RTI Soil Analysis Data

Date	Description	Weight (g)	Activity (uCi/g)
3/20/87	soil	787.0	(2.8+0.11)E-6
3/25/87	resin	369.4	(9.1+0.2)E-4 Co60 (5.4+0.6)E-6Cs137
6/5/87	1	1168.5	(1.76+0.05)E-5
	2	1087.7	(2.73+0.08)E-5
	3	494.1	(1.33+0.05)E-5
	4	1289.8	(1.46+0.05)E-5
	5	941.3	(2.8+0.2)E-6
6/11/87	14:00	845.2	(6.12+0.27)E-6
	11:28	1209.2	(8.42+0.30)E-6
	11:00	863.8	(3.23+0.09)E-5
	15:15	1176.5	(5.28+0.22)E-6
6/12/87	12:00	1224.3	(2.42+0.06)E-4
	14:25	1124.5	(6.76+0.26)E-6
	14:50	1137.5	(2.63+0.08)E-5
6/16/87	11:10	868.3	(4.02+0.1)E-5
	13:35	671.3	(1.03+0.04)E-5
6/17/87	11:10	1254.05	(3.41+0.09)E-5
6/23/87	under drum	851.8	(3.03+0.14)E-7
	Trench #2	705.8	< LLD
	Trench #2	514	< LLD
	under drum B	1330.6	(8.8+0.6)E-7
6/25/87		687.45	< LLD
	trench #3	603.2	< LLD
7/22/87	1. I-12	540.8	(2.29+0.07)E-5
	2. G-12	655.15	(8.49+0.22)E-5
	3. I-9	699.9	(4.30+0.12)E-5
	4. I-12	624.3	(9.99+0.36)E-6
	5. H-6	712.9	(6.00+0.16)E-5
	6. I-9	678.9	(2.43+0.07)E-5
	7. I-9	781.05	(1.90+0.06)E-5
	8. I-12	688.8	(8.44+0.31)E-6
	9. H-6	709.8	(3.52+0.09)E-5

LLD = 3.5E-8uCi/g

Range: Trenche (9.10 ± 0.2) E-4 to < LLD
Outside Deionizer Rm. (1.90 ± 0.08) E-5 to (9.99 ± 0.36) E-6

B/7

Status

Environmental

Water

- All samples taken from both shallow and deep wells on site have results less than LLD.
- No Co-60 found in lake water samples.

Soil

- All trenches have been filled in. Elevated readings (@200kR) still exist in trench #1.
- NRC surveys reveal elevated radiation readings in area outside fence line near Lake Denmark. Licensee has grided area and is conducting surveys and soil sampling.
- Traces of Co-60 contamination found in Lake Denmark silt sample (4' from water's edge; below NRC limits)

NJDEP

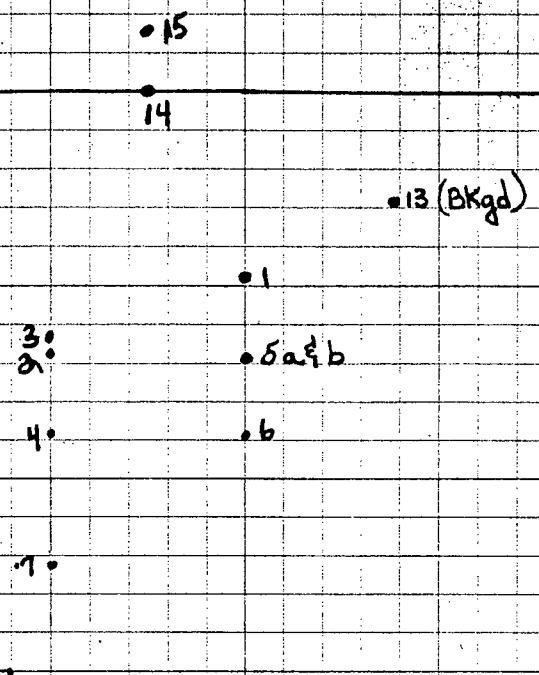
- Test wells are still being drilled.

Bldg. 62

of NRC Sampling site ON 8/24/87.

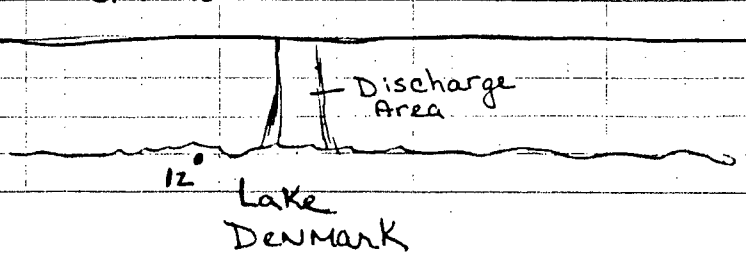
Bldg. 70

fence.



