2.0 SUMMARY AND CONCLUSIONS

Analyses of the ambient gamma exposure rates show the remediated areas are statistically indistinguishable from background readings elsewhere in SSFL Area IV. The entire site averaged 15.6 μR/hr with maximum readings up to 21.4 μR/hr occurring next to or on the surrounding rock formations, which is consistent with data and results from References 2 and 3, data being accumulated in the Area IV radiological characterization survey (References 5 and 6) and EPA measurements taken during the off-site multimedia sampling program (Reference 7). Table 1 provides the summarized data from the survey.

Table 1. Data Analysis Results Summary

Location	No. of Data Points	Mean (μR/hr)	Std. Dev. (μR/hr)	μR/hr		Ref. Fig. No.	Page No.
				Min	Max		
All areas	2316	15.6	1.5	10.4	21.0	7	21
Lower & upper pond basins	419	14.6	0.9	12.2	17.2	8	22
Lower & upper pond basins excluded	1897	15.7	1.5	10.4	21.0	9	23
Upper pond basin	244	14.2	0.7	12.2	15.8	10	24
Lower pond basin	175	15.3	0.7	13.2	17.2	11	25
Grid #1	16	17.0	0.6	16.3	18.6	13	27
Grid #2	17	17.0	0.4	16.2	17.6	14	28
Grid #4	51	16.7	0.8	15.2	19.0	15	29
Grid #5	112	16.6	0.6	15.5	18.6	16	30
Grid #6	70	17.2	0.4	16.1	18.2	17	31
Grid #7	Inaccessible or not in survey scope					18	32
Grid #8	50	18.7	0.9	17.2	21.4	19	33
Grid #9	82	16.6	0.9	15.1	21.4	20	34
Grid #10	103	15.2	0.8	11.3	16.8	21	35
Grid #11	37	16.0	0.4	14.9	16.8	22	36
Grid #13	20	18.4	0.7	17.8	19.6	23	37
Grid #14	61	17.0	1.1	15.2	19.6	24	38
Grid #15	110	17.1	1.1	14.9	19.7	25	39
Grid #16	113	16.3	0.4	15.5	17.2	26	40
Grid #17	31	16	0.4	15.3	16.9	27	41

Table 1. Data Analysis Results Summary

Location	No. of Data Points	Mean (μR/hr)	Std. Dev. (μR/hr)	μR/hr		Ref. Fig. No.	Page No.
				Min	Max		
Grid #21	13	17.2	1.0	15.8	18.6	28	42
Grid #22	118	15.6	0.7	13.9	18.4	29	43
Grid #23	115	14.7	0.7	13.3	16.6	30	44
Grid #24	61	16.0	0.3	15.1	16.7	31	45
Grid #29	90	16.1	0.9	14.9	19.4	32	46
Grid #30	121	15.2	0.6	13.7	17.6	33	47
Grid #31	96	14.3	0.7	12.0	15.6	34	48
Grid #32	10	16.2	0.4	15.7	16.8	35	49
Grid #33	33	16.8	0.4	16.2	18.1	36	50
Grid #36	75	16.4	1.1	14.5	19.8	37	51
Grid #37	121	15.6	0.6	14.5	17.4	38	52
Grid #38	121	14.6	0.7	13.2	17.2	39	53
Grid #39	86	14.2	0.7	12.5	15.4	40	54
Grid #40	48	17.3	0.7	16.2	18.8	41	55
Grid #41	22	17.0	0.6	15.2	18.4	42	56
Grid #43	64	16.8	1.2	14.7	19.9	43	57
Grid #44	120	15.1	1.0	13.5	17.9	44	58
Grid #45	121	14.4	0.6	13.0	15.6	45	59
Grid #46	121	13.8	0.5	12.6	15.5	46	60
Grid #47	104	13.2	1.1	10.4	15.4	47	61
Grid #48	40	16.5	0.8	15.1	18.7	48	62
Grid #52	14	14.7	0.2	14.1	15.0	49	63
Grid #53	44	14.0	0.9	10.4	15.3	50	64
Grid #54	66	14.3	0.6	13.1	16.1	51	65
Grid #55	66	13.7	1.0	10.9	15.0	52	66
Grid #3, 12, 18, 19, 20, 25, 26, 27, 28, 34, 35, 42, 49, 50, 51, 56, 57, 58	Inaccessible areas or outside the survey scope					12	26

Figure 1 demonstrates the homogeneity of the results from the survey. The remediated areas averaged lower exposure rate readings than the rock formations as expected and the standard deviation of the entire data set was only 1.5 μR/hr

In conclusion, the post-remediation ambient gamma exposure rate survey results show that the SDF site and surroundings to be indistinguishable from one another and from other referenced gamma survey reports.

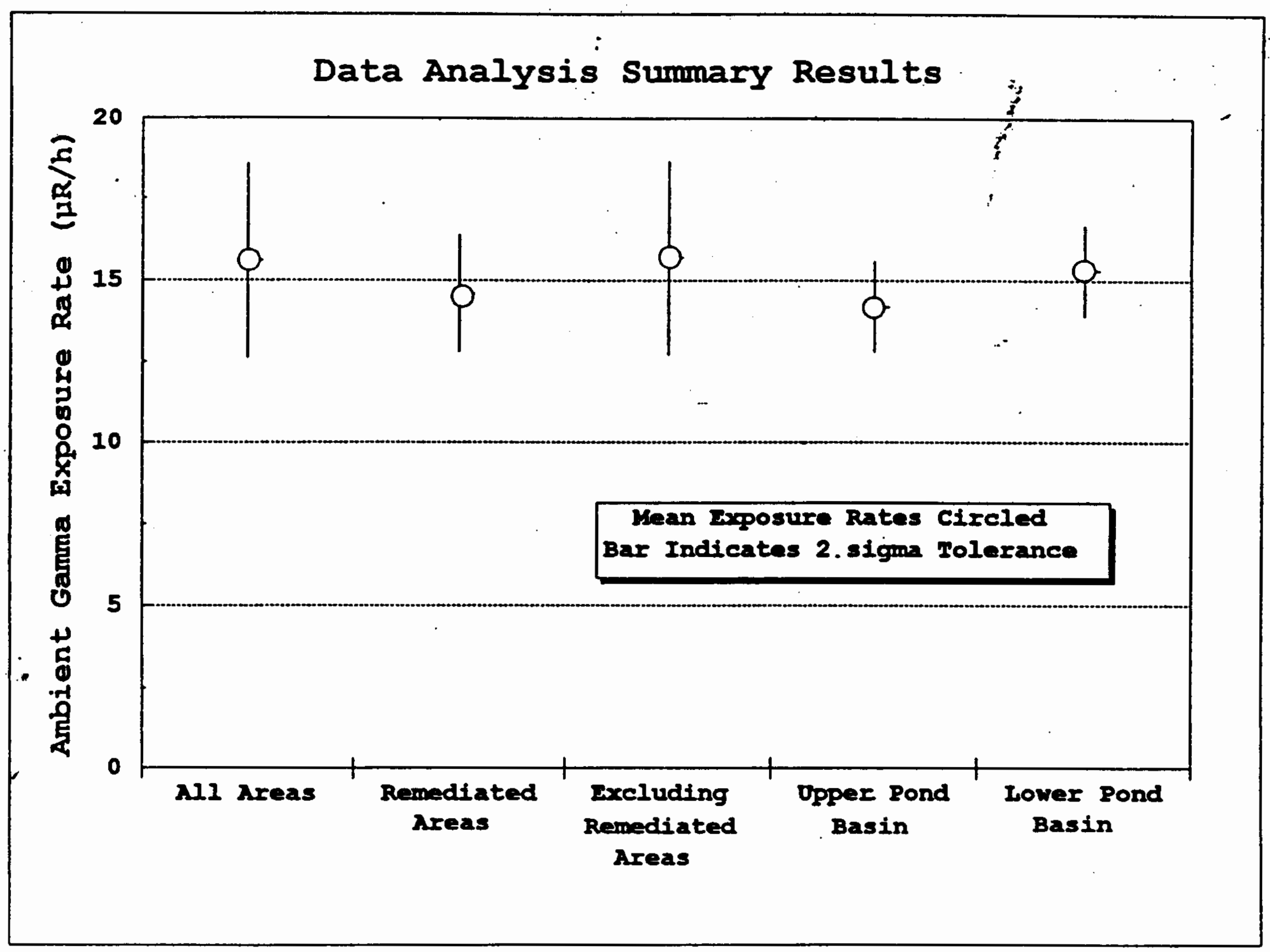

Figure 1. Data Analysis Summary Results

3.0 BACKGROUND

3.1 Location

The Sodium Disposal Facility (SDF) is located within Rockwell International's Santa Susana Field Laboratory (SSFL) in the Simi Hills of southeastern Ventura County, California, adjacent to the Los Angeles County line and approximately 29 miles northwest of downtown Los Angeles, directly south of the City of Simi Valley. Location of the SSFL relative to the Los Angeles and vicinities in shown in Figure 1. An enlarged map of neighboring SSFL communicate is shown in Figure 2. Figure 3 is a plot plan of the western portion of SSFL known as Area IV, where the SDF is located. A drawing (plan view) of the SDF and its adjoining areas is shown in Figure 4. The SDF is located on Rockwell-owned land.

3.2 Topography and Site Characteristics

The SDF is located at the west end of Rockwell International's SSFL. The SDF is commonly called the "Old Sodium Burn Pit," and is designated as SSFL site T886. The facility occupies the high ground of an alluvial flat that is roughly triangular in shape, and about two acres in area. The site is bordered by siltstone rock formations on two sides, which come together at the north end of the site to form a blunted apex to the triangle. Site drainage is through the siltstone narrows to the northwest.

The SDF was once used as a disposal site for sodium and sodium-potassium alloys, and combustible materials from US DOE/AEC nuclear programs. The disposal activity was mostly confined to a concrete pool, and two open-field pits that are referred to as the Upper Pond Basin and the Lower Pond Basin. Previous radiological survey and decontamination work have been done at the site. A more detailed description of the site's physical location, its relevant operational history, and a discussion of previous survey and decontamination efforts can be found in Reference 2.

3.3 Remediation Activities

A total of 12,000 cubic yards of soil were excavated from the lower pond basin and portions of the upper pond basin. Field gamma surveys of each cubic yard of soil resulted in approximately 750 cubic yards (~6%) being declared radioactively contaminated. Eighty composite soil samples were taken from the 750 cubic yards of soil and analyzed by an independent laboratory for gamma emitters (gamma spectroscopy), Sr-90, H-3, isotopic uranium, isotopic thorium and isotopic plutonium. Based on the concentration results, a total quantity of 6 millicuries of Cs-137 and

Figure 2. Location of SSFL in Relation to Los Angeles and Vicinity

Figure 3. Map of Neighboring SSFL Communities

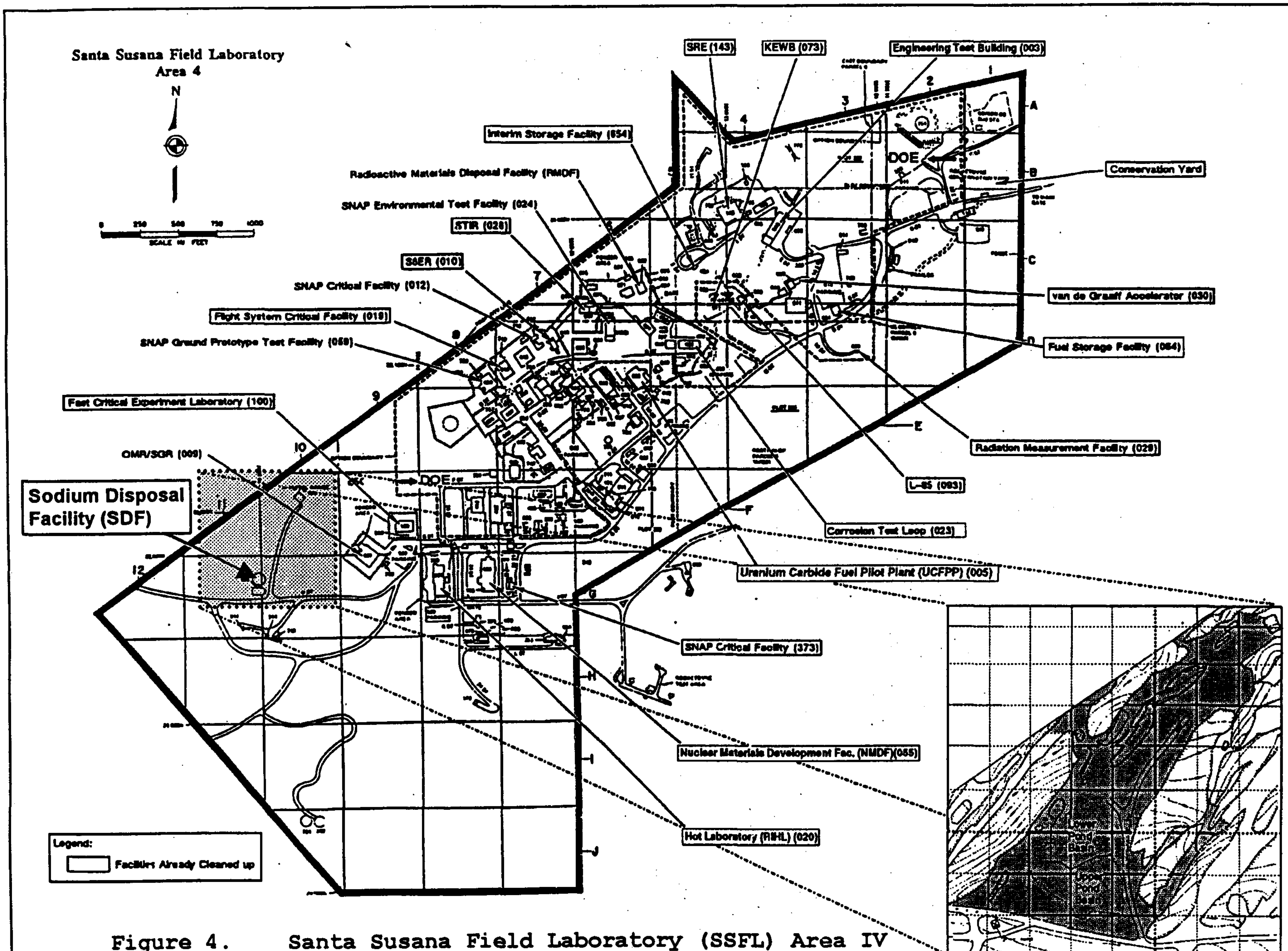

Figure 4. Santa Susana Field Laboratory (SSFL) Area IV

1 millicurie of Sr-90 was identified as contamination. Cs-137 concentrations ranged from 0.09 - 52 picocuries per gram of soil (pCi/gm) with an average of 8 pCi/gm, while Sr-90 concentrations ranged from 0.11 to 38 pCi/gm with an average of 1.6 pCi/gm. Of this radiologically contaminated soil, the mixed waste portion was disposed of to Envirocare in Utah while the radwaste portion is to be shipped to Hanford, Washington.

4.0 SURVEY RESULTS

4.1 Overview

The radiological survey of this report was performed to establish a post-remedial ambient gamma exposure rate comparison between the remedial areas (Upper and Lower Basins, see Figure 5) and the surrounding adjacent land. The previous baseline survey of Reference 3 had clearly shown residual radioactivity present in an enclosed 10′ x 10′ area. Subsequent soil excavation and removal along with numerous operational surveys indicated remediation was complete. This document will serve as one of the checks for completeness (soil sampling and RESRAD analyses will be documented in Reference 4).

4.2 Survey Procedures

The survey procedures are detailed in Reference 1 and are essentially the same as the survey of Reference 3. The zero-zero (0,0) coordinate for both surveys is the same, however, and the SDF site was again overlaid by a 10-ft (spacing intervals) north/south, east/west grid. Wood stakes were placed at the intersection of the 200-ft grid lines and survey measurement taken every 10-ft intersection at 1-meter height. For data analyses and interpretation, 100-ft by 100-ft grid squares were analyzed as one statistical distribution. Additional analyses of the site compared the affected areas (Upper and Lower Pond Basins) separately and together. Figure 6 shows the pond basins and locations of the grid squares.

The survey consisted of measurements of detected activity counts during a 1-minute time interval. All measurements were made with paired sets of independent survey instruments--two 1-inch NaI gamma detectors at 1-meter height. To insure precision in reproducing the 1-meter height at each location, the two gamma detectors were mounted on a fixture made from a PVC pole and assorted PVC fittings. Details about the fixtures can be found in Reference 1.

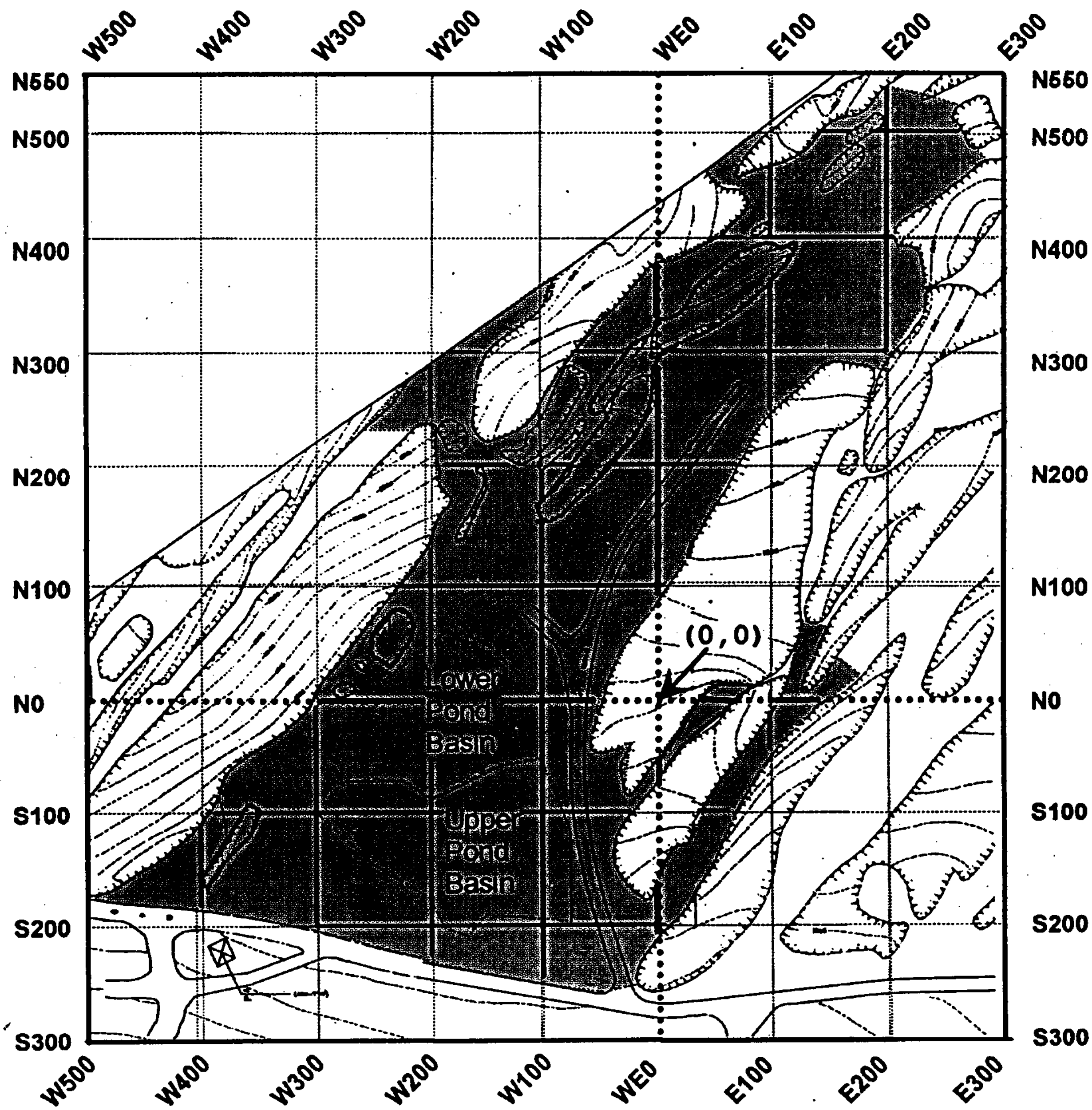

Figure 5. Sodium Disposal Facility Plan View

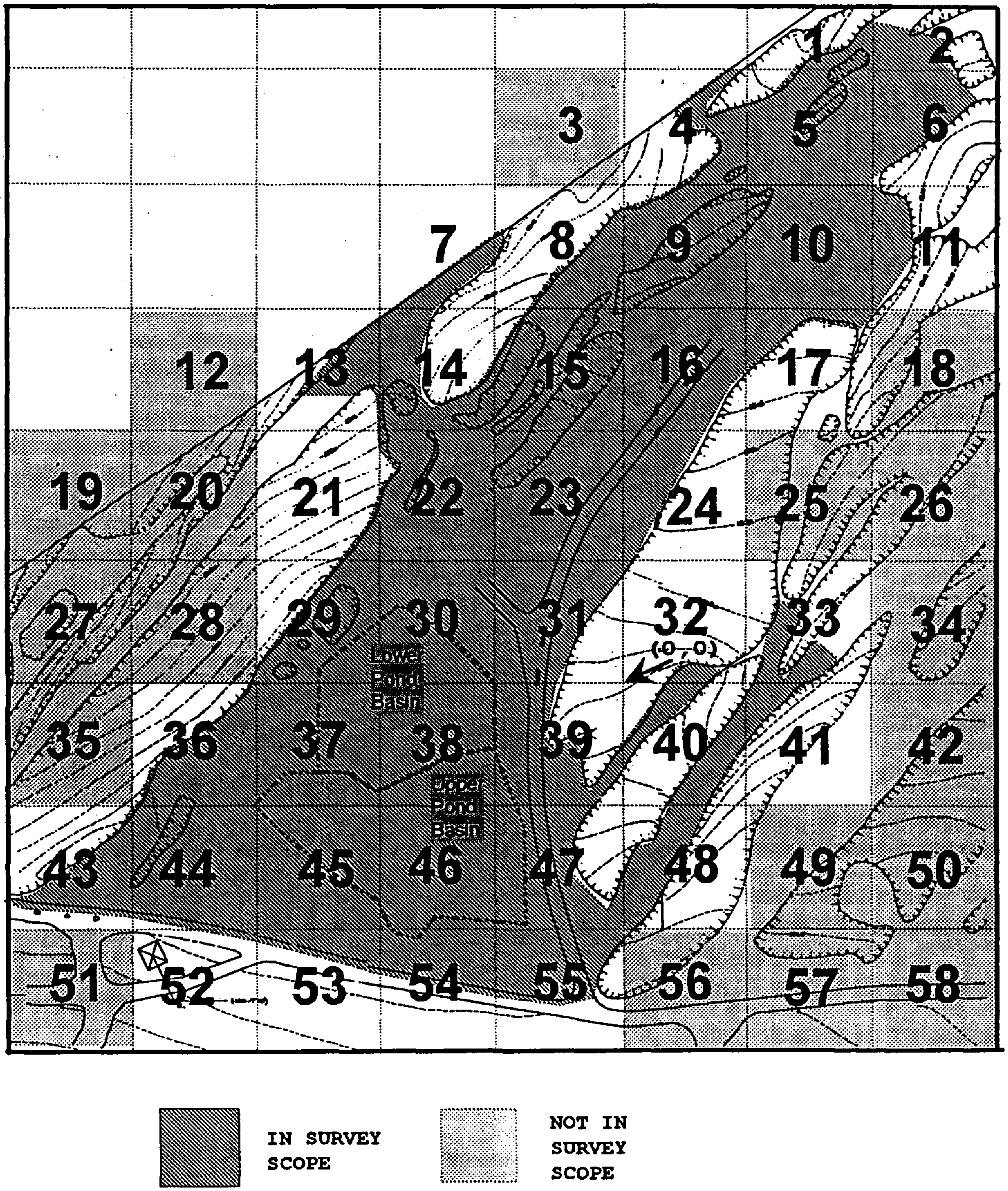

Figure 6. Sodium Disposal Facility Post-remediation Survey Grid Map

During the survey, the readings from the independent instrument pairs were compared for consistency and reasonableness. Anomalous or disparate readings at any time caused the survey team to interrupt the survey to check for instrument malfunctions and to retake the measurements if needed. All of the data (2 instruments averaged) from each location were ultimately used in analyses. Some data points are missing from the location plots of the data; however, the missing plots correspond to inaccessible locations (e.g., rock, heavy growth, poison oak, etc.).

Instrument performance was monitored throughout the survey by regular checks at a designated location which remained unchanged throughout the survey. The performance checks included measuring the instrument response to the ambient background radiation level, as read from a calibrated Reuter-Stokes meter, and measuring the instrument and Reuter-Stokes response to a 5 μCi Cs-137 check source at 1 meter. The performance checks for the instruments were recorded three times daily. The 3-point average Reuter-Stokes information was used to determine the efficiency conversion factor to convert the recorded counts per minute (cpm) to μR/hr for data comparison. Specific details about the instrument check sources, and the hardware used for the performance checks are given in Reference 1.

4.3 Data Analyses and Results

All of the raw data were entered into a Microsoft Excel spreadsheet as counts per minute (cpm) along with the grid coordinates and calibration factors from the survey data sheets. The data was then converted into exposure rate (μR/hr) from the daily Reuter-Stokes calibration data. Since each 10-ft grid point measurement was performed by an instrument pair, the exposure rate analyses on the following plots and graphs are for the average of the paired data. Statistical analyses of the data to determine the mean exposure rate and standard deviation was plotted on a cumulative probability distribution graph. When this type of graph is used, the x-axis is a Gaussian distribution function, so that a perfect fit of the data set to a Gaussian (bell) curve would plot along a straight line and the slope of the line would be greater for a larger standard deviation value of the data set.

The survey data was analyzed in several ways. First, the entire site with all areas combined was graphed. Figure 7 represents the 2316 data points for each separate 10-ft grid point surveyed. The mean site exposure rate which included the remediated areas and surrounding land was 15.6 μR/hr with a standard deviation of 1.46 μR/hr (9%).

Second, the remediated areas (the lower and upper pond basins) data was compared separately from the entire area surveyed. The results are shown in Figure 8. The remediated areas show a mean exposure rate of 14.6 μR/hr (std. dev. = 0.897 μR/hr) for 419 grid points. Figure 9 represents the mean exposure rate excluding the upper and lower pond basins. Figure 10 shows the upper pond basin mean exposure rate analysis and Figure 11 shows the lower pond basin mean exposure rate analysis. Lastly, each 100-ft by 100-ft grid square was given a numbering system to locate the data as shown in Figure 12. Each grid square's data is shown along with the resulting statistical analysis graph and is given in Figures 13-52. These figures also show the minimum and maximum exposure rate (used in Table 1) in larger typeface.

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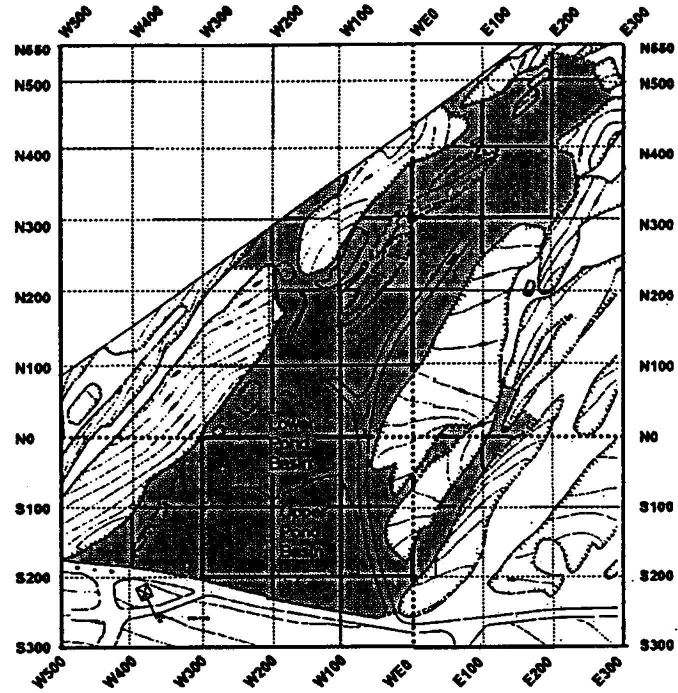


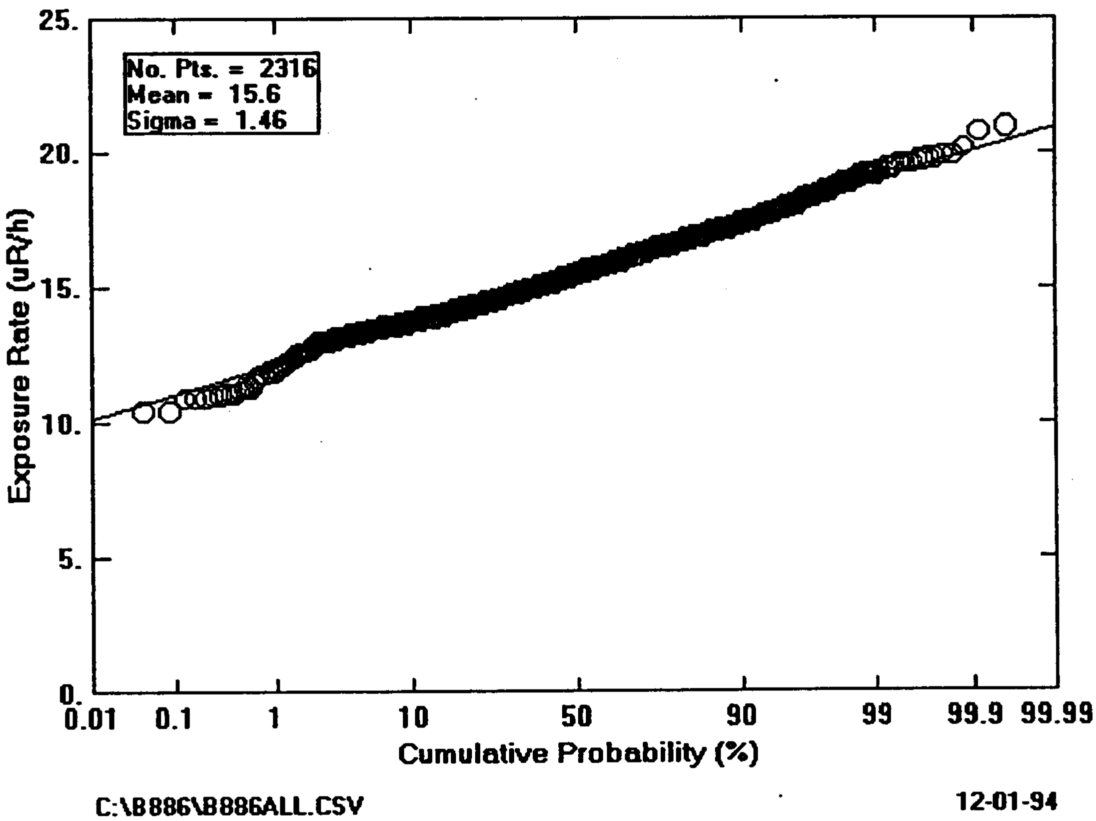
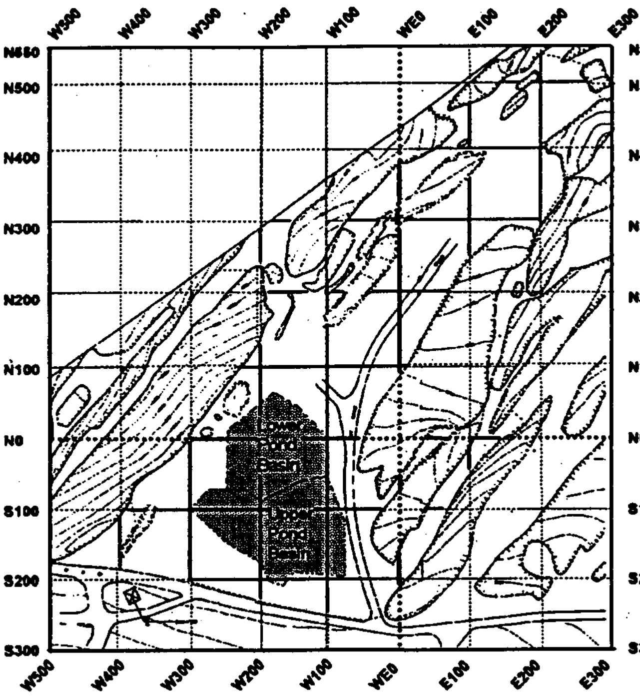


Figure 7. All Areas Combined Ambient Gamma Exposure Rate.



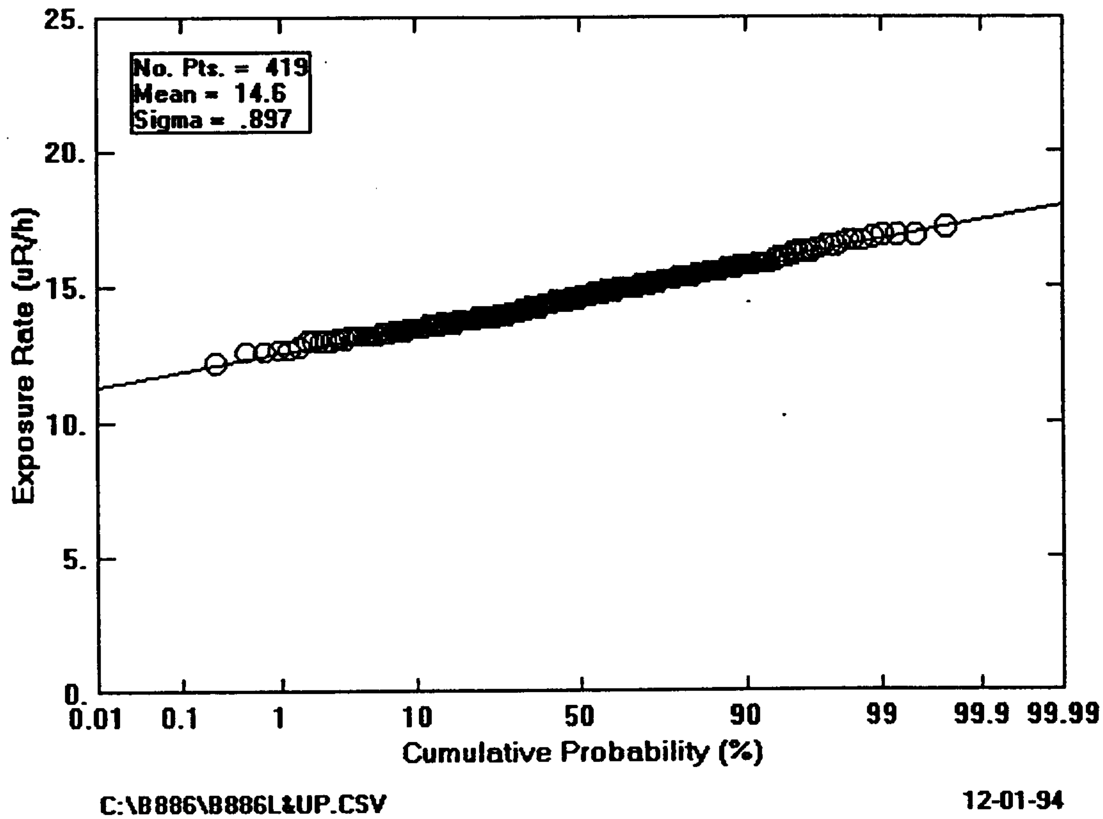
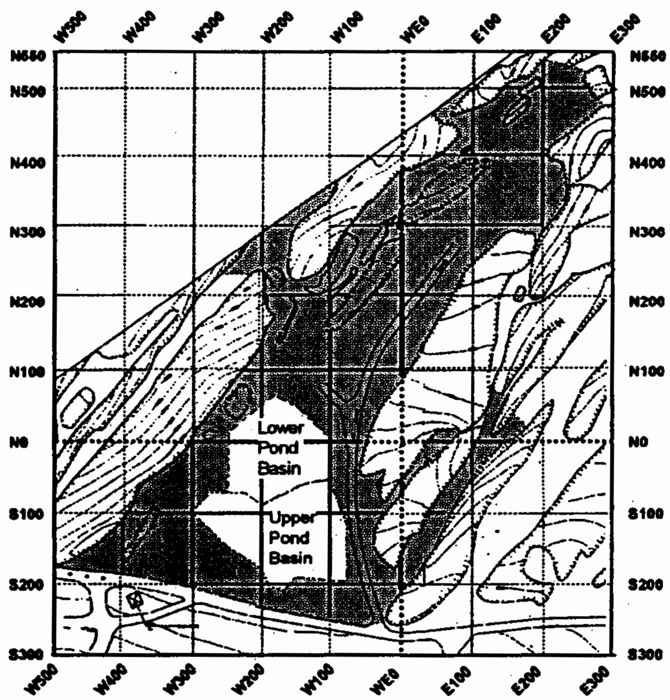


Figure 8. Lower and Upper Pond Basins Ambient Gamma Exposure Rate.



