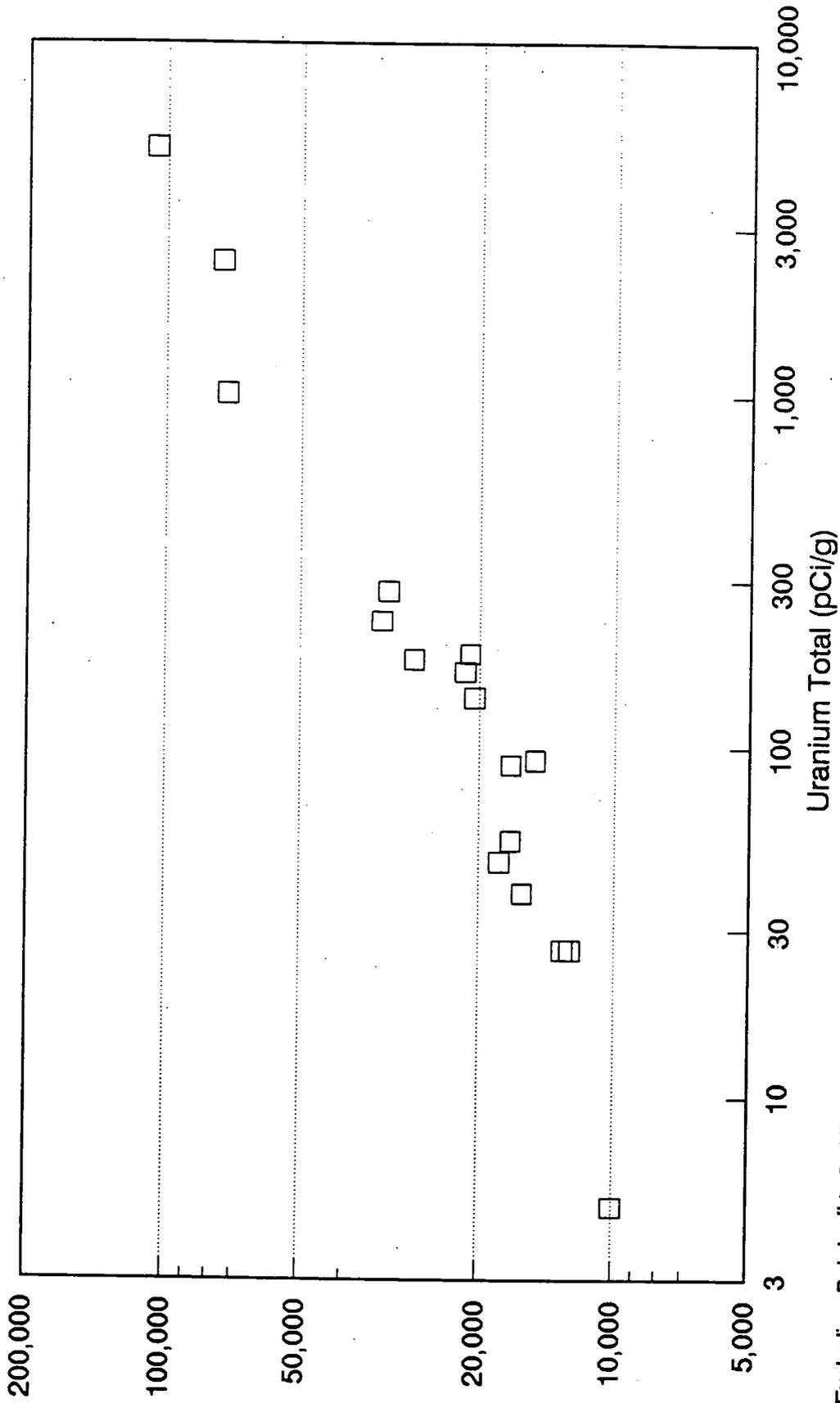


FIGURE 3

Correlation of Total Uranium To Bare SPA-3

At FEMP Sewage Treatment Plant

SPA-3 #2057 w/o shielding (cpm)