		μCi/gm
1	24'	(3.3 ± 0.2) E-6
2	31' 9"	(9.9 ± 0.3) E-6
3	31' 5"	(3.04 ± 0.09) E-5
4	44' 5"	(5.6 ± 0.2) E-5
5a	34' 5"	(1.25 ± 0.08) E-6
5b	34' 5"	(9.2 ± 0.3) E-6
6	44' 5"	(1.68 ± 0.09) E-6
7	60' 8"	(1.61 ± 0.05) E-5
8	78'	(1.42 ± 0.05) E-5
9	149'	(2.97 ± 0.2) E-6
10	105'	(1.05 ± 0.04) E-5
12	lake edge	(4.4 ± 0.2) E-6
13	19' 7"	
14	fence	(1.75 ± 0.6) E-6
15	8' above fence	(7.4 ± 0.6) E-7

dirt road



1 block = 5 feet

46 0410
5 X 5 TO THE INCH • 7 X 10 INCHES KEUFFEL & ESSER CO. MADE IN U.S.A.

DATA for Crushed Paint Can ≈ 1ft in diameter

Contact dose rate (max) 200 mR hr^{-1}
Dose rate @ 2½ feet 700 μR hr^{-1}
@ 5 feet 210 μR hr^{-1}
@ 10 feet 80 μR hr^{-1}

Object assayed with multi-channel analyzer ⇒ Co-60

Gamma Constant for Co-60 14 R/hr @ 1ft per curie
Assume point source for 10ft reading

$$X \cdot 14 \times 10^6 \frac{\mu R}{Ci} hr^{-1} \times 1 ft^2 = 80 \mu R\, hr^{-1} \times (10 ft)^2$$

$$X = \frac{80 \mu R\, hr^{-1} \times (10 ft)^2}{14 \times 10^6 \frac{\mu R}{Ci} hr^{-1}\, 1 ft^2} = 0.0006\ Ci$$

$$= 0.6\ mCi\ *$$

*Value based on no self shielding of source

John J. Miller
John A. Jensen

6/15/87

Date	Time	Description
6/11/87	≈9:30am	crushed paint can, 200 mR hr^{-1} max, identified as Co-60 with multi-channel analyzer
	≈10:40am	diatomaceous earth filter, 130 μR hr^{-1} max
	≈11:20am	55 gallon drum #1, 120 μR hr^{-1} max
	≈12:30pm	(2) 30 gallon drums #2 & #3, 110 μR hr^{-1} max
	1:35pm	plastic bottle in plastic bag, 50 mR hr^{-1} max
	2:10pm	55 gallon drum #4, 60 μR hr^{-1} max
	2:20pm	55 gallon drum #5, 50 μR hr^{-1} max
	2:40pm	55 gallon drum #6, 50 μR hr^{-1} max
	2:45pm	diatomaceous earth pump, 38 μR hr^{-1} max
	2:50pm	5 gallon metal bucket #7, 100 μR hr^{-1} max
	3:10pm	55 gallon drum #8, 80 μR hr^{-1} max
	4:55pm	55 gallon drum #9, covered in plastic, 500 μR hr^{-1} maximum reading

Date	Time	Description
6/12/87	a.m.	55 gallon drum #10, 3 mR hr^{-1} max
6/16/87	11:00am	metallic bucket #11 containing vermiculite and resin beads, 10 mR hr^{-1} max
6/17/87	2:45pm	55 gallon drum #12, 9 mR hr^{-1} max
6/24/87	11:00 am	55 gallon drum #13, 180 μR hr^{-1} max
	11:45 am	55 gallon drum #14, 80 μR hr^{-1} max

During the excavation activities, many poly bags were removed from the pit. The poly bags contain filters, rags, resins, and assorted trash. Many glass jars & bottles, plastic bottles, empty source sleeves, and other debris were also removed. One plastic bottle measured 50 mR hr^{-1} and another measured 5 mR hr^{-1}

Routine ___ Urgent X

UNITED STATES NUCLEAR REGULATORY COMMISSION
REGION I LABORATORY

Non Routine ___ Date Needed ASAP

SAMPLE RECORD SHEET

Serial No. 301206

Sample From: RTI
Collected By M. Taylor Date Sent 3/23/87
Organization

Samples Received: 3/23/87
Analysis Completed: 3/24/87
Notified: M. Taylor Date: 3/24/87

Analyzed By: [illegible]
Approved By: [illegible]