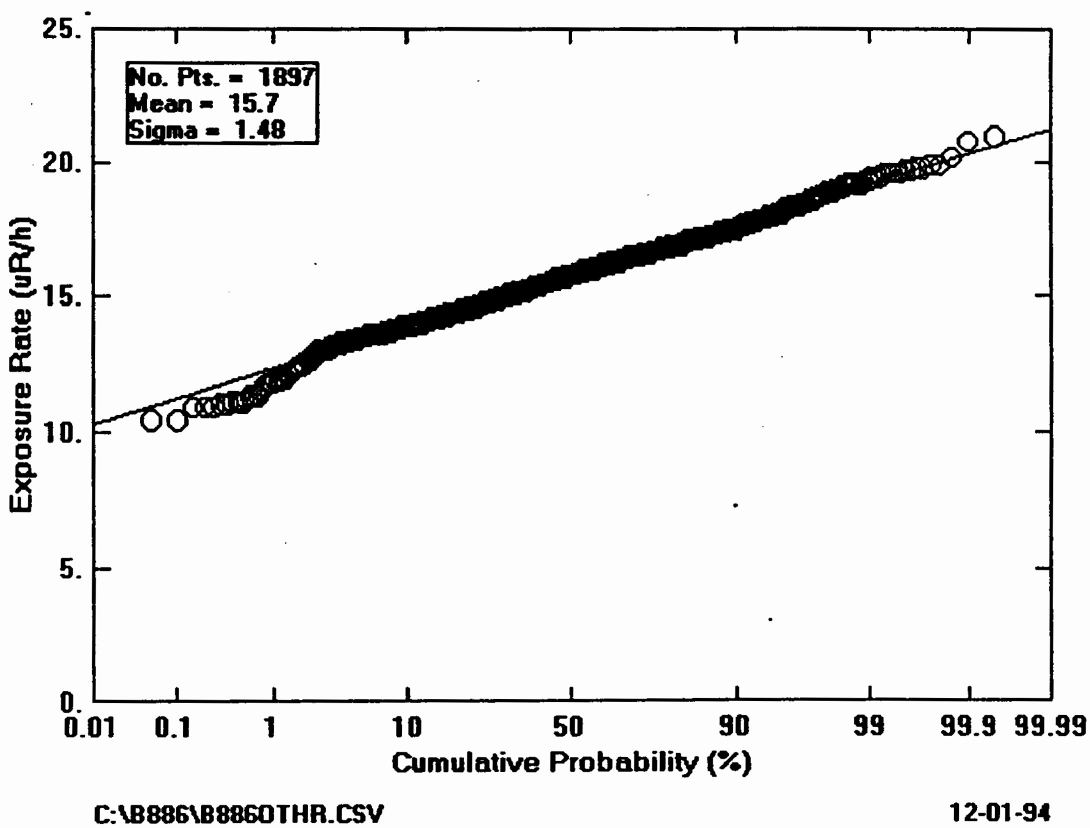
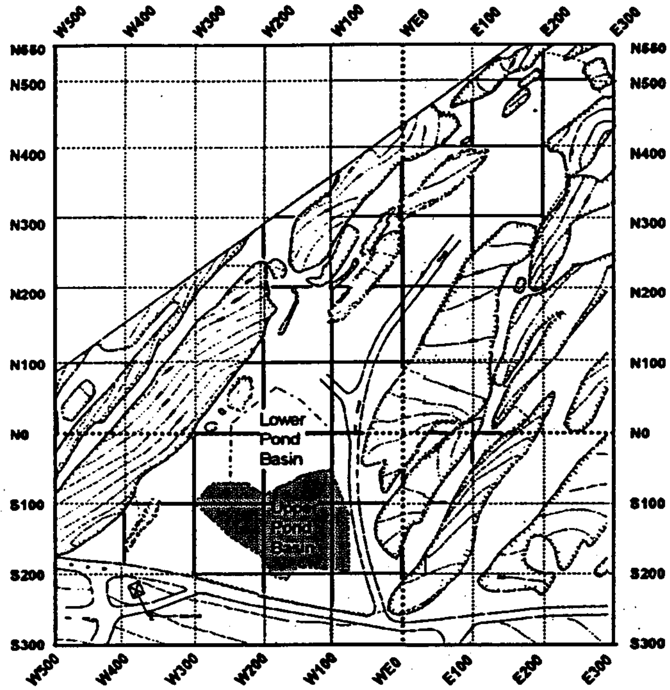


Figure 9. Ambient Gamma Exposure Rate Excluding the Lower and Upper Pond Basins.



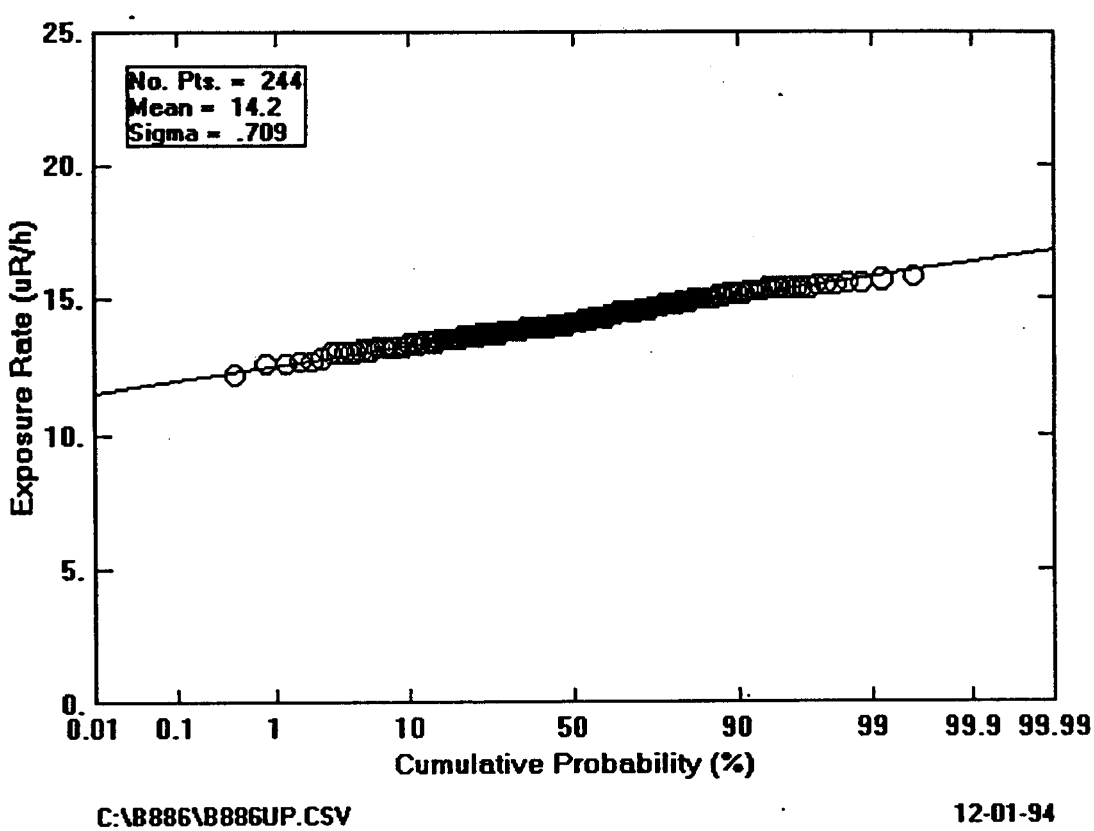
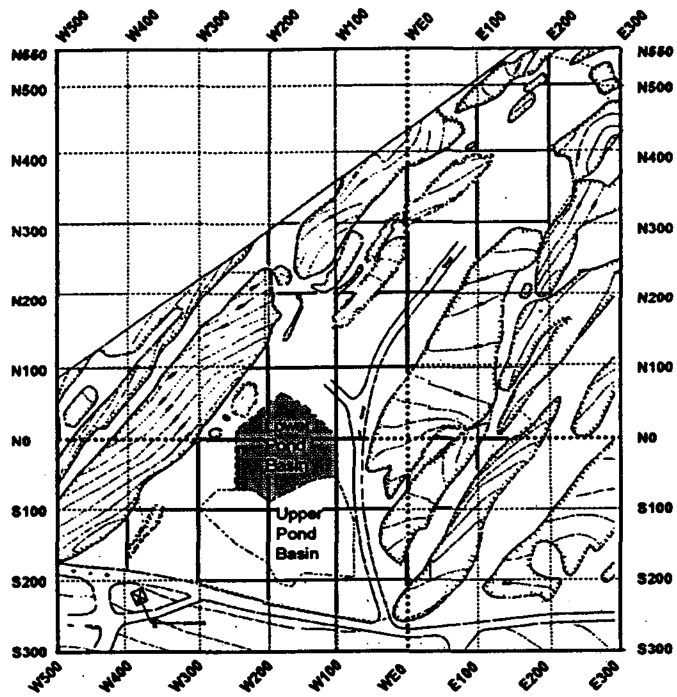


Figure 10. Upper Pond Basin Ambient Gamma Exposure Rate.



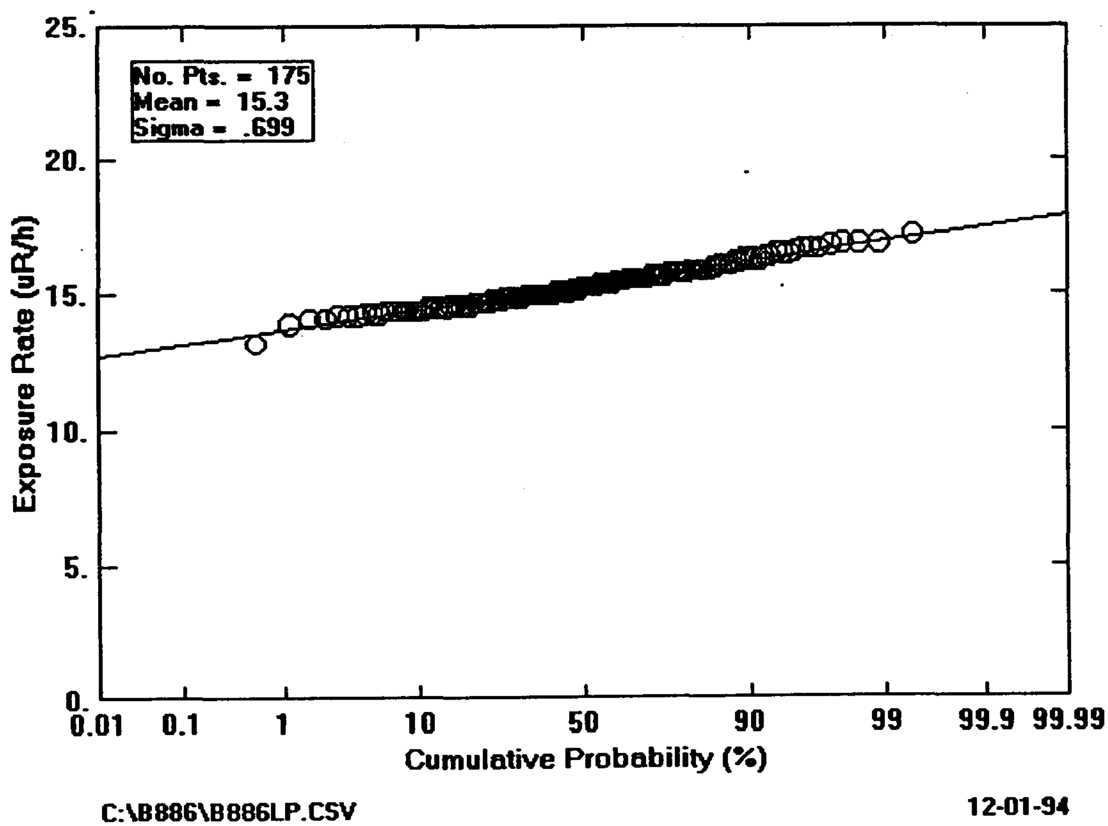


Figure 11. Lower Pond Basin Ambient Gamma Exposure Rate.

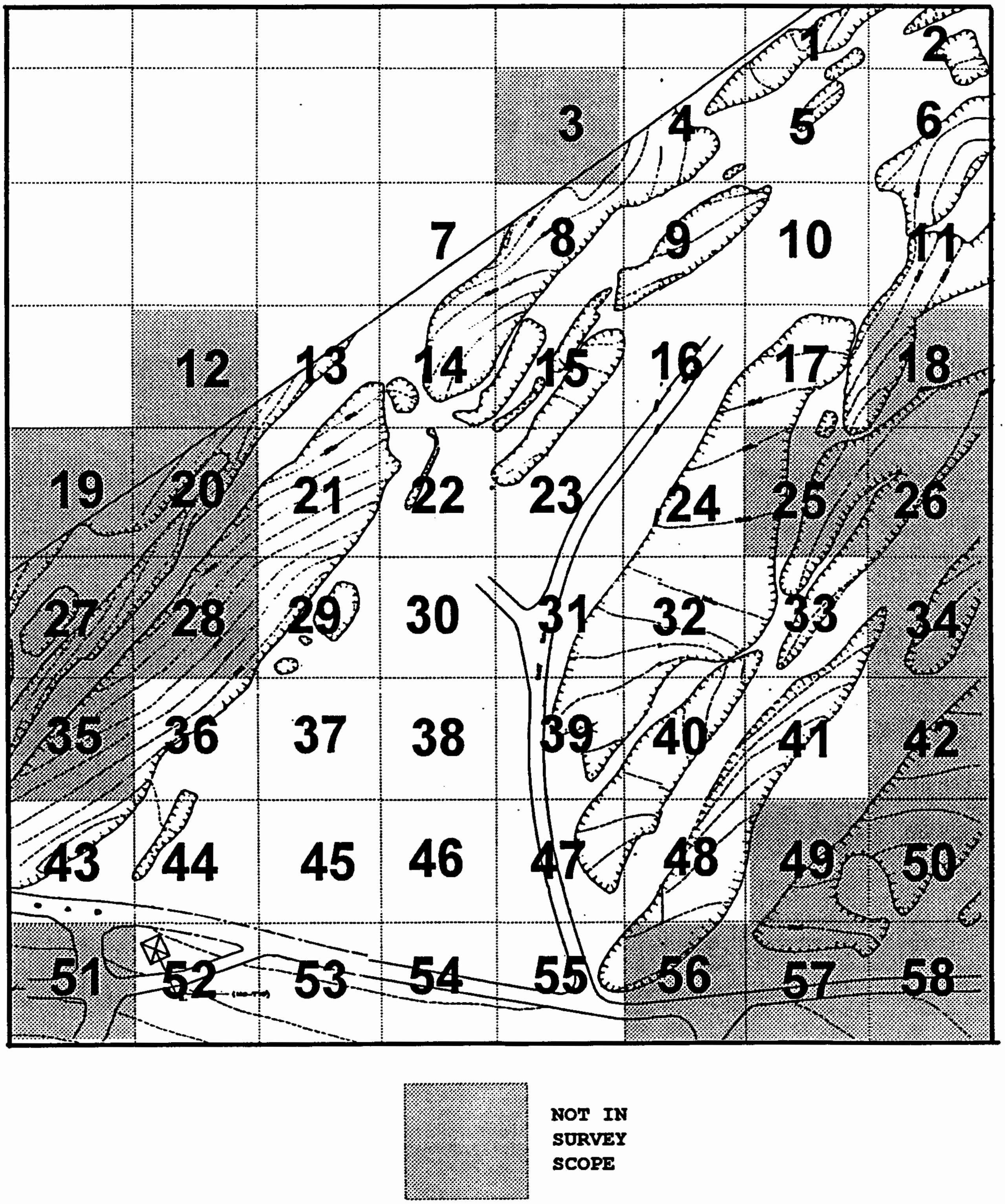
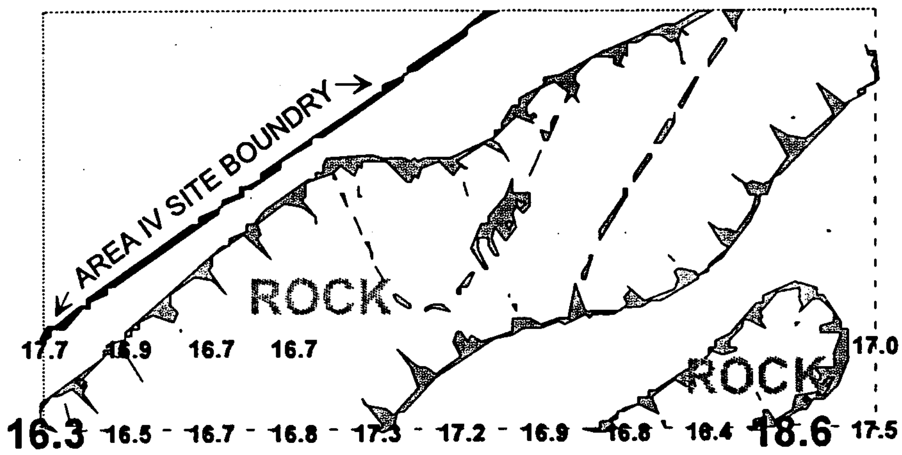
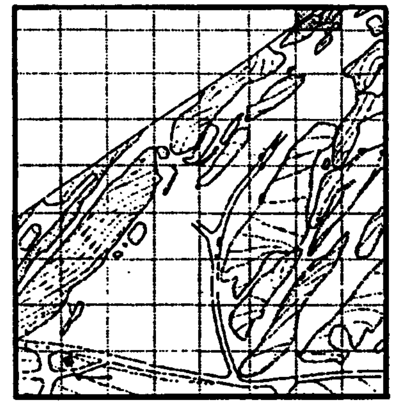


Figure 12. Grid Locator Map for Survey Results





Grid #1
N500ft - 550ft
E100ft - 200ft

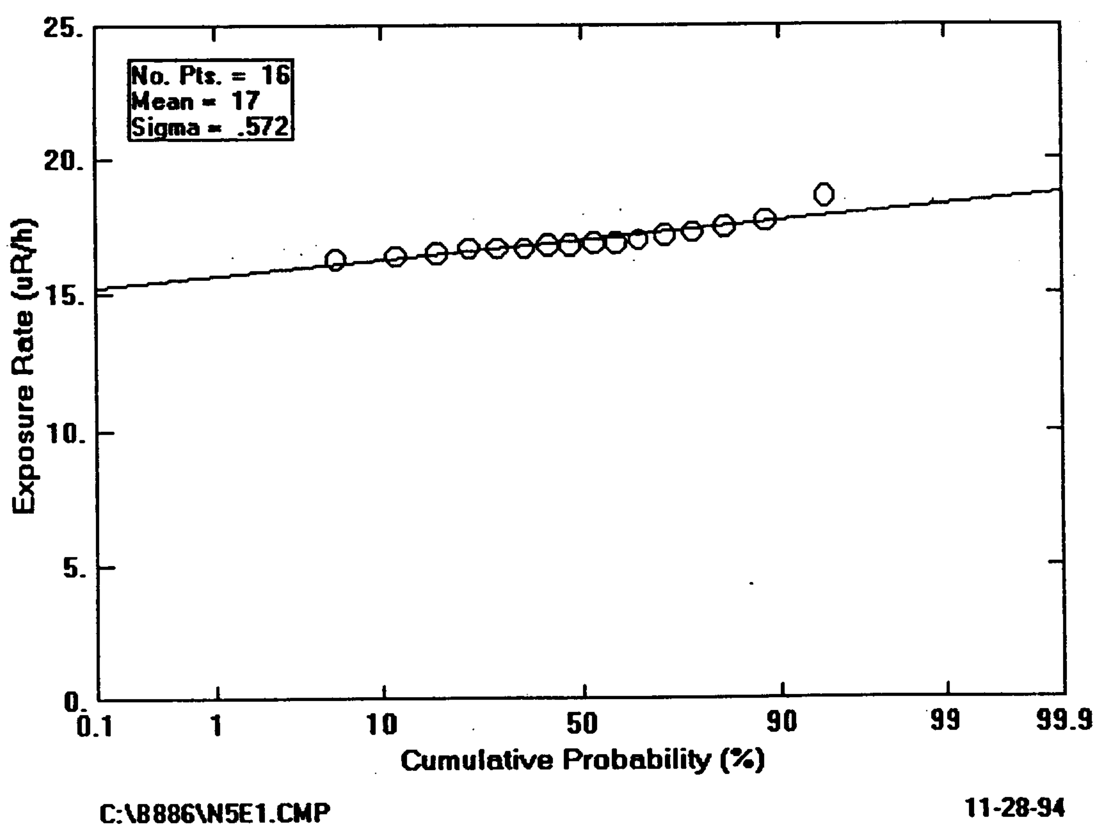
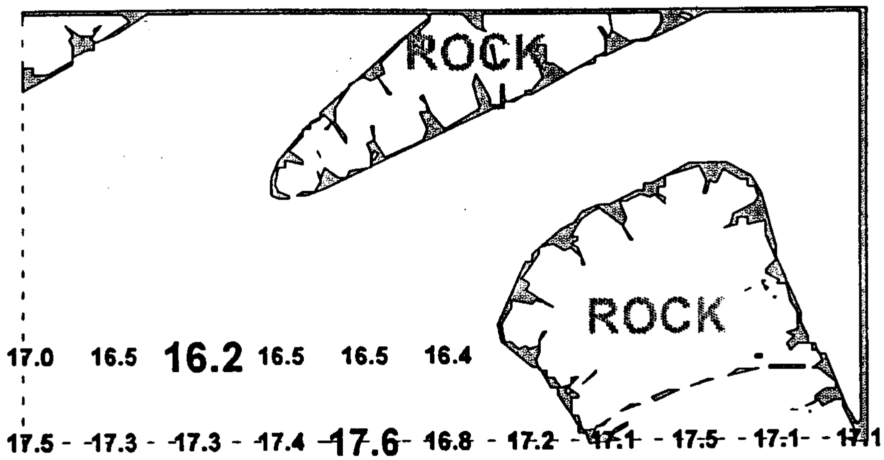


Figure 13. Grid #1 Ambient Gamma Exposure Rate.



Grid #2
N500ft - 550ft
E200ft - 300ft

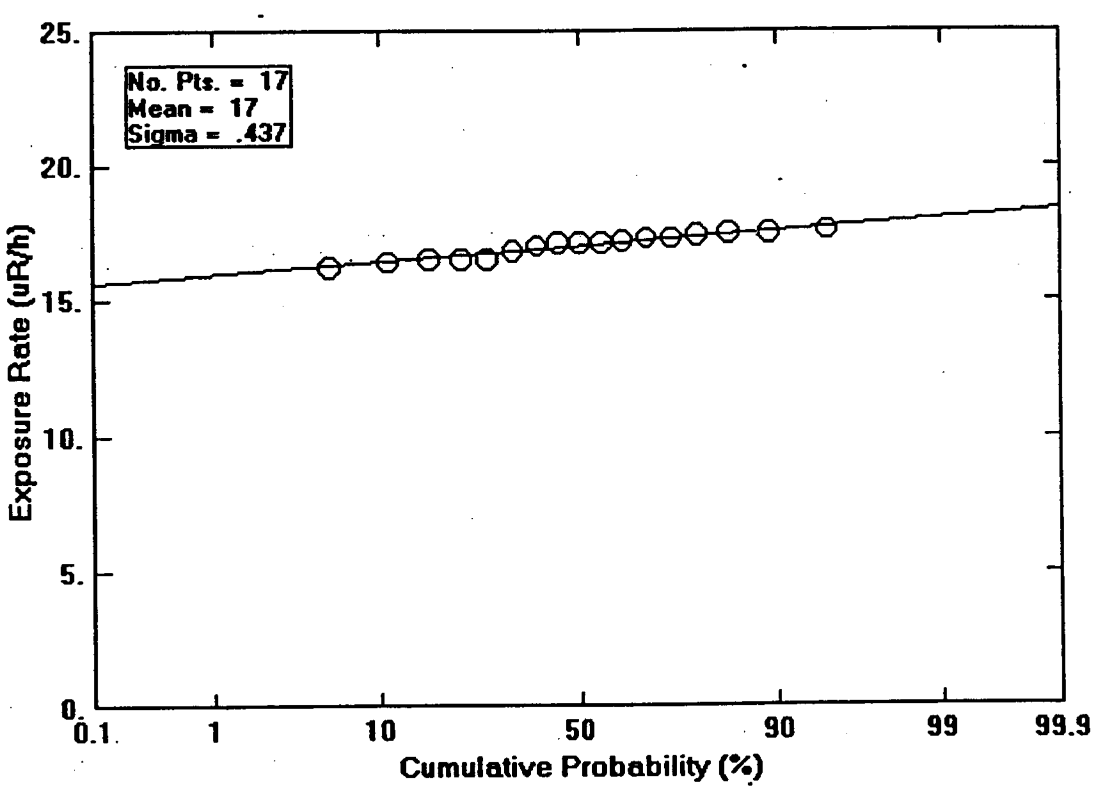


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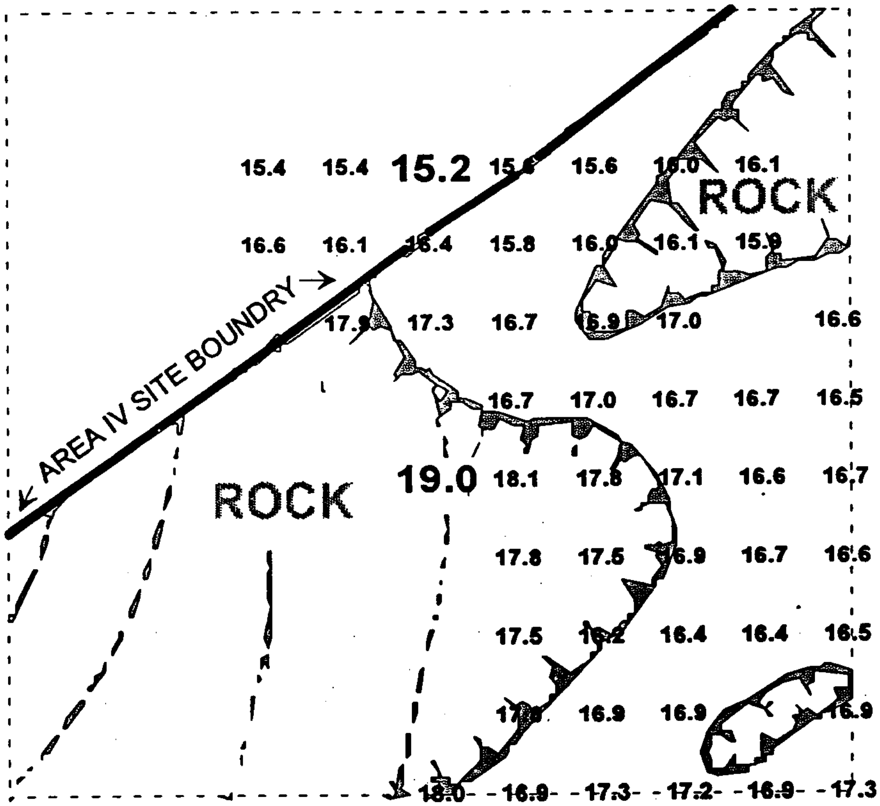
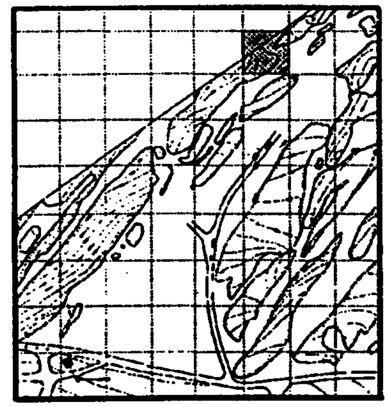
Figure 14. Grid #2 Ambient Gamma Exposure Rate.





Grid #4
N400ft - 500ft
E000ft - 100ft

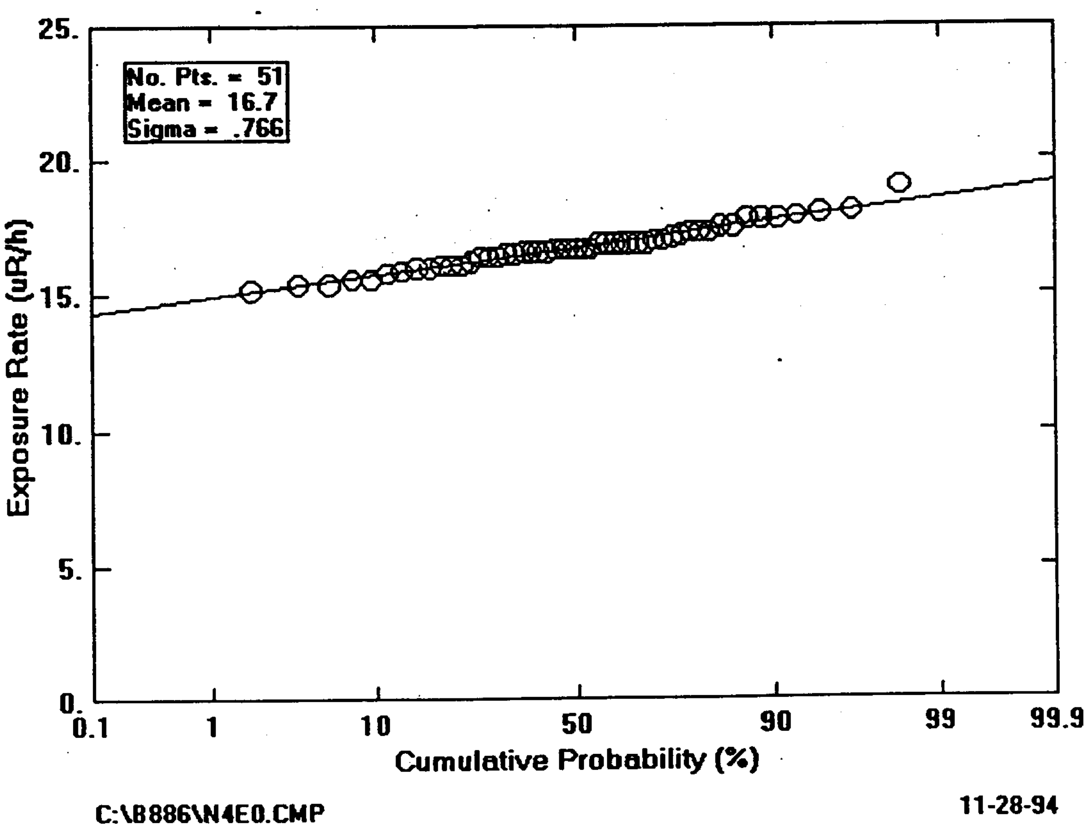
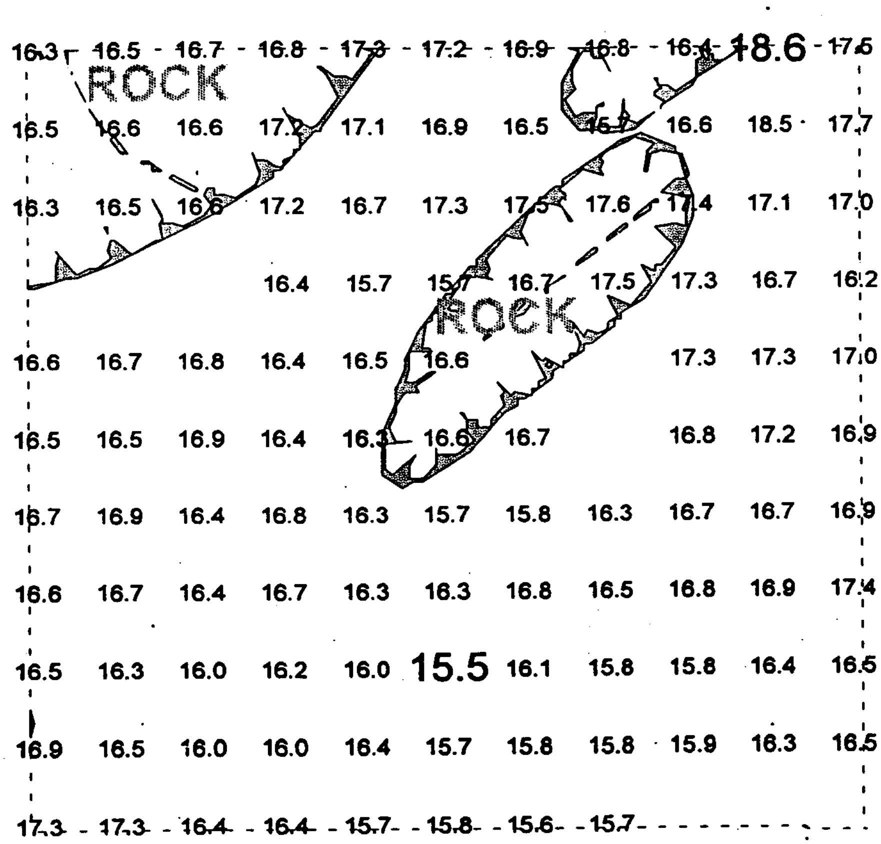
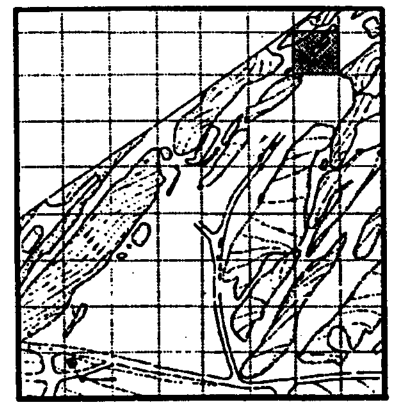


Figure 15. Grid #4 Ambient Gamma Exposure Rate.