Excluding Points #1, 3, 15, 18

FIGURE 4

Correlation of Total Uranium To Shielded SPA-3

At FEMP Sewage Treatment Plant

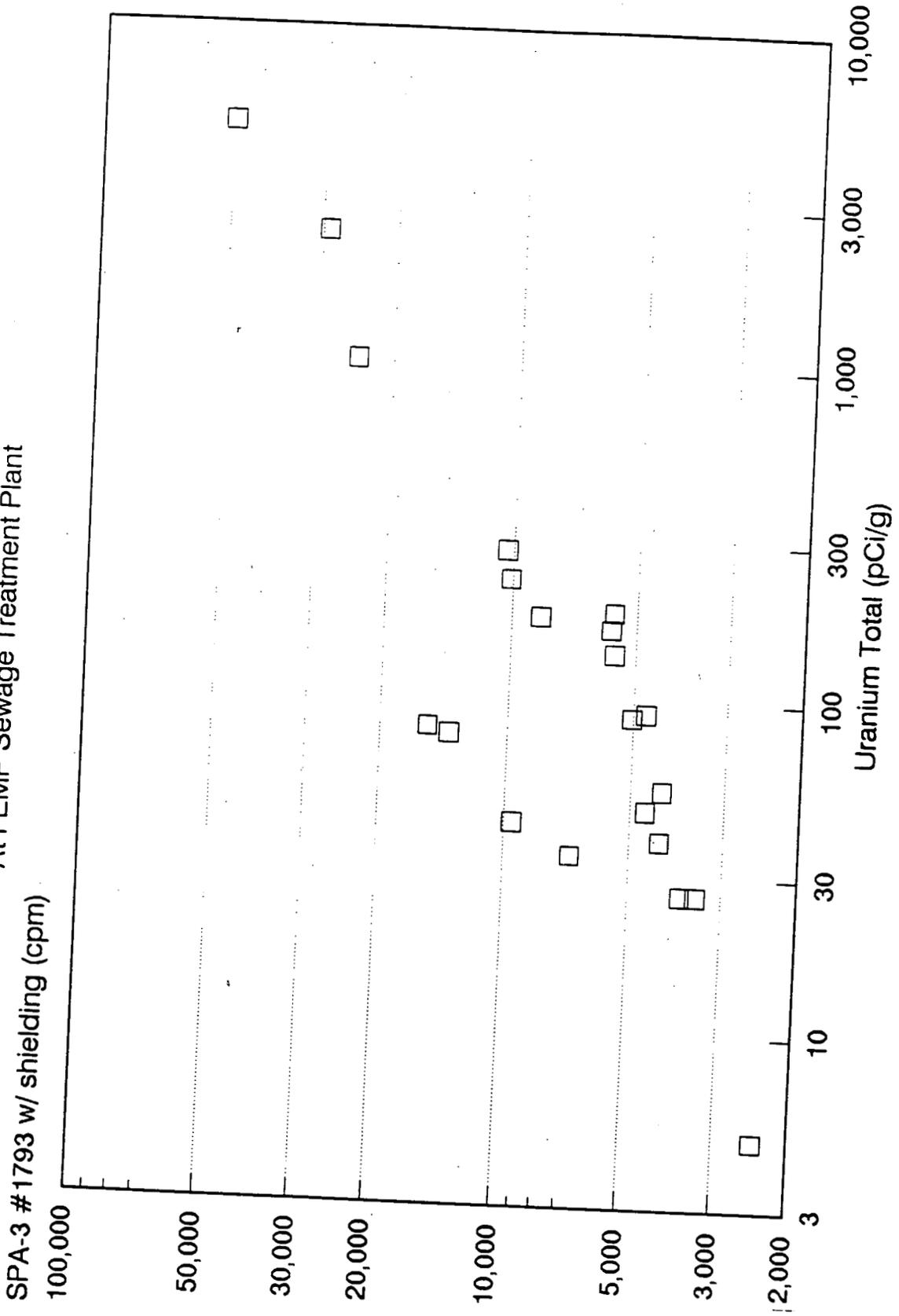


FIGURE 5

Correlation of Total Uranium To Shielded SPA-3 At FEMP Sewage Treatment Plant

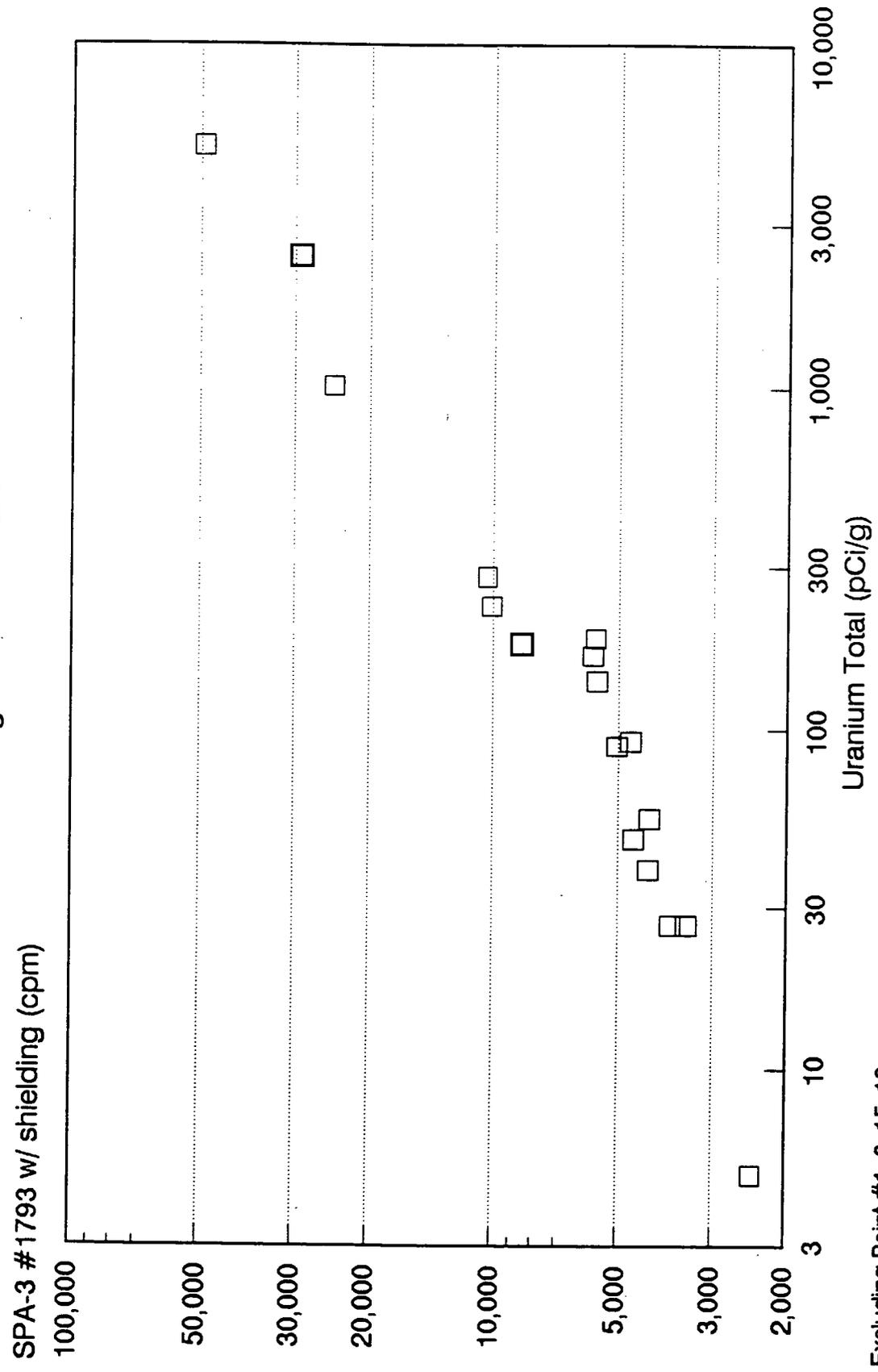


FIGURE 6

Correlation of Total Uranium To Shielded SPA-3

Delta-Gamma Reading
At FEMP Sewage Treatment Plant

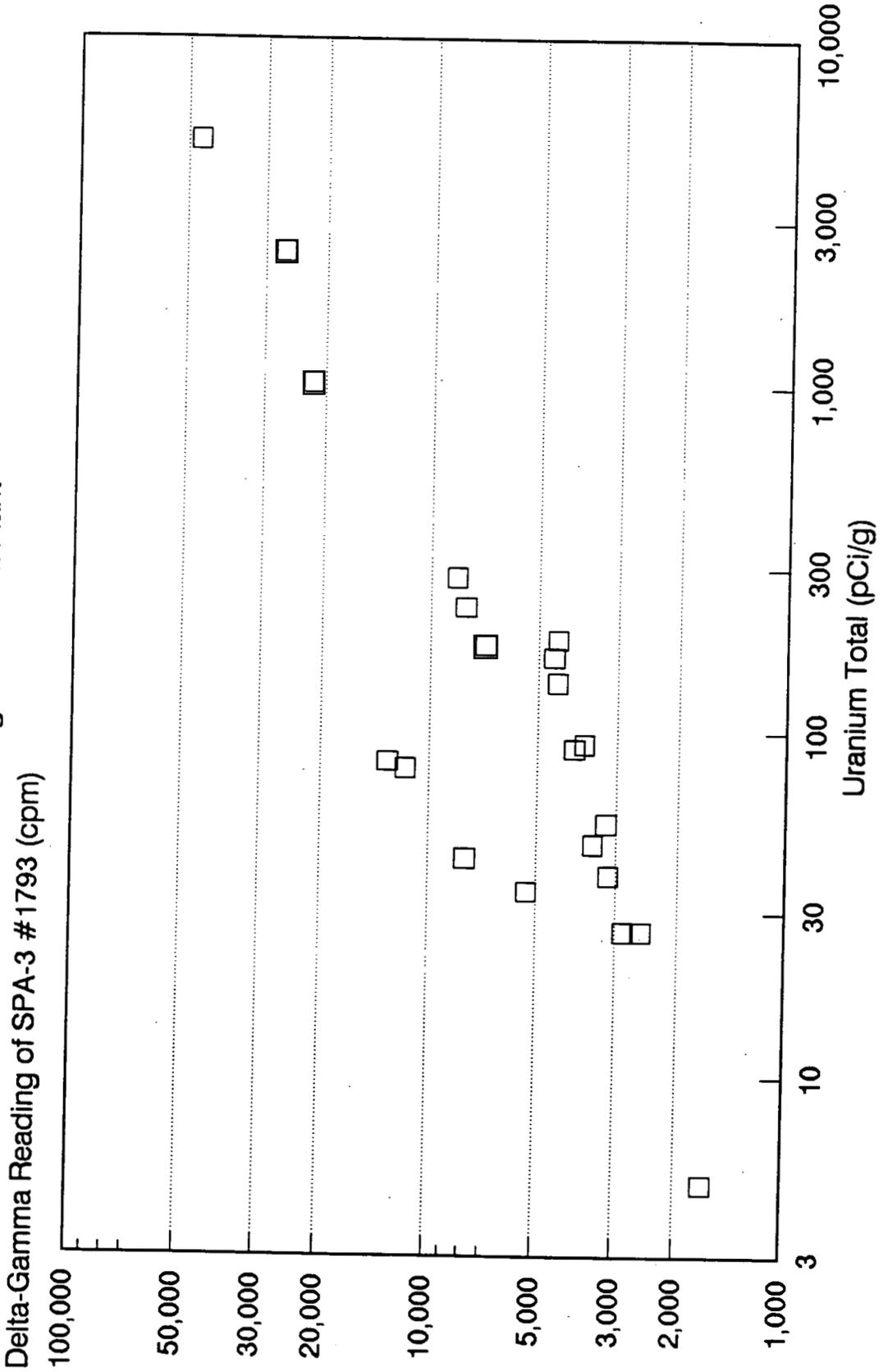
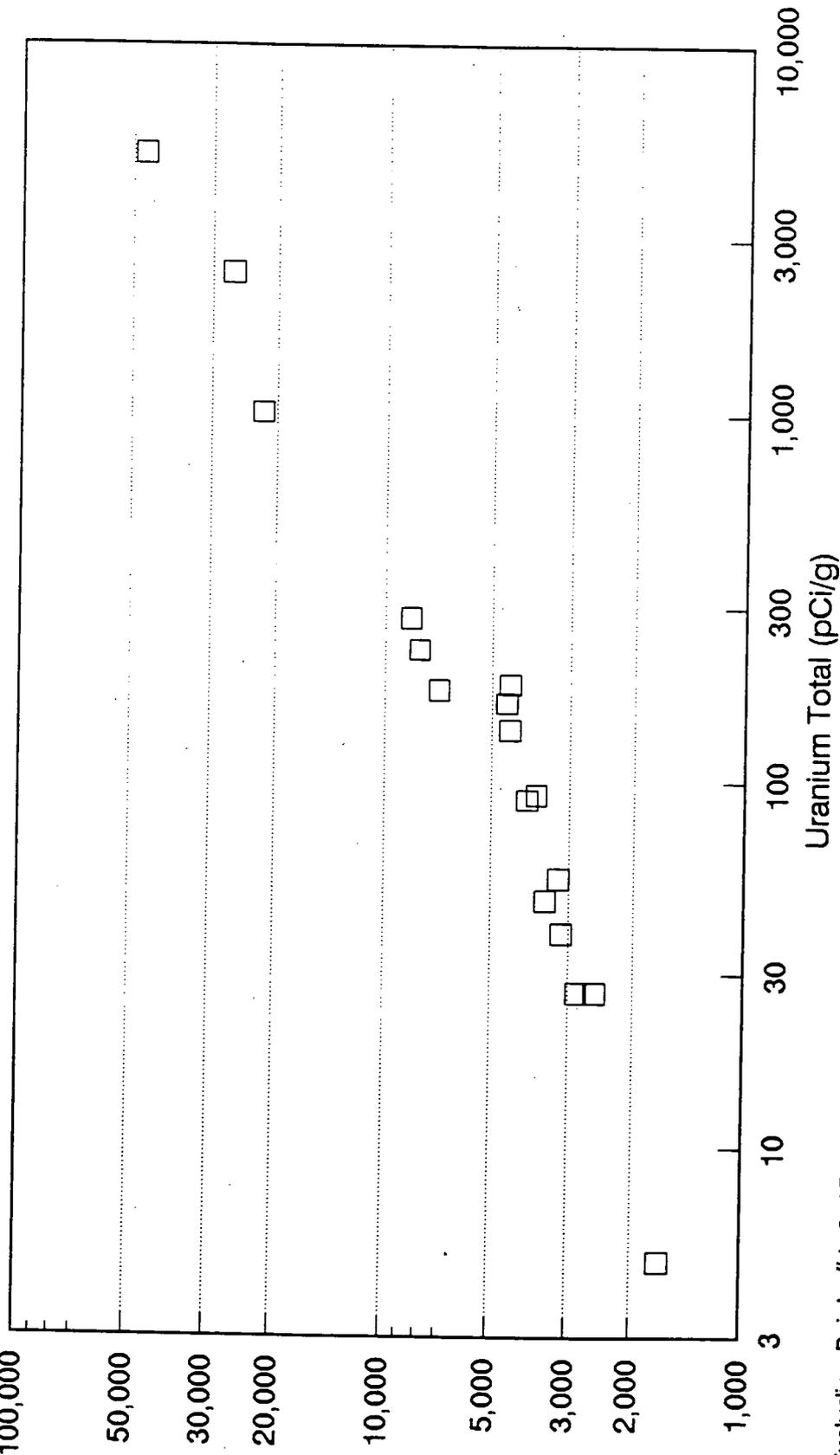


FIGURE 7

Correlation of Total Uranium To Shielded SPA-3

Delta-Gamma Reading
At FEMP Sewage Treatment Plant

Delta-Gamma Reading of SPA-3 #1793 (cpm)



Excluding Points #1, 3, 15, 18

FIGURE 8

Correlation of Total Uranium To FIDLER

At FEMP Sewage Treatment Plant

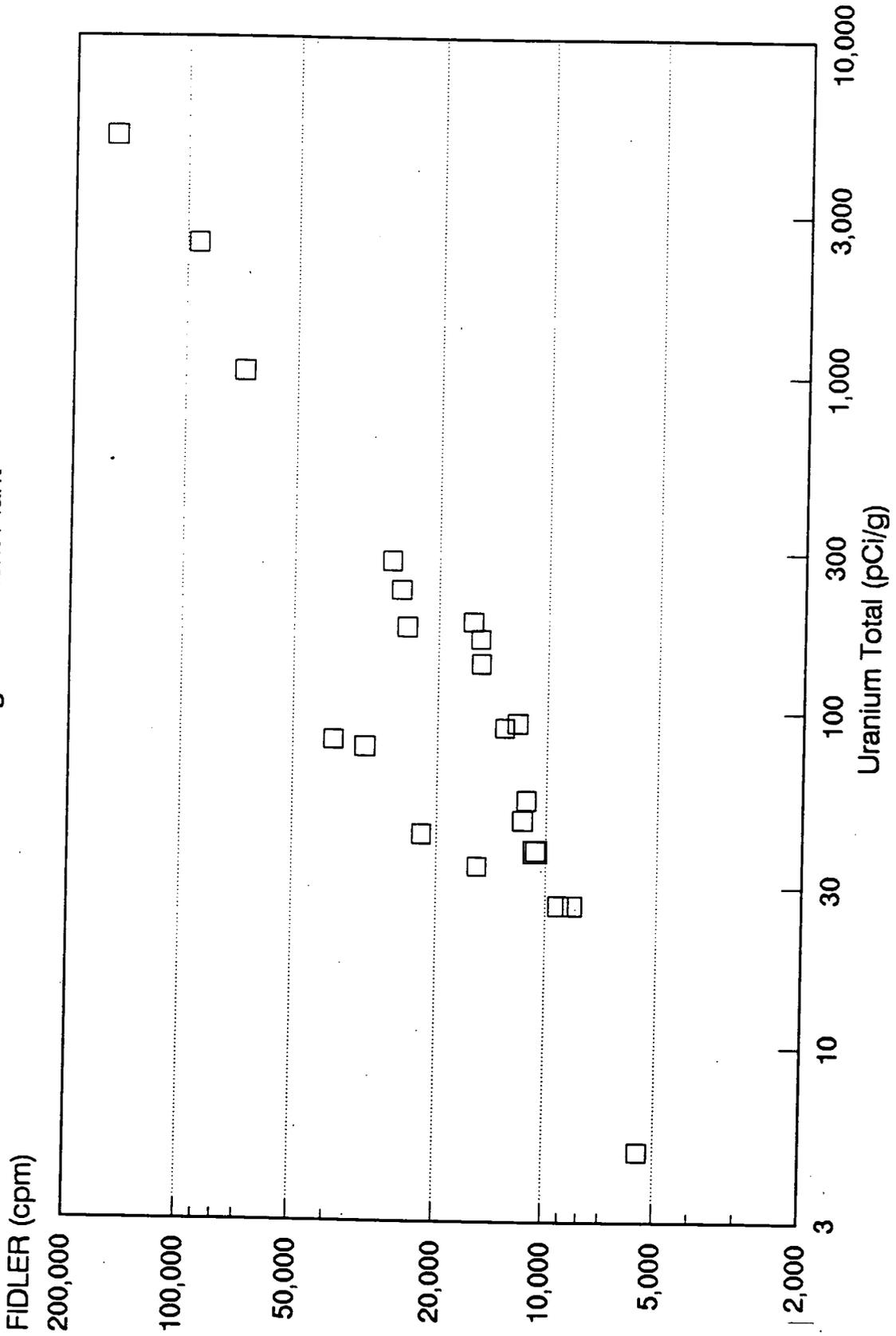
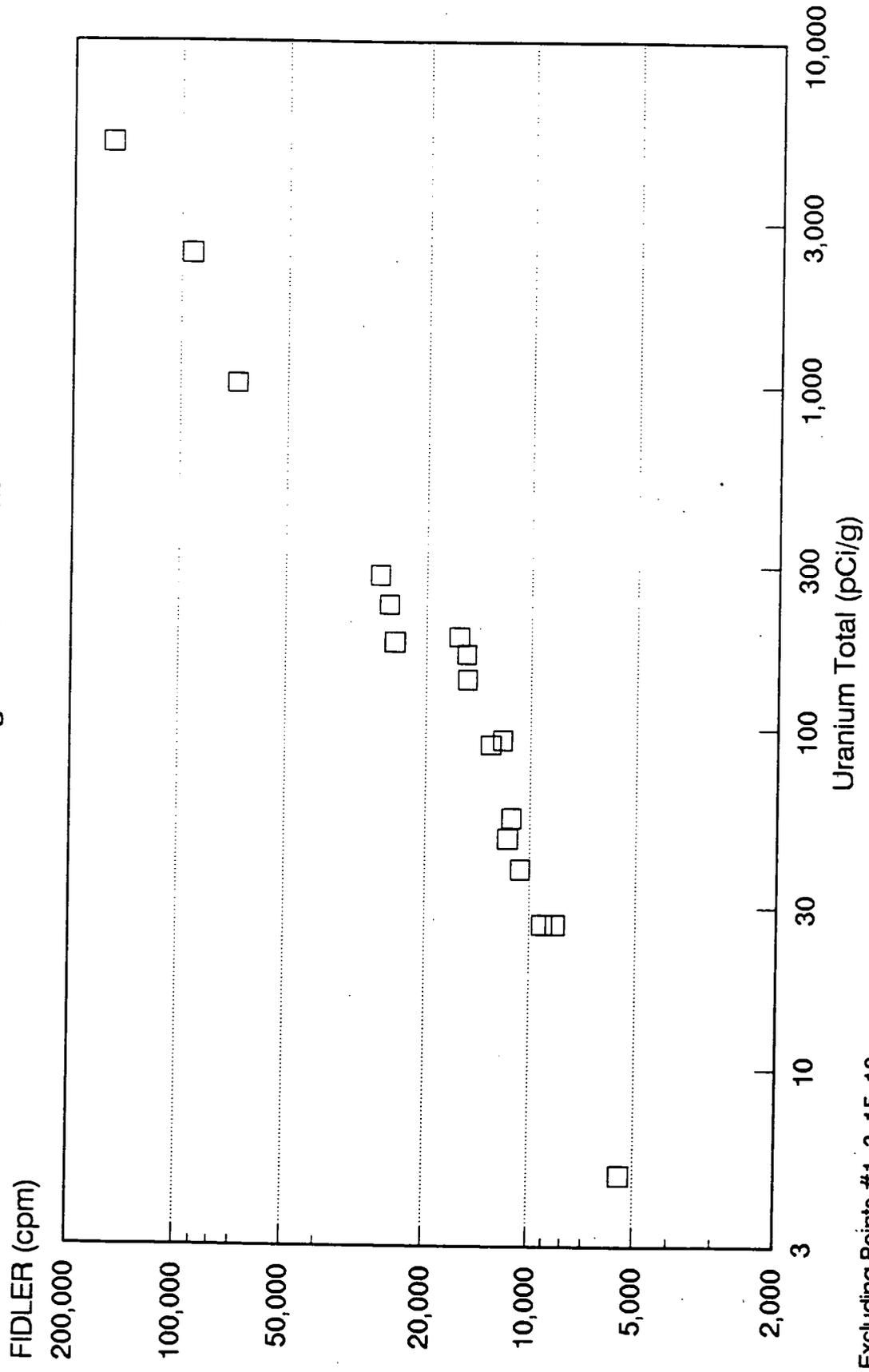


FIGURE 9

Correlation of Total Uranium To FIDLER At FEMP Sewage Treatment Plant



Excluding Points #1, 3, 15, 18

APPENDIX II

SHIELDED SPA-3 (#1793) READINGS FOR RADIATION SURVEY
 TO DETERMINE EXCAVATION BOUNDARY IN SOILS
 AROUND THE SEWAGE TREATMENT PLANT

TABLE 1 4037

E Coord	N Coord	Date	SPA-3 Reading (cp2m)	SPA-3 Reading (cpm)	Comments
1383150	479950	AUG-03-92	4.12E+03	2.06E+03	
1383000	479750	JUL-31-92	4.46E+03	2.23E+03	Near gravel
1383000	479800	JUL-31-92	4.87E+03	2.44E+03	
1383000	479775	JUL-31-92	4.89E+03	2.45E+03	Near gravel
1383300	479950	AUG-03-92	4.98E+03	2.49E+03	Cow path
1383300	479975	AUG-03-92	5.21E+03	2.61E+03	Cow path
1383290	479850	AUG-03-92	5.25E+03	2.63E+03	50' S of where next stake should be - south of STP (SE)
1383100	479500	JUL-31-92	5.28E+03	2.64E+03	
1383000	479725	JUL-31-92	5.35E+03	2.68E+03	Gravel
1383290	479500	AUG-03-92	5.43E+03	2.72E+03	10' from stake off property
1383200	479500	JUL-31-92	6.07E+03	3.04E+03	
1383300	480225	AUG-04-92	6.10E+03	3.05E+03	NE property line at high voltage tower
1383300	479925	AUG-03-92	6.14E+03	3.07E+03	Cow path
1383100	479550	JUL-31-92	6.23E+03	3.12E+03	
1382900	479650	JUL-31-92	6.26E+03	3.13E+03	Pipes
1383000	479575	JUL-31-92	6.31E+03	3.16E+03	
1383300	479875	AUG-03-92	6.34E+03	3.17E+03	Cow path
1383100	479525	JUL-31-92	6.36E+03	3.18E+03	
1383000	479650	JUL-31-92	6.40E+03	3.20E+03	
1383200	479725	JUL-31-92	6.41E+03	3.21E+03	
1383300	480000	AUG-03-92	6.41E+03	3.21E+03	Cow path
1382800	479500	AUG-03-92	6.43E+03	3.22E+03	
1383000	479600	JUL-31-92	6.46E+03	3.23E+03	
1383200	479525	JUL-31-92	6.47E+03	3.24E+03	
1383200	479675	JUL-31-92	6.51E+03	3.26E+03	
1383300	479500	AUG-04-92	6.52E+03	3.26E+03	East off-property in weeds
1383400	479500	AUG-04-92	6.58E+03	3.29E+03	East off-property in weeds
1383100	479600	JUL-31-92	6.63E+03	3.32E+03	
1383200	479700	JUL-31-92	6.64E+03	3.32E+03	
1383000	479550	JUL-31-92	6.65E+03	3.33E+03	
1383200	479750	JUL-31-92	6.65E+03	3.33E+03	
1382900	479675	JUL-31-92	6.67E+03	3.34E+03	Pipes
1383200	479600	JUL-31-92	6.69E+03	3.35E+03	
1383325	479500	AUG-04-92	6.70E+03	3.35E+03	East off-property in weeds
1383325	479600	AUG-04-92	6.70E+03	3.35E+03	East off-property in weeds
1382850	479900	JUL-31-92	6.73E+03	3.37E+03	
1383100	479575	JUL-31-92	6.73E+03	3.37E+03	
1383293	479500	AUG-04-92	6.74E+03	3.37E+03	East off-property in weeds
1382825	479900	JUL-28-92	6.77E+03	3.39E+03	
1383000	479700	JUL-31-92	6.77E+03	3.39E+03	
1383200	479550	JUL-31-92	6.77E+03	3.39E+03	
1383200	479625	JUL-31-92	6.78E+03	3.39E+03	
1382850	479900	JUL-28-92	6.79E+03	3.40E+03	
1383375	479500	AUG-04-92	6.79E+03	3.40E+03	East off-property in weeds
1382800	479900	JUL-28-92	6.80E+03	3.40E+03	
1383350	479500	AUG-04-92	6.80E+03	3.40E+03	East off-property in weeds
1383300	479600	AUG-04-92	6.83E+03	3.42E+03	East off-property in weeds
1383000	479625	JUL-31-92	6.85E+03	3.43E+03	
1383292	479600	AUG-04-92	6.85E+03	3.43E+03	East off-property in weeds
1382900	479675	JUL-31-92	6.86E+03	3.43E+03	
1383100	479650	JUL-31-92	6.86E+03	3.43E+03	
1382825	479800	JUL-28-92	6.89E+03	3.45E+03	
1383000	479675	JUL-31-92	6.90E+03	3.45E+03	
1383100	479675	JUL-31-92	6.90E+03	3.45E+03	Mud
1382900	479875	JUL-31-92	6.92E+03	3.46E+03	
1383100	479725	JUL-31-92	6.93E+03	3.47E+03	
1383200	479853	JUL-31-92	6.93E+03	3.47E+03	Last row outside fenc at STP
1382875	479800	JUL-28-92	6.94E+03	3.47E+03	