Sample No.	Sample Date	Sample Hour	Sample Description	Anal. for	Inst. used	Quant. used	Date cntd.	Count time	Gross count	Bkgd.	Net count	Eff.		Results ± 1σ Co-60 LLD
1	3/20	1700	water	γ scan for Co-60	γ spec	500 ml	3/23	2000s						<2E-7 μCi/ml
2	"	"												"
3	"	"												"
4	"	"												"
5	"	"												"
P-2	3/20	1116												"
P-6	3/20	1140					3/24							<6E-7 μCi/ml
soil	3/20	1100	soil	Co-60		787.9g	3/24	2000s						(2.80±0.11)E-6* μCi/g (±25%)

*Random uncertainties reported are 1 standard deviation, 1σ. small negative and other results ≤ 3σ are interpreted by NRC as including "zero" or as not detected. If appropriate, estimates of possible systematic errors are reported in parentheses

Routine ___ Urgent ___

UNITED STATES NUCLEAR REGULATORY COMMISSION
REGION I LABORATORY
SAMPLE RECORD SHEET

on Routine X Date Needed ASAP

Serial No. 301228

Sample From: RTI
Collected By M. Taylor J. Miller Date Sent ___
Organization DRSS

Samples Received: 6-15-87
Analysis Completed: 6-16-87
Notified: ___ Date: ___

Analyzed By: N.T.M.
Approved By: ___

Sample No.	Date	Hour	Sample Description	Anal. for	Inst. used	Quant. used	Date cntd.	Count time	Gross count	Bkgd.	Net count	Eff.		Results ± 1σ µci/g
1	6/11	14:00	Soil (450ml. Marinelli)	gamma scan	gamma spec	845.2 g		10min						(6.12 ± 0.27)E-6
2		11:28				1209.2 g								(8.42 ± 0.30)E
3		11:00				863.8 g								(3.23 ± 0.09)E-5
4	6/12	12:00				1224.3 g								(2.42 ± 0.06)E-4
5	6/11	15:15				1176.5 g								(5.28 ± 0.22)E-6
6	6/12	14:25				1124.5 g								(6.76 ± 0.26)E-6
7		14:50				1137.5 g								(2.63 ± 0.08)E-5
8														
9	6/11	15:00	liquid 50mL poly bottle			50 ml								µci/ml (1.17 ± 0.4)E-6
10	6/12	12:00												
11	6/11	10:35												(7.29 ± 0.36)E-5
12	6/11	17:12						1000 seconds						

*Random uncertainties reported are 1 standard deviation, 1σ. small negative and other results ≤ 3σ are interpreted by NRC as including "zero" or as not detected. If appropriate, estimates of possible systematic errors are reported in parentheses.

