

AMENDMENT 33

COLLATING INSTRUCTIONS  
FOR REVISION 4 TO THE ENVIRONMENTAL REPORT -  
OPERATING LICENSE STAGE

Revision 4 replacement pages (text, tables, and figures) are to be inserted into the Shoreham Nuclear Power Station Unit 1 Environmental Report - Operating License Stage. All replacement pages which differ from original pages are identified by a revision number and date in the lower right hand corner. Vertical bars located in the margin of text and tables indicate material which is new in the revision indicated at the bottom of the page. These instructions are to be inserted into Volume 1 behind the Revision Title Page.

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APPLICANT'S  
ENVIRONMENTAL REPORT  
OPERATING LICENSE STAGE

# SHOREHAM NUCLEAR POWER STATION UNIT 1

REVISION 4

SEPTEMBER, 1979

**LILCO**  
LONG ISLAND LIGHTING

1015 209

LIST OF AMENDMENTS TO THE APPLICATION  
OPERATING LICENSE STAGE

<u>Amendment Number</u>	<u>Amendment Date</u>	<u>Content</u>
Amendment 13	January 1976	Operating License Application
Amendment 14	March 1976	Revision 1 to FSAR
Amendment 15	September 1976	Revision 2 to FSAR
Amendment 16	October 1976	Revision 1 to ER
Amendment 17	November 1976	Revision 2 to ER
Amendment 18	November 1976	Revision 3 to FSAR
Amendment 19	February 1977	Revision 4 to FSAR
Amendment 20	March 1977	Revision 5 to FSAR
Amendment 21	May 1977	Revision 6 to FSAR
Amendment 22	August 1977	Revision 7 to FSAR
Amendment 23	September 1977	Revision 8 to FSAR
Amendment 24	October 1977	Revision 3 to ER
Amendment 25	December 1977	Revision 9 to FSAR
Amendment 26	February 1978	Revision 10 to FSAR
Amendment 27	June 1978	Revision 11 to FSAR
Amendment 28	July 1978	Revision 12 to FSAR
Amendment 29	September 1978	Revision 13 to FSAR
Amendment 30	December 1978	Revision 14 to FSAR
Amendment 31	January 1979	Revision 15 to FSAR
Amendment 32	April 1979	Revision 16 to FSAR
Amendment 33	September 1979	Revision 4 to ER

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2.8R-1	Orig.
T2.8-1 through T2.8-9	Orig.
F2.8-1 and F2.8-2	Orig.
2.9-1 through 2.9-3	Orig.
T2.9-1	Orig.
3-i	Orig.
3-iii	3
3-iv through 3-viii	Orig.
3.1-1 through 3.1-3	Orig.
T3.1-1	Orig.
F3.1-1 through F3.1-4	Orig.
3.2-1 through 3.2-4	Orig.
F3.2-1	Orig.
3.3-1 and 3.3-2	Orig.
F3.3-1	Orig.
3.4-1 and 3.4-2	1
3.4-3 through 3.4-7	3
3.4R-1	3
T3.4-1	3
T3.4-2	Orig.
F3.4-1 through F3.4-4	Orig.
F3.4-5 and F3.4-6	3
F3.4-7 through F3.4-13	Orig.
3.5-1 through 3.5-12	Orig.
T3.5-1	3
T3.5-2 (2 sheets)	Orig.
T3.5-3 (2 sheets)	Orig.
T3.5-4 (2 sheets)	Orig.
T3.5-5 through T3.5-8	Orig.
F3.5-1	Orig.
F3.5-2a through F3.5-2e	Orig.
F3.5-3a through F3.5-3c	Orig.
3.6-1 through 3.6-5	Orig.
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T5.1-6 (6 sheets)	Orig.
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F5.3-1	Orig.
5.4-1 through 5.4-6	Orig.
5.4R-1	Orig.
T5.4-1 through T5.4-3	Orig.
5.5-1	Orig.
5.6-1 and 5.6-2	Orig.
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5.7R-1	Orig.
T5.7-1	Orig.
F5.7-1	Orig.
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T6.1-1	Orig.
T6.1-2 (2 sheets)	Orig.
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T6.1-5 (2 sheets)	3
T6.1-6 (2 sheets)	Orig.
T6.1-7 (2 sheets)	Orig.
T6.1-8 and T6.1-9	Orig.
T6.1-10	1
T6.1-11	4
T6.1-12 (2 sheets)	4
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F6.1-7	3
F6.1-8 through F6.1-18	Orig.
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T6.2-1	Orig.
6.3-1	Orig.
6.4-1 and 6.4-2	Orig.
7-i	Orig.
7-iii through 7-v	Orig.
7.1-1 through 7.1-4	Orig.
7.1-5 through 7.1-10	1
7.1-11 through 7.1-15	Orig.
7.1R-1	Orig.
T7.1-1	1
T7.1-2	Orig.
7.2-1 through 7.2-4	Orig.
8-i	Orig.
8-iii and 8-iv	2
8-1 through 8-3	Orig.
8R-1	Orig.
8.1-1 and 8.1-2	2