SHIELDED SPA-3 (#1793) READINGS FOR RADIATION SURVEY
 TO DETERMINE EXCAVATION BOUNDARY IN SOILS
 AROUND THE SEWAGE TREATMENT PLANT

E Coord	N Coord	Date	SPA-3 Reading (cp2m)	SPA-3 Reading (cpm)	Comments
1383100	479625	JUL-31-92	6.95E+03	3.48E+03	
1383200	479775	JUL-31-92	6.96E+03	3.48E+03	
1382900	479825	JUL-31-92	6.97E+03	3.49E+03	
1382920	479760	JUL-31-92	7.00E+03	3.50E+03	
1382900	479600	JUL-31-92	7.01E+03	3.51E+03	
1383200	479575	JUL-31-92	7.01E+03	3.51E+03	
1382900	479625	JUL-31-92	7.04E+03	3.52E+03	
1383000	480000	AUG-04-92	7.04E+03	3.52E+03	
1383100	479750	JUL-31-92	7.07E+03	3.54E+03	
1383294	479700	AUG-04-92	7.08E+03	3.54E+03	East off-property in weeds
1383200	479800	JUL-31-92	7.09E+03	3.55E+03	
1383290	479600	AUG-03-92	7.09E+03	3.55E+03	
1383200	479650	JUL-31-92	7.10E+03	3.55E+03	
1382800	479550	AUG-03-92	7.12E+03	3.56E+03	
1382900	479550	JUL-31-92	7.12E+03	3.56E+03	
1383125	479928	AUG-03-92	7.13E+03	3.57E+03	At driveway in STP
1382900	479800	JUL-31-92	7.14E+03	3.57E+03	
1383000	480000	AUG-03-92	7.15E+03	3.58E+03	
1382900	479850	JUL-31-92	7.18E+03	3.59E+03	
1382850	479700	JUL-31-92	7.19E+03	3.60E+03	
1383100	479775	JUL-31-92	7.19E+03	3.60E+03	
1382800	479575	AUG-03-92	7.20E+03	3.60E+03	
1382875	479900	JUL-28-92	7.21E+03	3.61E+03	
1383025	479925	AUG-03-92	7.21E+03	3.61E+03	
1383100	479700	JUL-31-92	7.21E+03	3.61E+03	
1383290	479700	AUG-03-92	7.21E+03	3.61E+03	
1382850	479800	JUL-28-92	7.22E+03	3.61E+03	
1382800	479600	AUG-03-92	7.23E+03	3.62E+03	
1383300	479700	AUG-04-92	7.23E+03	3.62E+03	East off-property in weeds
1382800	479675	AUG-03-92	7.25E+03	3.63E+03	
1383000	479500	JUL-31-92	7.26E+03	3.63E+03	
1383200	479850	AUG-03-92	7.26E+03	3.63E+03	
1382800	479725	AUG-03-92	7.27E+03	3.64E+03	
1382800	479650	AUG-03-92	7.28E+03	3.64E+03	
1382825	480000	JUL-28-92	7.28E+03	3.64E+03	
1382910	479700	JUL-31-92	7.29E+03	3.65E+03	
1383100	479856	JUL-31-92	7.30E+03	3.65E+03	
1382800	479750	AUG-03-92	7.31E+03	3.66E+03	
1382915	479725	JUL-31-92	7.31E+03	3.66E+03	
1383300	479800	AUG-04-92	7.31E+03	3.66E+03	
1383300	480200	AUG-03-92	7.31E+03	3.66E+03	Cow path
1382800	479625	AUG-03-92	7.34E+03	3.67E+03	
1383359	480100	AUG-04-92	7.35E+03	3.68E+03	Swamp area
1382800	479525	AUG-03-92	7.37E+03	3.69E+03	
1382800	479775	AUG-03-92	7.37E+03	3.69E+03	
1382900	479775	JUL-31-92	7.38E+03	3.69E+03	
1382800	479700	AUG-03-92	7.39E+03	3.70E+03	
1382860	479725	JUL-31-92	7.39E+03	3.70E+03	
1383025	480000	AUG-04-92	7.40E+03	3.70E+03	
1383310	479900	AUG-04-92	7.40E+03	3.70E+03	
1383250	479875	AUG-03-92	7.42E+03	3.71E+03	
1383290	479800	AUG-03-92	7.43E+03	3.72E+03	
1382900	479525	JUL-31-92	7.44E+03	3.72E+03	
1382900	479500	JUL-31-92	7.44E+03	3.72E+03	
1382700	479800	JUL-28-92	7.45E+03	3.73E+03	
1383000	479858	JUL-31-92	7.47E+03	3.74E+03	
1382875	479884	JUL-31-92	7.48E+03	3.74E+03	
1382910	480000	JUL-28-92	7.48E+03	3.74E+03	On bank of ditch with running water

SHIELDED SPA-3 (#1793) READINGS FOR RADIATION SURVEY
TO DETERMINE EXCAVATION BOUNDARY IN SOILS
AROUND THE SEWAGE TREATMENT PLANT

E Coord	N Coord	Date	SPA-3 Reading (cp2m)	SPA-3 Reading (cpm)	Comments
1383100	479800	JUL-31-92	7.48E+03	3.74E+03	
1382900	479575	JUL-31-92	7.49E+03	3.75E+03	
1382875	479900	JUL-31-92	7.50E+03	3.75E+03	
1382800	479900	AUG-03-92	7.51E+03	3.76E+03	
1382800	479825	AUG-03-92	7.51E+03	3.76E+03	
1383000	479900	AUG-03-92	7.51E+03	3.76E+03	
1383000	479525	JUL-31-92	7.56E+03	3.78E+03	
1383325	480400	AUG-04-92	7.56E+03	3.78E+03	Swamp area
1383300	480175	AUG-03-92	7.62E+03	3.81E+03	Cow path
1382800	479875	AUG-03-92	7.63E+03	3.82E+03	
1383310	480200	AUG-04-92	7.63E+03	3.82E+03	Swamp area
1383250	479950	AUG-03-92	7.65E+03	3.83E+03	
1382975	480000	AUG-04-92	7.66E+03	3.83E+03	
1383300	480550	JUL-27-92	7.67E+03	3.84E+03	
1383300	480800	JUL-27-92	7.67E+03	3.84E+03	100' past last grid point
1383300	480600	JUL-27-92	7.68E+03	3.84E+03	
1383300	480275	AUG-04-92	7.69E+03	3.85E+03	NE property line at high voltage tower
1382900	479900	JUL-28-92	7.73E+03	3.87E+03	
1383300	479900	AUG-03-92	7.79E+03	3.90E+03	Cow path
1383400	480000	AUG-04-92	7.79E+03	3.90E+03	Swamp area
1382850	480000	JUL-28-92	7.80E+03	3.90E+03	
1382800	479800	JUL-28-92	7.83E+03	3.92E+03	
1383000	479850	AUG-03-92	7.83E+03	3.92E+03	
1383300	480525	JUL-27-92	7.84E+03	3.92E+03	
1383200	480325	JUL-27-92	7.86E+03	3.93E+03	
1383300	480282	JUL-27-92	7.90E+03	3.95E+03	Unable to survey to next grid point due to high grass
1382800	479800	AUG-03-92	7.92E+03	3.96E+03	
1383275	480200	AUG-04-92	7.92E+03	3.96E+03	Along fence in northeast corner inside STP
1382800	480000	JUL-28-92	7.93E+03	3.97E+03	
1383000	479926	AUG-03-92	7.93E+03	3.97E+03	Near drive in STP
1382930	480200	JUL-28-92	7.94E+03	3.97E+03	
1382850	480125	JUL-30-92	7.96E+03	3.98E+03	
1383300	480775	JUL-27-92	7.99E+03	4.00E+03	
1382905	479700	JUL-31-92	8.01E+03	4.01E+03	
1383200	480300	JUL-27-92	8.02E+03	4.01E+03	
1383300	480500	JUL-27-92	8.07E+03	4.04E+03	
1383300	480250	AUG-04-92	8.07E+03	4.04E+03	NE property line at high voltage tower
1382860	480125	JUL-30-92	8.08E+03	4.04E+03	
1383200	480350	JUL-27-92	8.09E+03	4.05E+03	
1383200	480650	JUL-27-92	8.10E+03	4.05E+03	Highest of 3 readings
1383200	480600	JUL-27-92	8.11E+03	4.06E+03	
1382800	479850	AUG-03-92	8.12E+03	4.06E+03	
1383305	480300	AUG-04-92	8.12E+03	4.06E+03	Swamp area
1383200	480375	JUL-27-92	8.18E+03	4.09E+03	
1383300	480750	JUL-27-92	8.20E+03	4.10E+03	
1383100	480600	JUL-27-92	8.21E+03	4.11E+03	
1382875	479895	JUL-31-92	8.22E+03	4.11E+03	
1382922	479900	JUL-28-92	8.24E+03	4.12E+03	
1383200	480575	JUL-27-92	8.24E+03	4.12E+03	
1382950	480250	AUG-04-92	8.25E+03	4.13E+03	
1383300	480575	JUL-27-92	8.25E+03	4.13E+03	
1383100	480500	JUL-27-92	8.26E+03	4.13E+03	
1383200	480700	JUL-27-92	8.26E+03	4.13E+03	Highest of 3 readings
1383200	480675	JUL-27-92	8.26E+03	4.13E+03	Highest of 3 readings
1382850	479950	JUL-31-92	8.29E+03	4.15E+03	
1383100	480525	JUL-27-92	8.29E+03	4.15E+03	
1383300	480400	JUL-27-92	8.29E+03	4.15E+03	
1383200	480475	JUL-27-92	8.30E+03	4.15E+03	

SHIELDED SPA-3 (#1793) READINGS FOR RADIATION SURVEY
 TO DETERMINE EXCAVATION BOUNDARY IN SOILS
 AROUND THE SEWAGE TREATMENT PLANT

E Coord	N Coord	Date	SPA-3 Reading (cp2m)	SPA-3 Reading (cpm)	Comments
1383300	480650	JUL-27-92	8.33E+03	4.17E+03	
1382930	480200	JUL-30-92	8.34E+03	4.17E+03	
1383100	480575	JUL-27-92	8.34E+03	4.17E+03	
1382865	480125	JUL-30-92	8.36E+03	4.18E+03	
1382825	480200	JUL-28-92	8.37E+03	4.19E+03	
1382905	480000	JUL-28-92	8.38E+03	4.19E+03	
1383150	479928	AUG-03-92	8.38E+03	4.19E+03	At driveway in STP
1383200	480625	JUL-27-92	8.38E+03	4.19E+03	Highest of 3 readings
1383300	480700	JUL-27-92	8.38E+03	4.19E+03	
1383200	480450	JUL-27-92	8.39E+03	4.20E+03	
1383300	480725	JUL-27-92	8.39E+03	4.20E+03	
1382855	479950	JUL-31-92	8.40E+03	4.20E+03	
1383300	480625	JUL-27-92	8.40E+03	4.20E+03	
1382900	480200	JUL-28-92	8.41E+03	4.21E+03	
1382800	480200	JUL-28-92	8.42E+03	4.21E+03	
1383100	480475	JUL-27-92	8.42E+03	4.21E+03	
1383200	479875	AUG-03-92	8.42E+03	4.21E+03	
1383025	479926	AUG-03-92	8.43E+03	4.22E+03	
1382875	480000	JUL-28-92	8.44E+03	4.22E+03	
1383075	479950	AUG-03-92	8.44E+03	4.22E+03	
1382900	479925	JUL-30-92	8.45E+03	4.23E+03	
1382900	480250	AUG-04-92	8.46E+03	4.23E+03	
1383300	480350	JUL-27-92	8.47E+03	4.24E+03	
1383200	480550	JUL-27-92	8.48E+03	4.24E+03	
1382915	479760	JUL-31-92	8.50E+03	4.25E+03	
1383000	479800	AUG-03-92	8.51E+03	4.26E+03	
1383125	479950	AUG-03-92	8.51E+03	4.26E+03	
1383200	480425	JUL-27-92	8.51E+03	4.26E+03	
1382850	480125	JUL-30-92	8.52E+03	4.26E+03	
1382875	479892	JUL-31-92	8.52E+03	4.26E+03	
1382965	480210	JUL-30-92	8.52E+03	4.26E+03	Along the fence
1383000	479875	AUG-03-92	8.52E+03	4.26E+03	
1383300	480675	JUL-27-92	8.52E+03	4.26E+03	
1382915	480025	JUL-30-92	8.53E+03	4.27E+03	In ditch
1383100	480450	JUL-27-92	8.53E+03	4.27E+03	
1383100	480400	JUL-27-92	8.55E+03	4.28E+03	
1383100	479975	AUG-03-92	8.56E+03	4.28E+03	
1383300	480325	JUL-27-92	8.56E+03	4.28E+03	
1383300	480300	JUL-27-92	8.57E+03	4.29E+03	
1383300	480425	JUL-27-92	8.59E+03	4.30E+03	
1382825	480100	JUL-28-92	8.61E+03	4.31E+03	
1383100	479900	AUG-03-92	8.61E+03	4.31E+03	
1382900	479765	JUL-31-92	8.62E+03	4.31E+03	
1382900	479950	JUL-30-92	8.65E+03	4.33E+03	
1383050	479950	AUG-03-92	8.65E+03	4.33E+03	
1383200	480230	JUL-27-92	8.65E+03	4.33E+03	Approx. 5' from next grid point stake inside STP fence
1383200	480275	JUL-27-92	8.65E+03	4.33E+03	
1383200	480500	JUL-27-92	8.66E+03	4.33E+03	
1383250	480200	AUG-04-92	8.67E+03	4.34E+03	Along fence in northeast corner inside STP
1382900	479975	JUL-30-92	8.69E+03	4.35E+03	
1382975	480250	JUL-30-92	8.69E+03	4.35E+03	
1383200	480400	JUL-27-92	8.70E+03	4.35E+03	
1383150	479900	AUG-03-92	8.73E+03	4.37E+03	
1383300	480375	JUL-27-92	8.73E+03	4.37E+03	
1382850	479925	JUL-31-92	8.76E+03	4.38E+03	
1382925	480250	AUG-04-92	8.76E+03	4.38E+03	
1382925	480225	AUG-04-92	8.76E+03	4.38E+03	NW corner outside STP (wet)
1383100	480550	JUL-27-92	8.76E+03	4.38E+03	