Grid #5
N400ft - 500ft
E100ft - 200ft

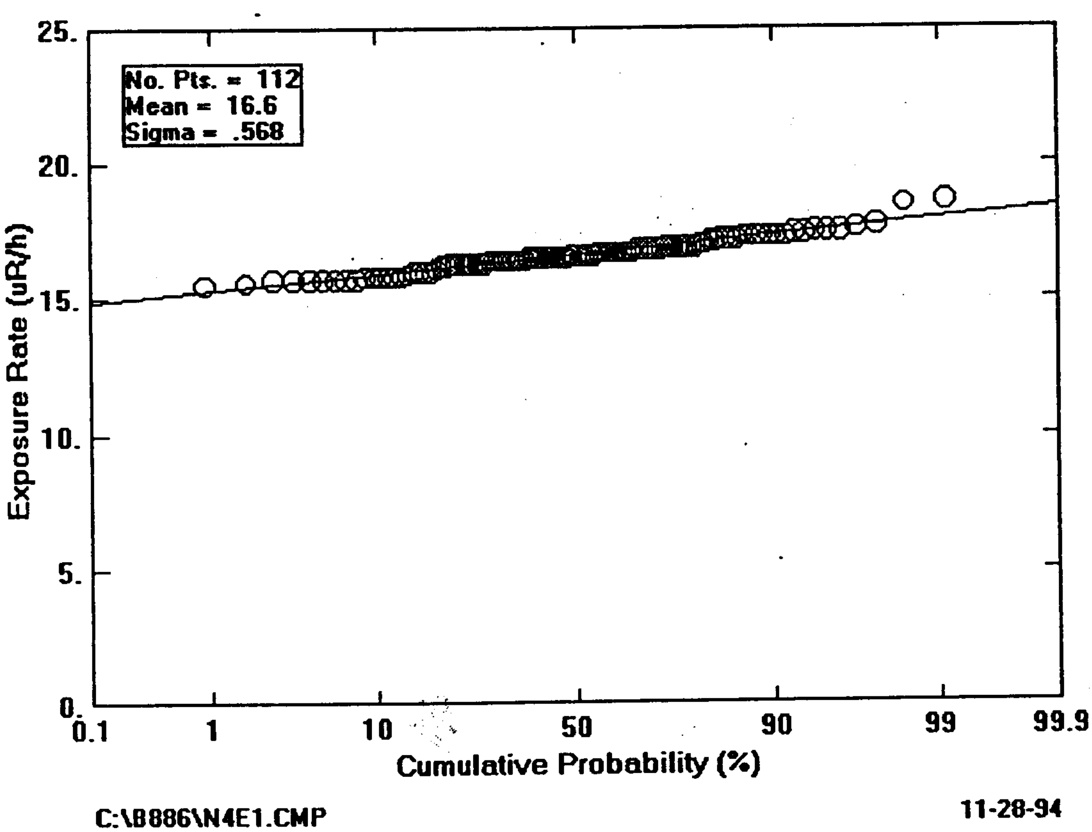
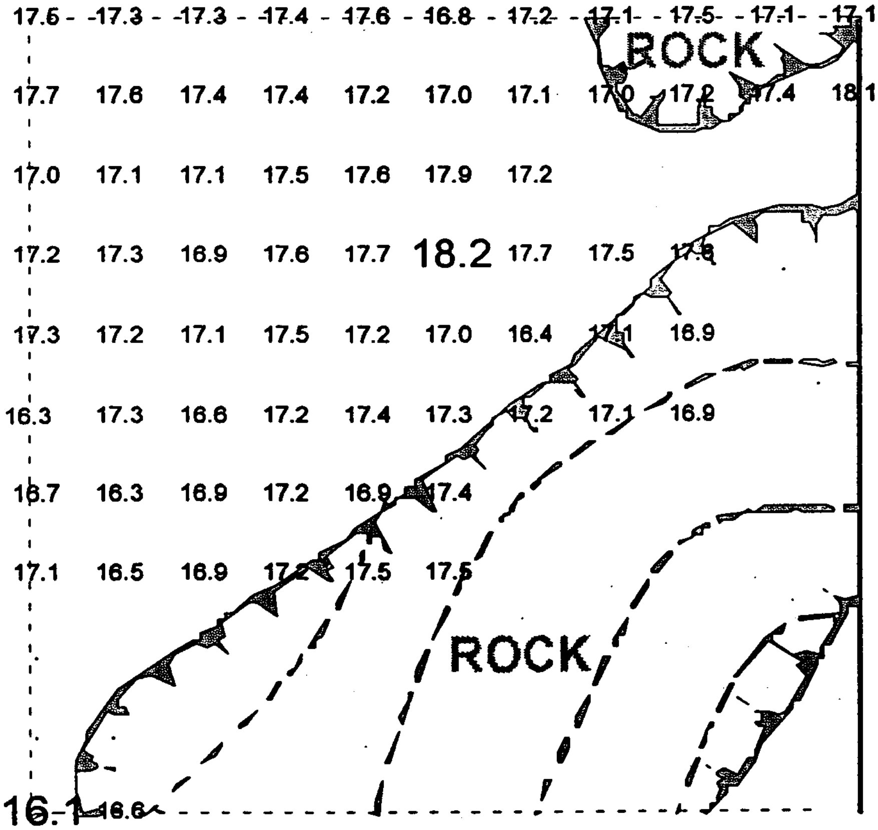
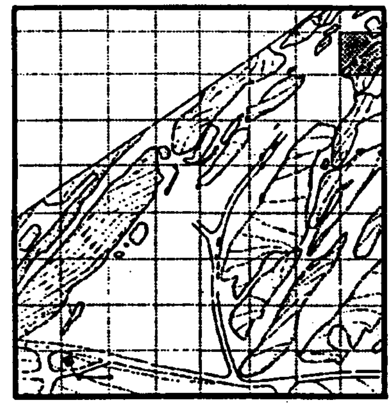


Figure 16. Grid #5 Ambient Gamma Exposure Rate.





Grid #6
N400ft - 500ft
E200ft - 300ft

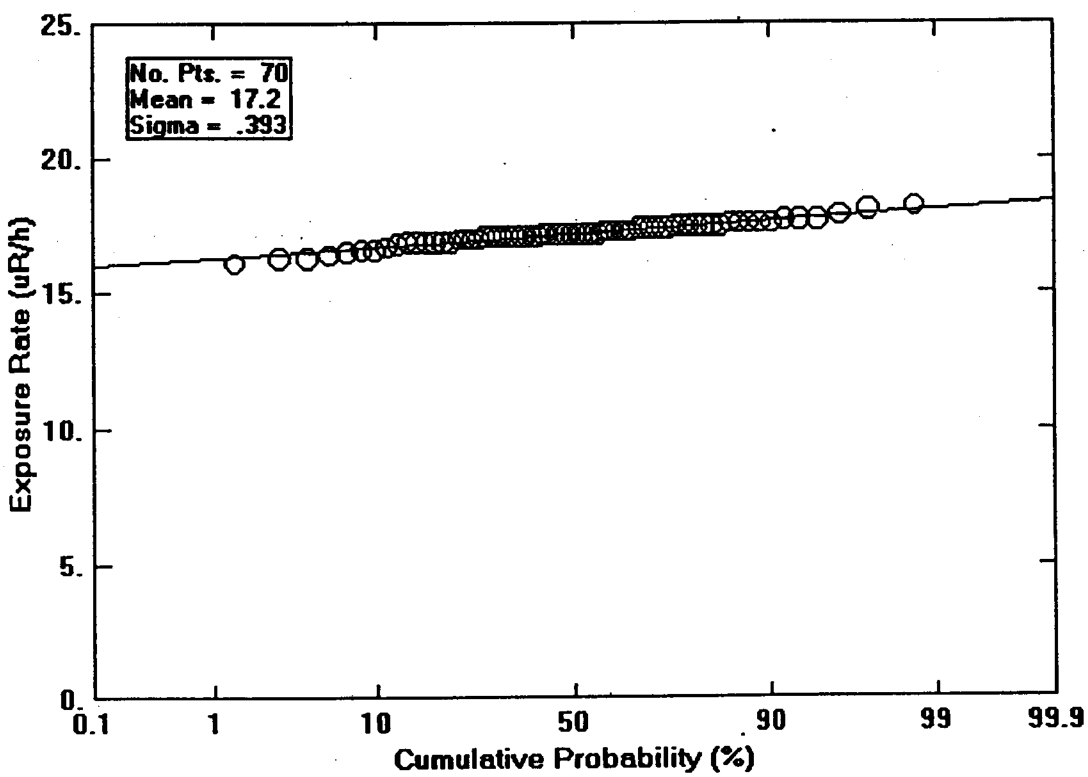


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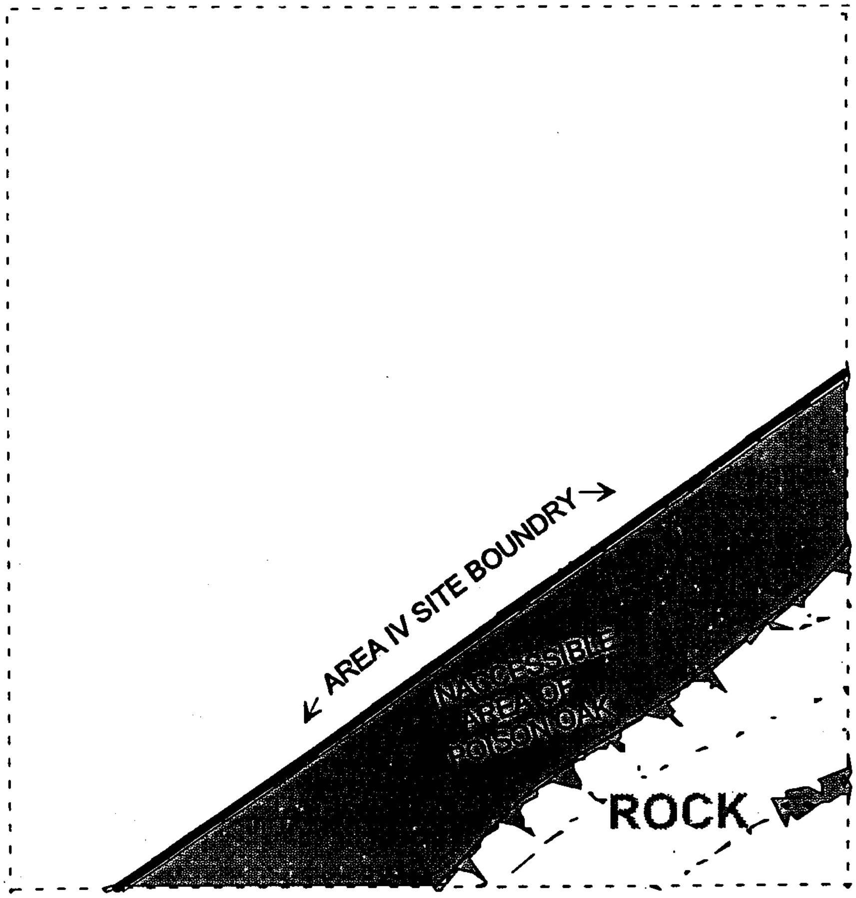
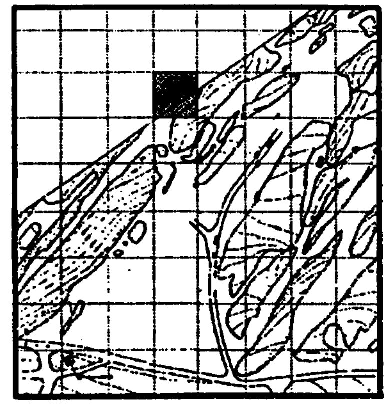
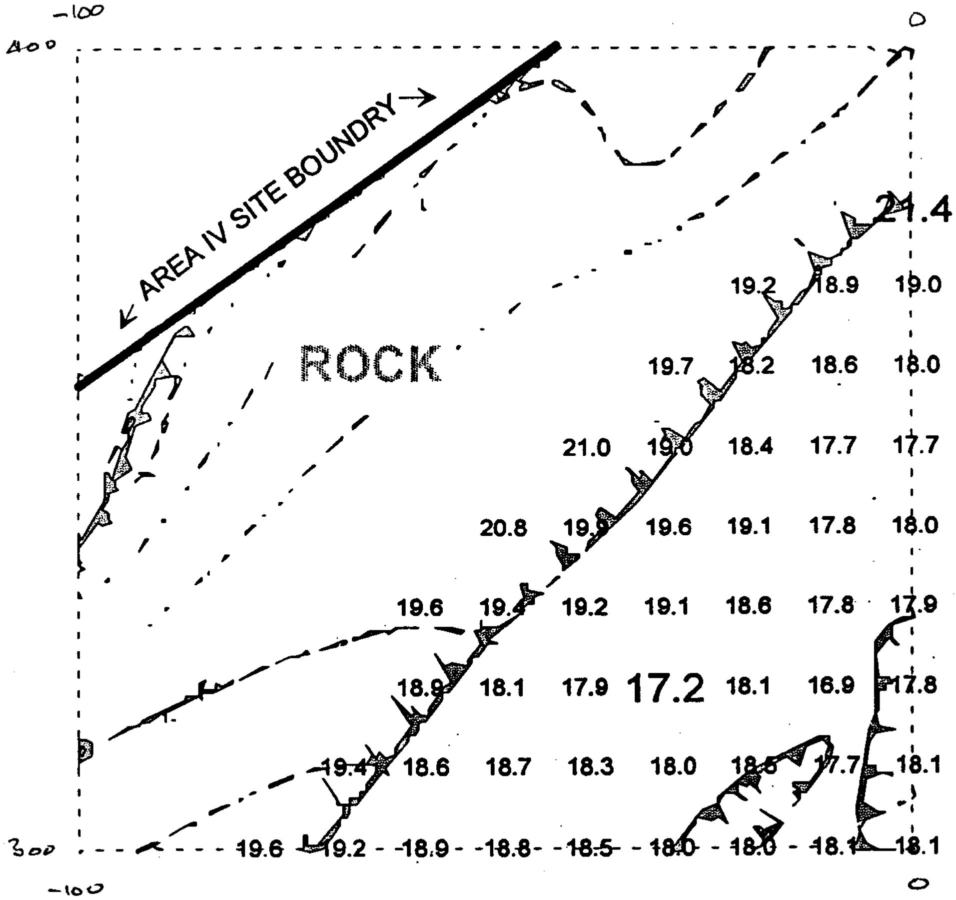
Figure 17. Grid #6 Ambient Gamma Exposure Rate.

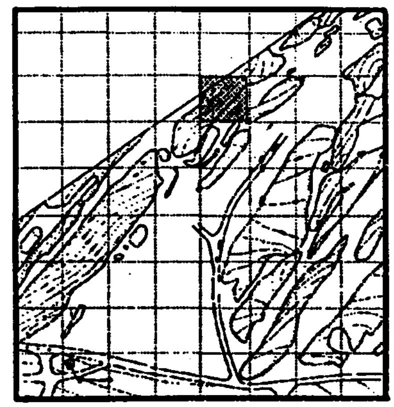




Grid #7
N300ft - 400ft
W200ft - 100ft

Figure 18. Grid #7 Plotview - Inaccessible area





Grid #8
N300ft - 400ft
W100ft - 0ft

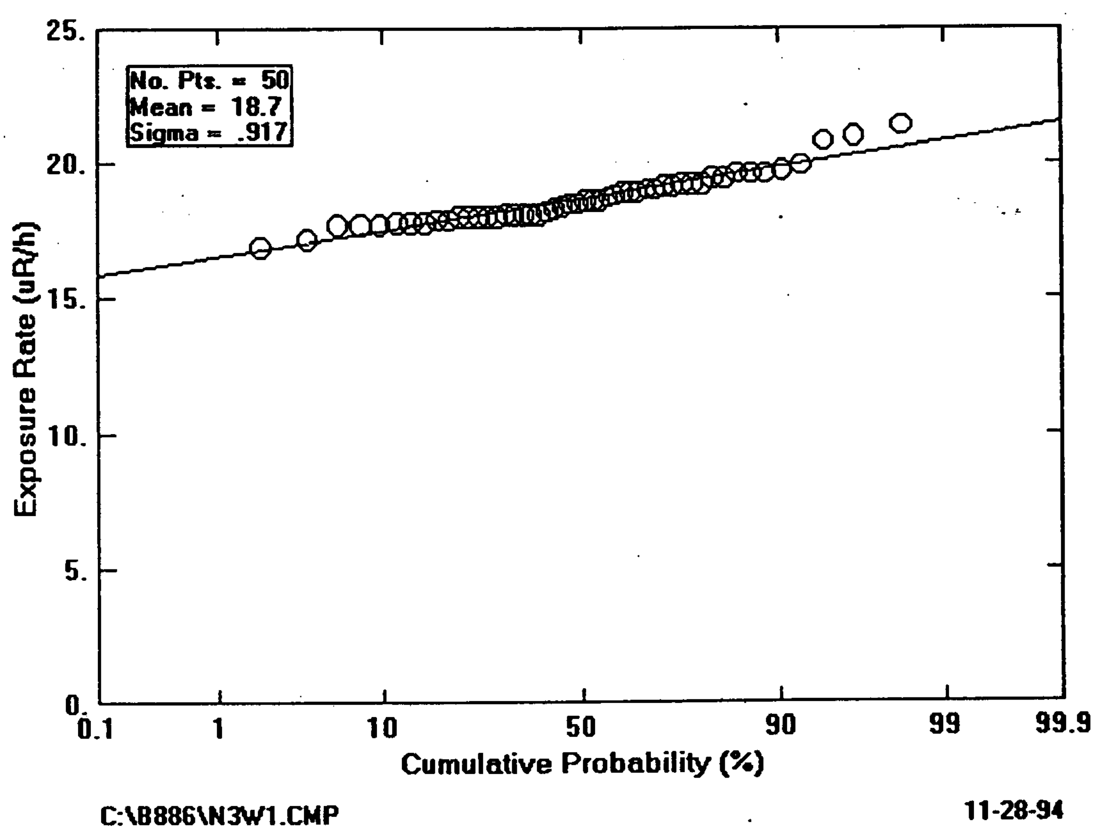
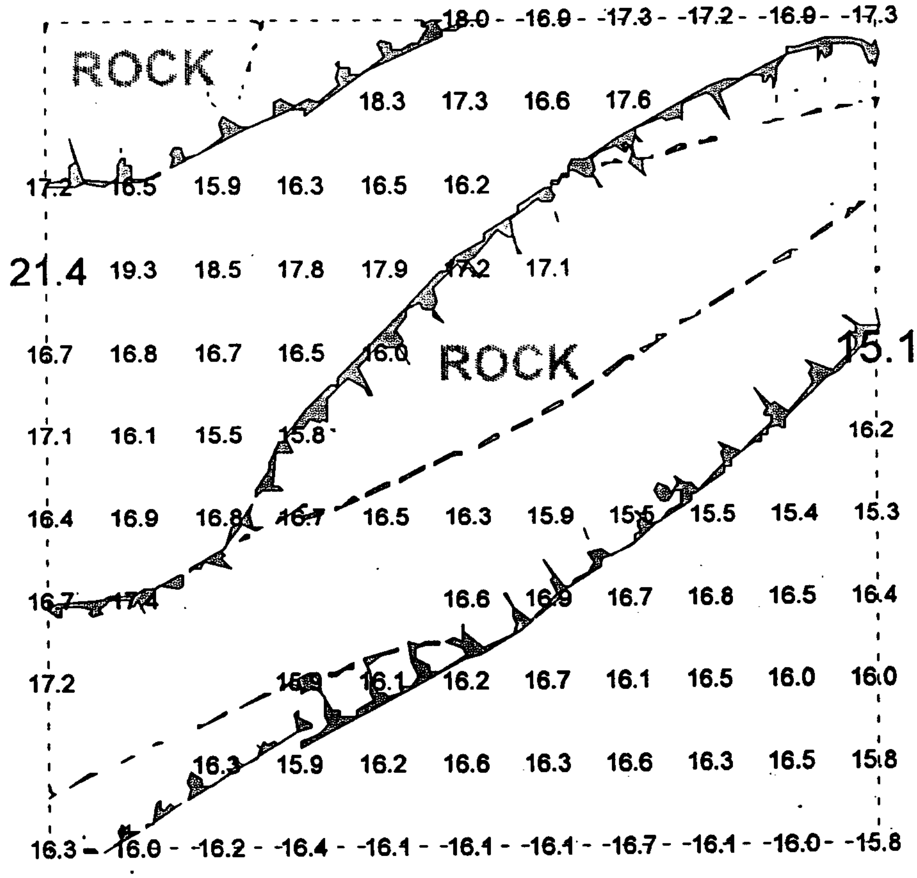
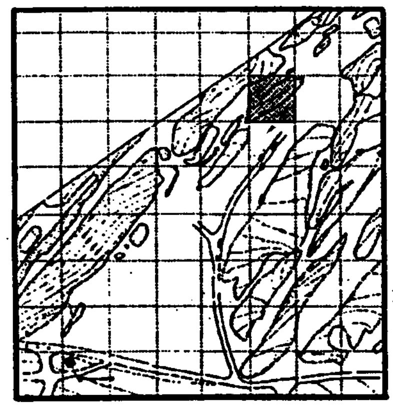


Figure 19. Grid #8 Ambient Gamma Exposure Rate.





Grid #9
N300ft - 400ft
E 0ft - 100ft

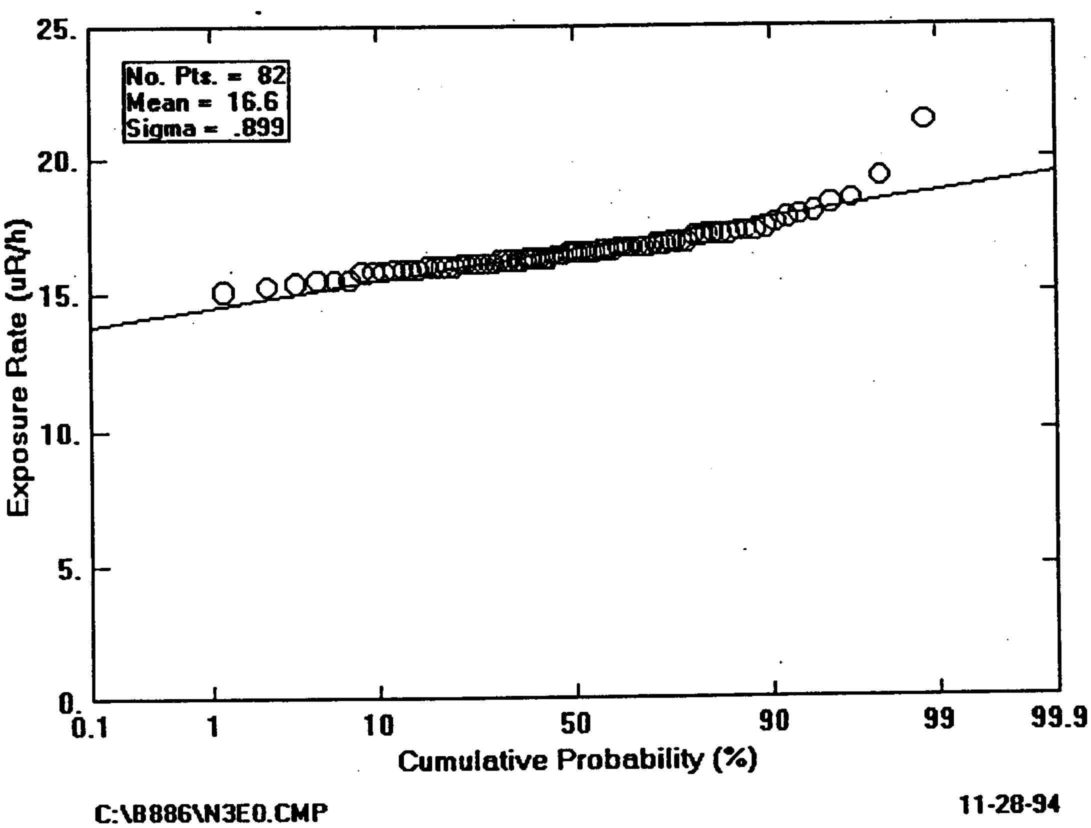
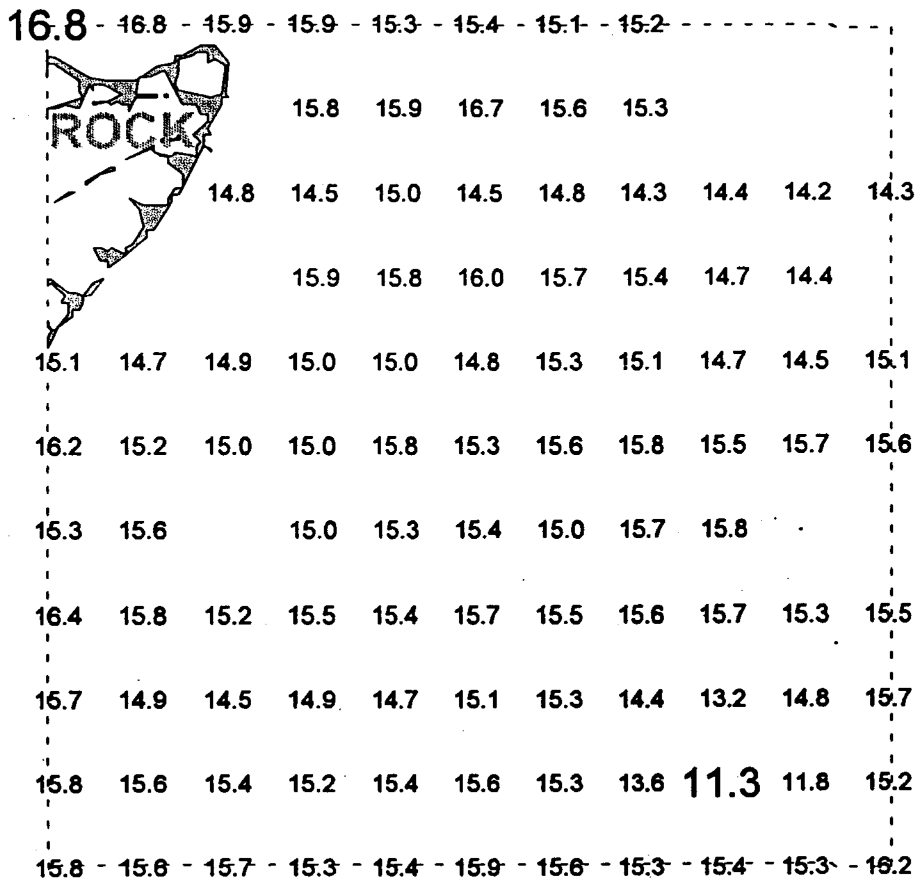
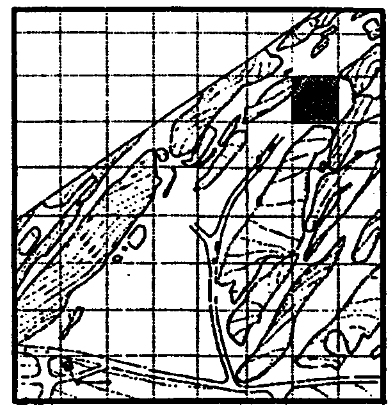


Figure 20. Grid #9 Ambient Gamma Exposure Rate.





Grid #10
N300ft - 400ft
E100ft - 200ft

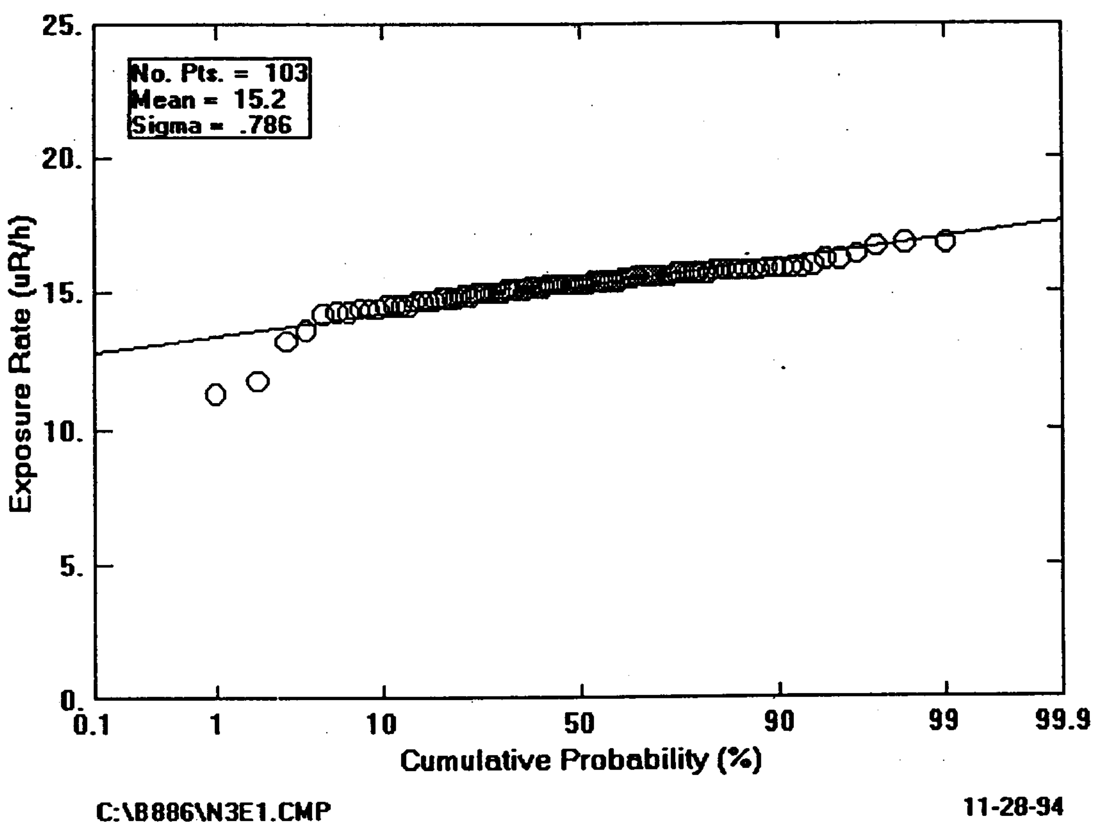
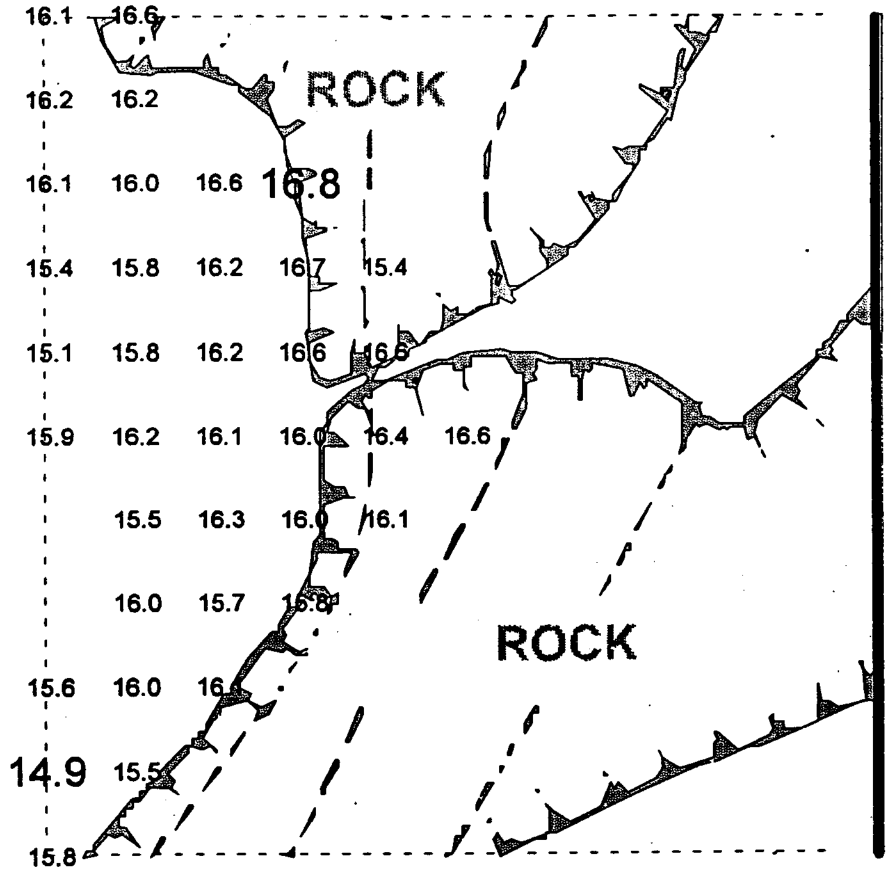
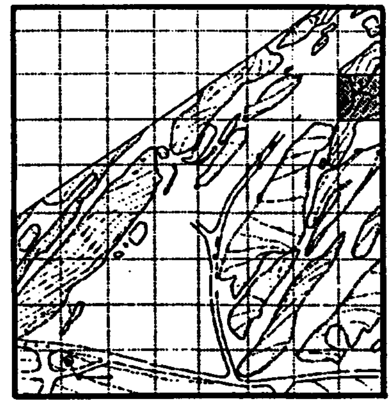


Figure 21. Grid #10 Ambient Gamma Exposure Rate.