line ✓ Urgent ___

UNITED STATES NUCLEAR REGULATORY COMMISSION
REGION I LABORATORY
SAMPLE RECORD SHEET

Routine ___ Date Needed ___ Serial No. 301227

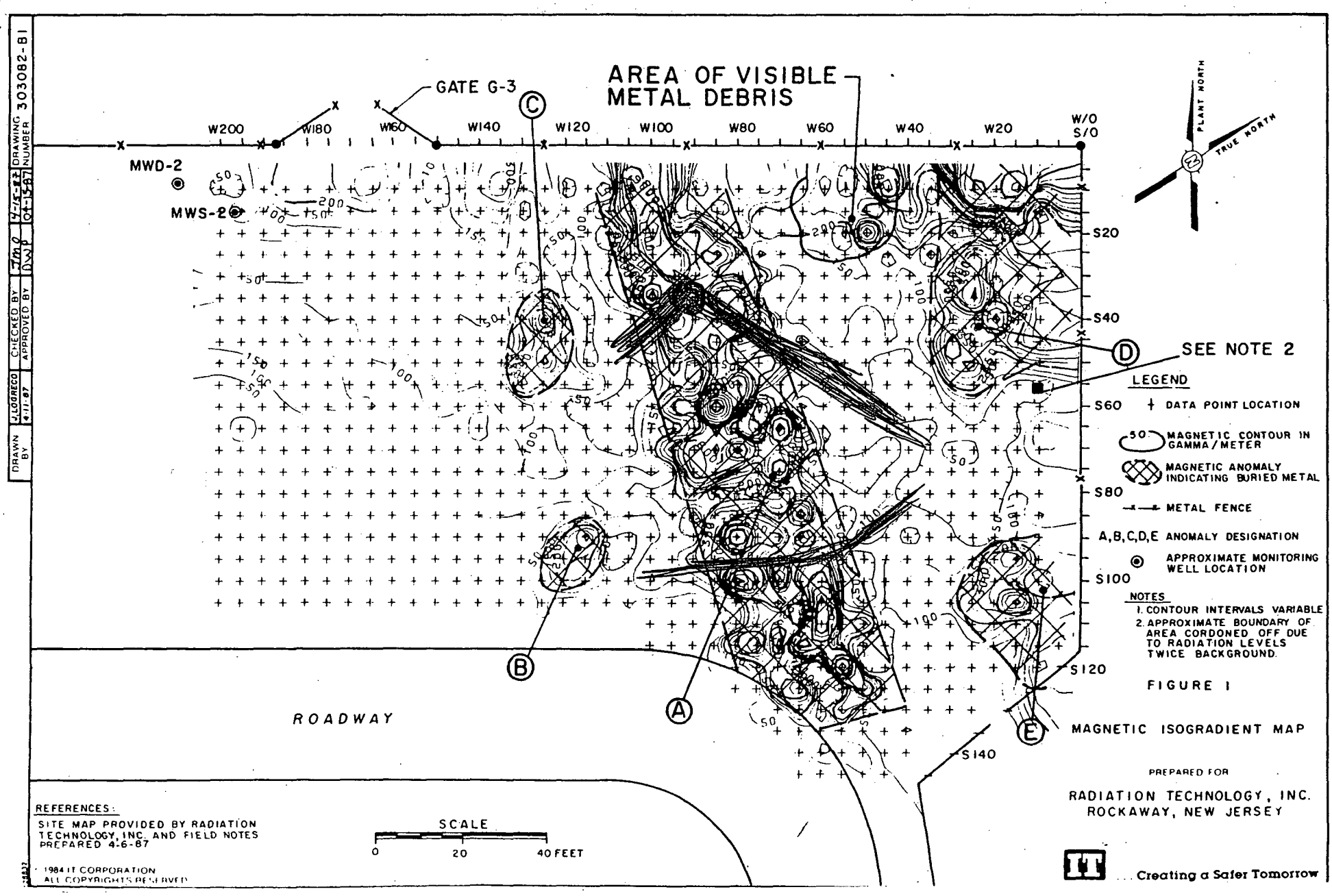
nple From: Radiation Technology
lected By J. Miller Date Sent ___
ganization ___

Samples Received: 6-5-87
Analysis Completed: 6-12-87
Notified: ___ Date: ___

Analyzed By: n.m.
Approved By: VOR

Sample			Sample Description	Anal. for	Inst. used	Quant. used	Date cntd.	Count time	Gross count	Bkgd.	Net count	Eff.		Cobalt-60 Results ± 1σ µCi/g (±25%)
.	Date	Hour												
	6/5	1200	Soil-Marinelli Bks.	γ scan	γ spec	1168.5 g	6/12	10 min.						(1.76±0.05)E-5
						1087.7 g								(2.73±0.08)E-5
						4941 g								(1.33±0.05)E-5
						1289.8 g								(1.46±0.05)E-5
						941.3 g								(2.8±0.2)E-6

*Random uncertainties reported are 1 standard deviation, 1σ, small negative and other results < 3σ are interpreted by NRC as


AREA OF VISIBLE METAL DEBRIS
GATE G-3
W200
W180
W160
W140
W120
W100
W80
W60
W40
W20
W/O S/O
MWD-2
MWS-2
S20
S40
S60
S80
S100
S120
S140
SEE NOTE 2
ROADWAY
PLANT NORTH
TRUE NORTH
LEGEND
DATA POINT LOCATION
MAGNETIC CONTOUR IN GAMMA/METER
MAGNETIC ANOMALY INDICATING BURIED METAL
METAL FENCE
A,B,C,D,E ANOMALY DESIGNATION
APPROXIMATE MONITORING WELL LOCATION
NOTES
1. CONTOUR INTERVALS VARIABLE
2. APPROXIMATE BOUNDARY OF AREA CORDONED OFF DUE TO RADIATION LEVELS TWICE BACKGROUND.
FIGURE 1
MAGNETIC ISOGRADIENT MAP
PREPARED FOR
RADIATION TECHNOLOGY, INC.
ROCKAWAY, NEW JERSEY
REFERENCES:
SITE MAP PROVIDED BY RADIATION TECHNOLOGY, INC. AND FIELD NOTES PREPARED 4-6-87
SCALE
0 20 40 FEET
© 1984 IT CORPORATION
ALL COPYRIGHTS RESERVED
IT
Creating a Safer Tomorrow
DRAWN BY J. LOGRECO 4-11-87
CHECKED BY
APPROVED BY
DRAWING NUMBER 303082-B1