SHIELDED SPA-3 (#1793) READINGS FOR RADIATION SURVEY
 TO DETERMINE EXCAVATION BOUNDARY IN SOILS
 AROUND THE SEWAGE TREATMENT PLANT

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E Coord	N Coord	Date	SPA-3 Reading (cp2m)	SPA-3 Reading (cpm)	Comments
1382800	480100	JUL-28-92	8.78E+03	4.39E+03	
1383200	480525	JUL-27-92	8.78E+03	4.39E+03	
1383200	480250	JUL-27-92	8.80E+03	4.40E+03	
1382870	480200	JUL-28-92	8.82E+03	4.41E+03	
1382918	480025	JUL-30-92	8.82E+03	4.41E+03	In ditch
1383100	480425	JUL-27-92	8.84E+03	4.42E+03	
1383100	480075	AUG-04-92	8.84E+03	4.42E+03	
1382885	480200	JUL-28-92	8.88E+03	4.44E+03	
1382910	480025	JUL-30-92	8.88E+03	4.44E+03	In ditch
1382850	480200	JUL-28-92	8.93E+03	4.47E+03	
1383300	480450	JUL-27-92	8.93E+03	4.47E+03	
1383300	480300	AUG-04-92	8.95E+03	4.48E+03	NE property line at high voltage tower
1382885	479925	JUL-30-92	8.96E+03	4.48E+03	
1383025	479950	AUG-03-92	8.97E+03	4.49E+03	
1383100	480025	AUG-04-92	8.98E+03	4.49E+03	
1383175	479875	AUG-03-92	8.99E+03	4.50E+03	
1382975	480210	JUL-30-92	9.00E+03	4.50E+03	Along the fence
1383150	480200	AUG-04-92	9.03E+03	4.52E+03	Along fence in northeast corner inside STP
1382860	479950	JUL-31-92	9.04E+03	4.52E+03	
1383000	480325	JUL-28-92	9.06E+03	4.53E+03	
1383100	479950	AUG-03-92	9.06E+03	4.53E+03	
1383125	480100	AUG-04-92	9.07E+03	4.54E+03	
1382905	480025	JUL-30-92	9.08E+03	4.54E+03	
1382885	479950	JUL-30-92	9.13E+03	4.57E+03	
1382980	480210	JUL-30-92	9.14E+03	4.57E+03	Along the fence
1383175	480175	AUG-04-92	9.14E+03	4.57E+03	Along fence in northeast corner inside STP
1383200	480200	AUG-04-92	9.14E+03	4.57E+03	Along fence in northeast corner inside STP
1382875	480175	JUL-30-92	9.17E+03	4.59E+03	
1383225	480200	AUG-04-92	9.18E+03	4.59E+03	Along fence in northeast corner inside STP
1382850	480175	JUL-30-92	9.19E+03	4.60E+03	
1383200	480175	AUG-04-92	9.20E+03	4.60E+03	Along fence in northeast corner inside STP
1383200	480250	JUL-27-92	9.20E+03	4.60E+03	
1382880	480200	JUL-28-92	9.21E+03	4.61E+03	
1382950	480225	AUG-04-92	9.21E+03	4.61E+03	
1382900	480000	JUL-28-92	9.22E+03	4.61E+03	
1383100	480000	AUG-03-92	9.22E+03	4.61E+03	
1383175	480200	AUG-04-92	9.23E+03	4.62E+03	Along fence in northeast corner inside STP
1383120	480250	JUL-29-92	9.24E+03	4.62E+03	
1382853	479925	JUL-31-92	9.25E+03	4.63E+03	
1382921	480000	JUL-28-92	9.25E+03	4.63E+03	
1382900	480275	AUG-04-92	9.28E+03	4.64E+03	
1383000	480300	JUL-28-92	9.30E+03	4.65E+03	
1383100	480325	JUL-27-92	9.30E+03	4.65E+03	
1382905	480175	JUL-30-92	9.33E+03	4.67E+03	
1382854	479925	JUL-31-92	9.34E+03	4.67E+03	
1383125	480075	AUG-04-92	9.34E+03	4.67E+03	
1383100	480350	JUL-27-92	9.35E+03	4.68E+03	
1383075	479970	AUG-03-92	9.36E+03	4.68E+03	Edge of water filter
1382975	480250	AUG-04-92	9.37E+03	4.69E+03	
1382975	480230	JUL-30-92	9.39E+03	4.70E+03	
1383300	480475	JUL-27-92	9.39E+03	4.70E+03	
1382912	479725	JUL-31-92	9.40E+03	4.70E+03	
1383100	480375	JUL-27-92	9.40E+03	4.70E+03	
1383150	480175	AUG-04-92	9.40E+03	4.70E+03	Along fence in northeast corner inside STP
1383075	480300	JUL-29-92	9.41E+03	4.71E+03	2nd time taking this reading
1383115	480250	JUL-29-92	9.42E+03	4.71E+03	
1382875	480150	JUL-30-92	9.43E+03	4.72E+03	
1382900	480000	JUL-28-92	9.43E+03	4.72E+03	

SHIELDED SPA-3 (#1793) READINGS FOR RADIATION SURVEY
 TO DETERMINE EXCAVATION BOUNDARY IN SOILS
 AROUND THE SEWAGE TREATMENT PLANT

E Coord	N Coord	Date	SPA-3 Reading (cp2m)	SPA-3 Reading (cpm)	Comments
1382925	480195	JUL-30-92	9.43E+03	4.72E+03	
1382750	480150	JUL-30-92	9.45E+03	4.73E+03	
1383000	480350	JUL-28-92	9.45E+03	4.73E+03	
1383125	480280	JUL-29-92	9.46E+03	4.73E+03	
1383000	480272	JUL-28-92	9.47E+03	4.74E+03	
1383075	479926	AUG-03-92	9.47E+03	4.74E+03	
1383105	480250	JUL-29-92	9.47E+03	4.74E+03	
1382850	480100	JUL-28-92	9.48E+03	4.74E+03	
1383225	480175	AUG-04-92	9.49E+03	4.75E+03	Along fence in northeast corner inside STP
1382982	480210	JUL-30-92	9.53E+03	4.77E+03	Highest of 3 readings; along the fence
1383100	480250	JUL-27-92	9.53E+03	4.77E+03	
1382775	480100	JUL-28-92	9.54E+03	4.77E+03	Highest of 3 readings
1383060	480311	JUL-29-92	9.57E+03	4.79E+03	
1382900	480175	JUL-30-92	9.61E+03	4.81E+03	
1382900	480225	AUG-04-92	9.61E+03	4.81E+03	Highest of 3 readings - NW corner outside STP (w
1383025	480300	JUL-29-92	9.61E+03	4.81E+03	
1383060	480311	JUL-29-92	9.62E+03	4.81E+03	
1383060	480311	JUL-29-92	9.62E+03	4.81E+03	
1383123	480225	JUL-29-92	9.63E+03	4.82E+03	Highest of 3 readings
1383075	480300	JUL-29-92	9.64E+03	4.82E+03	
1383075	480300	JUL-29-92	9.65E+03	4.83E+03	
1382975	480228	JUL-30-92	9.66E+03	4.83E+03	Highest of 3 readings
1383060	480311	JUL-29-92	9.67E+03	4.84E+03	
1382900	479760	JUL-31-92	9.68E+03	4.84E+03	
1383025	479900	AUG-03-92	9.69E+03	4.85E+03	Highest of 3 readings
1383025	480300	JUL-29-92	9.71E+03	4.86E+03	
1382875	480100	JUL-28-92	9.72E+03	4.86E+03	Highest of 3 readings
1382884	479950	JUL-30-92	9.72E+03	4.86E+03	Highest of 3 readings
1383075	480300	JUL-29-92	9.72E+03	4.86E+03	
1383100	480287	JUL-27-92	9.72E+03	4.86E+03	Actual N coordinate is 480287.5
1383250	479925	AUG-03-92	9.72E+03	4.86E+03	Highest of 3 readings
1383050	479970	AUG-03-92	9.73E+03	4.87E+03	Highest of 3 readings; Edge of water filter
1383025	480300	JUL-29-92	9.74E+03	4.87E+03	
1383200	479925	AUG-03-92	9.74E+03	4.87E+03	Highest of 3 readings
1383100	480250	JUL-29-92	9.75E+03	4.88E+03	Highest of 3 readings
1382900	480025	JUL-30-92	9.76E+03	4.88E+03	Highest of 3 readings
1382922	480000	JUL-28-92	9.76E+03	4.88E+03	Highest of 3 readings
1383000	480252	JUL-28-92	9.76E+03	4.88E+03	
1383060	480315	JUL-29-92	9.77E+03	4.89E+03	
1383110	480250	JUL-29-92	9.77E+03	4.89E+03	Highest of 3 readings
1382877	480100	JUL-28-92	9.78E+03	4.89E+03	Highest of 3 readings
1383025	480300	JUL-29-92	9.78E+03	4.89E+03	
1383125	480275	JUL-29-92	9.78E+03	4.89E+03	Highest of 3 readings
1383130	480205	JUL-29-92	9.78E+03	4.89E+03	Highest of 3 readings
1383000	480275	JUL-28-92	9.79E+03	4.90E+03	Highest of 3 readings
1383125	480225	JUL-29-92	9.80E+03	4.90E+03	Highest of 3 readings
1382875	480200	JUL-28-92	9.81E+03	4.91E+03	Highest of 3 readings
1382975	480227	JUL-30-92	9.81E+03	4.91E+03	Highest of 3 readings
1383125	480250	JUL-29-92	9.81E+03	4.91E+03	Highest of 3 readings
1382862	479725	JUL-31-92	9.82E+03	4.91E+03	Highest of 3 readings
1383060	480315	JUL-29-92	9.82E+03	4.91E+03	
1383122	480225	JUL-29-92	9.82E+03	4.91E+03	Highest of 3 readings
1383125	480125	AUG-04-92	9.82E+03	4.91E+03	Highest of 3 readings
1382975	480226	JUL-30-92	9.83E+03	4.92E+03	Highest of 3 readings
1383060	480315	JUL-29-92	9.83E+03	4.92E+03	
1382919	480025	JUL-30-92	9.84E+03	4.92E+03	Highest of 3 readings
1383075	480299	JUL-29-92	9.84E+03	4.92E+03	Highest of 3 readings
1383060	480315	JUL-29-92	9.85E+03	4.93E+03	

SHIELDED SPA-3 (#1793) READINGS FOR RADIATION SURVEY
 TO DETERMINE EXCAVATION BOUNDARY IN SOILS
 AROUND THE SEWAGE TREATMENT PLANT

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	E Coord	N Coord	Date	SPA-3 Reading (cp2m)	SPA-3 Reading (cpm)	Comments
	1383050	480303	JUL-29-92	9.86E+03	4.93E+03	Highest of 3 readings
	1383100	480300	JUL-27-92	9.86E+03	4.93E+03	Highest of 3 readings
	1383128	480205	JUL-29-92	9.86E+03	4.93E+03	Highest of 3 readings
	1382875	480050	JUL-30-92	9.87E+03	4.94E+03	Highest of 3 readings
	1383075	480300	JUL-29-92	9.87E+03	4.94E+03	
	1383100	479926	AUG-03-92	9.88E+03	4.94E+03	Highest of 3 readings
	1383000	480262	JUL-28-92	9.89E+03	4.95E+03	
	1383100	480208	JUL-27-92	9.89E+03	4.95E+03	
	1383050	480300	JUL-29-92	9.91E+03	4.96E+03	
	1383250	480175	AUG-04-92	9.92E+03	4.96E+03	Highest of 3 readings - Along fence in northeast corner
	1383025	480275	JUL-29-92	9.93E+03	4.97E+03	
	1383025	480275	JUL-29-92	9.93E+03	4.97E+03	
	1383025	480275	JUL-29-92	9.94E+03	4.97E+03	
	1383050	480304	JUL-29-92	9.94E+03	4.97E+03	Highest of 3 readings
	1382755	480150	JUL-30-92	9.95E+03	4.98E+03	Highest of 3 readings; Wet stream
	1382865	479950	JUL-31-92	9.95E+03	4.98E+03	Highest of 3 readings
B	1382875	479700	JUL-31-92	9.95E+03	4.98E+03	Highest of 3 readings
	1382875	480075	JUL-30-92	9.95E+03	4.98E+03	Highest of 3 readings
	1383000	480255	JUL-28-92	9.95E+03	4.98E+03	
	1383050	480300	JUL-29-92	9.95E+03	4.98E+03	
	1383025	480275	JUL-29-92	9.96E+03	4.98E+03	
	1383035	480275	JUL-29-92	9.96E+03	4.98E+03	
	1382902	479700	JUL-31-92	9.97E+03	4.99E+03	Highest of 3 readings
	1383035	480275	JUL-29-92	9.97E+03	4.99E+03	
	1383035	480275	JUL-29-92	9.97E+03	4.99E+03	
	1383035	480275	JUL-29-92	9.97E+03	4.99E+03	
	1383050	480300	JUL-29-92	9.97E+03	4.99E+03	
	1383050	480300	JUL-29-92	9.97E+03	4.99E+03	
	1383050	480302	JUL-29-92	9.98E+03	4.99E+03	Highest of 3 readings
	1383075	480298	JUL-29-92	9.98E+03	4.99E+03	Highest of 3 readings
	1383000	480247	JUL-28-92	9.99E+03	5.00E+03	Highest of 3 readings
	1383000	480250	JUL-28-92	9.99E+03	5.00E+03	Highest of 3 readings
	1383050	480305	JUL-29-92	9.99E+03	5.00E+03	Highest of 3 readings
	1382775	480150	JUL-30-92	1.00E+04	5.00E+03	Highest of 3 readings; muddy and slushy
B	1382870	480125	JUL-30-92	1.00E+04	5.00E+03	Highest of 2 readings
B	1382910	480175	JUL-30-92	1.00E+04	5.00E+03	
	1383050	480290	JUL-29-92	1.00E+04	5.00E+03	
	1383075	479875	AUG-03-92	1.00E+04	5.00E+03	
	1383075	480290	JUL-29-92	1.00E+04	5.00E+03	Highest of 2 readings
	1383125	480205	JUL-29-92	1.00E+04	5.00E+03	Highest of 3 readings
	1383126	480205	JUL-29-92	1.00E+04	5.00E+03	
B	1383127	480205	JUL-29-92	1.00E+04	5.00E+03	
	1382819	480150	JUL-30-92	1.01E+04	5.05E+03	Highest of 3 readings; muddy and slushy
B	1382883	479950	JUL-30-92	1.01E+04	5.05E+03	
	1382975	480225	JUL-30-92	1.01E+04	5.05E+03	
	1383000	480245	JUL-28-92	1.01E+04	5.05E+03	
B	1383000	480246	JUL-28-92	1.01E+04	5.05E+03	
B	1383040	480275	JUL-29-92	1.01E+04	5.05E+03	
B	1383050	480301	JUL-29-92	1.01E+04	5.05E+03	
	1383050	480297	JUL-29-92	1.01E+04	5.05E+03	
	1383050	480300	JUL-29-92	1.01E+04	5.05E+03	Highest of 3 readings - 2nd time taking this reading
	1383050	480296	JUL-29-92	1.01E+04	5.05E+03	
B	1383060	480306	JUL-29-92	1.01E+04	5.05E+03	Highest of 3 readings
	1383060	480306	JUL-29-92	1.01E+04	5.05E+03	
B	1383075	480297	JUL-29-92	1.01E+04	5.05E+03	Highest of 2 readings
	1383075	480125	AUG-04-92	1.01E+04	5.05E+03	
B	1383121	480225	JUL-29-92	1.01E+04	5.05E+03	
B	1382760	480150	JUL-30-92	1.02E+04	5.10E+03	Highest of 3 readings