Grid #11
N300ft - 400ft
E200ft - 300ft

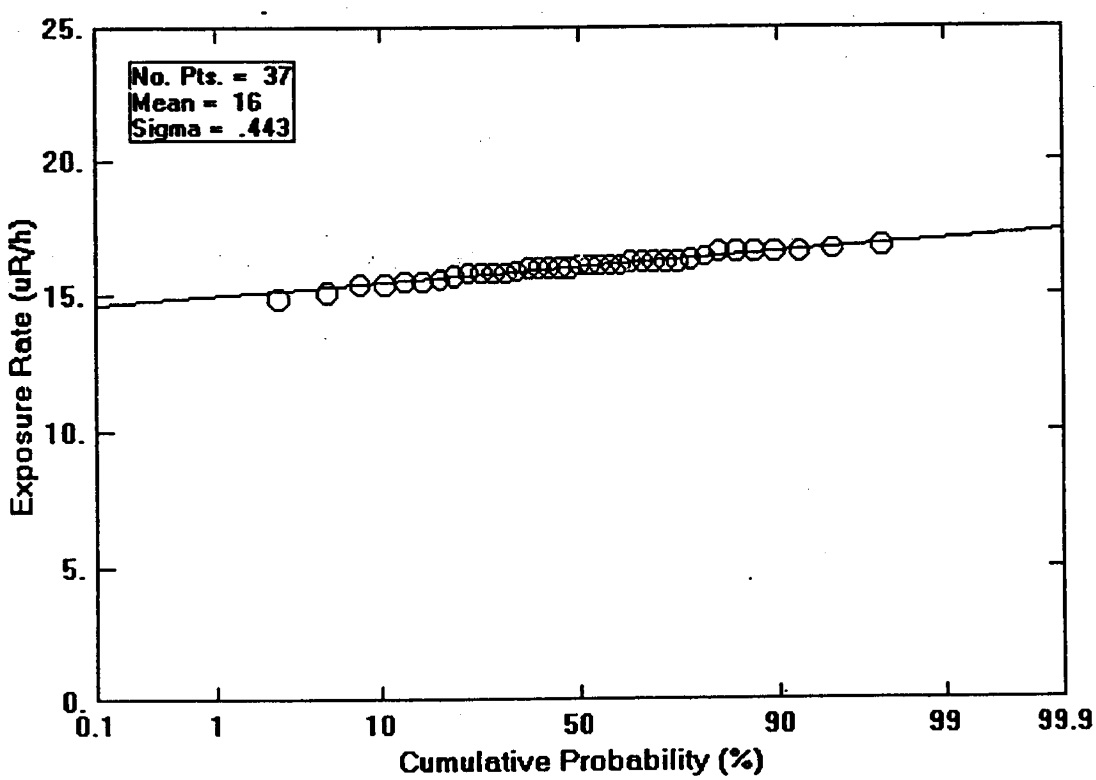


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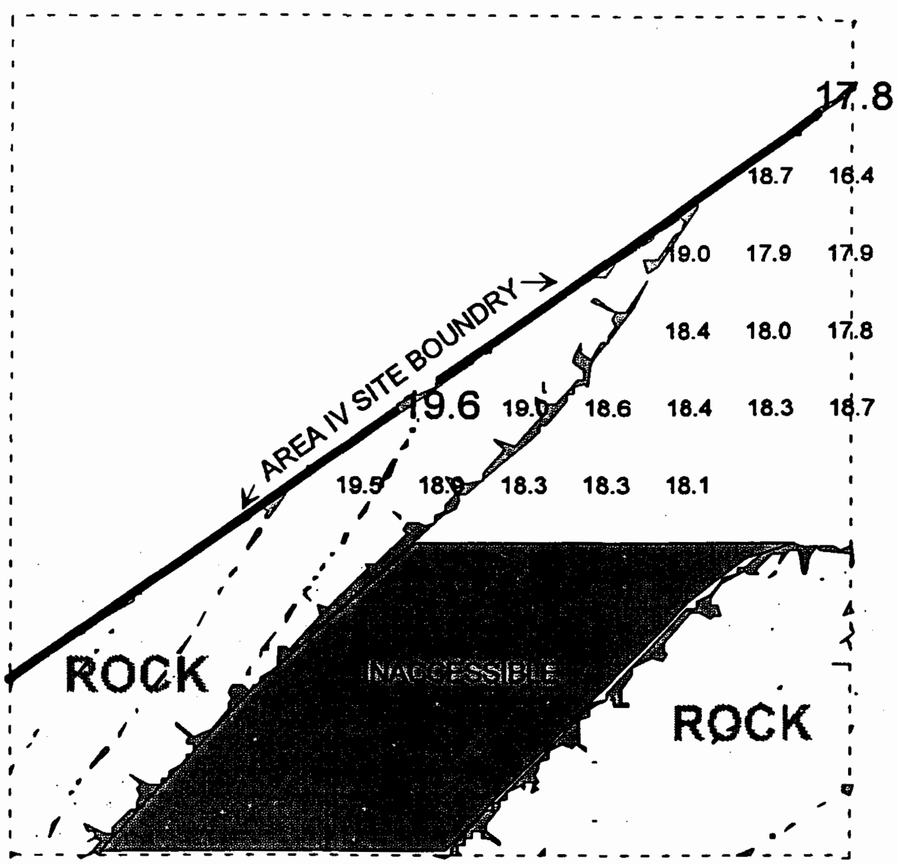
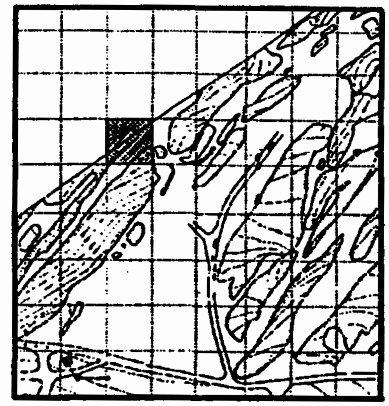
Figure 22. Grid #11 Ambient Gamma Exposure Rate.





Grid #13
N200ft - 300ft
W300ft - 200ft

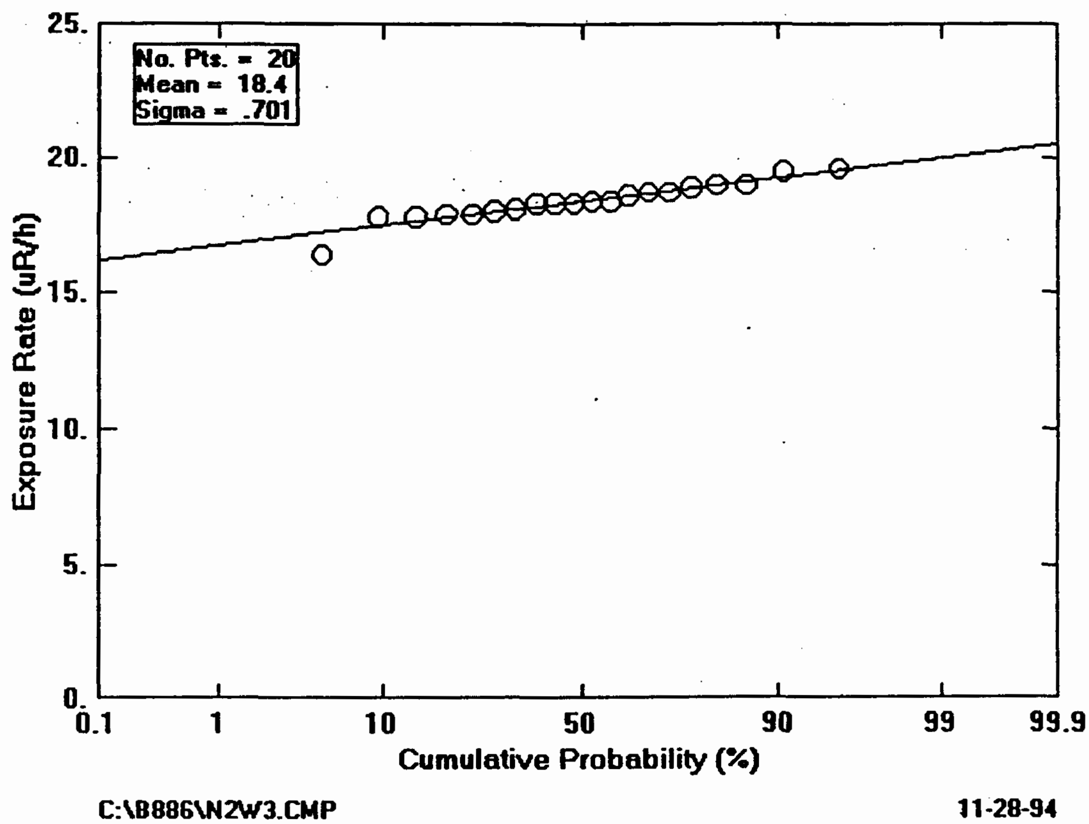
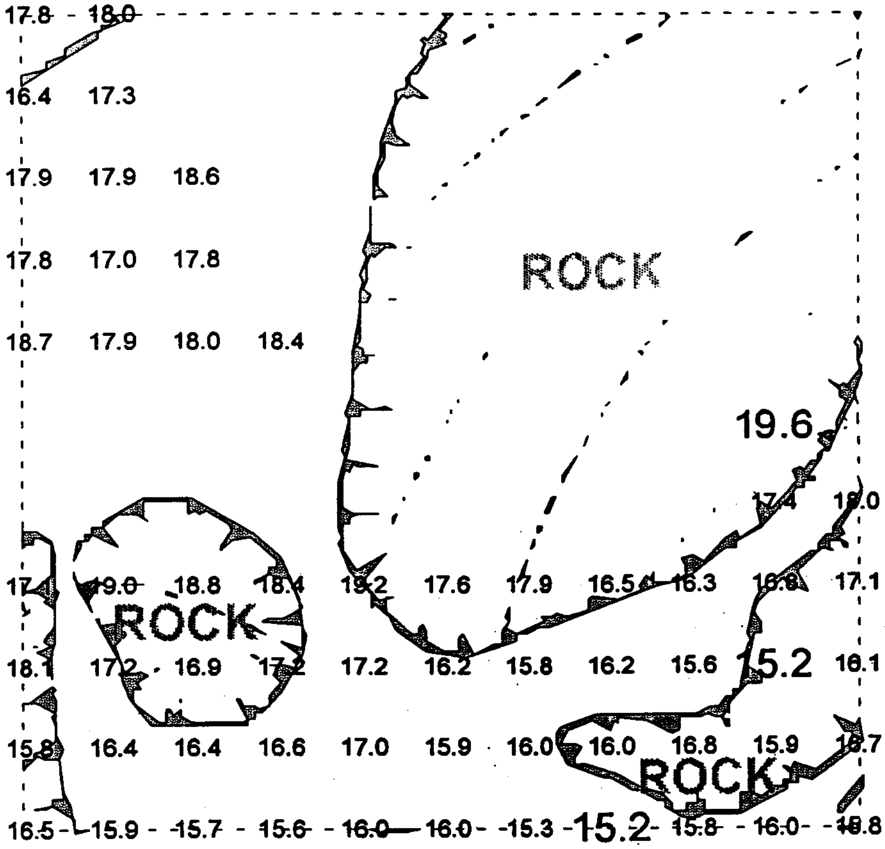
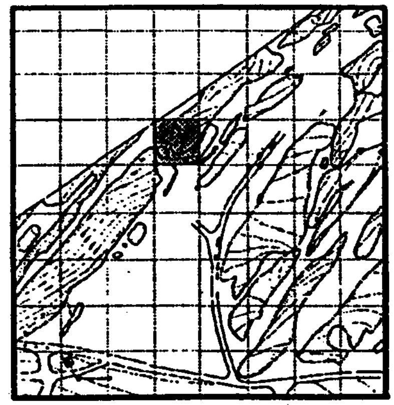


Figure 23. Grid #13 Ambient Gamma Exposure Rate.





Grid #14
N200ft - 300ft
W200ft - 100ft

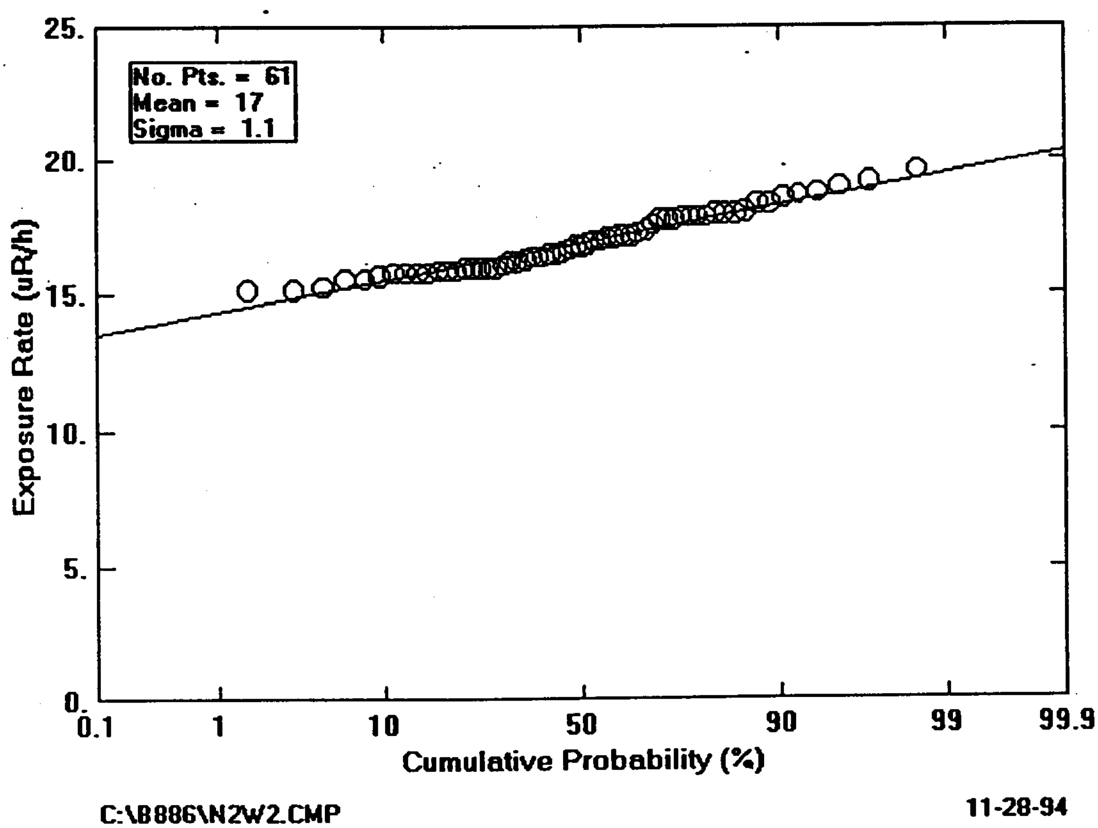
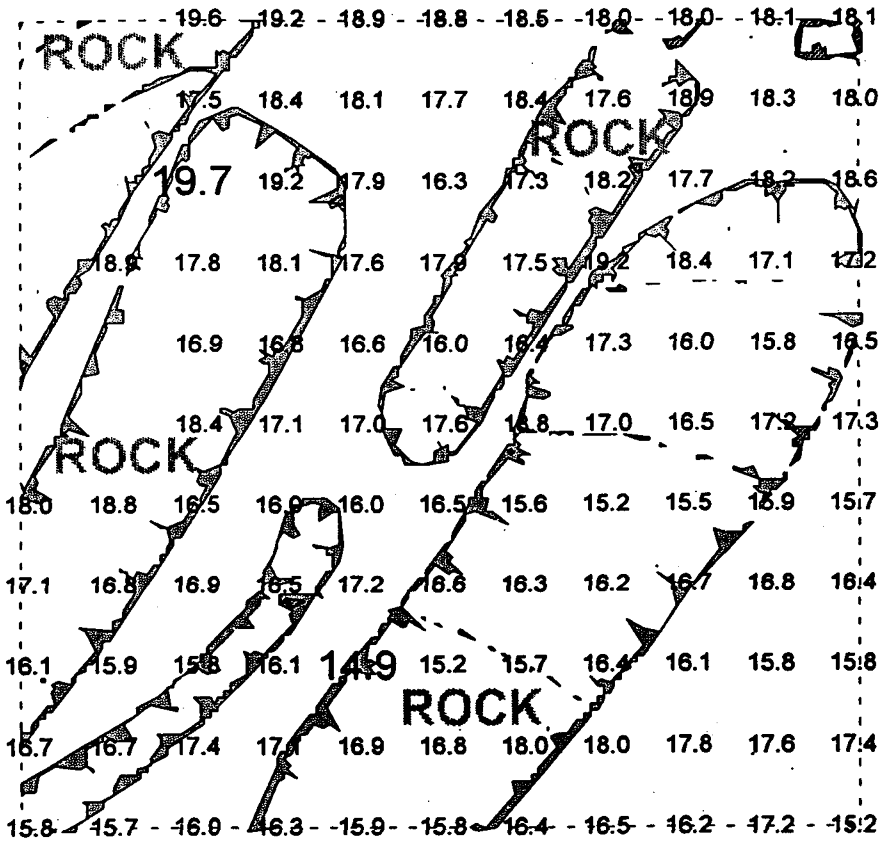
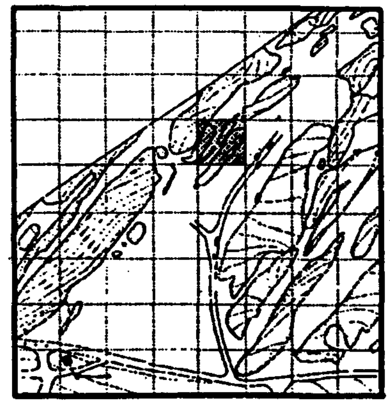


Figure 24. Grid #14 Ambient Gamma Exposure Rate.





Grid #15
N200ft - 300ft
W100ft - 0ft

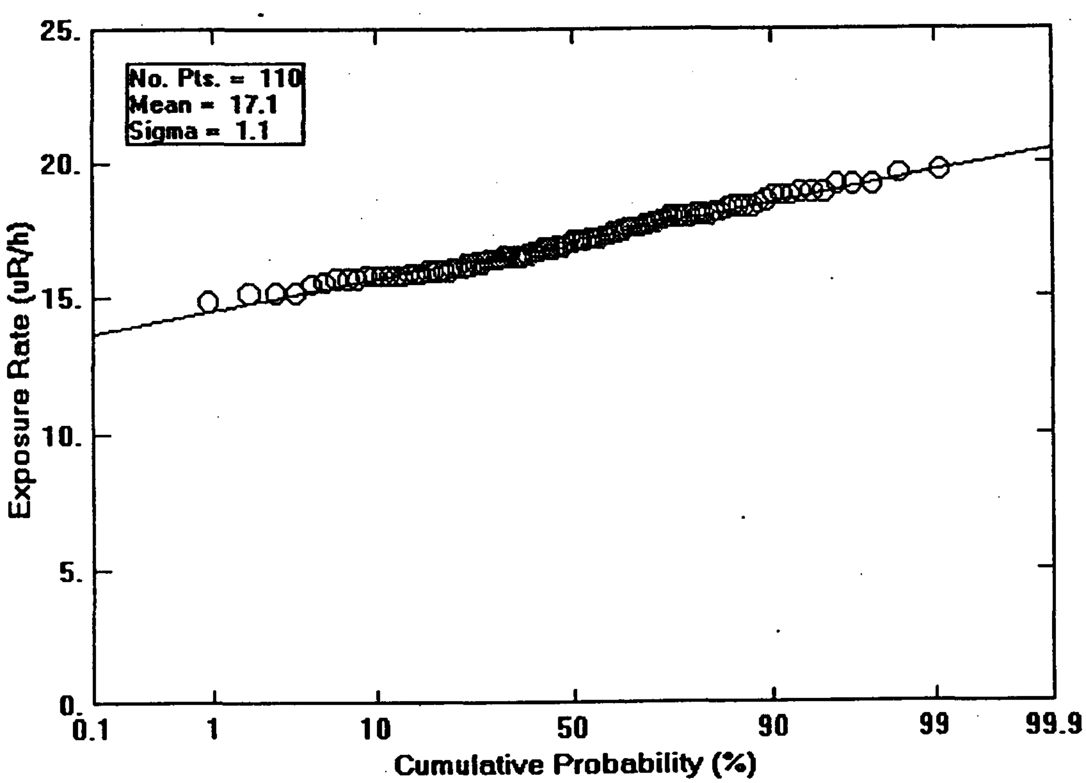


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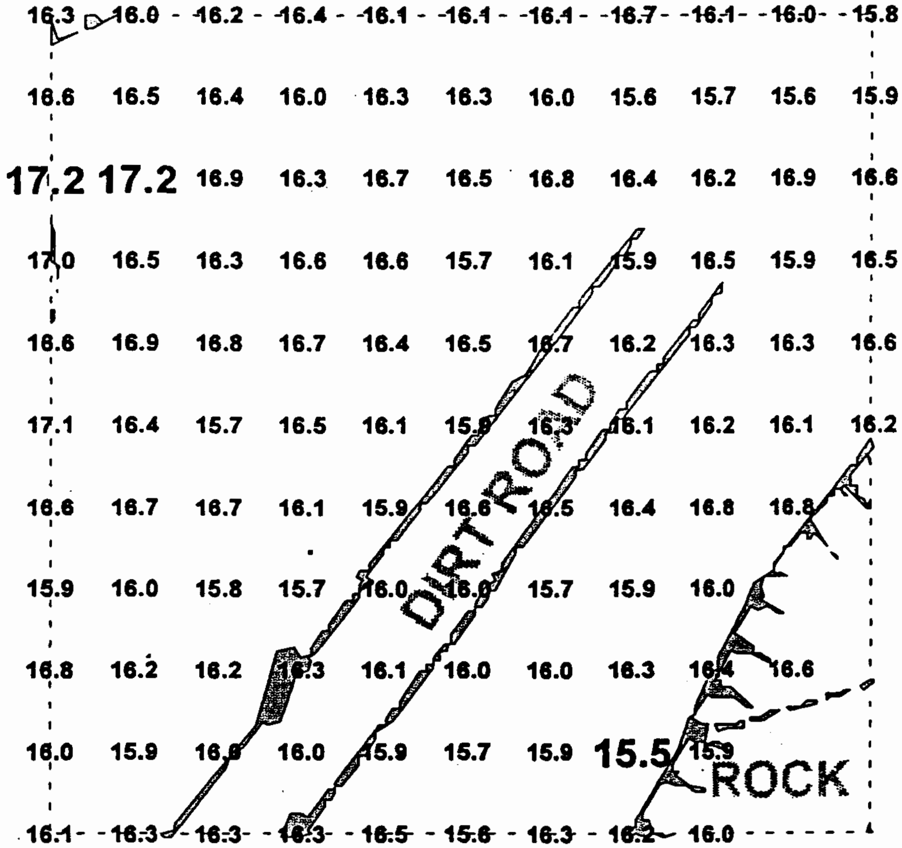
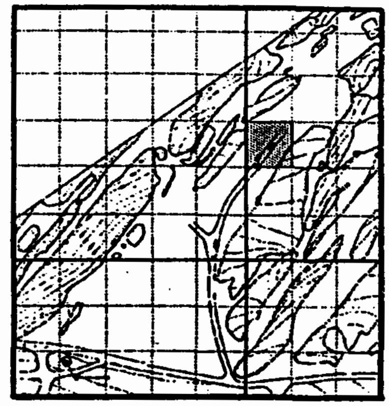
Figure 25. Grid #15 Ambient Gamma Exposure Rate.





Grid #16
N200ft - 300ft
E 0ft - 100ft

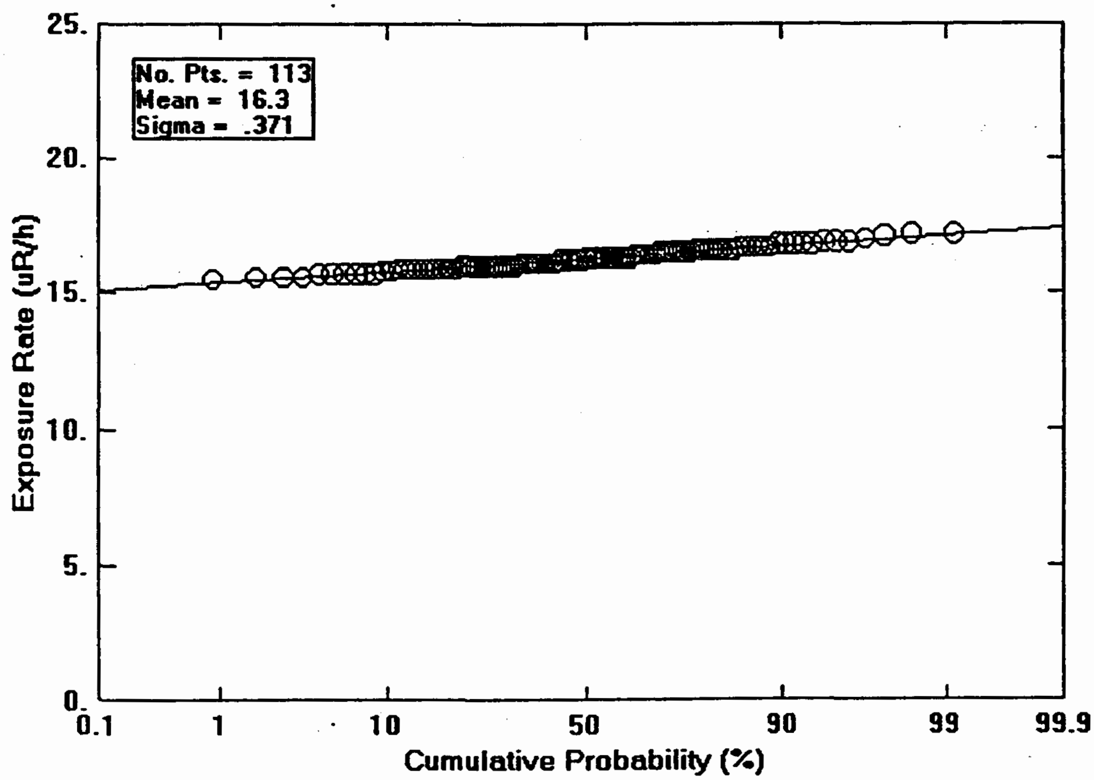


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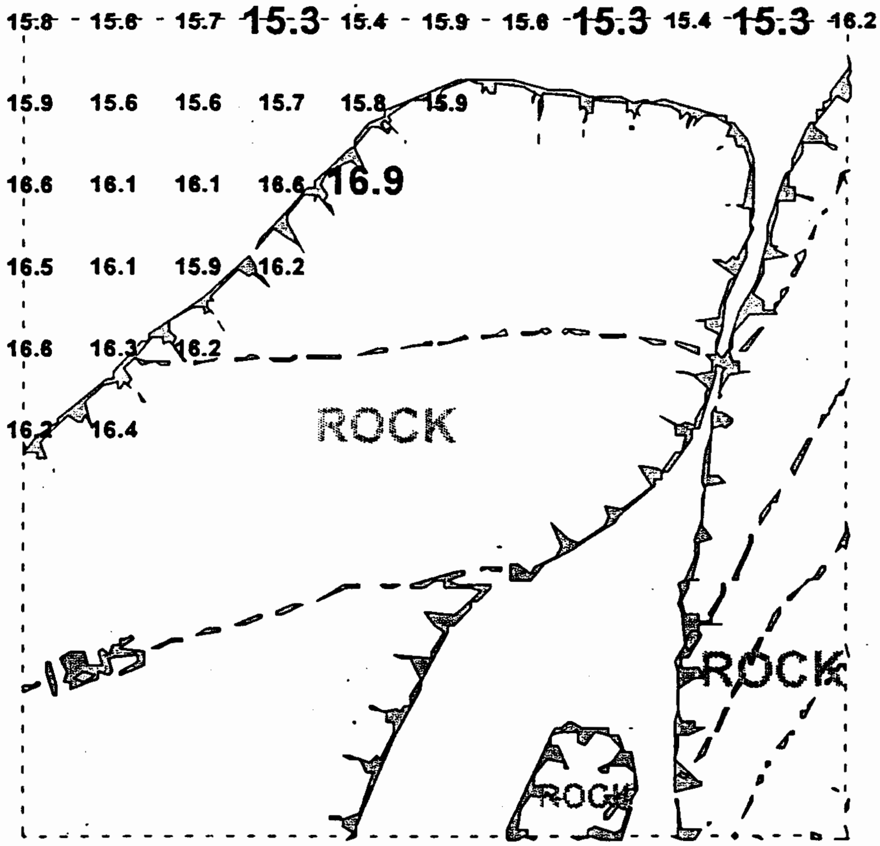
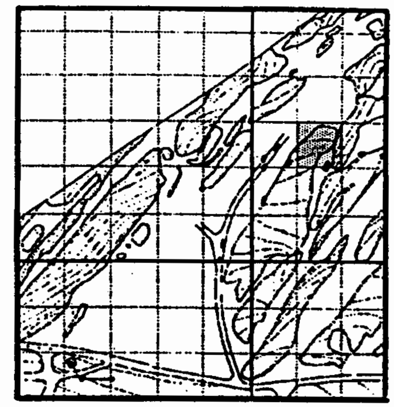
Figure 26. Grid #16 Ambient Gamma Exposure Rate.





Grid #17
N200ft - 300ft
E100ft - 200ft

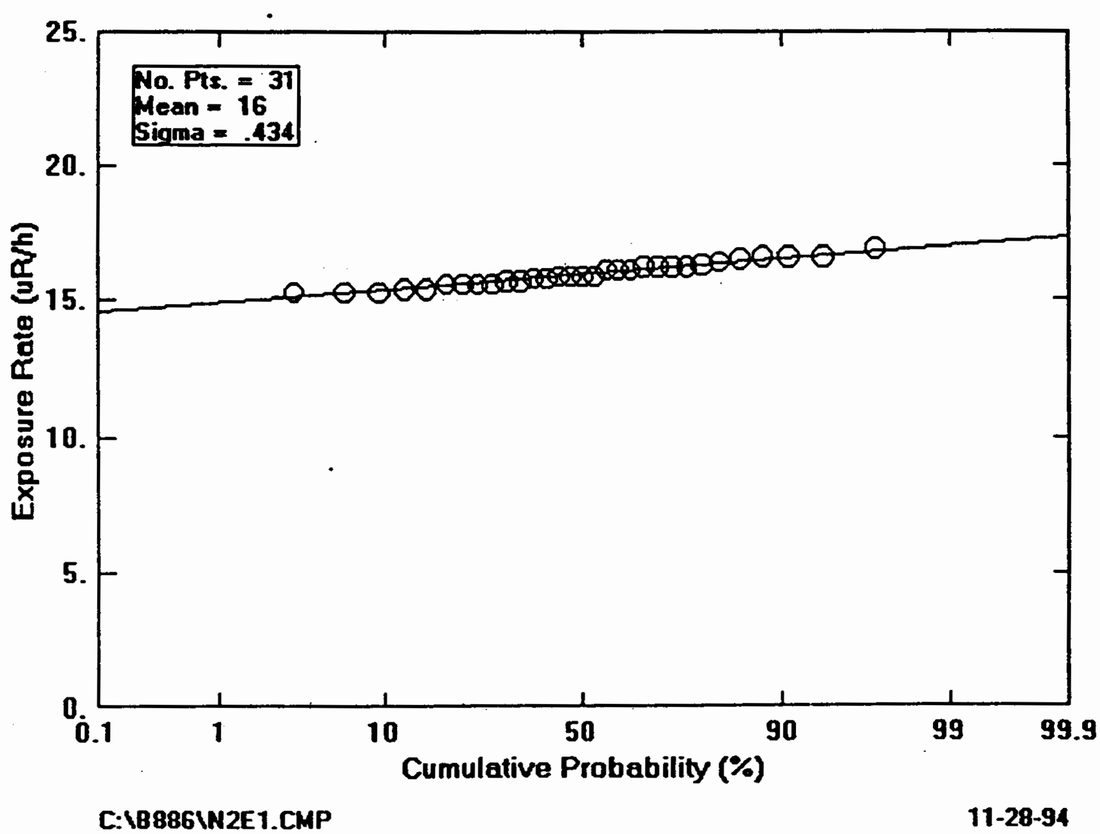
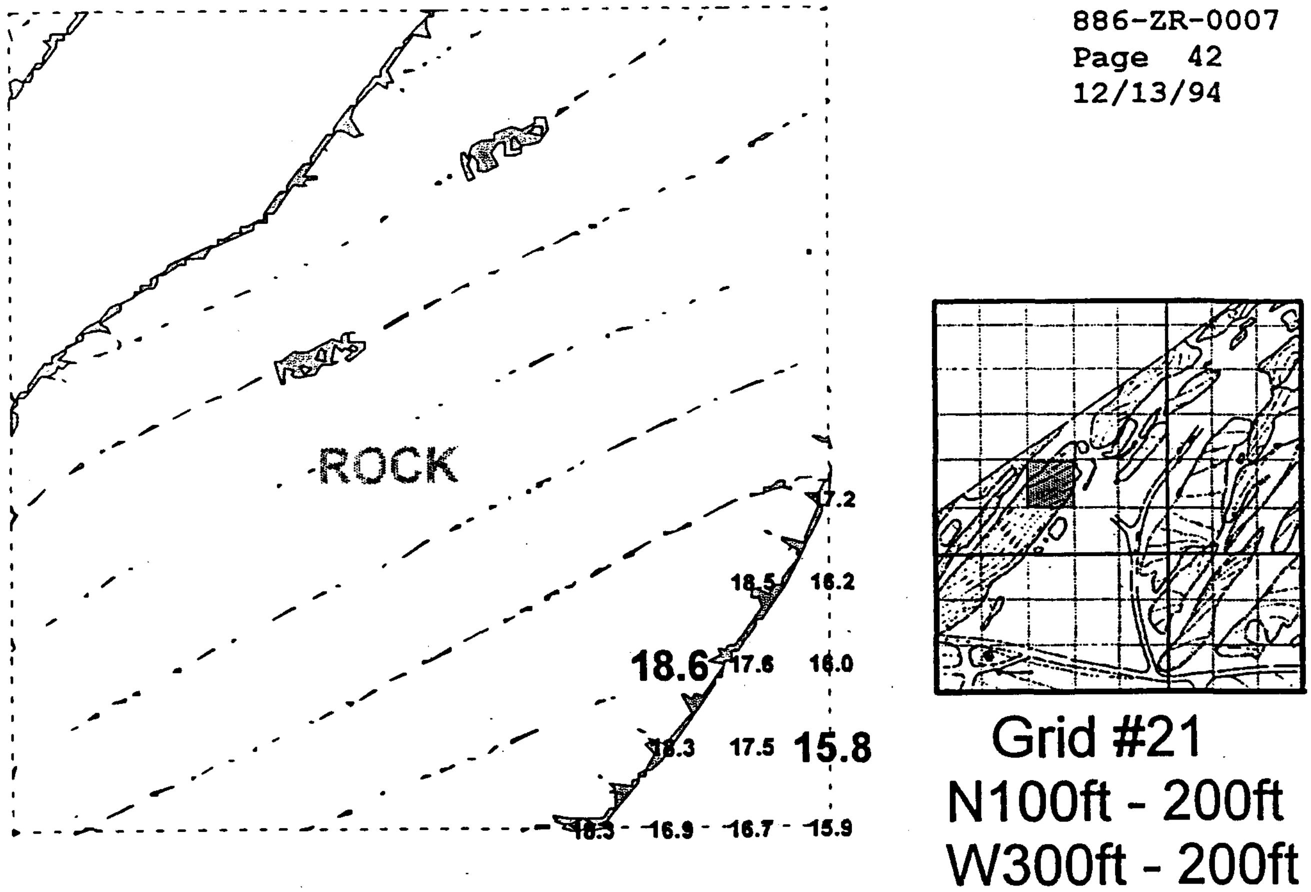


Figure 27. Grid #17 Ambient Gamma Exposure Rate.



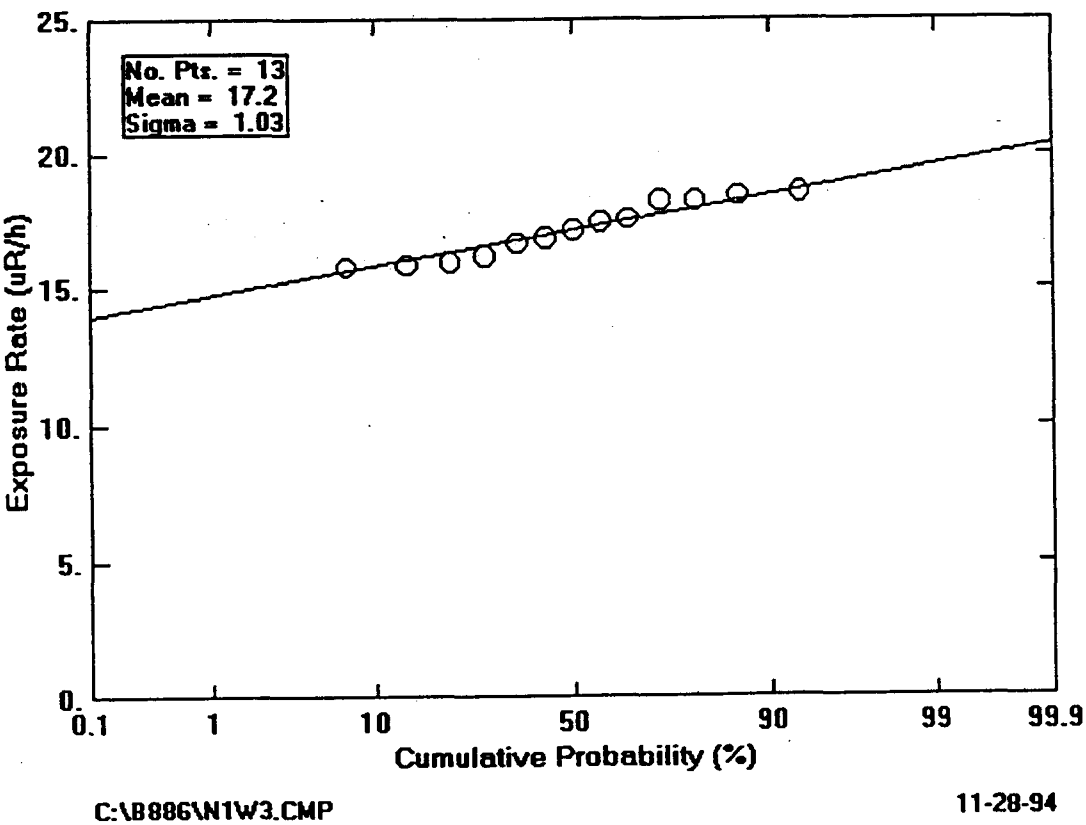
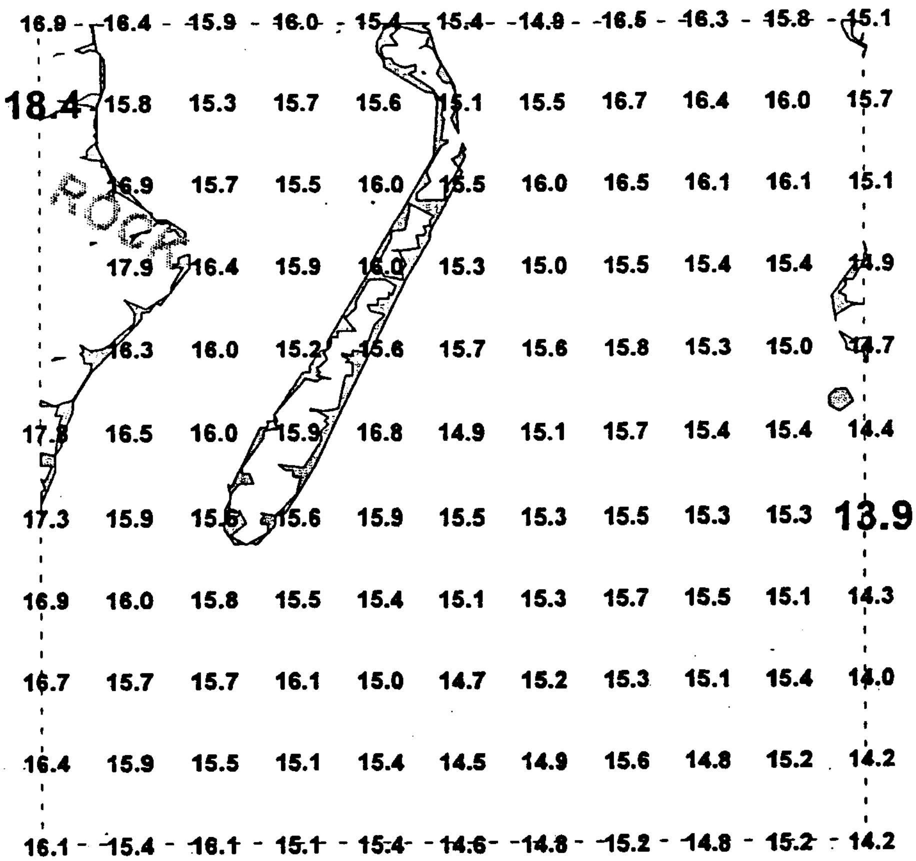
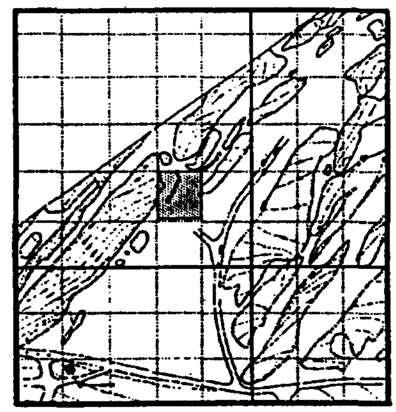


Figure 28. Grid #21 Ambient Gamma Exposure Rate.





Grid #22
N100ft - 200ft
W200ft - 100ft

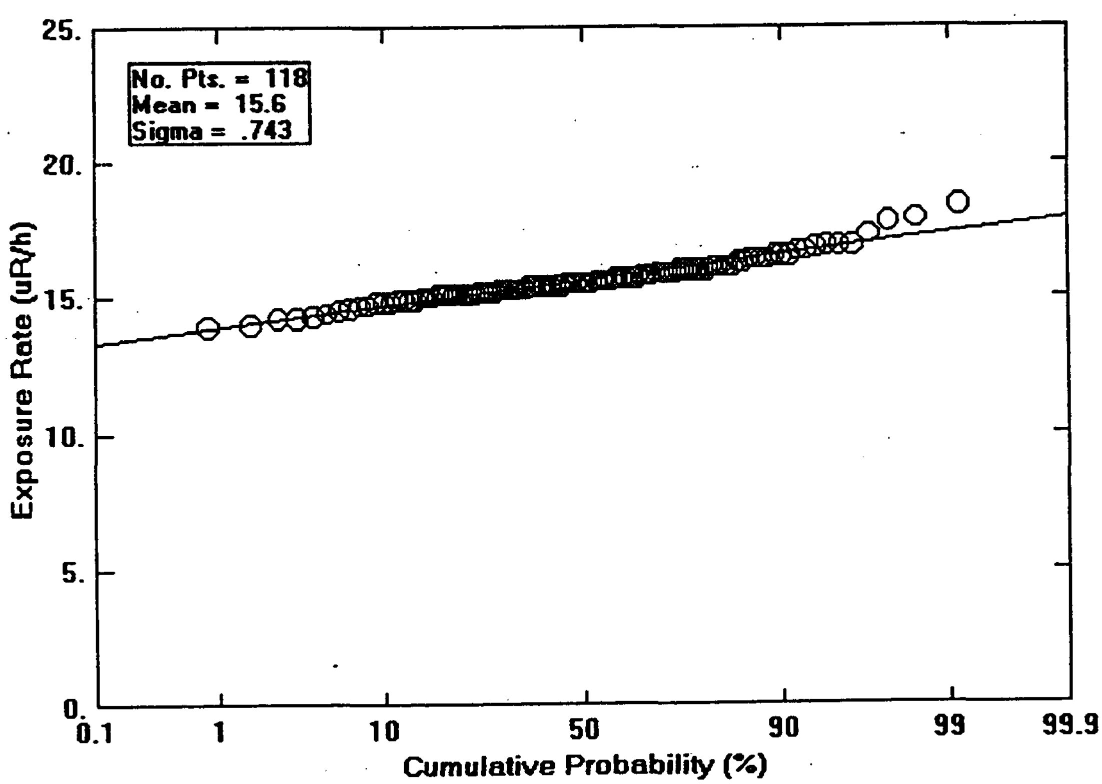


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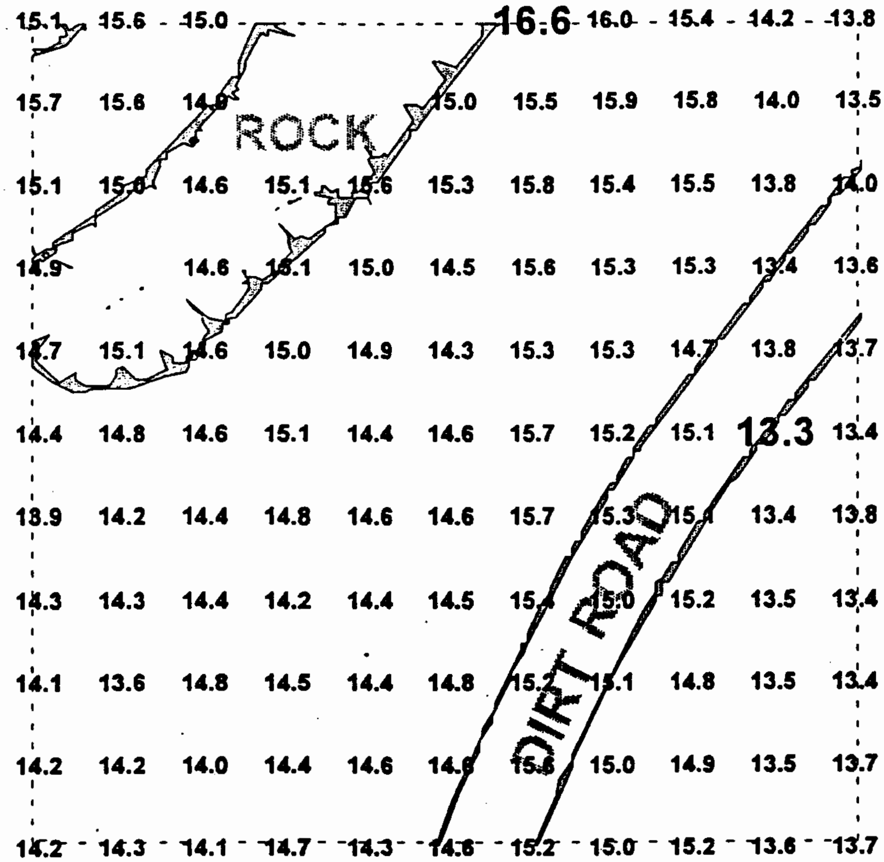
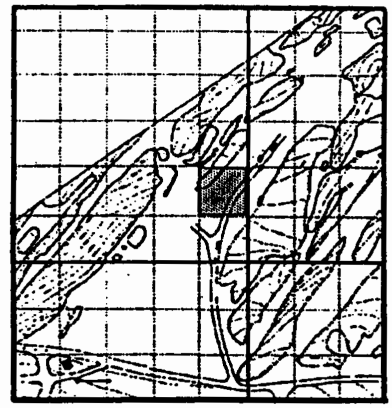
Figure 29. Grid #22 Ambient Gamma Exposure Rate.





Grid #23
N100ft - 200ft
W100ft - 0ft

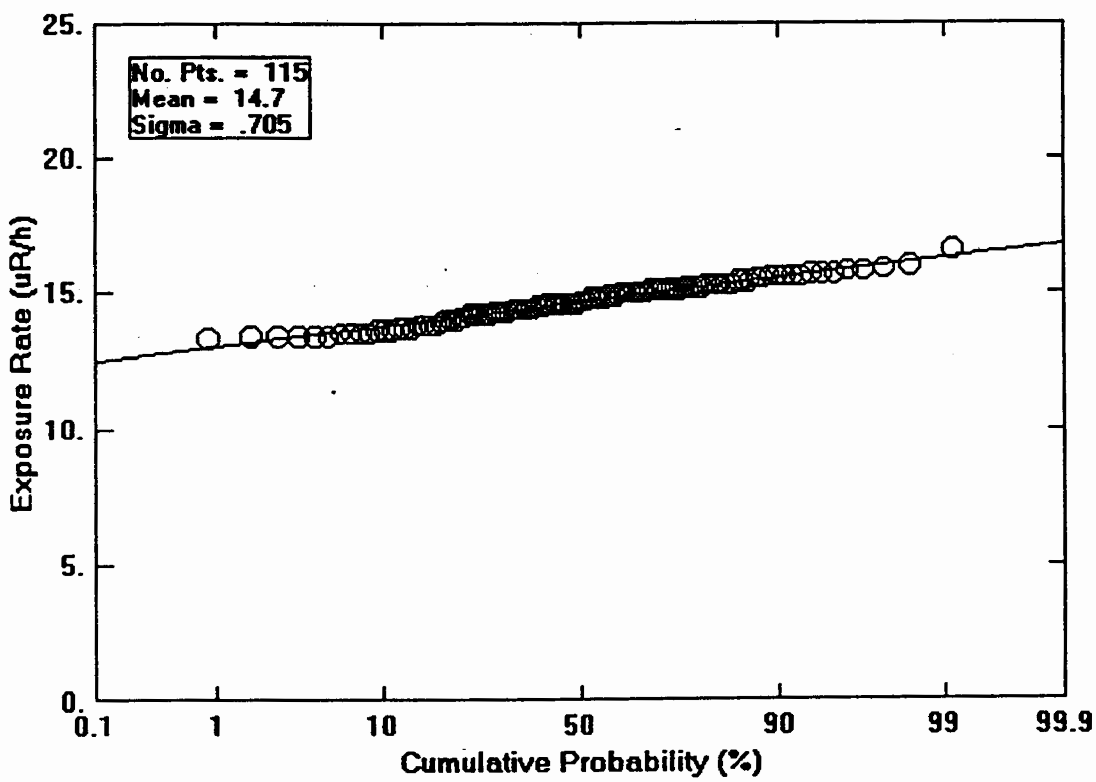


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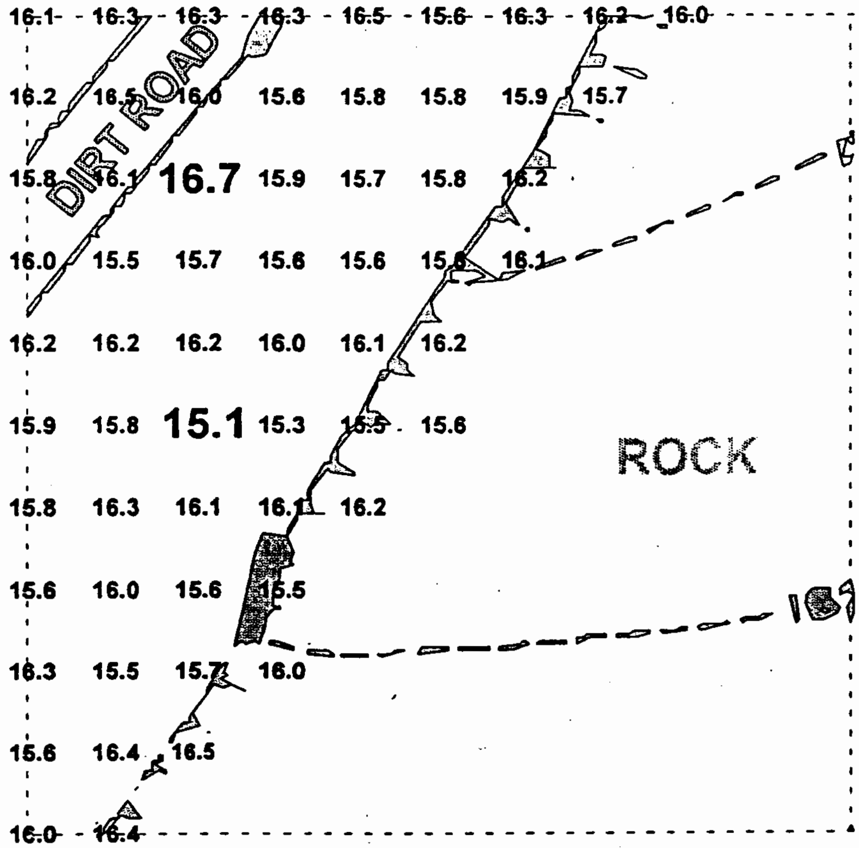
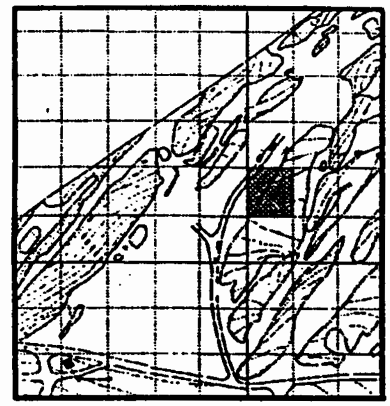
Figure 30. Grid #23 Ambient Gamma Exposure Rate.





Grid #24
N100ft - 200ft
E 0ft - 100ft

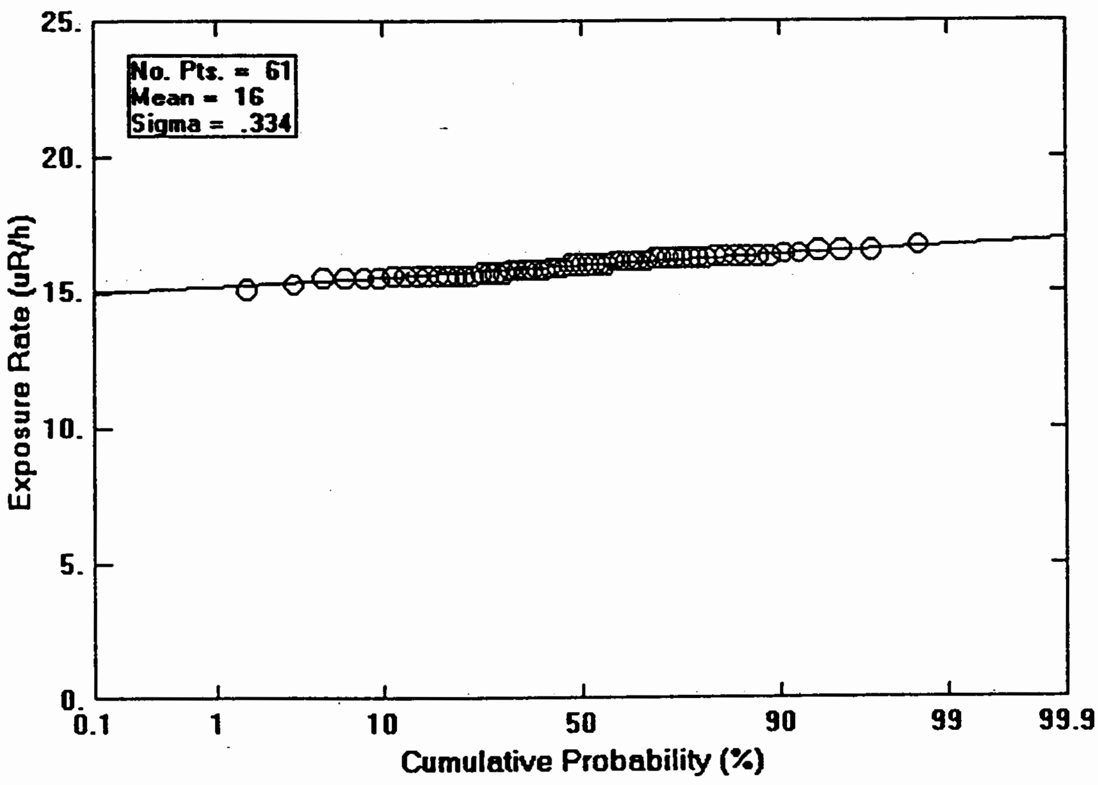
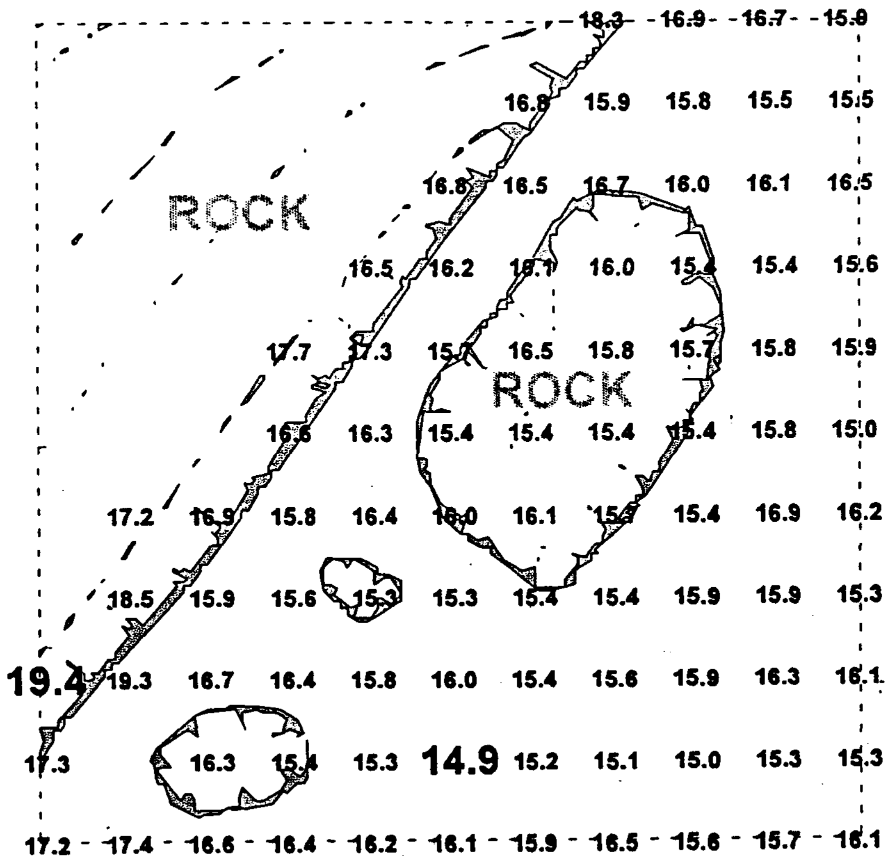
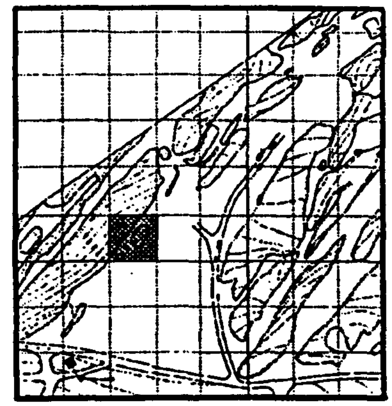


Figure 31. Grid #24 Ambient Gamma Exposure Rate.





Grid #29
N 0ft - 100ft
W300ft - 200ft

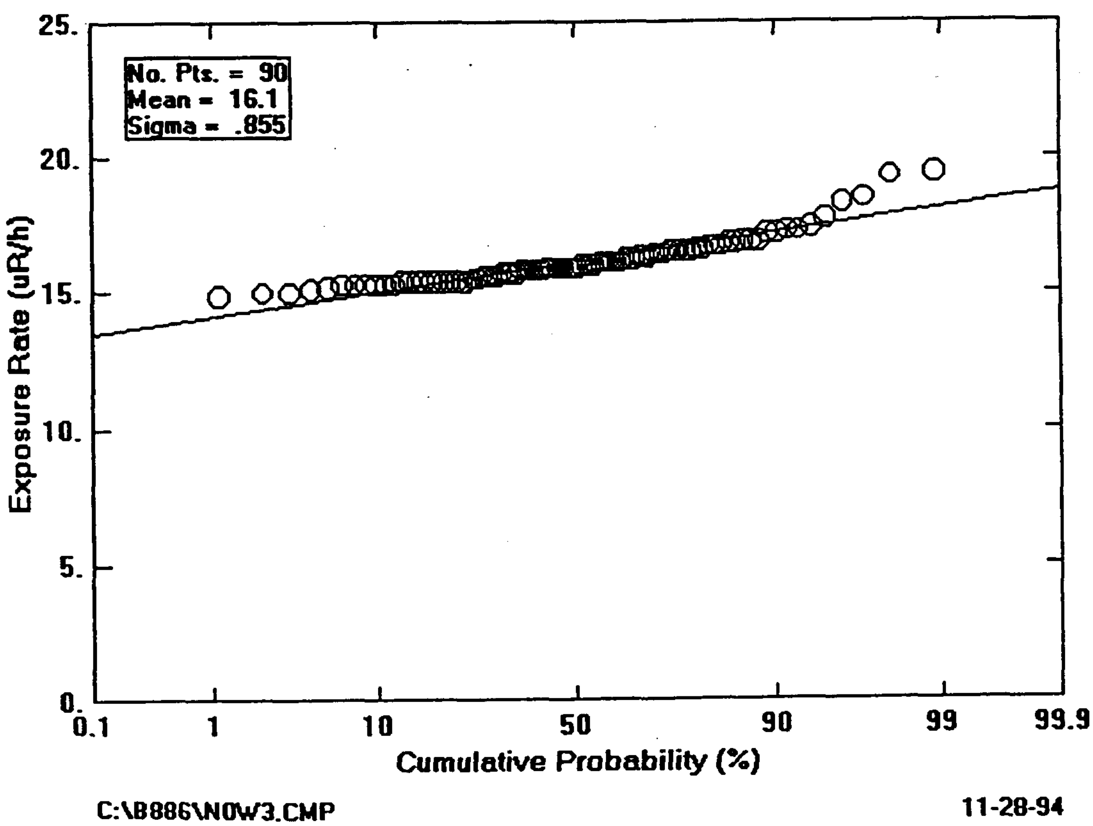
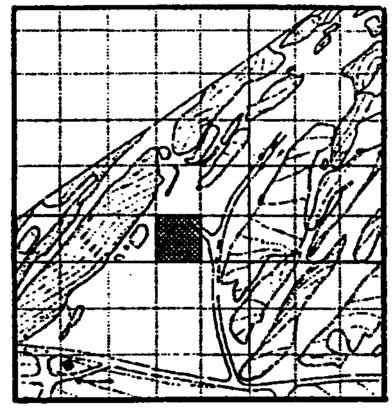


Figure 32. Grid #29 Ambient Gamma Exposure Rate.

16.1	15.4	16.1	15.1	15.5	14.6	14.8	15.2	14.8	15.2	14.2
16.2	15.2	16.1	15.1	14.9	14.4	15.1	14.9	15.0	14.8	14.0
15.7	15.5	15.1	15.6	14.9	14.0	14.8	14.7	14.9	14.9	14.2
16.0	15.8	15.2	16.2	15.3	14.8	14.9	15.3	14.6	14.6	14.3
15.7	15.3	15.1	15.9	14.9	14.4	14.8	14.8	14.7	15.1	13.7
15.9	15.1	15.3	15.6	15.4	14.6	14.4	14.6	14.6	14.8	14.1
16.4	15.3	15.8	15.3	15.5	15.9	15.0	15.2	14.9	14.9	14.2
15.7	15.6	15.6	15.0	15.6	14.8	15.0	15.2	15.0	15.2	14.0
17.6	15.7	15.4	14.9	15.1	14.5	15.0	15.8	15.2	14.7	14.4
17.3	15.5	15.6	14.6	15.1	14.8	15.1	15.6	15.0	14.9	14.3
17.2	15.3	14.6	15.0	15.2	15.9	14.9	16.2	15.4	15.4	14.5

DIRT ROAD



Grid #30
N 0ft - 100ft
W200ft - 100ft

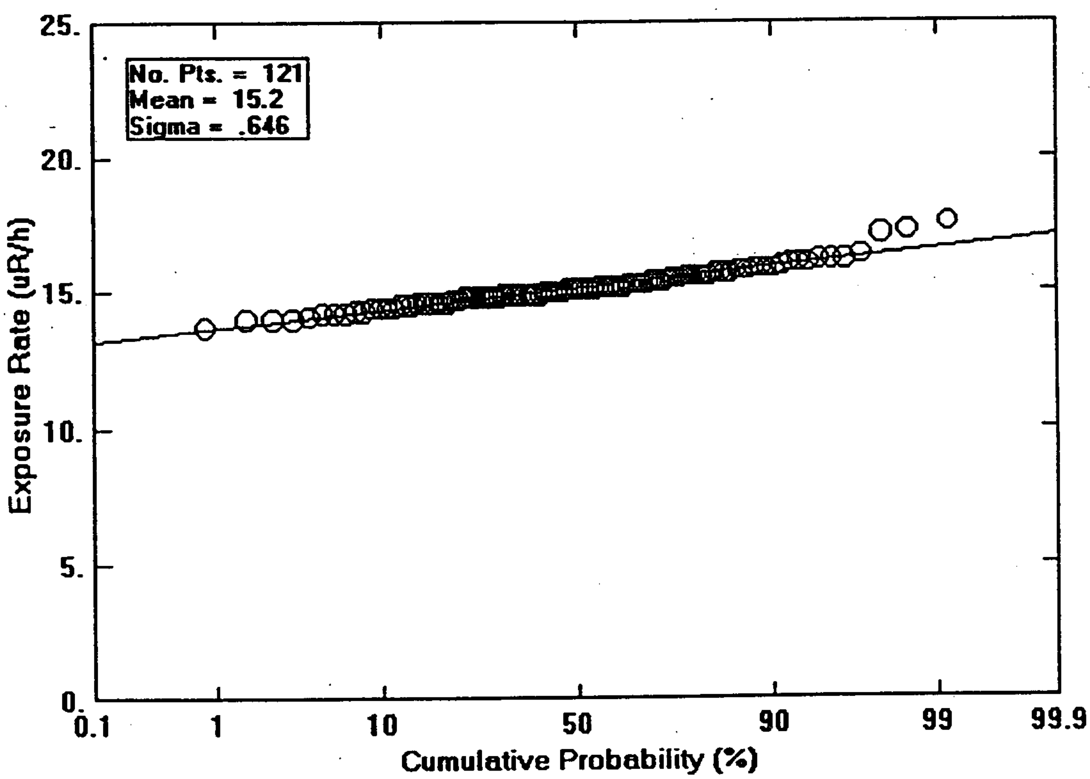


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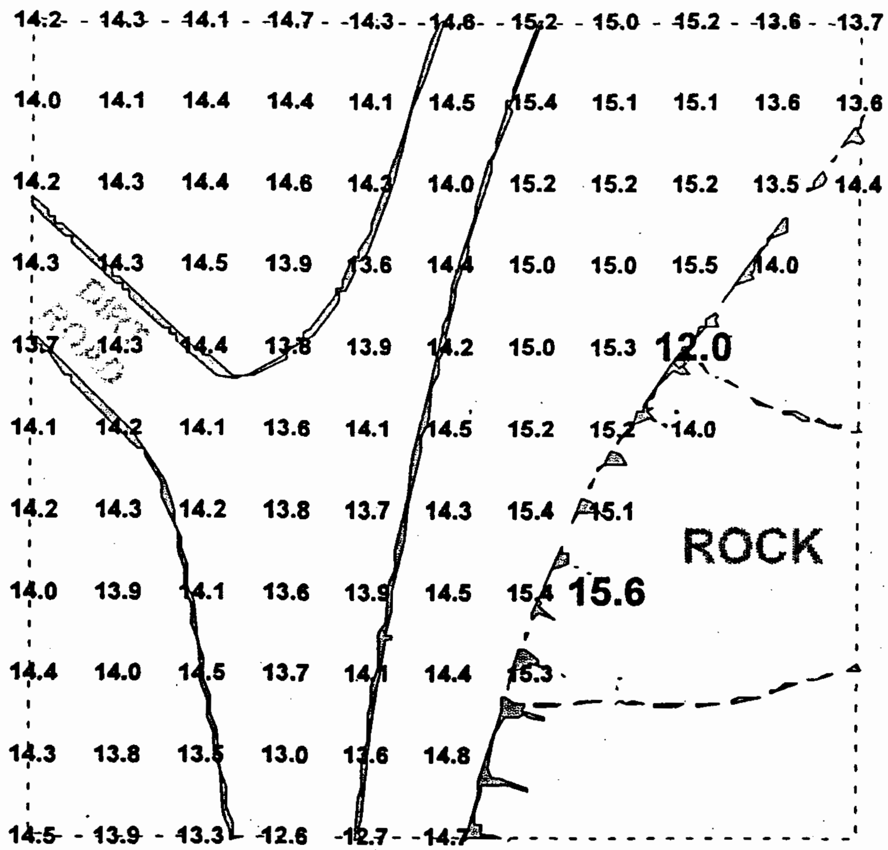
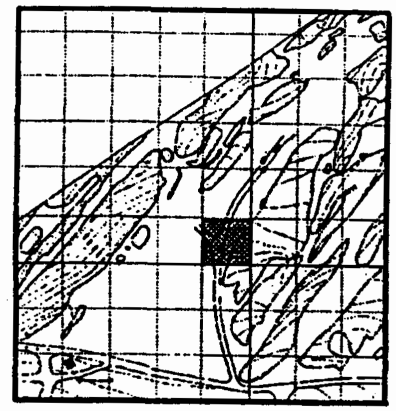
Figure 33. Grid #30 Ambient Gamma Exposure Rate.