SHIELDED SPA-3 (#1793) READINGS FOR RADIATION SURVEY
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 AROUND THE SEWAGE TREATMENT PLANT

	E Coord	N Coord	Date	SPA-3 Reading (cp2m)	SPA-3 Reading (cpm)	Comments
B	1382855	479925	JUL-31-92	1.02E+04	5.10E+03	
	1382878	480100	JUL-28-92	1.02E+04	5.10E+03	Highest of 3 readings
	1383050	480295	JUL-29-92	1.02E+04	5.10E+03	
	1383050	480298	JUL-29-92	1.02E+04	5.10E+03	
	1383050	480299	JUL-29-92	1.02E+04	5.10E+03	
	1383070	480300	JUL-29-92	1.02E+04	5.10E+03	
	1383125	480200	AUG-04-92	1.02E+04	5.10E+03	Highest of 3 readings
	1383150	479875	AUG-03-92	1.02E+04	5.10E+03	
	1383150	480125	AUG-04-92	1.02E+04	5.10E+03	
B	1382880	480050	JUL-30-92	1.03E+04	5.15E+03	
	1383050	480285	JUL-29-92	1.03E+04	5.15E+03	
	1383050	480280	JUL-29-92	1.03E+04	5.15E+03	
	1383100	480225	JUL-27-92	1.03E+04	5.15E+03	
B	1383100	480280	JUL-27-92	1.03E+04	5.15E+03	
	1383125	480025	AUG-04-92	1.03E+04	5.15E+03	
	1383125	480175	AUG-04-92	1.03E+04	5.15E+03	
	1382800	480150	JUL-30-92	1.04E+04	5.20E+03	Muddy and slushy
	1382850	480150	JUL-30-92	1.04E+04	5.20E+03	
	1382875	480125	JUL-30-92	1.04E+04	5.20E+03	
	1382880	479950	JUL-30-92	1.04E+04	5.20E+03	
	1382925	480185	JUL-30-92	1.04E+04	5.20E+03	
	1383075	480280	JUL-29-92	1.04E+04	5.20E+03	
	1383075	480295	JUL-29-92	1.04E+04	5.20E+03	
	1383075	480285	JUL-29-92	1.04E+04	5.20E+03	
	1383100	480125	AUG-04-92	1.04E+04	5.20E+03	
	1382850	479702	JUL-31-92	1.05E+04	5.25E+03	
	1382879	480100	JUL-28-92	1.05E+04	5.25E+03	
B	1382880	480075	JUL-30-92	1.05E+04	5.25E+03	
	1382900	480150	JUL-30-92	1.05E+04	5.25E+03	
	1382900	480100	JUL-28-92	1.05E+04	5.25E+03	
	1382924	480000	JUL-28-92	1.05E+04	5.25E+03	
B	1382987	480210	JUL-30-92	1.05E+04	5.25E+03	Along the fence
	1383100	480275	JUL-27-92	1.05E+04	5.25E+03	Highest of 3 readings
	1383120	480225	JUL-29-92	1.05E+04	5.25E+03	
	1382880	480100	JUL-28-92	1.06E+04	5.30E+03	
B	1382912	479760	JUL-31-92	1.06E+04	5.30E+03	
B	1382923	480000	JUL-28-92	1.06E+04	5.30E+03	
	1383000	480210	JUL-27-92	1.07E+04	5.35E+03	
	1383045	480275	JUL-29-92	1.07E+04	5.35E+03	
	1383050	480275	JUL-29-92	1.07E+04	5.35E+03	
	1383150	480000	AUG-03-92	1.07E+04	5.35E+03	
	1382900	480050	JUL-30-92	1.08E+04	5.40E+03	
	1383000	480225	JUL-28-92	1.08E+04	5.40E+03	
	1383075	480275	JUL-29-92	1.08E+04	5.40E+03	
	1383100	480100	AUG-04-92	1.08E+04	5.40E+03	
	1382850	479704	JUL-31-92	1.09E+04	5.45E+03	
B	1382900	479755	JUL-31-92	1.09E+04	5.45E+03	
	1383225	479925	AUG-03-92	1.09E+04	5.45E+03	
	1382882	479950	JUL-30-92	1.10E+04	5.50E+03	
B	1382883	479925	JUL-30-92	1.10E+04	5.50E+03	
B	1382911	479725	JUL-31-92	1.10E+04	5.50E+03	
	1383028	479875	AUG-03-92	1.10E+04	5.50E+03	
	1383300	480075	AUG-03-92	1.10E+04	5.50E+03	Cow path
	1383025	480075	AUG-04-92	1.11E+04	5.55E+03	
	1383150	480100	AUG-04-92	1.12E+04	5.60E+03	
	1382900	480075	JUL-30-92	1.13E+04	5.65E+03	
	1382925	480025	JUL-30-92	1.13E+04	5.65E+03	
	1383250	479900	AUG-03-92	1.13E+04	5.65E+03	

SHIELDED SPA-3 (#1793) READINGS FOR RADIATION SURVEY
 TO DETERMINE EXCAVATION BOUNDARY IN SOILS
 AROUND THE SEWAGE TREATMENT PLANT

4037

	E Coord	N Coord	Date	SPA-3 Reading (cp2m)	SPA-3 Reading (cpm)	Comments
B	1382870	479950	JUL-31-92	1.14E+04	5.70E+03	
	1383100	480050	AUG-04-92	1.14E+04	5.70E+03	
B	1383300	480025	AUG-03-92	1.14E+04	5.70E+03	Cow path
	1382882	479925	JUL-30-92	1.15E+04	5.75E+03	
B	1382900	479700	JUL-31-92	1.15E+04	5.75E+03	
	1382880	479925	JUL-30-92	1.20E+04	6.00E+03	
	1382915	480175	JUL-30-92	1.20E+04	6.00E+03	
	1383225	479875	AUG-03-92	1.20E+04	6.00E+03	
	1383200	479875	AUG-03-92	1.21E+04	6.05E+03	
	1382860	479925	JUL-31-92	1.22E+04	6.10E+03	
	1382900	479750	JUL-31-92	1.22E+04	6.10E+03	
	1383025	480050	AUG-04-92	1.23E+04	6.15E+03	
	1383075	479900	AUG-03-92	1.23E+04	6.15E+03	
	1383275	479950	AUG-03-92	1.24E+04	6.20E+03	
	1382910	479760	JUL-31-92	1.25E+04	6.25E+03	
	1382910	479725	JUL-31-92	1.26E+04	6.30E+03	
	1383050	480100	AUG-04-92	1.26E+04	6.30E+03	On top of water filter inside STP
	1383100	479875	AUG-03-92	1.26E+04	6.30E+03	
	1383125	479875	AUG-03-92	1.26E+04	6.30E+03	
	1383125	480000	AUG-03-92	1.26E+04	6.30E+03	
	1383150	479975	AUG-03-92	1.26E+04	6.30E+03	Next to white bldg.
	1383050	479925	AUG-03-92	1.27E+04	6.35E+03	
	1383050	479875	AUG-03-92	1.27E+04	6.35E+03	
	1382875	479950	JUL-30-92	1.28E+04	6.40E+03	
B	1382920	480025	JUL-30-92	1.29E+04	6.45E+03	
	1383225	479900	AUG-03-92	1.29E+04	6.45E+03	
	1382926	480100	JUL-28-92	1.30E+04	6.50E+03	
	1383150	480075	AUG-04-92	1.30E+04	6.50E+03	
	1383175	480000	AUG-03-92	1.32E+04	6.60E+03	
B	1382865	479725	JUL-31-92	1.35E+04	6.75E+03	
	1383275	480000	AUG-03-92	1.37E+04	6.85E+03	
	1383125	479900	AUG-03-92	1.38E+04	6.90E+03	
	1383050	480125	AUG-04-92	1.40E+04	7.00E+03	
	1383200	479900	AUG-03-92	1.41E+04	7.05E+03	
	1383150	480025	AUG-04-92	1.42E+04	7.10E+03	
B	1383300	480150	AUG-03-92	1.42E+04	7.10E+03	Cow path
	1383200	480000	AUG-03-92	1.43E+04	7.15E+03	
	1383275	479925	AUG-03-92	1.43E+04	7.15E+03	
	1383300	480050	AUG-03-92	1.43E+04	7.15E+03	Cow path
	1383150	480050	AUG-04-92	1.47E+04	7.35E+03	
	1383125	479975	AUG-03-92	1.48E+04	7.40E+03	
	1383300	480125	AUG-03-92	1.49E+04	7.45E+03	Cow path
	1382870	479725	JUL-31-92	1.50E+04	7.50E+03	
	1383275	479875	AUG-03-92	1.52E+04	7.60E+03	
	1383125	480050	AUG-04-92	1.53E+04	7.65E+03	
	1383050	479900	AUG-03-92	1.54E+04	7.70E+03	
	1383075	480103	AUG-04-92	1.55E+04	7.75E+03	On top of water filter inside STP
	1382925	480175	JUL-30-92	1.56E+04	7.80E+03	Wet over near corner
	1383300	480100	AUG-03-92	1.62E+04	8.10E+03	Cow path
	1383025	479900	AUG-03-92	1.64E+04	8.20E+03	
	1382900	479725	JUL-31-92	1.67E+04	8.35E+03	
	1382875	479925	JUL-30-92	1.68E+04	8.40E+03	
	1383200	479950	AUG-03-92	1.73E+04	8.65E+03	
	1383025	480100	AUG-04-92	2.12E+04	1.06E+04	Near insinerator inside STP
	1383275	479900	AUG-03-92	2.53E+04	1.27E+04	
	1383275	479975	AUG-03-92	2.62E+04	1.31E+04	

= Boundary Point for Soil Excavation

8/17/92 stpsurv2.wk3

SHIELDED SPA-3 (#1793) BOUNDARY READINGS
FOR THE SOIL EXCAVATION PROJECT
AROUND THE SEWAGE TREATMENT PLANT

	E Coord	N Coord	Date	SPA-3 Reading (cp2m)	SPA-3 Reading (cpm)	Comments
B	1382875	479700	JUL-31-92	9.95E+03	4.98E+03	Highest of 3 readings - Southern most radium spot
B	1382900	479700	JUL-31-92	1.15E+04	5.75E+03	Southern most radium spot
B	1382865	479725	JUL-31-92	1.35E+04	6.75E+03	Southern most radium spot
B	1382911	479725	JUL-31-92	1.10E+04	5.50E+03	Southern most radium spot
B	1382900	479755	JUL-31-92	1.09E+04	5.45E+03	Southern most radium spot
B	1382912	479760	JUL-31-92	1.06E+04	5.30E+03	Southern most radium spot
B	1382855	479925	JUL-31-92	1.02E+04	5.10E+03	Radium spot adjacent to Sewage Treatment Plant drive
B	1382883	479925	JUL-30-92	1.10E+04	5.50E+03	Radium spot adjacent to Sewage Treatment Plant drive
B	1382870	479950	JUL-31-92	1.14E+04	5.70E+03	Radium spot adjacent to Sewage Treatment Plant drive
B	1382883	479950	JUL-30-92	1.01E+04	5.05E+03	Radium spot adjacent to Sewage Treatment Plant drive
B	1382923	480000	JUL-28-92	1.06E+04	5.30E+03	West of Sewage Treatment Plant
B	1382920	480025	JUL-30-92	1.29E+04	6.45E+03	West of Sewage Treatment Plant
B	1383300	480025	AUG-03-92	1.14E+04	5.70E+03	Cow path
B	1382880	480050	JUL-30-92	1.03E+04	5.15E+03	West of Sewage Treatment Plant
B	1382880	480075	JUL-30-92	1.05E+04	5.25E+03	West of Sewage Treatment Plant
B	1382870	480125	JUL-30-92	1.00E+04	5.00E+03	Highest of 2 readings - West of Sewage Treatment Plant
B	1382760	480150	JUL-30-92	1.02E+04	5.10E+03	Highest of 3 readings - West of Sewage Treatment Plant
B	1383300	480150	AUG-03-92	1.42E+04	7.10E+03	Cow path
B	1382910	480175	JUL-30-92	1.00E+04	5.00E+03	West of Sewage Treatment Plant
B	1383127	480205	JUL-29-92	1.00E+04	5.00E+03	North of Sewage Treatment Plant
B	1382987	480210	JUL-30-92	1.05E+04	5.25E+03	Along the fence - North of Sewage Treatment Plant
B	1383121	480225	JUL-29-92	1.01E+04	5.05E+03	North of Sewage Treatment Plant
B	1383000	480246	JUL-28-92	1.01E+04	5.05E+03	North of Sewage Treatment Plant
B	1383040	480275	JUL-29-92	1.01E+04	5.05E+03	North of Sewage Treatment Plant
B	1383100	480280	JUL-27-92	1.03E+04	5.15E+03	North of Sewage Treatment Plant
B	1383075	480297	JUL-29-92	1.01E+04	5.05E+03	Highest of 2 readings - North of Sewage Treatment Plant
B	1383050	480301	JUL-29-92	1.01E+04	5.05E+03	North of Sewage Treatment Plant
B	1383060	480306	JUL-29-92	1.01E+04	5.05E+03	Highest of 3 readings - North of Sewage Treatment Plant

B = Boundary Point for Soil Excavation

SHIELDED SPA-3 (#1793) READINGS FOR RADIATION SURVEY
TO DETERMINE EXCAVATION BOUNDARY OF 300 pCi/g TOTAL URANIUM
IN SOILS AROUND THE SEWAGE TREATMENT PLANT

E Coord	N Coord	Date	SPA-3 Reading (cp2m)	SPA-3 Reading (cpm)	Comments
1382940	480000	8-26-92	5.13E+03	2.57E+03	Along west rad rope inside STP
1382940	479925	8-26-92	6.46E+03	3.23E+03	Along west rad rope inside STP
1382925	480000	8-26-92	6.58E+03	3.29E+03	Gravel
1382940	480025	8-26-92	6.67E+03	3.34E+03	Along west rad rope inside STP
1382925	479915	8-26-92	7.16E+03	3.58E+03	Gravel
1382925	479975	8-26-92	7.52E+03	3.76E+03	Gravel
1383310	480075	8-25-92	7.57E+03	3.79E+03	Approximately 5 feet east of property fence
1382940	479950	8-26-92	7.67E+03	3.84E+03	Along west rad rope inside STP
1383325	479900	8-25-92	7.68E+03	3.84E+03	Approximately 5 feet east of property fence
1383310	480100	8-25-92	7.90E+03	3.95E+03	Approximately 5 feet east of property fence
1382940	479975	8-26-92	7.92E+03	3.96E+03	Along west rad rope inside STP
1383310	479975	8-25-92	8.05E+03	4.03E+03	Approximately 5 feet east of property fence
1383310	479925	8-25-92	8.12E+03	4.06E+03	Approximately 5 feet east of property fence
1383310	480125	8-25-92	8.35E+03	4.18E+03	Approximately 5 feet east of property fence
1383310	480170	8-25-92	8.45E+03	4.23E+03	Approximately 5 feet east of property fence
1383270	479975	8-25-92	8.52E+03	4.26E+03	
1382925	479900	8-26-92	8.59E+03	4.30E+03	Gravel
1383310	480150	8-25-92	8.68E+03	4.34E+03	Approximately 5 feet east of property fence
1383310	479950	8-25-92	8.77E+03	4.39E+03	Approximately 5 feet east of property fence
1383310	480000	8-25-92	8.84E+03	4.42E+03	Approximately 5 feet east of property fence
1382917	479900	8-27-92	9.03E+03	4.52E+03	Along Fence West of STP
1382940	480050	8-26-92	9.19E+03	4.60E+03	Along west rad rope inside STP
1382920	480000	8-27-92	9.68E+03	4.84E+03	Along Fence West of STP
1383310	480025	8-25-92	9.80E+03	4.90E+03	Approximately 5 feet east of property fence
1383310	480050	8-25-92	1.01E+04	5.05E+03	Approximately 5 feet east of property fence
1383273	479975	8-25-92	1.01E+04	5.05E+03	
1382921	479975	8-27-92	1.04E+04	5.20E+03	Along Fence West of STP
1382925	480200	8-26-92	1.06E+04	5.30E+03	North of Incinerator (inside STP)
1382921	479925	8-27-92	1.07E+04	5.35E+03	Along Fence West of STP
1382917	479925	8-27-92	1.10E+04	5.50E+03	Along Fence West of STP
1383120	480200	8-26-92	1.12E+04	5.60E+03	Regulated Area Northeast of Incinerator
1383275	479950	8-25-92	1.15E+04	5.75E+03	
1382975	480200	8-26-92	1.16E+04	5.80E+03	North of Incinerator (inside STP)
1383275	479970	8-25-92	1.17E+04	5.85E+03	
1383100	480200	8-26-92	1.18E+04	5.90E+03	Regulated Area Northeast of Incinerator
1383275	479925	8-25-92	1.20E+04	6.00E+03	
1383035	480100	8-26-92	1.21E+04	6.05E+03	Across Driveway from Incinerator
1382921	480110	8-27-92	1.21E+04	6.05E+03	Along Fence West of STP
1383100	480174	8-26-92	1.22E+04	6.10E+03	Regulated Area Northeast of Incinerator
1382925	480025	8-26-92	1.22E+04	6.10E+03	Gravel
1383100	480160	8-26-92	1.23E+04	6.15E+03	Regulated Area Northeast of Incinerator
1382923	480110	8-27-92	1.23E+04	6.15E+03	Along Fence West of STP
1382923	480100	8-27-92	1.24E+04	6.20E+03	Along Fence West of STP
1383072	480200	8-26-92	1.25E+04	6.25E+03	North of Incinerator (inside STP)
1383275	479975	8-25-92	1.26E+04	6.30E+03	
1383085	480200	8-26-92	1.27E+04	6.35E+03	Regulated Area Northeast of Incinerator
1383085	480160	8-26-92	1.30E+04	6.50E+03	Regulated Area Northeast of Incinerator
1382921	480025	8-27-92	1.30E+04	6.50E+03	Along Fence West of STP
1382925	479950	8-26-92	1.31E+04	6.55E+03	Gravel
1383085	480150	8-26-92	1.32E+04	6.60E+03	Across Driveway from Incinerator
1383072	480165	8-26-92	1.34E+04	6.70E+03	North of Incinerator (inside STP)
1382921	479950	8-27-92	1.35E+04	6.75E+03	Along Fence West of STP
1383000	480200	8-26-92	1.36E+04	6.80E+03	North of Incinerator (inside STP)
1838050	480200	8-26-92	1.36E+04	6.80E+03	North of Incinerator (inside STP)
1382950	480200	8-26-92	1.38E+04	6.90E+03	North of Incinerator (inside STP)
1383030	480100	8-26-92	1.38E+04	6.90E+03	Across Driveway from Incinerator
1382921	480100	8-27-92	1.38E+04	6.90E+03	Along Fence West of STP
1383275	479973	8-25-92	1.39E+04	6.95E+03	

SHIELDED SPA-3 (#1793) READINGS FOR RADIATION SURVEY
 TO DETERMINE EXCAVATION BOUNDARY OF 300 pCi/g TOTAL URANIUM
 IN SOILS AROUND THE SEWAGE TREATMENT PLANT

	E Coord	N Coord	Date	SPA-3 Reading (cp2m)	SPA-3 Reading (cpm)	Comments
	1383025	480200	8-26-92	1.42E+04	7.10E+03	North of Incinerator (inside STP)
	1383015	480080	8-26-92	1.43E+04	7.15E+03	Across Driveway from Incinerator
	1383275	479870	8-25-92	1.43E+04	7.15E+03	
	1383280	479975	8-25-92	1.46E+04	7.30E+03	
	1383029	480100	8-26-92	1.47E+04	7.35E+03	Across Driveway from Incinerator
	1382925	480182	8-26-92	1.47E+04	7.35E+03	North of Incinerator (inside STP)
	1382912	480129	8-27-92	1.47E+04	7.35E+03	Along Fence West of STP
	1383265	479900	8-25-92	1.49E+04	7.45E+03	
	1382925	480050	8-26-92	1.53E+04	7.65E+03	Gravel
	1382922	480079	8-27-92	1.53E+04	7.65E+03	Along Fence West of STP
	1382921	480072	8-27-92	1.54E+04	7.70E+03	Along Fence West of STP
	1382921	480050	8-27-92	1.54E+04	7.70E+03	Along Fence West of STP
	1383084	480150	8-26-92	1.54E+04	7.70E+03	Across Driveway from Incinerator
	1383000	480190	8-26-92	1.55E+04	7.75E+03	North of Incinerator (inside STP)
	1383275	479871	8-25-92	1.55E+04	7.75E+03	
	1383028	480100	8-26-92	1.56E+04	7.80E+03	Across Driveway from Incinerator
	1383050	480125	8-26-92	1.56E+04	7.80E+03	Across Driveway from Incinerator
	1383275	479988	8-25-92	1.57E+04	7.85E+03	
	1382912	480124	8-27-92	1.57E+04	7.85E+03	Along Fence West of STP
	1383275	479990	8-25-92	1.58E+04	7.90E+03	
	1382921	480000	8-27-92	1.58E+04	7.90E+03	Along Fence West of STP
	1383015	480082	8-26-92	1.58E+04	7.90E+03	Across Driveway from Incinerator
	1383000	480188	8-26-92	1.59E+04	7.95E+03	
	1383275	479910	8-25-92	1.60E+04	8.00E+03	
	1383278	479975	8-25-92	1.62E+04	8.10E+03	
	1383271	479900	8-25-92	1.65E+04	8.25E+03	
	1383923	480077	8-27-92	1.65E+04	8.25E+03	Along Fence West of STP
	1383274	479975	8-25-92	1.66E+04	8.30E+03	
	1382912	480175	8-27-92	1.66E+04	8.30E+03	Along Fence West of STP
	1382925	480181	8-26-92	1.68E+04	8.40E+03	North of Incinerator (inside STP)
B	1383275	479872	8-25-92	1.71E+04	8.55E+03	South Boundary #2
B	1382921	480150	8-27-92	1.71E+04	8.55E+03	Along Fence West of STP
B	1383060	480165	8-26-92	1.72E+04	8.60E+03	East Incinerator Boundary
B	1383275	479974	8-25-92	1.73E+04	8.65E+03	South Boundary #1
	1383275	479873	8-25-92	1.75E+04	8.75E+03	
B	1383270	479900	8-25-92	1.75E+04	8.75E+03	West Boundary #2
B	1383275	479909	8-25-92	1.76E+04	8.80E+03	North Boundary #2
B	1383027	480100	8-26-92	1.78E+04	8.90E+03	Across Driveway from Incinerator - Boundary for #
	1383275	479907	8-25-92	1.79E+04	8.95E+03	
	1383275	479874	8-25-92	1.80E+04	9.00E+03	
	1383275	479908	8-25-92	1.82E+04	9.10E+03	
B	1383000	480185	8-26-92	1.83E+04	9.15E+03	North Incinerator Boundary
	1383275	479906	8-25-92	1.84E+04	9.20E+03	
	1383275	479900	8-25-92	1.84E+04	9.20E+03	Point #2 (SE)
	1383050	480165	8-26-92	1.85E+04	9.25E+03	North of Incinerator (inside STP)
	1383275	479900	8-25-92	1.85E+04	9.25E+03	
B	1383277	479975	8-25-92	1.85E+04	9.25E+03	East Boundary #1
	1383055	480165	8-26-92	1.88E+04	9.40E+03	
B	1383275	479987	8-25-92	1.88E+04	9.40E+03	North Boundary #1
B	1383083	480150	8-26-92	1.89E+04	9.45E+03	Across Driveway from Incinerator - Boundary for #
B	1383049	480125	8-26-92	1.89E+04	9.45E+03	Across Driveway from Incinerator - Boundary for #
B	1382915	480124	8-27-92	1.89E+04	9.45E+03	Along Fence West of STP
	1383275	479905	8-25-92	1.91E+04	9.55E+03	
	1383275	479875	8-25-92	1.93E+04	9.65E+03	
	1383075	480145	8-26-92	1.94E+04	9.70E+03	Across Driveway from Incinerator
B	1382923	480075	8-27-92	1.94E+04	9.70E+03	Along Fence West of STP - Hot Spot
B	1382921	480179	8-27-92	1.95E+04	9.75E+03	Along Fence West of STP
B	1382923	480076	8-27-92	1.96E+04	9.80E+03	Along Fence West of STP - Hot Spot

SHIELDED SPA-3 (#1793) READINGS FOR RADIATION SURVEY
 TO DETERMINE EXCAVATION BOUNDARY OF 300 pCi/g TOTAL URANIUM
 IN SOILS AROUND THE SEWAGE TREATMENT PLANT

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	E Coord	N Coord	Date	SPA-3 Reading (cp2m)	SPA-3 Reading (cpm)	Comments
B	1382923	480072	8-27-92	1.98E+04	9.90E+03	Along Fence West of STP - Hot Spot
	1383275	479980	8-25-92	2.01E+04	1.01E+04	
	1383290	480184	8-26-92	2.05E+04	1.03E+04	In Contaminated Area along East STP Fence
	1383025	480100	8-26-92	2.09E+04	1.05E+04	Across Driveway from Incinerator - Point #3
	1383000	480180	8-26-92	2.10E+04	1.05E+04	North of Incinerator (inside STP)
	1382925	480175	8-26-92	2.14E+04	1.07E+04	North of Incinerator (inside STP)
	1383275	479895	8-25-92	2.16E+04	1.08E+04	
	1382925	479925	8-26-92	2.19E+04	1.10E+04	Gravel - Flagged location, but not part of boundary
B	1383275	479975	8-25-92	2.23E+04	1.12E+04	Point #1 (SE) - West Boundary #1
B	1382921	480125	8-27-92	2.27E+04	1.14E+04	Along Fence West of STP
B	1382925	480180	8-26-92	2.28E+04	1.14E+04	West Incinerator Boundary
	1383290	480005	8-26-92	2.31E+04	1.16E+04	In Contaminated Area along East STP Fence
B	1382919	480125	8-27-92	2.36E+04	1.18E+04	Along Fence West of STP
B	1382921	480130	8-27-92	2.39E+04	1.20E+04	Along Fence West of STP
	1383060	480145	8-26-92	2.43E+04	1.22E+04	Across Driveway from Incinerator
	1383275	479880	8-25-92	2.47E+04	1.24E+04	
	1383280	479900	8-25-92	2.53E+04	1.27E+04	
B	1383015	480084	8-26-92	2.53E+04	1.27E+04	Across Driveway from Incinerator - Boundary for #3
	1382975	480165	8-26-92	2.56E+04	1.28E+04	North of Incinerator (inside STP)
	1383275	479885	8-25-92	2.63E+04	1.32E+04	
	1383290	480175	8-26-92	2.65E+04	1.33E+04	In Contaminated Area along East STP Fence
	1383050	480139	8-26-92	2.68E+04	1.34E+04	Across Driveway from Incinerator
	1383070	480145	8-26-92	2.75E+04	1.38E+04	Across Driveway from Incinerator
	1383000	480175	8-26-92	2.87E+04	1.44E+04	North of Incinerator (inside STP)
	1382940	480075	8-26-92	2.99E+04	1.50E+04	Along west rad rope inside STP
	1382925	480150	8-26-92	3.11E+04	1.56E+04	West of Incinerator (inside STP)
	1383025	480165	8-26-92	3.17E+04	1.59E+04	North of Incinerator (inside STP)
	1383045	480125	8-26-92	3.18E+04	1.59E+04	Across Driveway from Incinerator
	1383080	480150	8-26-92	3.31E+04	1.66E+04	Across Driveway from Incinerator
	1383275	479890	8-25-92	3.36E+04	1.68E+04	
	1383015	480085	8-26-92	3.49E+04	1.75E+04	Across Driveway from Incinerator
	1383290	480150	8-26-92	3.57E+04	1.79E+04	In Contaminated Area along East STP Fence
	1383025	480117	8-26-92	3.62E+04	1.81E+04	Across Driveway from Incinerator
	1382925	480100	8-26-92	3.63E+04	1.82E+04	Gravel
	1382925	480110	8-26-92	3.63E+04	1.82E+04	West of Incinerator (inside STP)
	1382940	480090	8-26-92	3.68E+04	1.84E+04	Along west rad rope inside STP
	1383000	480165	8-26-92	3.80E+04	1.90E+04	North of Incinerator (inside STP)
B	1383285	479900	8-25-92	3.85E+04	1.93E+04	East Boundary #2
	1383290	480125	8-26-92	3.92E+04	1.96E+04	In Contaminated Area along East STP Fence
	1383275	479985	8-25-92	4.06E+04	2.03E+04	
	1383031	480125	8-26-92	4.12E+04	2.06E+04	Across Driveway from Incinerator
	1383290	480025	8-26-92	4.30E+04	2.15E+04	In Contaminated Area along East STP Fence
	1383290	480100	8-26-92	4.46E+04	2.23E+04	In Contaminated Area along East STP Fence
	1383290	480075	8-26-92	5.92E+04	2.96E+04	In Contaminated Area along East STP Fence
	1383290	480050	8-26-92	6.78E+04	3.39E+04	In Contaminated Area along East STP Fence
B	1382925	480075	8-26-92	7.08E+04	3.54E+04	Gravel - Concrete Slabs - South Incinerator Boundary
	1382925	480125	8-26-92	7.64E+04	3.82E+04	West of Incinerator (inside STP)