Grid #31
N 0ft - 100ft
W100ft - 0ft

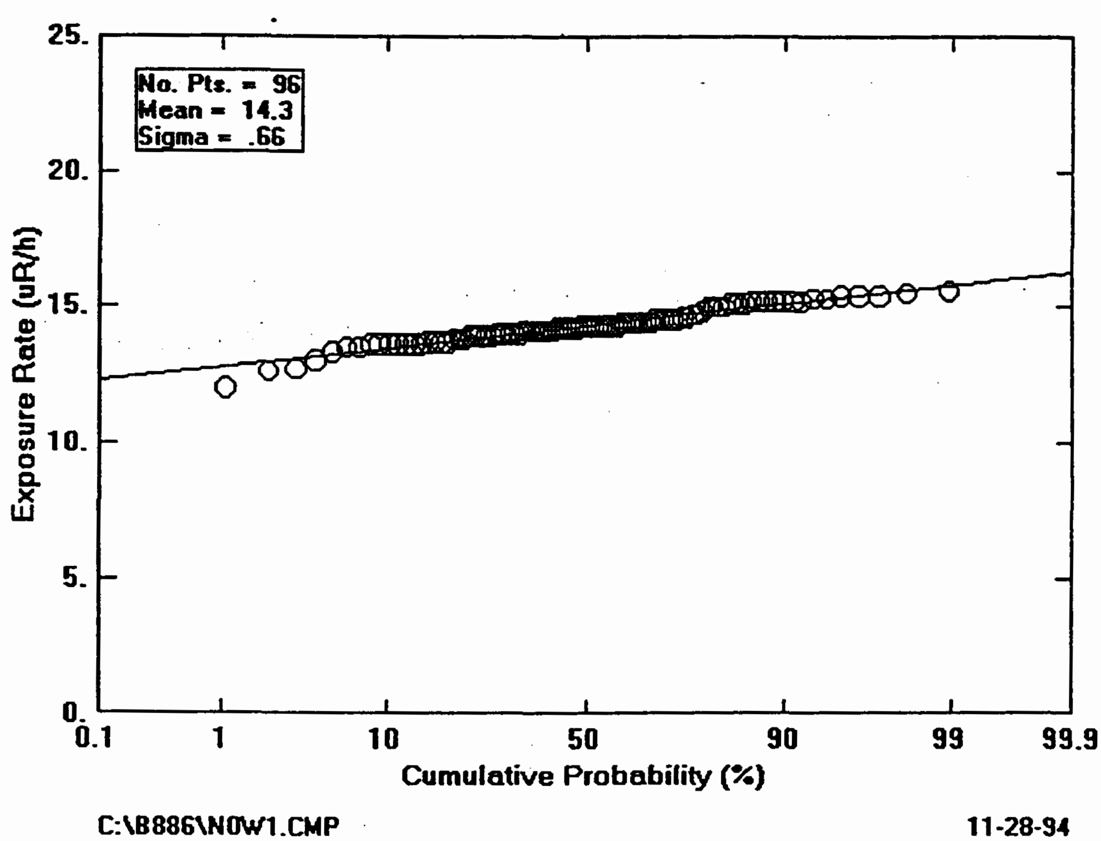
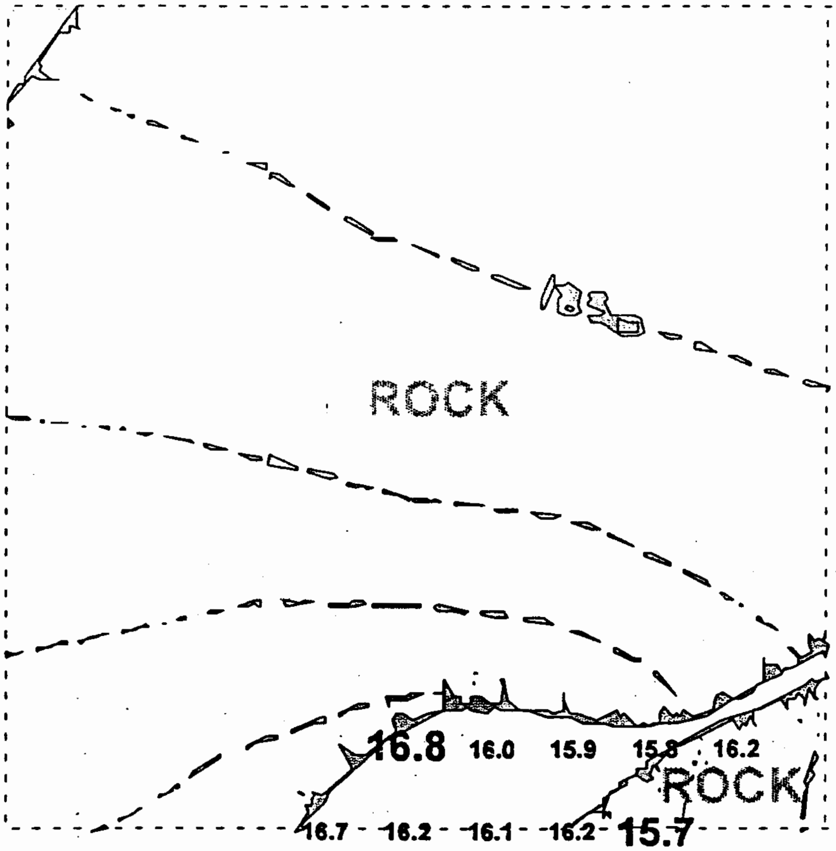


Figure 34. Grid #31 Ambient Gamma Exposure Rate.



Grid #32
N 0ft - 100ft
E 0ft - 100ft

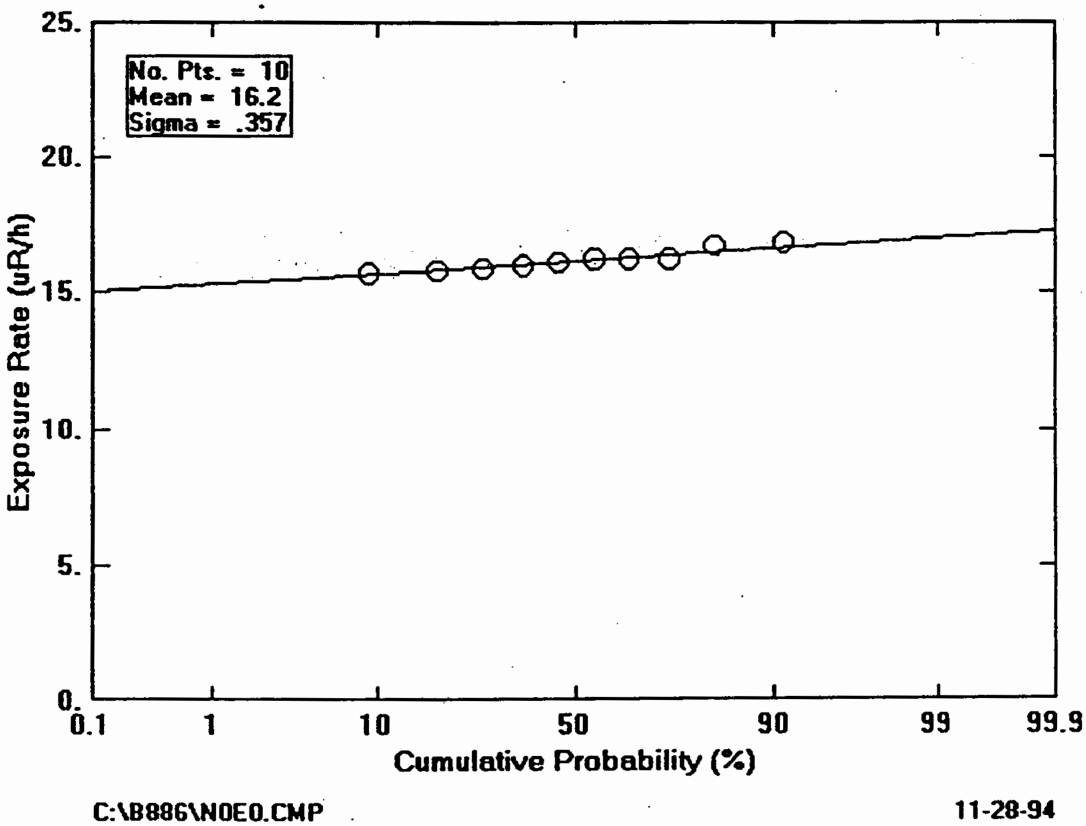
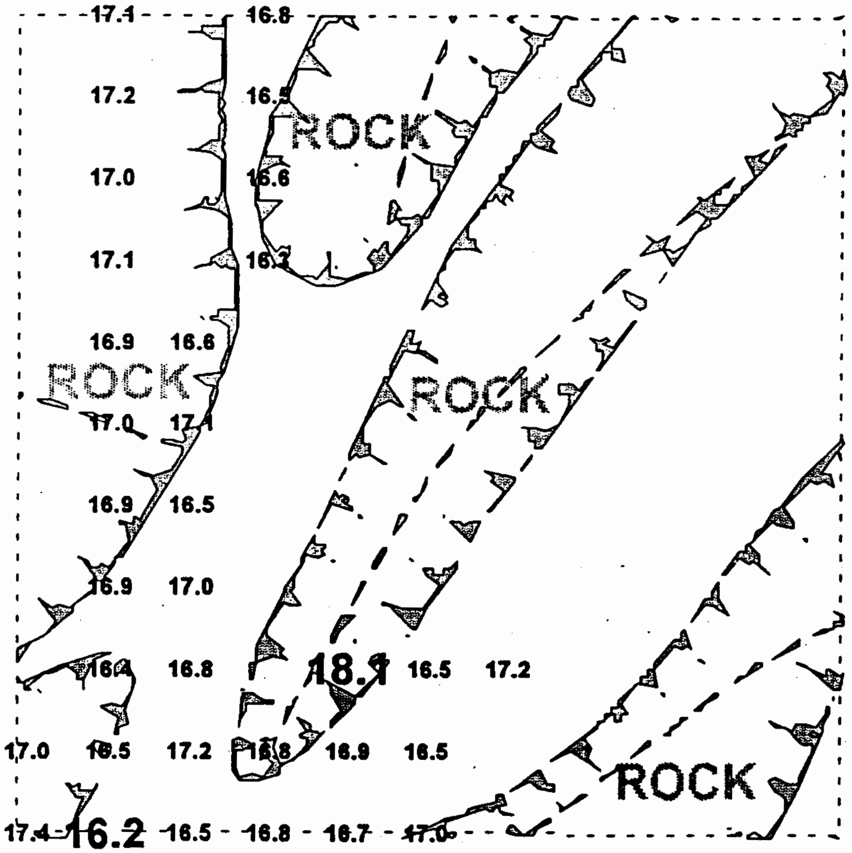
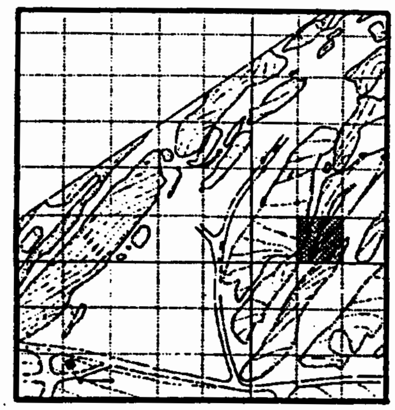


Figure 35. Grid #32 Ambient Gamma Exposure Rate.





Grid #33
N 0ft - 100ft
E100ft - 200ft

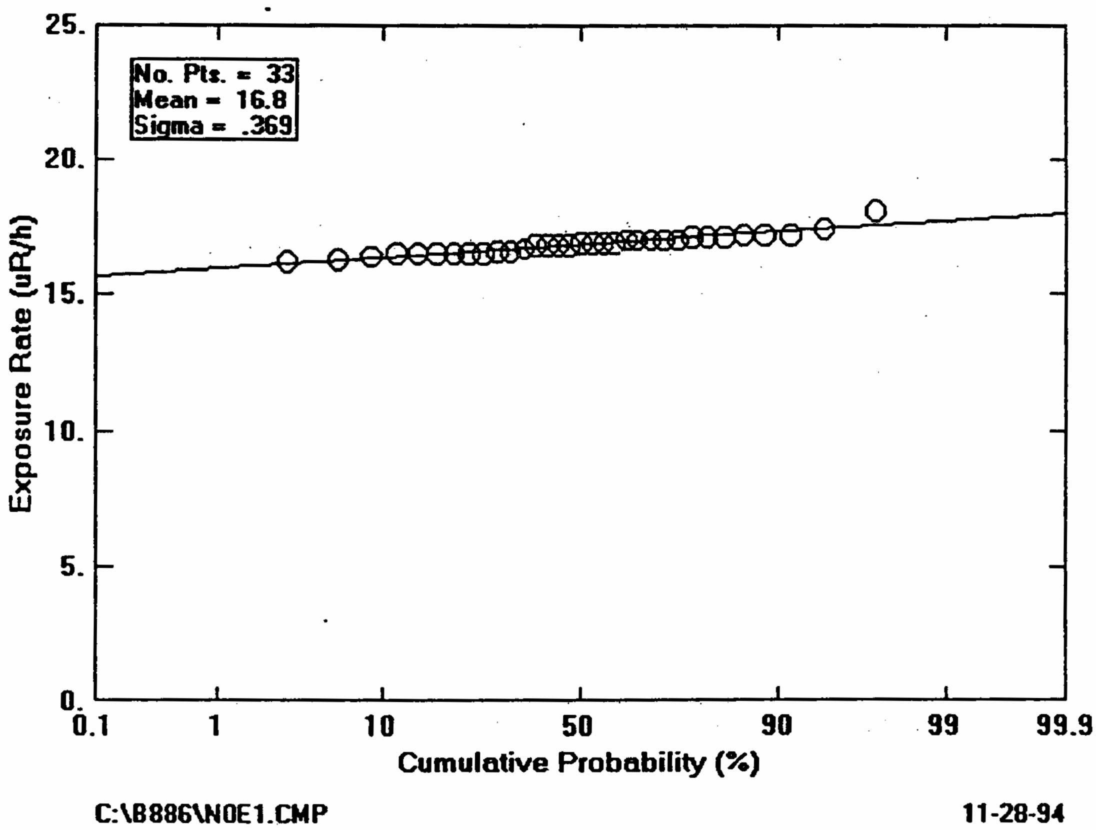
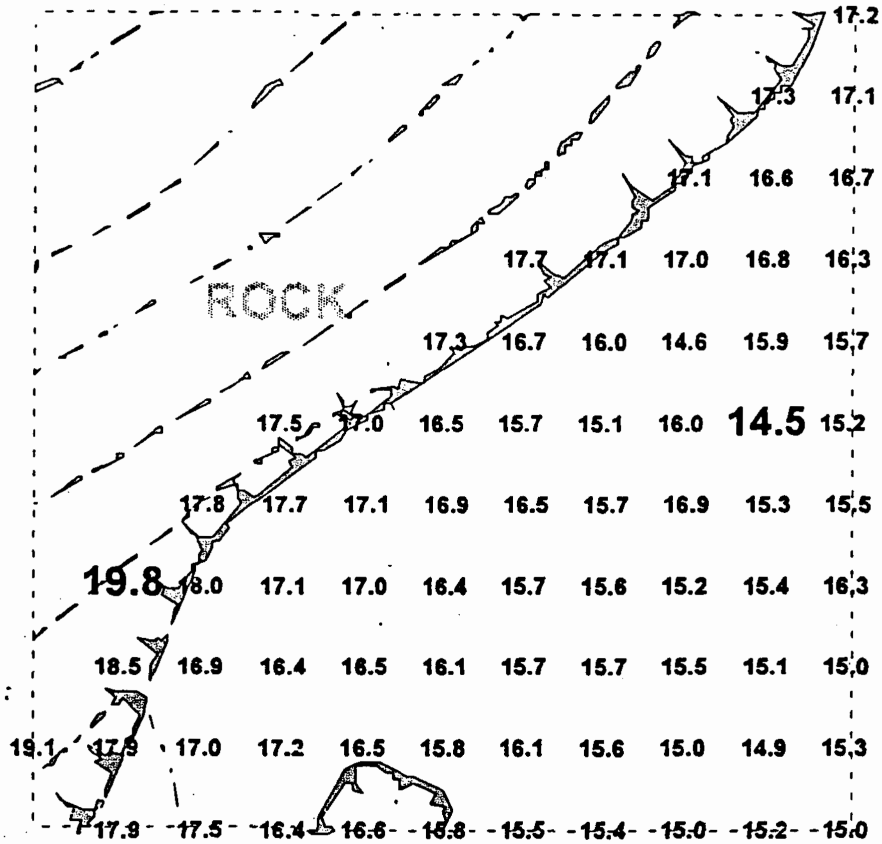
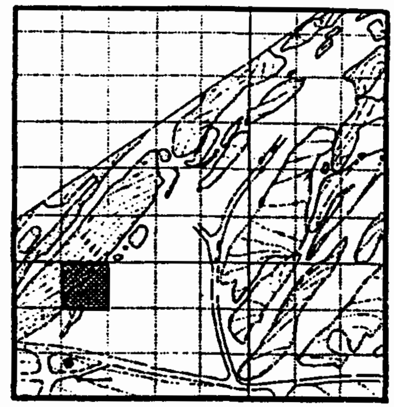


Figure 36. Grid #33 Ambient Gamma Exposure Rate.





Grid #36
S 0ft - 100ft
W400ft - 300ft

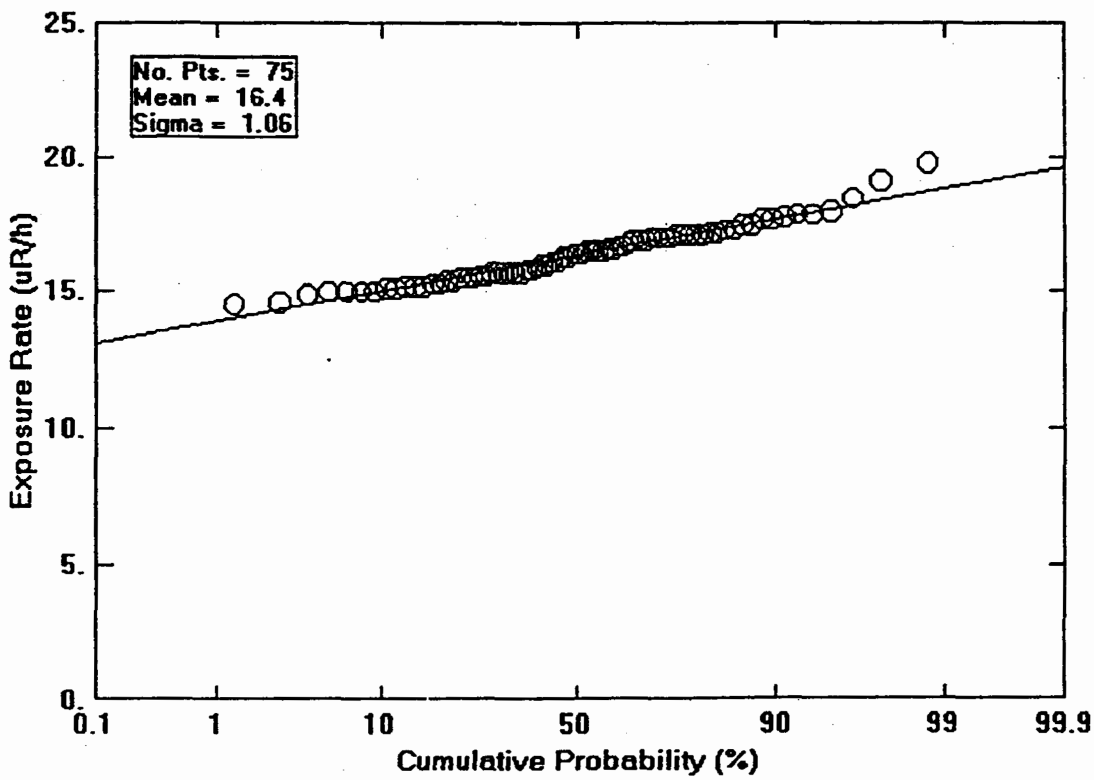


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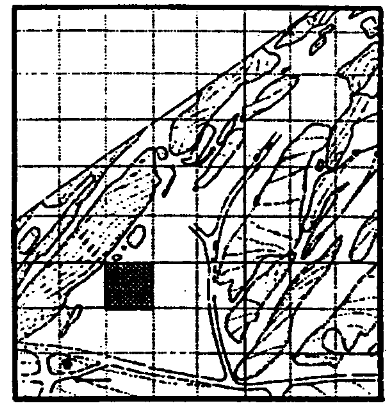
Figure 37. Grid #36 Ambient Gamma Exposure Rate.

17.2	17.4	16.6	16.4	16.2	16.1	15.9	16.5	15.6	15.7	16.1
17.1	16.5	16.4	16.0	15.3	15.3	16.0	16.5	15.8	15.9	15.9
16.7	15.8	16.3	15.6	15.6	16.8	17.2	16.5	16.4	16.1	15.5
16.3	15.7	15.2	15.3	14.9	15.7	15.7	16.4	16.3	15.7	15.3
15.7	15.7	15.2	15.4	15.2	14.9	15.4	15.8	16.1	15.7	16.1
15.2	15.2	15.0	15.1	15.1	15.1	15.0	16.1	16.6	15.7	15.4
15.5	15.0	15.0	15.2	15.1	15.4	15.1	15.8	16.3	16.9	16.0
16.3	15.1	15.3	15.0	15.4	15.7	16.1	15.6	16.2	15.9	15.9
15.0	15.1	14.7	14.5	15.0	15.5	15.3	15.5	15.0	15.0	15.1
15.3	14.6	15.2	14.6	14.5	14.8	15.4	15.4	15.0	15.4	14.7
15.0	15.0	14.9	14.9	15.2	15.3	15.3	15.4	15.2	15.0	16.2



Grid #37
S 0ft - 100ft
W300ft - 200ft

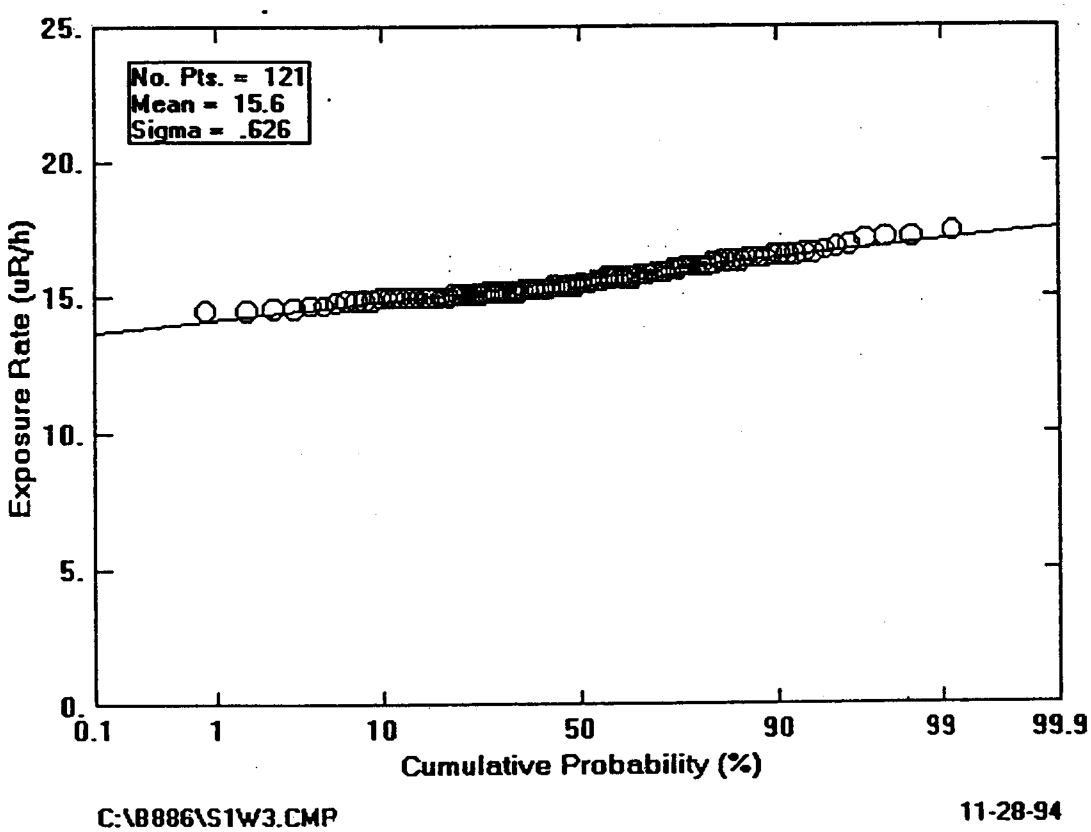
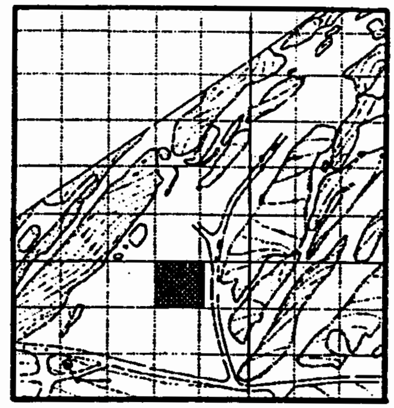


Figure 38. Grid #37 Ambient Gamma Exposure Rate.

17.2	15.3	14.6	15.0	15.2	15.9	14.9	16.2	15.4	15.4	14.5
15.7	15.3	16.0	16.7	16.7	15.6	14.9	15.0	15.5	15.5	14.1
15.1	15.3	15.2	14.4	15.4	15.0	14.7	14.7	15.0	14.7	14.4
14.9	14.9	14.2	14.6	14.7	14.4	14.2	14.4	14.8	14.9	14.2
15.0	14.4	14.4	15.0	14.8	14.6	14.4	14.7	15.0	14.4	13.9
14.9	14.6	14.6	14.8	14.9	14.9	15.0	14.6	14.3	14.5	**13.2**
15.3	15.0	14.7	14.5	14.3	14.5	14.1	14.5	14.3	14.0	13.7
15.0	14.6	14.4	14.7	14.1	14.3	14.0	13.7	13.8	13.5	13.4
14.2	14.3	14.5	14.1	13.9	14.0	14.0	14.5	14.3	14.2	14.0
14.3	14.1	13.9	13.9	14.3	13.7	13.6	13.9	14.0	14.0	13.9
14.7	14.0	14.1	14.3	14.4	13.8	13.6	14.1	13.8	13.8	14.2



Grid #38
S 0ft - 100ft
W200ft - 100ft

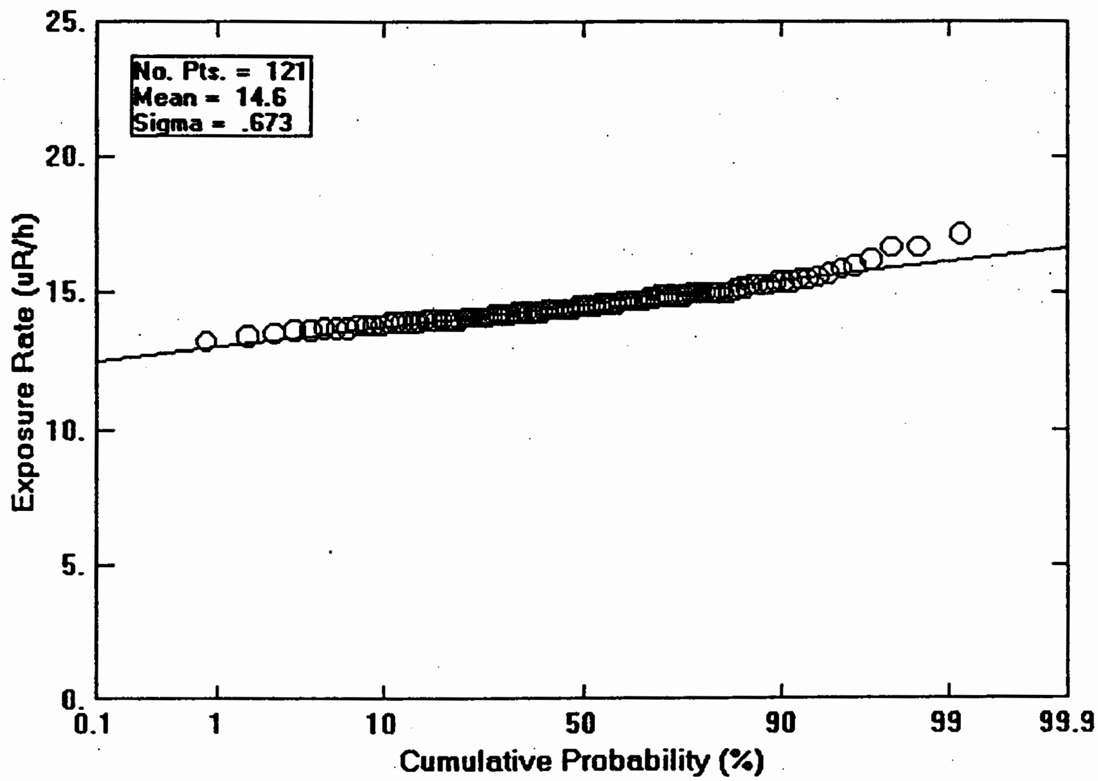


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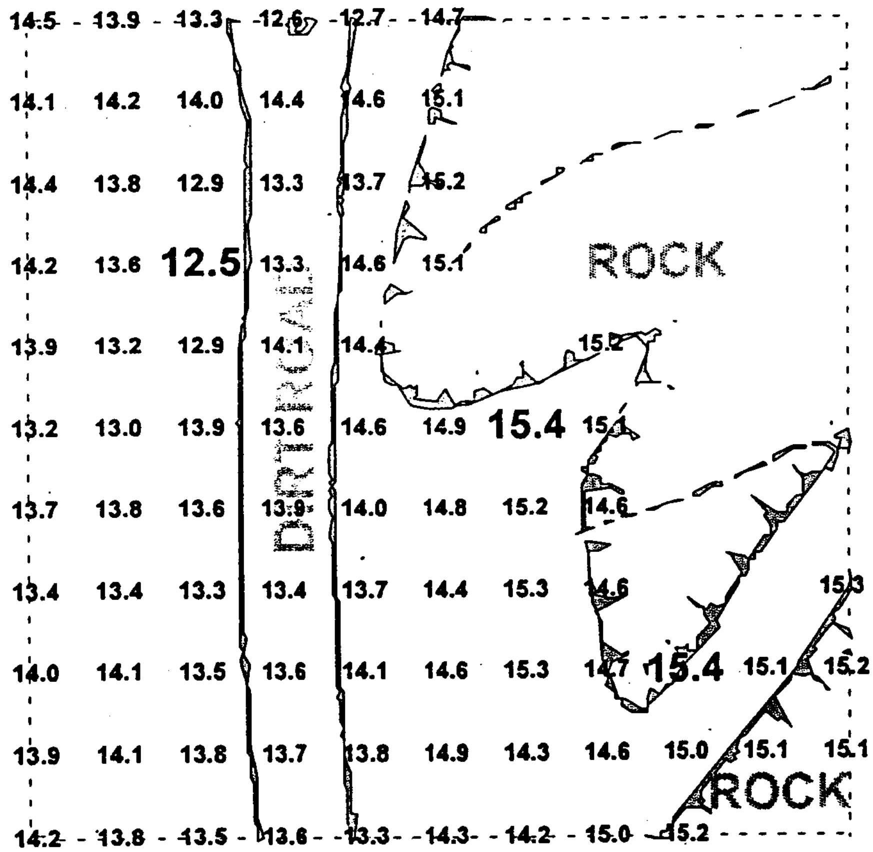
Figure 39. Grid #38 Ambient Gamma Exposure Rate.



Grid #39
S 0ft - 100ft
W100ft - 0ft

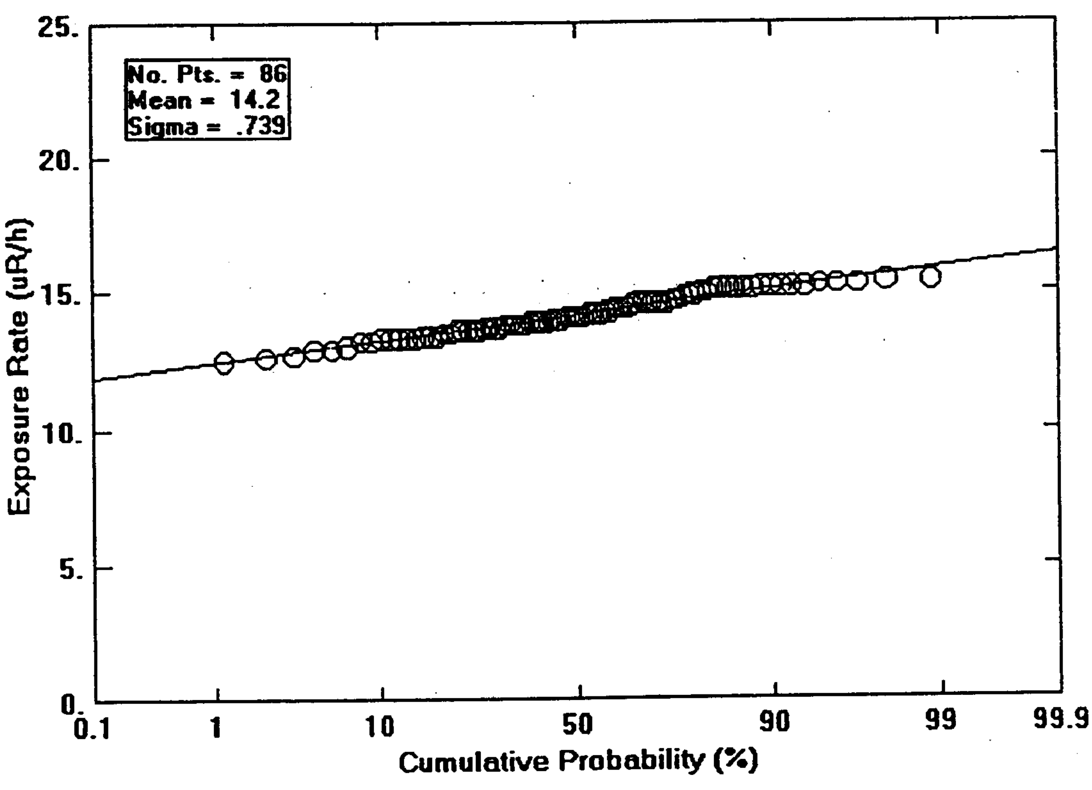


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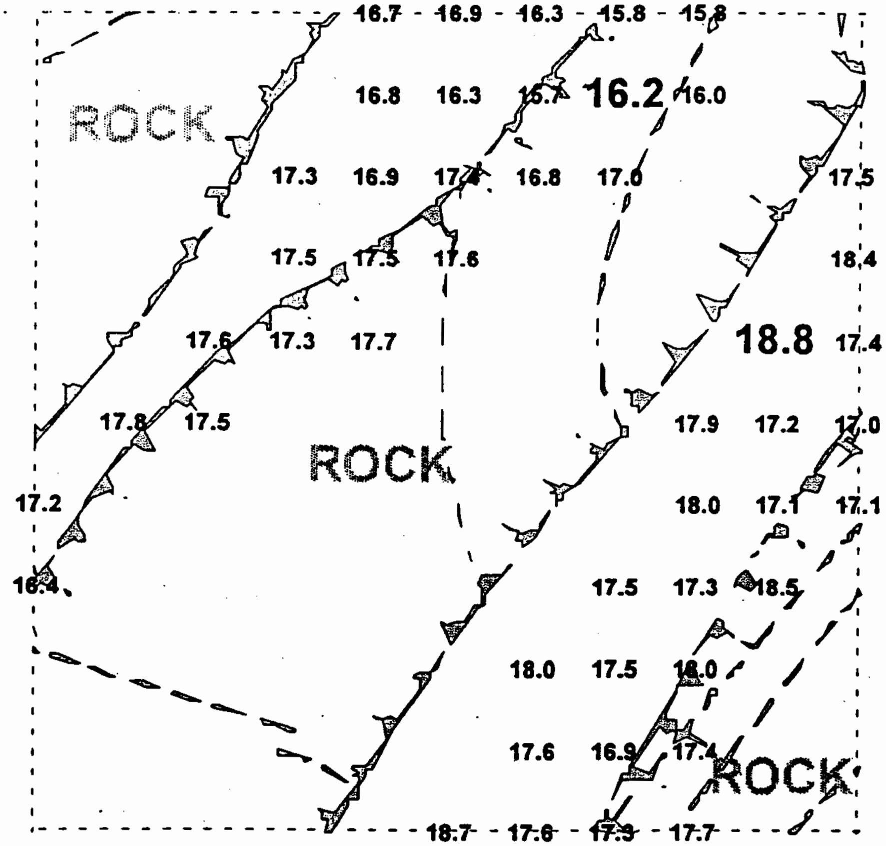
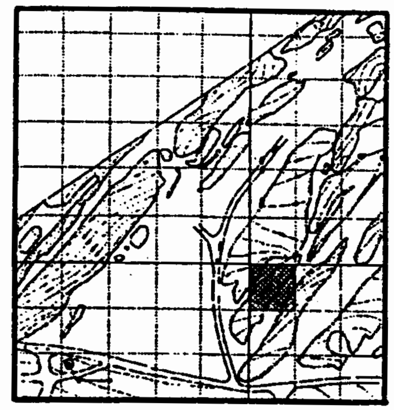
Figure 40. Grid #39 Ambient Gamma Exposure Rate.