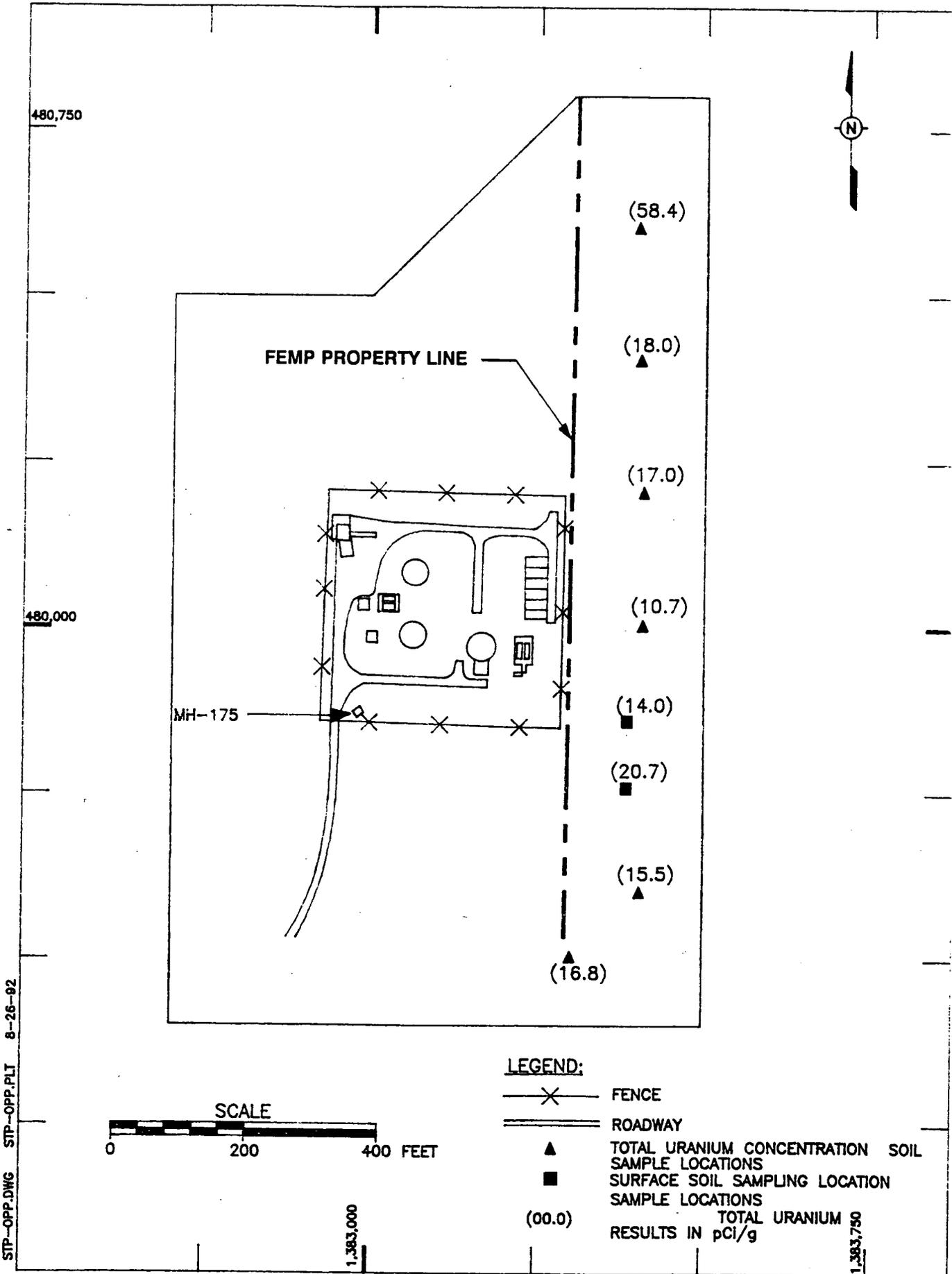
3 = Boundary point for soil excavation at 300 pCi/g total uranium

3/31/92 stpsurv3.wk3

**SHIELDED SPA-3 (#1793) READINGS FOR RADIATION SURVEY
TO DETERMINE EXCAVATION BOUNDARY OF 300 pCi/g TOTAL URANIUM
IN SOILS AROUND THE SEWAGE TREATMENT PLANT**

	E Coord	N Coord	Date	SPA-3 Reading (cp2m)	SPA-3 Reading (cpm)	Comments
B	1383275	479872	8-25-92	1.71E+04	8.55E+03	South Boundary #2
B	1383270	479900	8-25-92	1.75E+04	8.75E+03	West Boundary #2
B	1383285	479900	8-25-92	3.85E+04	1.93E+04	East Boundary #2
B	1383275	479909	8-25-92	1.76E+04	8.80E+03	North Boundary #2
B	1383275	479974	8-25-92	1.73E+04	8.65E+03	South Boundary #1
B	1383275	479975	8-25-92	2.23E+04	1.12E+04	Point #1 (SE) - West Boundary #1
B	1383277	479975	8-25-92	1.85E+04	9.25E+03	East Boundary #1
B	1383275	479987	8-25-92	1.88E+04	9.40E+03	North Boundary #1
B	1382923	480072	8-27-92	1.98E+04	9.90E+03	Along Fence West of STP - Hot Spot
B	1382923	480075	8-27-92	1.94E+04	9.70E+03	Along Fence West of STP - Hot Spot
B	1382925	480075	8-26-92	7.08E+04	3.54E+04	Gravel - Concrete Slabs - South Incinerator Boi
B	1382923	480076	8-27-92	1.96E+04	9.80E+03	Along Fence West of STP - Hot Spot
B	1383015	480084	8-26-92	2.53E+04	1.27E+04	Across Driveway from Incinerator - Boundary fo
B	1383027	480100	8-26-92	1.78E+04	8.90E+03	Across Driveway from Incinerator - Boundary fo
B	1382915	480124	8-27-92	1.89E+04	9.45E+03	Along Fence West of STP
B	1382919	480125	8-27-92	2.36E+04	1.18E+04	Along Fence West of STP
B	1382921	480125	8-27-92	2.27E+04	1.14E+04	Along Fence West of STP
B	1383049	480125	8-26-92	1.89E+04	9.45E+03	Across Driveway from Incinerator - Boundary fo
B	1382921	480130	8-27-92	2.39E+04	1.20E+04	Along Fence West of STP
B	1382921	480150	8-27-92	1.71E+04	8.55E+03	Along Fence West of STP
B	1383083	480150	8-26-92	1.89E+04	9.45E+03	Across Driveway from Incinerator - Boundary fo
B	1383060	480165	8-26-92	1.72E+04	8.60E+03	East Incinerator Boundary
B	1382921	480179	8-27-92	1.95E+04	9.75E+03	Along Fence West of STP
B	1382925	480180	8-26-92	2.28E+04	1.14E+04	West Incinerator Boundary
B	1383000	480185	8-26-92	1.83E+04	9.15E+03	North Incinerator Boundary

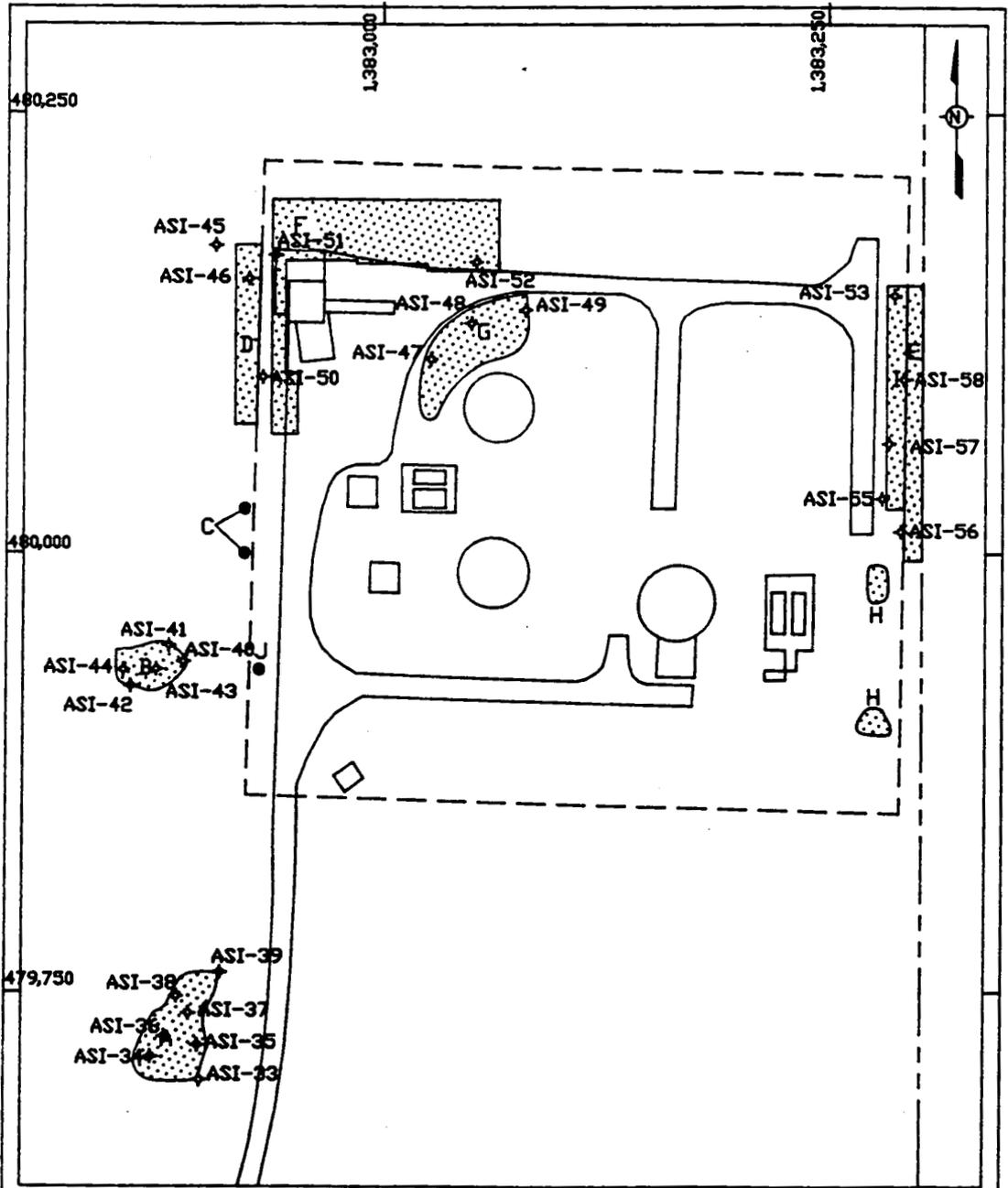
APPENDIX III



OFF-PROPERTY PRELIMINARY TOTAL URANIUM RESULTS

FIGURE 1

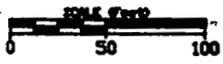
APPENDIX IV



LEGEND

- ASI-39 + POST EXCAVATION SAMPLE LOCATIONS
- FENCE
- PROPERTY LINE

- A Maximum depth 18'
- B Maximum depth 18'
- C Maximum depth 6'
- D Maximum depth 12'
- E Maximum depth 24'
- F Maximum depth 24'
- G Maximum depth 6'
- H Maximum depth 12'
- I Maximum depth 12'
- J Maximum depth 6'



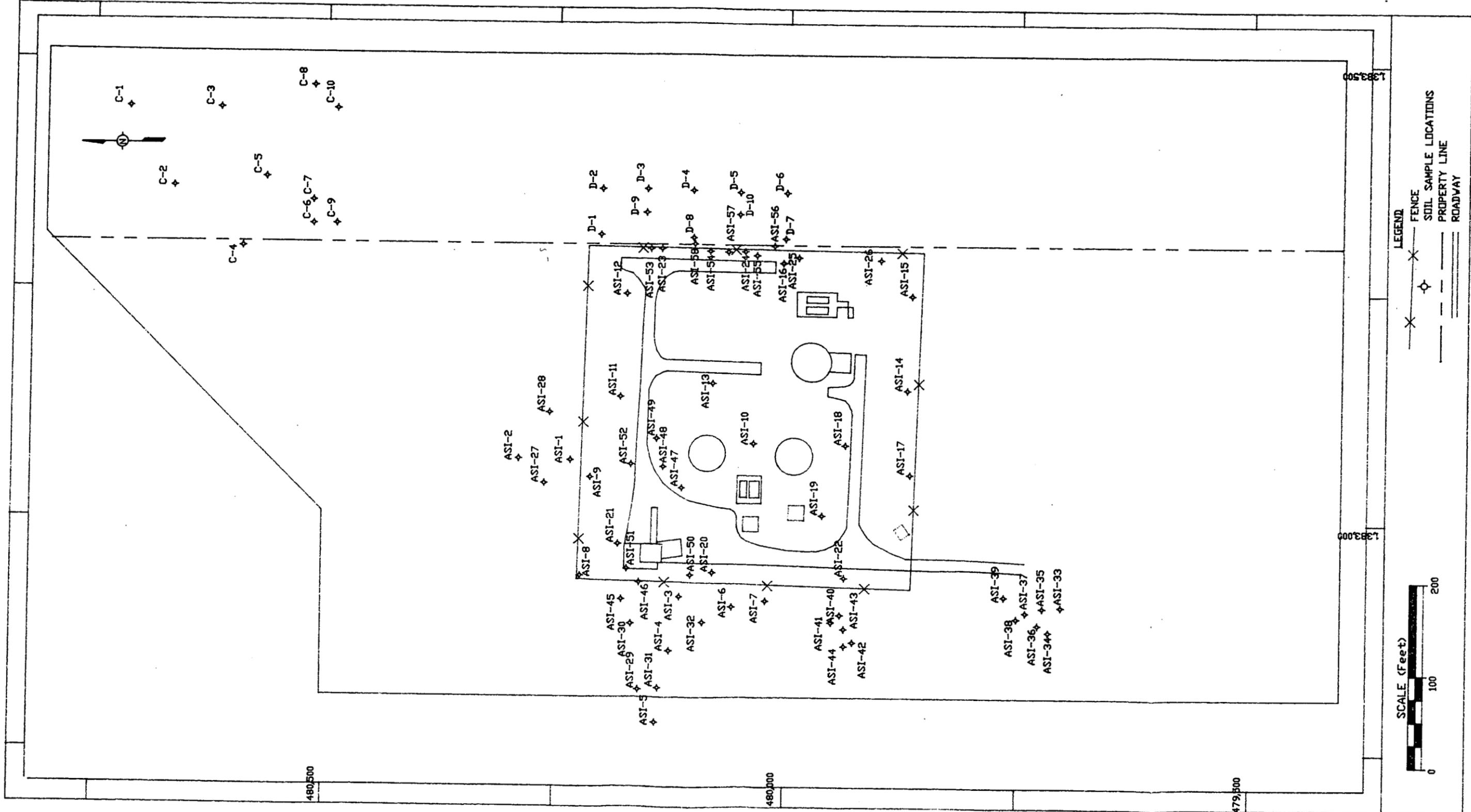
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EXCAVATION BOUNDARIES

FIGURE 1

TABLE 1, ON-PROPERTY EXCAVATION QUANTITIES, DEPTHS AND ACTION LEVELS

EXCAVATED AREA	TOTAL # OF BOXES/AREA	ACTION LEVEL	MAXIMUM DEPTH/AREA
A	34	100 pCi/g	18"
B	20	100 pCi/g	18"
C	1	300 pCi/g	6"
D	13	300 pCi/g	12"
E	30	100 pCi/g	24"
F	44	300 pCi/g	24"
G	13	300 pCi/g	6"
H	7	300 pCi/g	12"
I	15	300 pCi/g	12"
J	1	300 pCi/g	6"
TOTAL	178		



SOIL SAMPLE LOCATIONS

TABLE 2 - ADDITIONAL ON-PROPERTY SOIL SAMPLING DATA

SAMPLE #	TOTAL U pCi/g
1 (0-2)	166.9
1 (2-4)	165.5
1 (4-6)	49.3
1 (6-12)	<7.4
1 (12-18)	<7.4
2 (0-2)	152.0
2 (2-4)	136.5
2 (4-6)	52.7
2 (6-12)	<7.4
2 (12-18)	<7.4
3 (0-2)	79.7
3 (2-4)	57.4
3 (4-6)	56.8
3 (6-12)	18.9
3 (12-18)	23.0
4 (0-2)	31.1
4 (2-4)	20.3
4 (4-6)	12.2
4 (6-12)	<7.4
4 (12-18)	<7.4
5 (0-2)	164.9
5 (2-4)	152.7
5 (4-6)	115.5
5 (6-12)	23.0
5 (12-18)	<7.4
6 (0-2)	158.8
6 (2-4)	110.8
6 (4-6)	41.2
6 (6-12)	13.5
6 (12-18)	<7.4

SAMPLE #	TOTAL U pCi/g
7 (0-2)	97.3
7 (2-4)	92.6
7 (4-6)	60.8
7 (6-12)	13.5
7 (12-18)	9.5
8 (0-2)	207.4
8 (2-4)	141.9
8 (4-6)	30.4
8 (6-12)	<7.4
8 (12-18)	<7.4
8 (18-24)	172.3
9 (0-2)	153.4
9 (2-4)	114.2
9 (4-6)	120.3
9 (6-12)	33.8
9 (12-18)	<7.4
9 (18-24)	<7.4
10 (0-2)	113.5
10 (2-4)	77.0
10 (4-6)	36.5
10 (6-12)	16.2
10 (12-18)	9.5
10 (18-24)	<7.4
11 (0-2)	133.1
11 (2-4)	93.2
11 (4-6)	54.1
11 (6-12)	18.9
11 (12-18)	<7.4
11 (18-24)	<7.4
12 (0-2)	108.1

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TABLE 2 - ADDITIONAL ON-PROPERTY SOIL SAMPLING DATA

SAMPLE #	TOTAL U pCi/g
12 (2-4)	52.0
12 (4-6)	<7.4
12 (6-12)	91.2
12 (12-18)	<7.4
12 (18-24)	<7.4
13 (0-2)	56.8
13 (2-4)	50.7
13 (4-6)	32.4
13 (6-12)	11.5
13 (12-18)	<7.4
13 (18-24)	<7.4
14 (0-2)	67.6
14 (2-4)	58.1
14 (4-6)	41.9
14 (6-12)	15.5
14 (12-18)	<7.4
14 (18-24)	<7.4
15 (0-2)	75.7
15 (2-4)	70.3
15 (4-6)	37.8
15 (6-12)	14.2
15 (12-18)	<7.4
15 (18-24)	<7.4
16 (0-2)	66.2
16 (2-4)	70.3
16 (4-6)	68.2
16 (6-12)	28.4
16 (12-18)	12.2
16 (18-24)	<7.4
17 (0-2)	74.3

SAMPLE #	TOTAL U pCi/g
17 (2-4)	73.7
17 (4-6)	9.5
17 (6-12)	56.8
17 (12-18)	<7.4
17 (18-24)	<7.4
18 (0-2)	51.4
18 (2-4)	42.6
18 (4-6)	42.6
18 (6-12)	12.8
18 (12-18)	<7.4
18 (18-24)	<7.4
19 (0-2)	<7.4
19 (2-4)	<7.4
19 (4-6)	<7.4
19 (6-12)	<7.4
19 (12-18)	<7.4
19 (18-24)	<7.4
20 (18-24)	206.1
20 (24-30)	209.5
20 (30-36)	67.6
20 (36-42)	39.2
20 (42-48)	33.1
21 (12-18)	83.8
21 (18-24)	<7.4
21 (24-30)	<7.4
21 (30-36)	<7.4
21 (36-42)	<7.4
21 (42-48)	<7.4
22 (0-6)	228.4
22 (6-12)	104.1

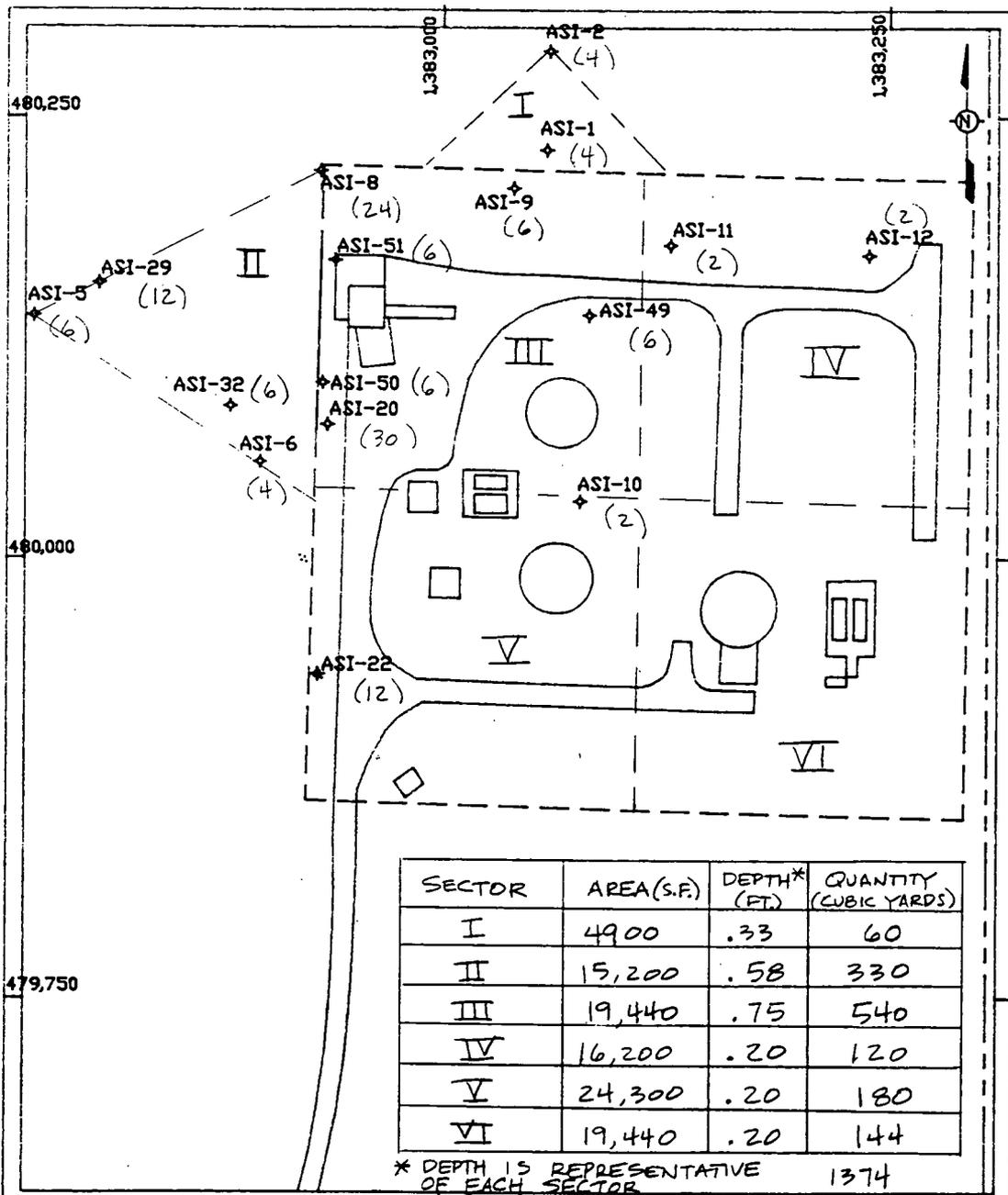
TABLE 4 - ON-PROPERTY POST-EXCAVATION VERIFICATION SOIL SAMPLING DATA

SAMPLE #	TOTAL U pCi/g
33 (0-6)	<7.4
34 (0-6)	<7.4
35 (0-6)	<7.4
36 (0-6)	<7.4
37 (0-6)	<7.4
38 (0-6)	<7.4
39 (0-6)	<7.4
40 (0-6)	<7.4
41 (0-6)	<7.4
42 (0-6)	<7.4
43 (0-6)	<7.4
44 (0-6)	<7.4
45 (0-6)	99.3
46 (0-6)	77.7
47 (0-6)	53.4
48 (0-6)	88.5
49 (0-6)	190.5
50 (0-6)	248
51 (0-6)	250
52 (0-6)	72.3
53 (0-6)	34.5
54 (0-6)	52.7
55 (0-6)	45.9
56 (0-6)	11.5
57 (0-6)	<7.4
58 (0-6)	<7.4

TABLE 3 - ADDITIONAL OFF-PROPERTY SOIL SAMPLING DATA

BORING #	TOTAL U pCi/g
C-1 (0-2)	47.3
C-1 (2-4)	46.0
C-1 (4-6)	47.3
C-2 (0-2)	79.7
C-2 (2-4)	74.3
C-2 (4-6)	70.3
C-3 (0-2)	25.7
C-3 (2-4)	27.0
C-3 (4-6)	28.4
C-4 (0-2)	98.0
C-4 (2-4)	75.0
C-4 (4-6)	25.0
C-5 (0-2)	67.6
C-5 (2-4)	45.3
C-5 (4-6)	34.5
C-6 (0-2)	14.9
C-6 (2-4)	16.2
C-6 (4-6)	16.9
C-7 (0-2)	17.6
C-7 (2-4)	20.3
C-7 (4-6)	13.5
C-8 (0-2)	16.2
C-8 (2-4)	21.6
C-8 (4-6)	25.0
C-9 (0-2)	56.8
C-9 (2-4)	54.1
C-9 (4-6)	27.0
C-10 (0-2)	67.6
C-10 (2-4)	26.4
C-10 (4-6)	61.5

BORING #	TOTAL U pCi/g
D-1 (0-2)	33.1
D-1 (2-4)	23.6
D-1 (4-6)	18.9
D-2 (0-2)	60.1
D-2 (2-4)	43.2
D-2 (4-6)	56.8
D-3 (0-2)	33.8
D-3 (2-4)	24.3
D-3 (4-6)	21.6
D-4 (0-2)	14.9
D-4 (2-4)	13.5
D-4 (4-6)	13.5
D-5 (0-2)	14.9
D-5 (2-4)	14.2
D-5 (4-6)	11.5
D-6 (0-2)	20.9
D-6 (2-4)	23.6
D-6 (4-6)	30.4
D-7 (0-2)	8.1
D-7 (2-4)	7.4
D-7 (4-6)	<7.4
D-8 (0-2)	12.8
D-8 (2-4)	14.2
D-8 (4-6)	15.5
D-9 (0-2)	7.4
D-9 (2-4)	7.4
D-9 (4-6)	9.5
D-10 (0-2)	<7.4
D-10 (2-4)	<7.4
D-10 (4-6)	<7.4



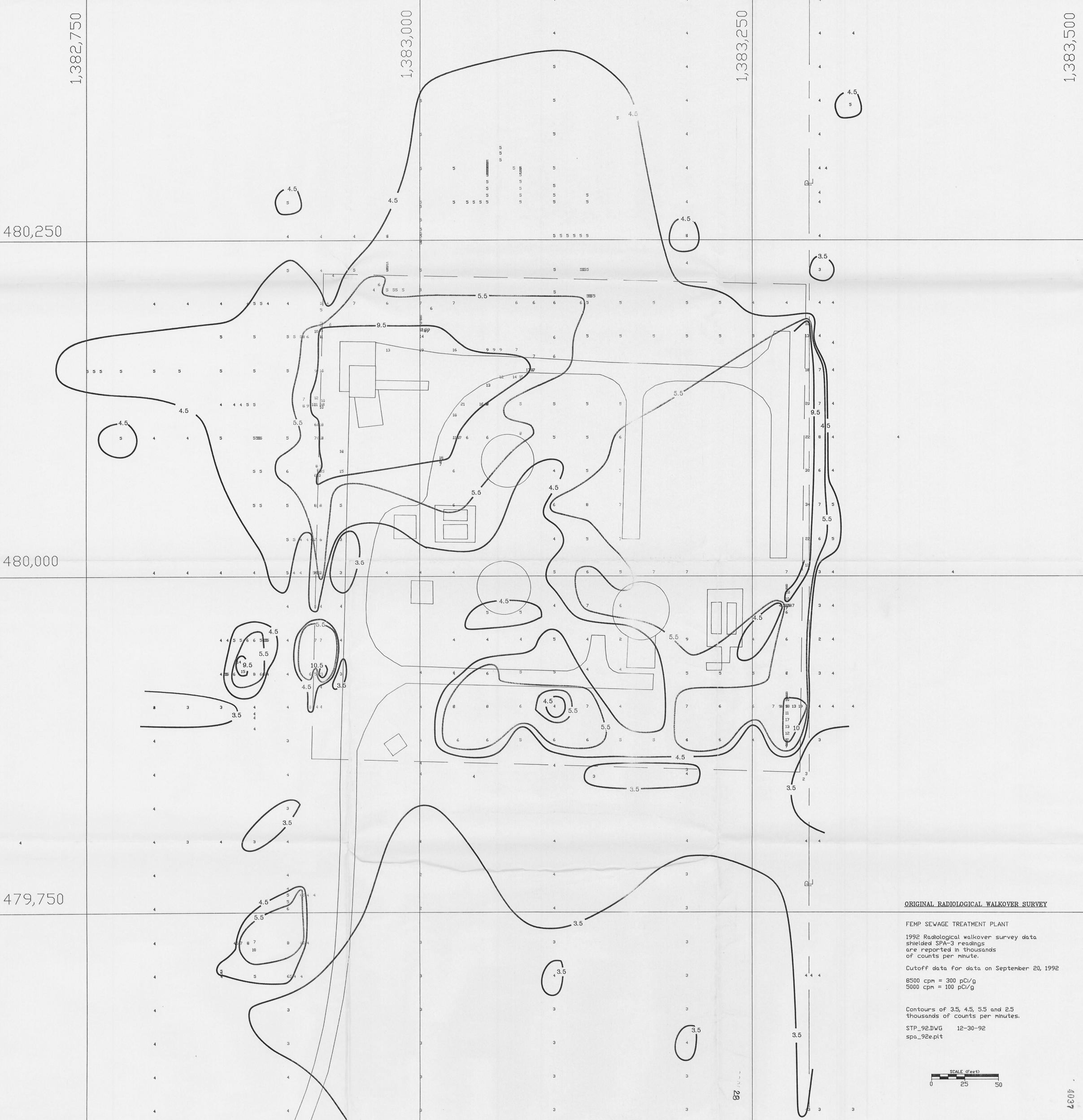
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SAMPLE LOCATIONS EXCEEDING 100 pCi/g TOTAL URANIUM
FIGURE 3

TABLE 5, DEPTH OF 100 pCi/g TOTAL URANIUM (FIGURE 3)

SAMPLE #	DEPTH
1	4"
2	4"
5	6"
6	4"
8	24"
9	6"
10	2"
11	2"
12	2"
20	30"
22	12"
29	12"
32	6"
49	6"
50	6"
51	6"



ORIGINAL RADIOLOGICAL WALKOVER SURVEY

FEMP SEWAGE TREATMENT PLANT
 1992 Radiological walkover survey data
 shielded SPA-3 readings
 are reported in thousands
 of counts per minute.
 Cutoff data for data on September 20, 1992
 8500 cpm = 300 pCi/g
 5000 cpm = 100 pCi/g
 Contours of 3.5, 4.5, 5.5 and 2.5
 thousands of counts per minutes.
 STP_92.DWG 12-30-92
 spa_92e.plt