Grid #40
S 0ft - 100ft
E 0ft - 100ft

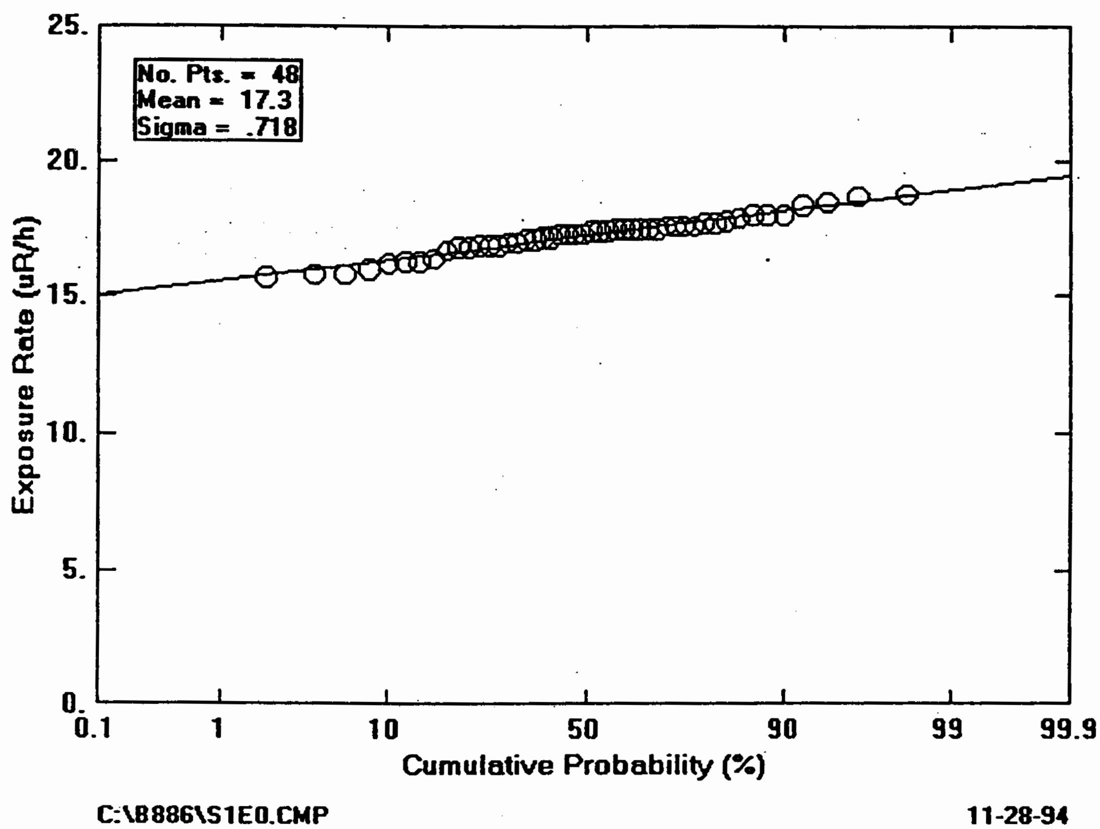
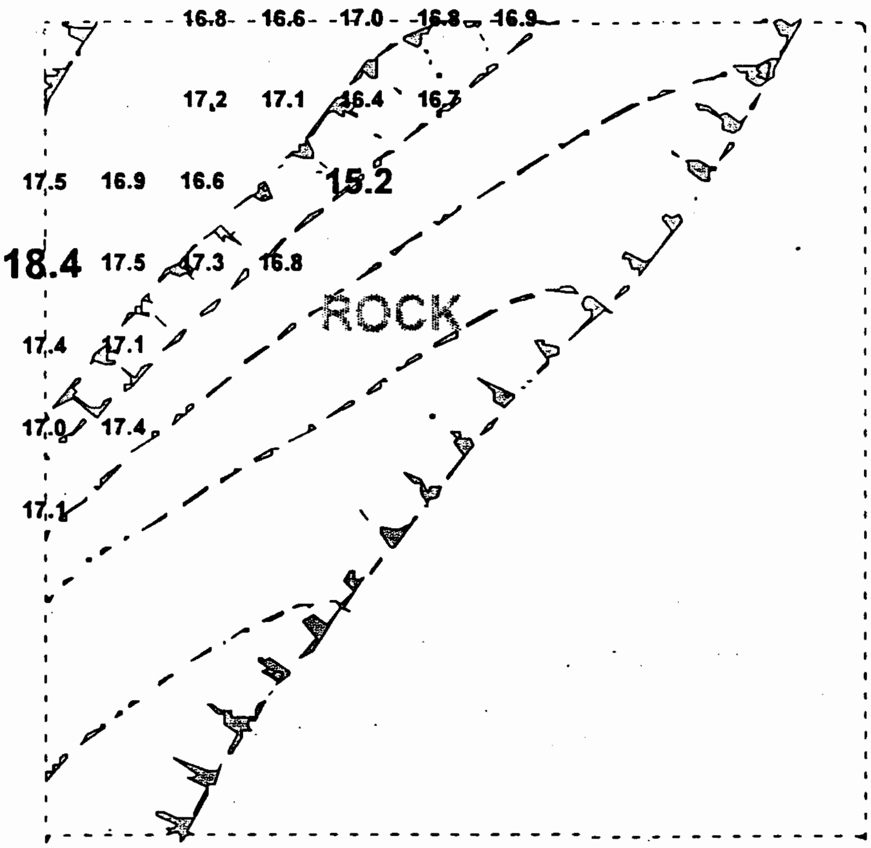


Figure 41. Grid #40 Ambient Gamma Exposure Rate.



Grid #41
S 0ft - 100ft
E100ft - 200ft

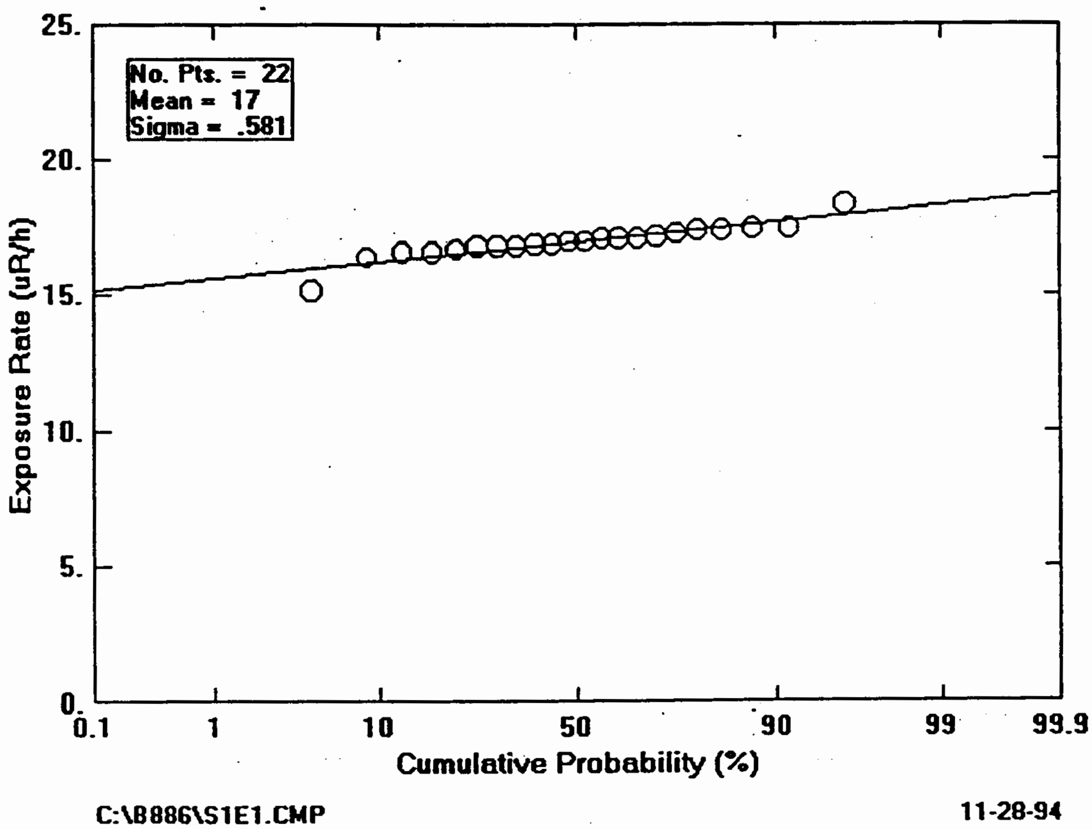
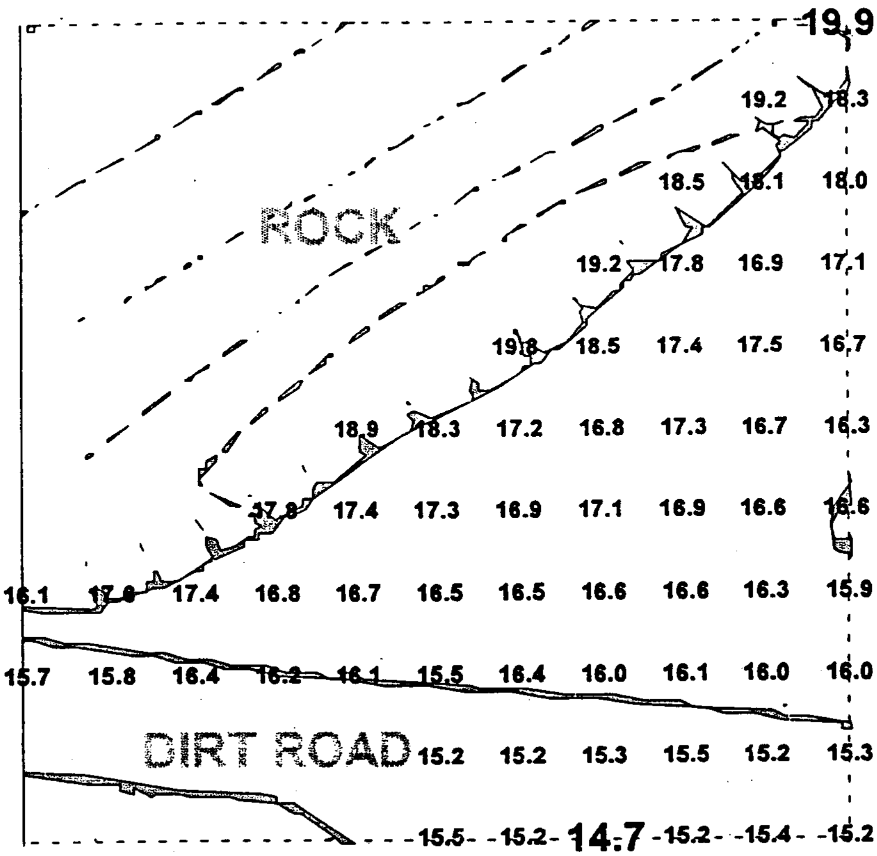
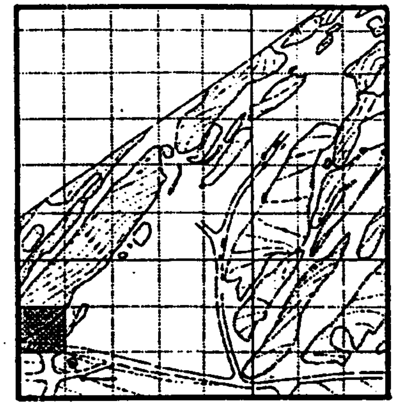


Figure 42. Grid #41 Ambient Gamma Exposure Rate.





Grid #43
S100ft - 200ft
E 500ft - 400ft

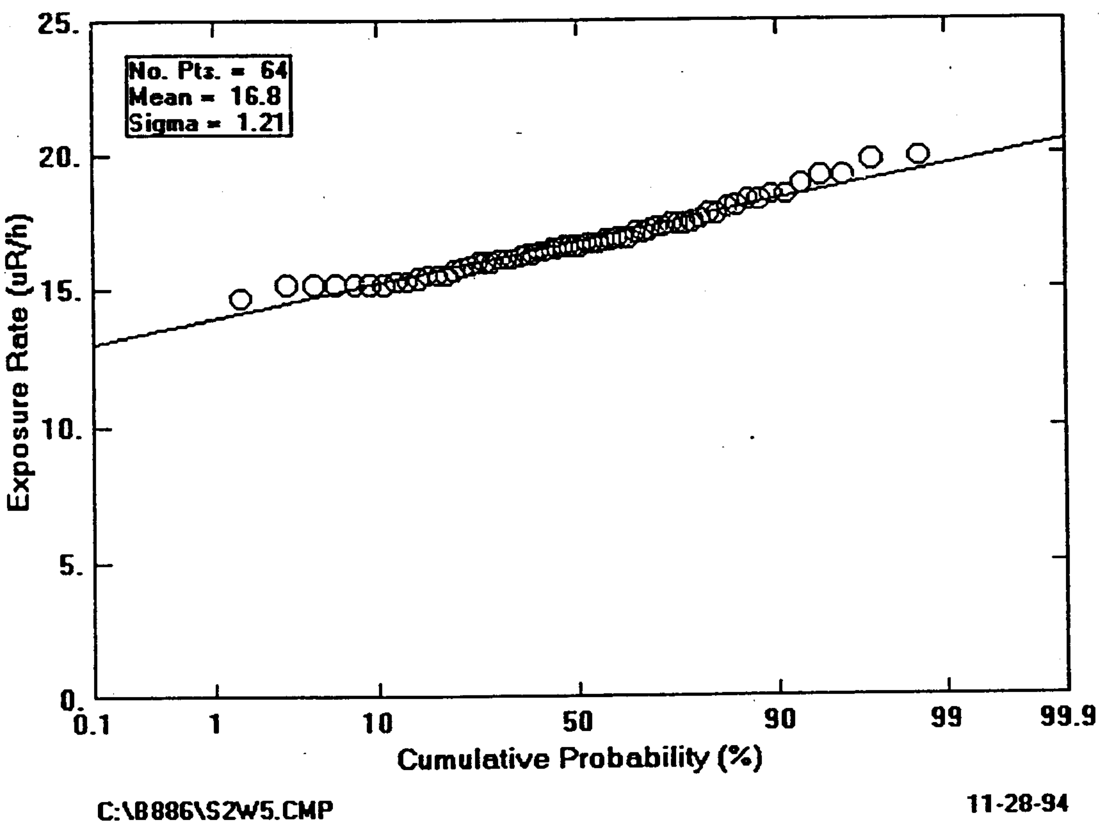
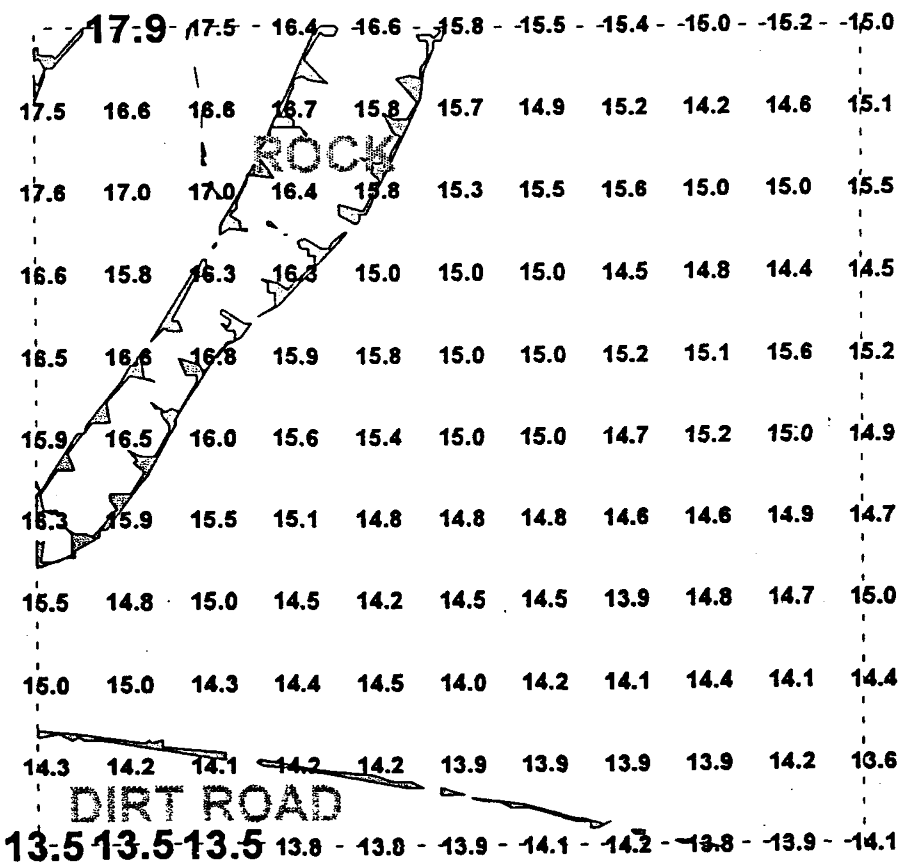
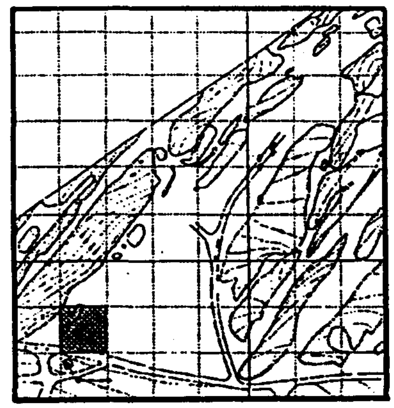


Figure 43. Grid #43 Ambient Gamma Exposure Rate.





Grid #44
S100ft - 200ft
E400ft - 300ft

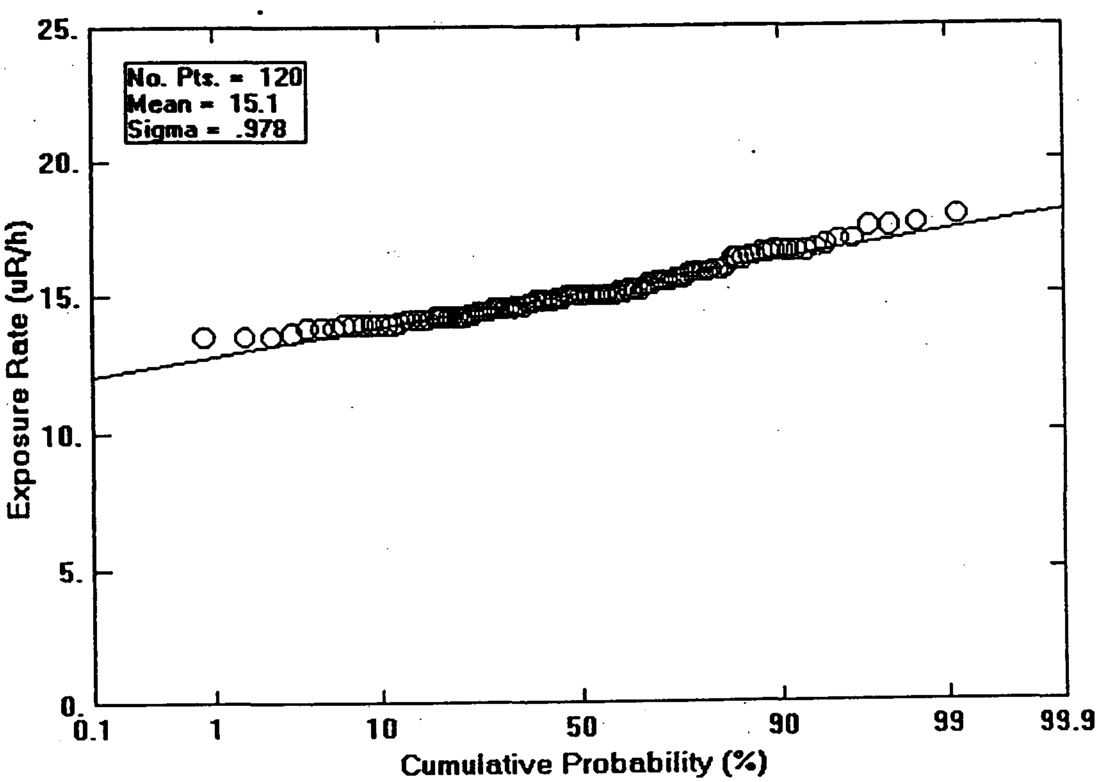


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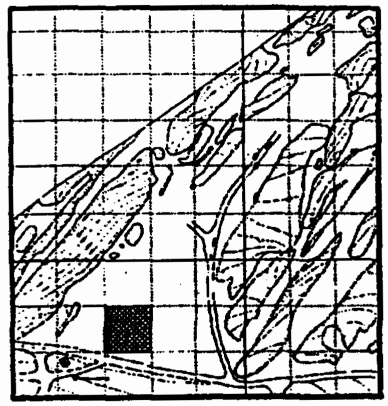
Figure 44. Grid #44 Ambient Gamma Exposure Rate.

15.0	15.0	14.9	14.9	15.2	15.3	15.3	15.4	15.2	15.0	15.2
15.1	14.9	14.7	14.6	14.9	14.4	14.4	14.8	14.7	14.7	14.5
15.5	15.2	14.8	14.8	15.3	15.4	**15.6**	15.0	15.1	15.0	15.4
14.5	14.1	13.8	14.1	14.1	14.0	14.8	14.3	14.5	14.5	14.3
15.2	14.9	14.3	14.4	14.5	14.8	14.8	14.2	15.2	14.7	14.9
14.9	14.6	14.6	14.3	14.4	14.4	15.2	14.4	14.3	14.8	14.7
14.7	14.9	14.4	14.3	14.2	14.7	14.8	14.9	14.7	15.0	15.2
15.0	14.5	14.0	13.7	14.1	**13.0**	14.4	13.9	14.4	13.5	13.5
14.4	13.9	14.0	13.9	14.1	13.5	13.8	13.9	13.6	13.1	13.2
13.6	14.2	13.2	14.0	13.7	13.4	13.9	13.5	13.7	13.6	13.8
14.1	14.3	14.2	13.8	13.9	13.3	13.3	13.5	13.4	13.4	13.6



Grid #45
S100ft - 200ft
W300ft - 200ft

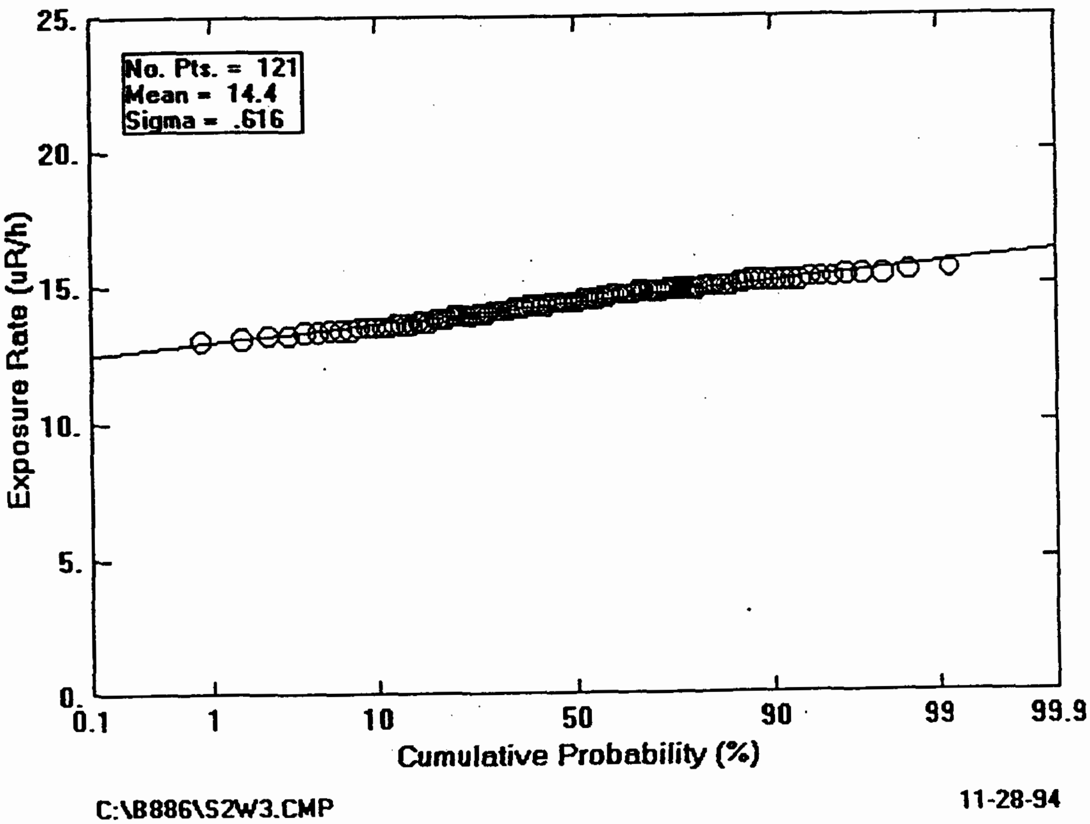
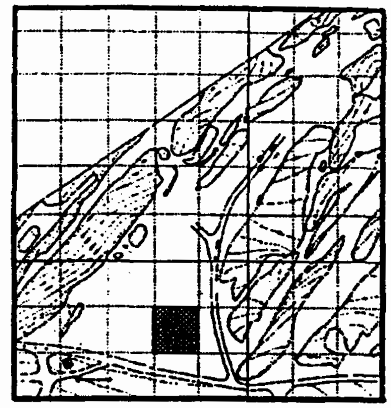


Figure 45. Grid #45 Ambient Gamma Exposure Rate.

14.7	14.0	14.1	14.3	14.4	13.8	13.6	14.1	13.8	13.8	14.2
14.4	13.9	14.2	14.2	14.0	13.9	13.5	13.9	13.7	13.8	13.1
13.8	13.9	13.9	13.9	14.3	13.9	13.9	13.9	13.7	13.4	14.0
14.0	14.1	13.8	13.3	13.8	13.2	13.6	13.8	13.0	13.4	13.4
14.0	14.1	14.2	13.5	13.9	13.9	13.7	13.9	13.7	13.3	13.2
13.4	13.6	13.7	13.7	14.3	13.8	13.5	13.2	13.3	13.4	13.5
13.8	13.6	13.6	13.5	13.6	13.2	13.2	12.6	13.0	13.2	13.3
13.9	14.3	14.6	14.4	14.3	13.8	13.5	13.1	13.3	13.8	13.8
13.5	14.7	14.6	14.6	14.3	14.0	13.5	12.7	13.1	12.8	13.8
14.0	14.5	14.7	14.6	14.5	14.5	13.9	13.5	13.0	13.7	13.7
13.8	15.5	15.3	15.5	15.5	13.1	13.1	13.1	13.2	13.8	13.6



Grid #46
S100ft - 200ft
W200ft - 100ft

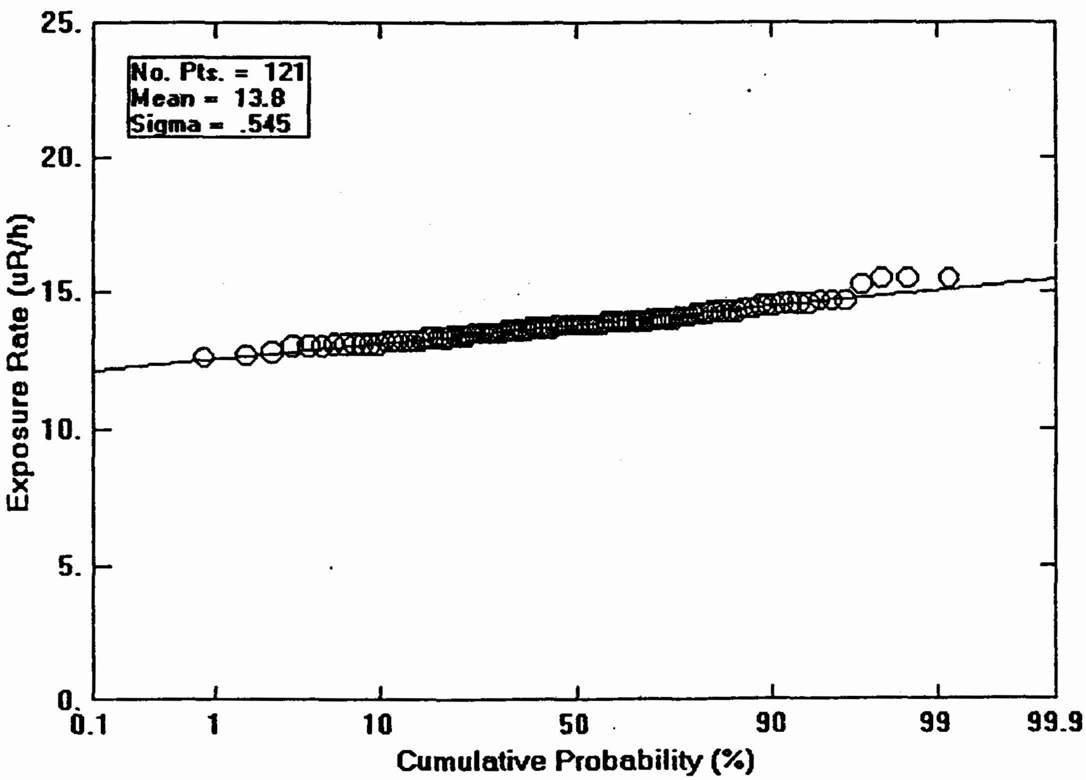


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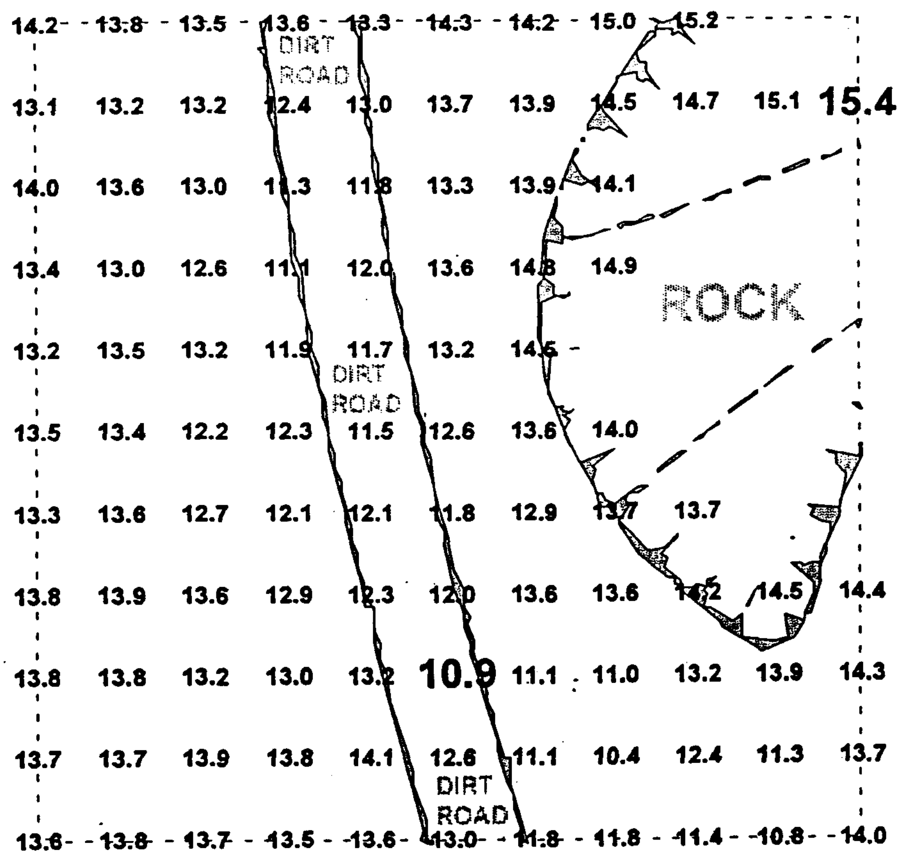
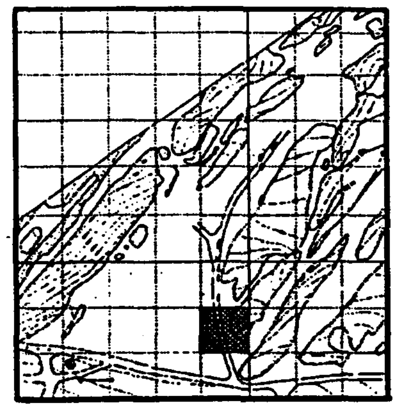
Figure 46. Grid #46 Ambient Gamma Exposure Rate.





Grid #47
S100ft - 200ft
W100ft - 0ft

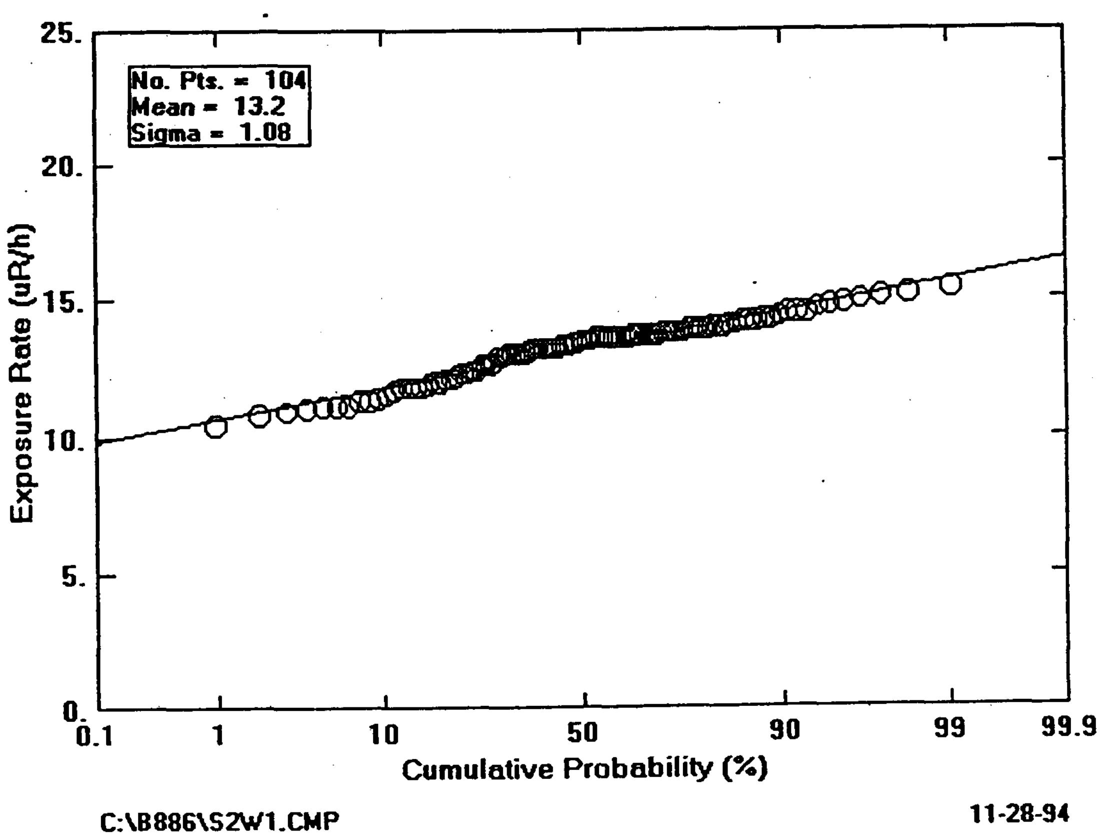
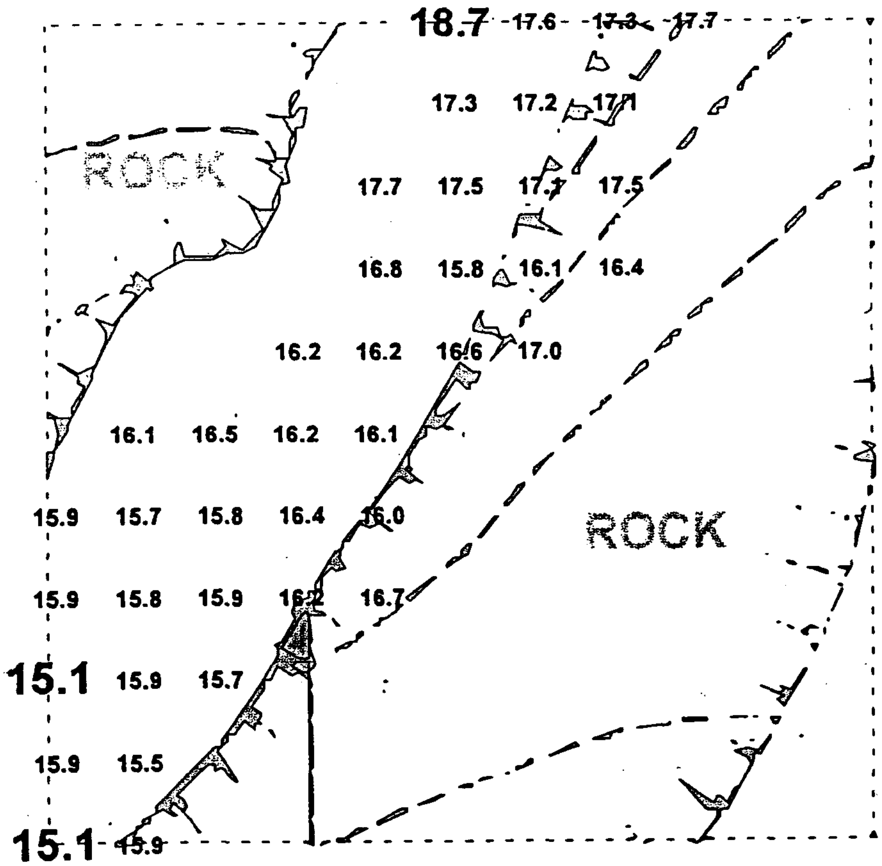


Figure 47. Grid #47 Ambient Gamma Exposure Rate.



Grid #48
S100ft - 200ft
E 0ft - 100ft

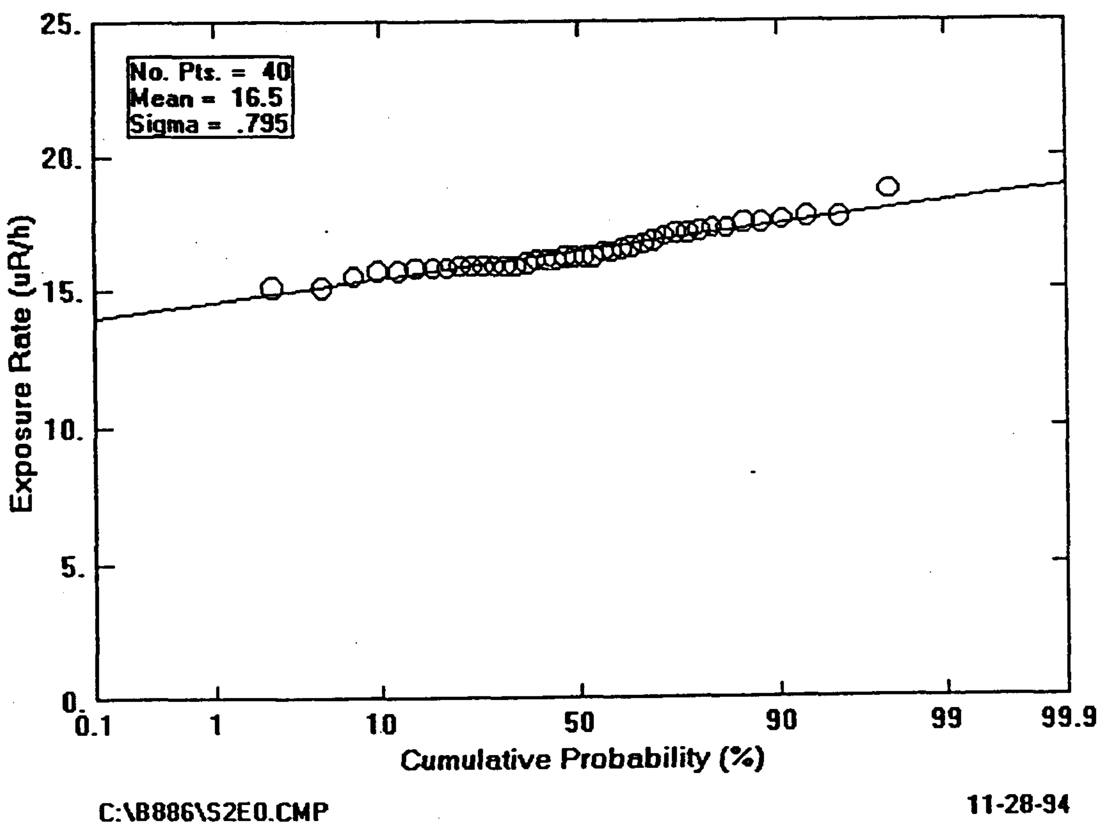
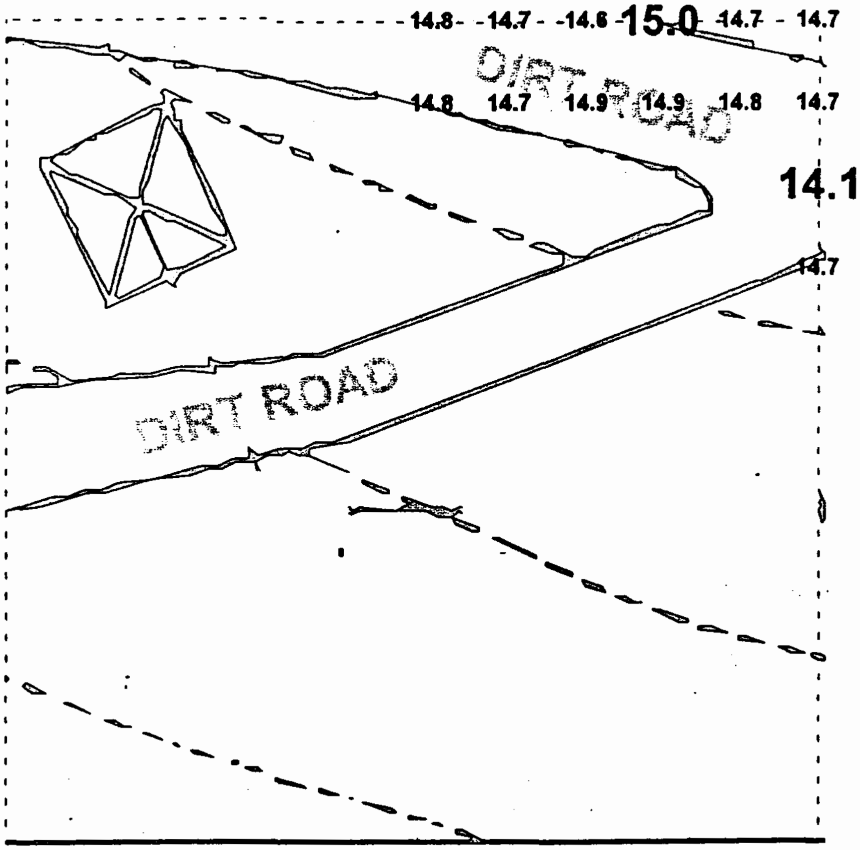
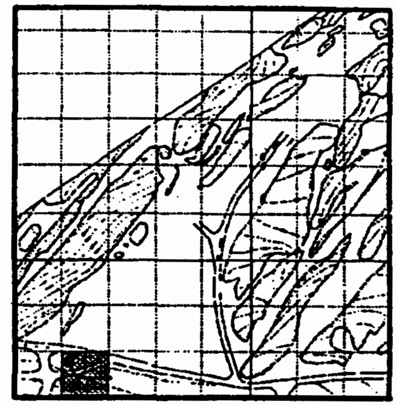


Figure 48. Grid #48 Ambient Gamma Exposure Rate.





Grid #52
S200ft - 300ft
W400ft - 300ft

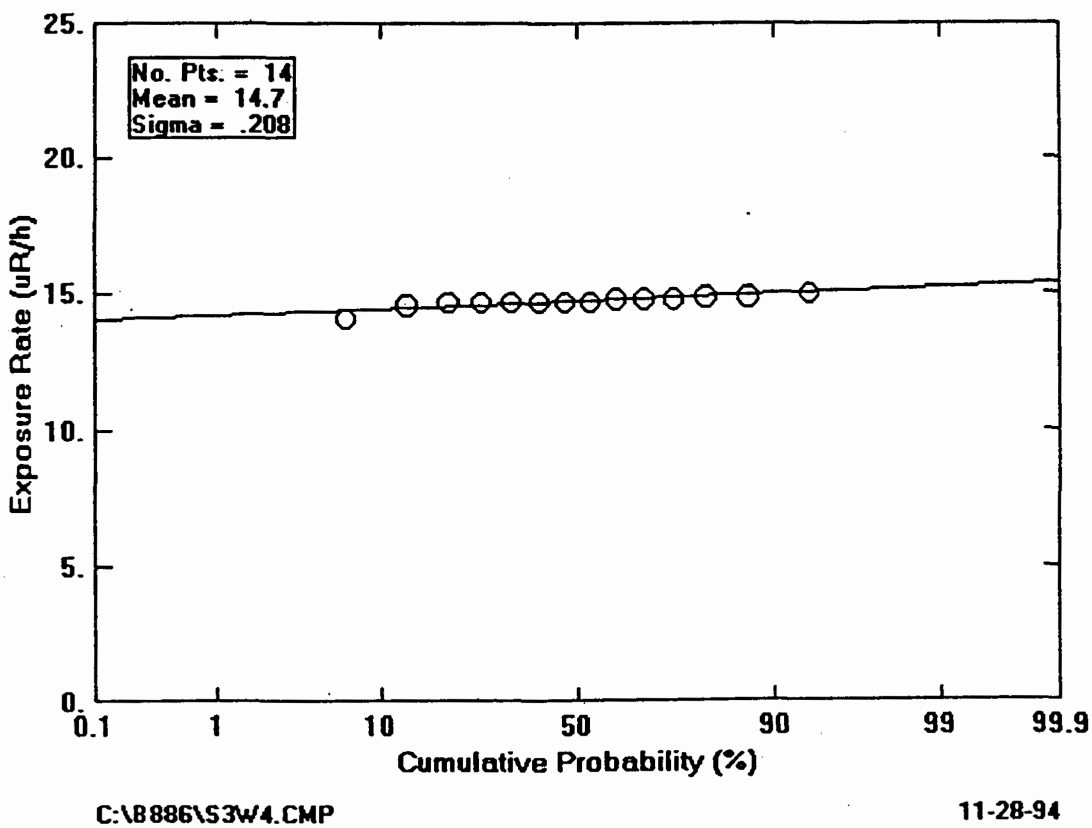
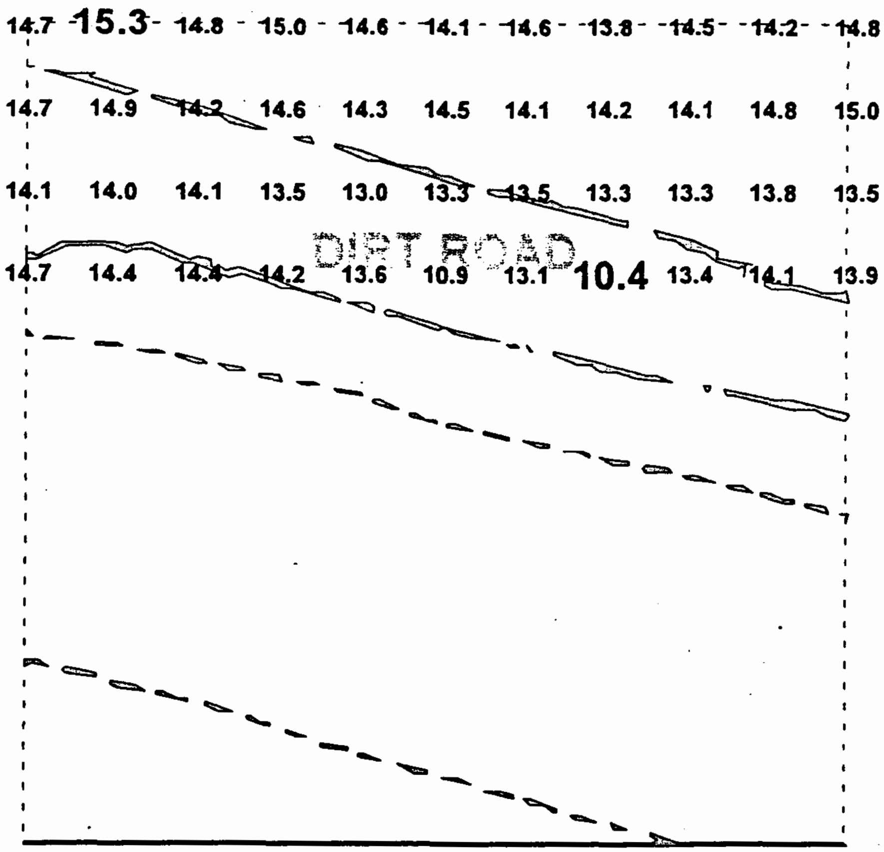
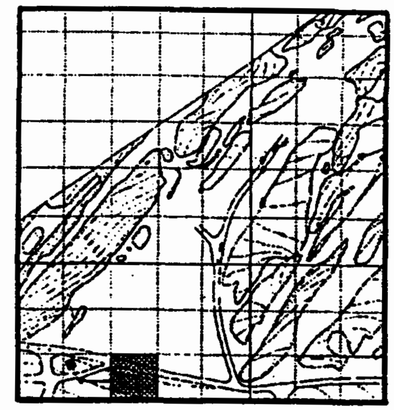


Figure 49. Grid #52 Ambient Gamma Exposure Rate.





Grid #53
S200ft - 300ft
W300ft - 200ft

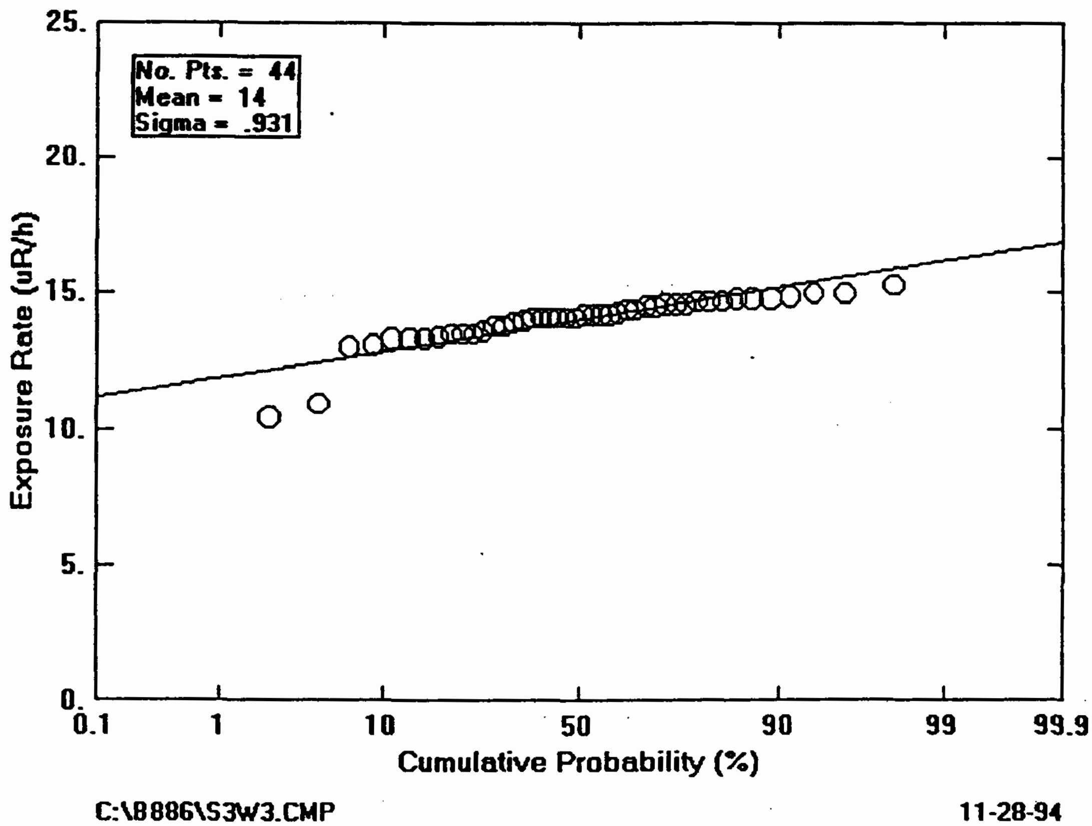
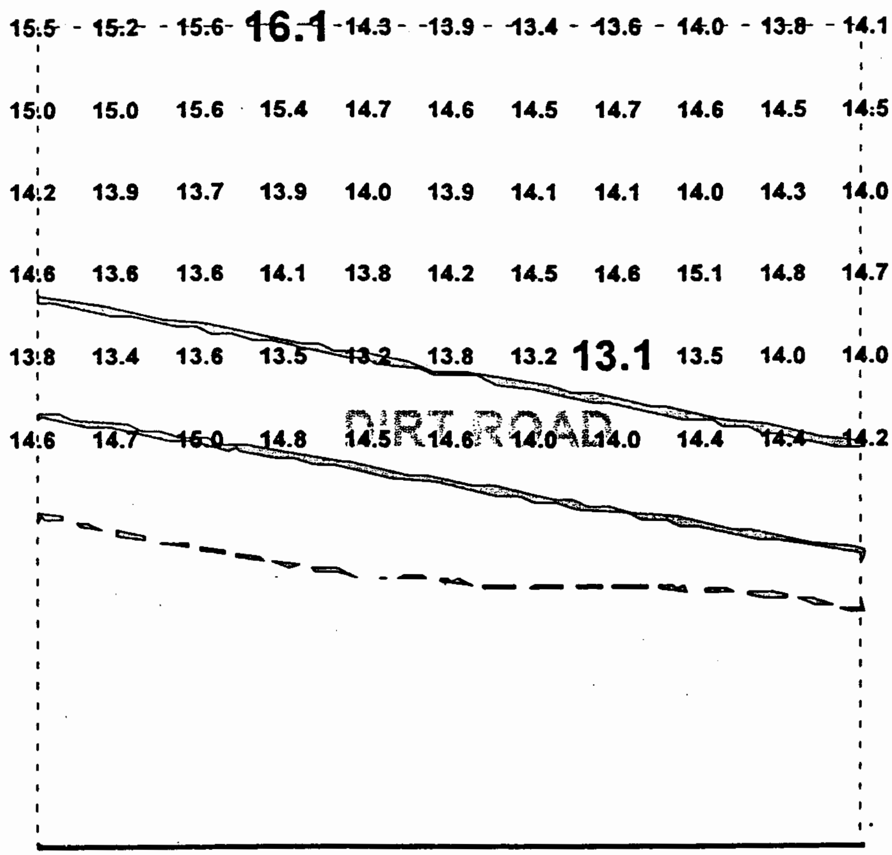
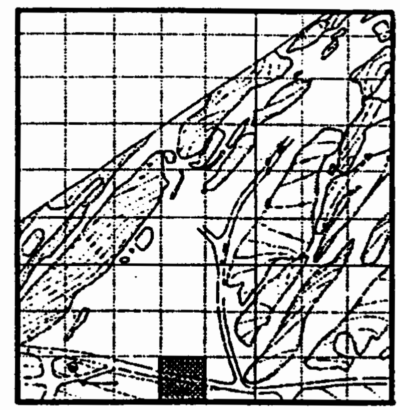


Figure 50. Grid #53 Ambient Gamma Exposure Rate.





Grid #54
S200ft - 300ft
W200ft - 100ft

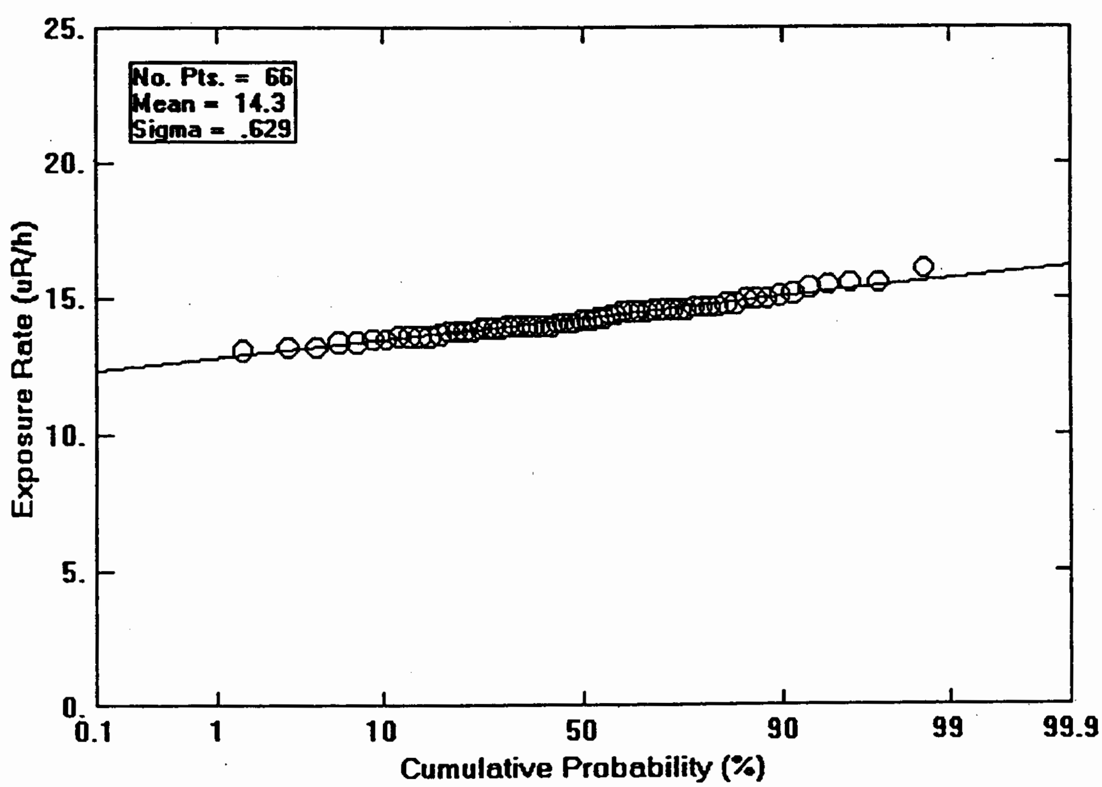


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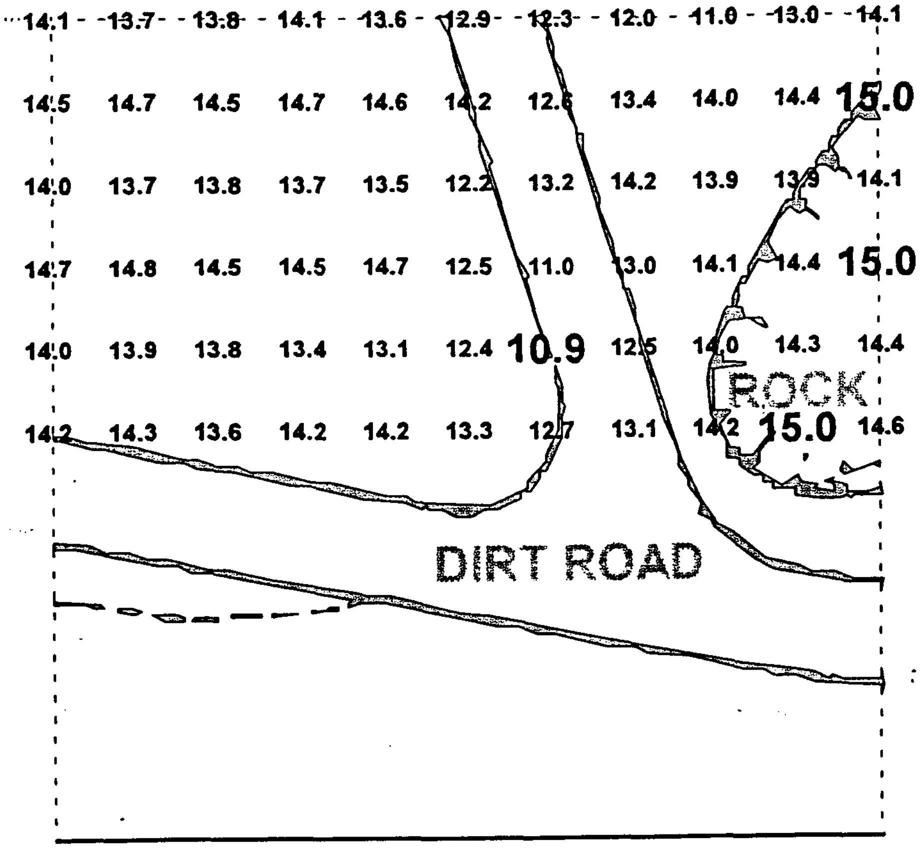
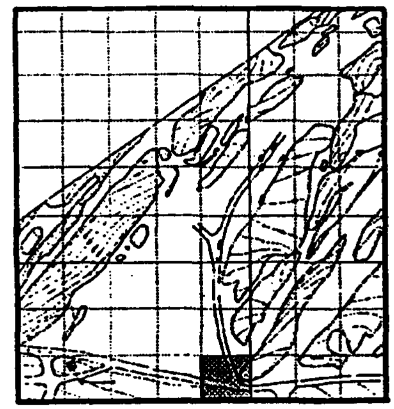
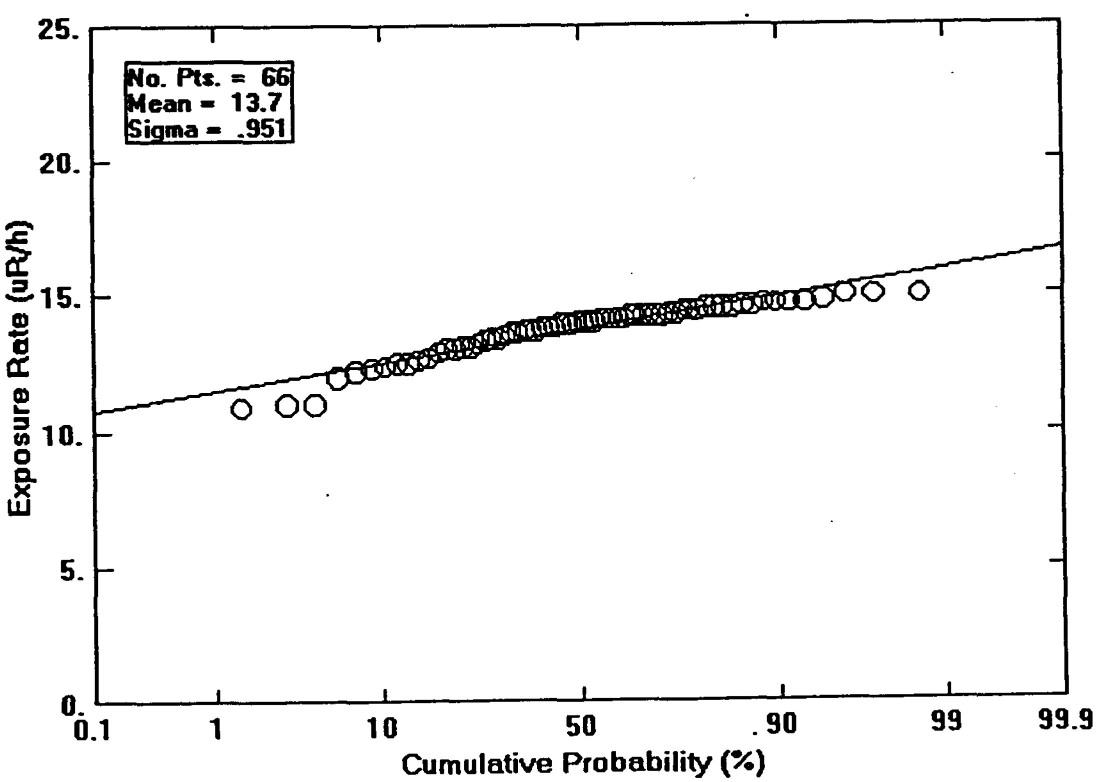
Figure 51. Grid #54 Ambient Gamma Exposure Rate.





Grid #55
S200ft - 300ft
W100ft - 0ft



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11-28-94

Figure 52. Grid #55 Ambient Gamma Exposure Rate.

EXHIBIT VI

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)
DOCUMENTATION FOR DECONTAMINATION AND
DECOMMISSIONING OF FACILITY 4886

Department of Energy
Energy Technology Engineering Center Project Office
P.O. Box 1446
Canoga Park, CA 91304

RECEIVED
FEB 28 1991
DRF0637

25 February 1991

Dr. D. Clark Gibbs
General Manager
Energy Technology Engineering Center
Rockwell International
P.O. Box 1449
Canoga Park, CA 91304

Subj: Transmittal of Sodium Disposal Facility Assessment NEPA Determination

Dear Dr. Gibbs:

A copy of the NEPA determination (categorical exclusion) for assessment of the Sodium Disposal Facility's contamination is attached. This constitutes approval for the project relative to environmental considerations.

Robert LeChevalier
Acting Site Manager,
Energy Technology Engineering Center

cc:
J. Semko, NE-47

CATEGORICAL EXCLUSION (CX) DETERMINATION

Proposed Action: Assessment of Sodium Disposal Facility Contamination

Location: Santa Susana Field Laboratory, Ventura County, California

Description Of Proposed Action: Assessment and characterization of soil contamination from a possible release at the Sodium Disposal Facility according to the requirements of Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). Activities will include soil boring, sampling, and analyses, a detailed radiological survey, and a geophysical survey. The total land area involved is approximately 4 acres.

Categorical Exclusion (CX) To Be Applied: (Section D, Department of Energy (DOE) National Environmental Policy Act (NEPA) Guidelines): CX as identified in Federal Register Volume 55, Number 174, dated September 7, 1990, for "3. Site characterization and environmental monitoring . . . under CERCLA or Resource Conservation Recovery Act (RCRA) . . . Activities covered include but are not limited to: . . . h. Sampling and characterization of water, rocks, soils and contaminants." The assessment activities will not introduce or spread hazardous substances and will not affect environmentally sensitive areas. Samples will be handled and disposed of in accordance with DOE and EPA requirements.

I have determined that the proposed action meets the requirements for the CX referenced above. Therefore, I have determined that the proposed action may be categorically excluded from further NEPA review and documentation.

APPROVAL: for Leo P. Duffy, Director
Office of Environmental Restoration and Waste Management, EM-1

DATE: 12/8/90

CONCURRENCE: Carol Borgstrom
Carol Borgstrom, Director
Office of NEPA Oversight

DATE: 12/18/90

Department of Energy
San Francisco Field Office
1333 Broadway
Oakland, California 94612

RECEIVED
MAR 09 1992
DRF 0390

March 5, 1992

TO: G.G. Gaylord, ETEC

RE: NEPA Approval for Sodium Disposal Facility Remediation

This memo is to confirm that it is my understanding that EM-1 has approved the Categorical Exclusion for the Sodium Disposal Facility Remediation Project, and the proscribed time for EH comments has been made available. I will provide a copy of the approval to the site as soon as possible.

This memo authorizes you to proceed with the project.

Roger H. Liddle
DOE/SAN/ERWM

CC: Bob LeChevaliar, ETEC-SO
Manny Tessier, ETEC

Internal Letter

Rockwell International

Date: August 19, 1992

No: 92-021-01-100

TO: (Name, Organization, Internal Address)

Alex Klein
ETEC
D/026 055-T009

FROM: (Name, Organization, Internal Address, Phone)

L. R. Stone
ETEC
D/021 055-T039
X5497

Subject: NEPA Status: Former B/886 Sodium Burn Pit

Reference 1: 91ETEC-DRF-2192, L. Stone (ETEC) to R. Liddle (DOE), "Sodium Disposal Facility Closure: National Environmental Policy Act (NEPA) Determination," dated September 28, 1991

2: DOE Letter R. H. Liddle (DOE/SAN/ERWM) to G. Gaylord (ETEC), "NEPA Approval for Sodium Disposal Facility Remediation," dated March 5, 1992 (DRF-0390)

A meeting was held on August 10, 1992 between R. Liddle (DOE/SFFO), G. Gaylord and the undersigned for the purpose of reviewing NEPA compliance status with regard to the proposed expanded earth excavation and replacement in the former B/886 Sodium Burn Pit. The NEPA submittal includes the California Regional Water Quality Control Board - Los Angeles Region Clean-Up and Abatement Order No. 91-061 dated April 30, 1991. There-in is the requirement to "...clean-up any soil and/or groundwater contamination..." This requirement provides sufficient latitude to increase the earth removal and replacement from an initial 4,000 Cu. Yards to a current 28,500 Cu. Yards.

It is not necessary to request any addition NEPA compliance reviews from the DOE at this time.

Loren Stone
ES&H Coordinator
Energy Technology Engineering Center

Roger Liddle
Environmental Restoration
U. S. Department of Energy

LRS:05dg65

cc: R. Le Chevalier, DOE/ETEC
D. Spencer, DOE/ETEC
G. Gaylord, 622-T038
M. Tessier, 021-T038
T. Venable, 453-T039

Form 131-P Rev. 3-76