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8.1R-1	Orig.
T8.1-1 (2 sheets)	2
T8.1-2	2
8.2-1 through 8.2-4	Orig.
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T8.2-1	2
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10-1	Orig.
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T11.1-1 (sheets 2 through 8 of 8)	Orig.
11.2-1	Orig.
11.2R-1	Orig.
T11.2-1 (2 sheets)	Orig.
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12-iii and 12-iv	Orig.
12.1-1 through 12.1-4	Orig.
T12-1 (3 sheets)	Orig.
12.2-1 through 12.2-7	Orig.
12.3-1	Orig.
12-4-1	Orig.
12.5-1	Orig.
13-i	Orig.
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A1-2	3
A1-3 and A1-4	Orig.
A2.1-1 through A2.1-4	3
A2.3-1 through A2.3-3	Orig.
A2.4-1 through A2.4-7	Orig.
TA2.4-1 (2 sheets)	Orig.
A3-1	Orig.
A3.1-1 and A3.1-2	3
A3.1-3 and A3.1-4	Orig.
A3.1-5 through A3.1-11	3
TA3.1-1	Orig.
TA3.1-2 (3 sheets)	3
TA3.1-3 and TA3.1-4	3
FA3.1-1	Orig.
FA3.1-2	3
FA3.1-3	Orig.
A3.2-1 and A3.2-2	Orig.
TA3.2-1	4
TA3.2-2 (2 sheets)	4
TA3.2-3	3
A4-1	Orig.
A5-1	Orig.
A5.1-1	Orig.
A5.2-1	1
FA5.2-1	Orig.
A5.3-1	1
A5.4-1	Orig.
A5.5-1	3
A5.6-1	3
A5.6-2 through A5.6-5	Orig.
A5.7-1	Orig.
B-i	Orig.
B-iii	Orig.
B-iv	1
B-v and B-vi	Orig.
TB-1 (4 sheets)	Orig.
TB-2 through TB-10	Orig.
TB-11 (2 sheets)	Orig.
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FB-5 through FB-37	1
FB-38	Orig.
FB-39	1
FB-40 and FB-41	Orig.
FB-42	1
FB-43	Orig.
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FB-45	Orig.
FB-46 and FB-47	1
FB-48	Orig.
FB-49	1
FB-50	Orig.
FB-51 and FB-52	1
FB-53	Orig.
FB-54 and FB-55	1
FB-56 through FB-59	Orig.
FB-60 and FB-61	1
FB-62	Orig.
FB-63 and FB-64	1
FB-65	Orig.
FB-66 and FB-67	1
FB-68	Orig.
FB-69 and FB-70	1
FB-71	Orig.
FB-72	1
FB-73	Orig.
FB-74 and FB-75	1
FB-76	Orig.
FB-77	1
FB-78 and FB-79	Orig.
FB-80 and FB-81	1
FB-82 and FB-83	Orig.
FB-84 and FB-85	1
FB-86	Orig.
FB-87 and FB-88	1
FB-89	Orig.
FB-90	1
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C-iii	Orig.
CI-i	Orig.
CI-iii through CI-v	Orig.
CI-1 through CI-6	Orig.
T CI-1	Orig.
F CI-1	Orig.
F CI-2a through F CI-2d	Orig.
F CI-3 through F CI-8	Orig.
CII-i	Orig.
CII-iii through CII-vi	Orig.
CII-1 through CII-12	Orig.
CIIR-1 through CIIR-3	Orig.
T CII-1 through T CII-10	Orig.
F CII-1 through F CII-8	Orig.
CIII-i	Orig.
CIII-iii through CIII-vii	Orig.
CIII-1 through CIII-7	Orig.
CIIIR-1 and CIIIR-2	Orig.
T CIII-1 and T CIII-2	Orig.
F CIII-1 through F CIII-3	Orig.
CIV-i	Orig.
CIV-iii and CIV-iv	Orig.
CIV-1 and CIV-2	Orig.
T CIV-1	Orig.
CV-i	Orig.
CV-iii	Orig.
CV-1 through CV-12	Orig.
D-i	Orig.
D-1 and D-2	Orig.
E-i	Orig.
E-1 through E-6	Orig.
F-i	Orig.
FI-i	Orig.
FI-iii and FI-iv	Orig.
FI-1 through FI-11	Orig.
FIR-1	Orig.
F FI-1 through F FI-6	Orig.
FII-i	Orig.
FII-iii and FII-iv	Orig.
FII-1 through FII-8	Orig.
FIIR-1	Orig.
F FII-1 through F FII-5	Orig.

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G-1 through G-15	Orig.
GR-1	Orig.
T G-1 (2 sheets)	Orig.
T G-2 (2 sheets)	Orig.
T G-3 (2 sheets)	Orig.
F G-1 through F G-16	Orig.
F G-17a through F G-17k	Orig.
F G-18 through F G-24	Orig.
F G-25a through F G-25d	Orig.
F G-26a through F G-26f	Orig.
F G-27	Orig.
H-1	Orig.
H-iii	Orig.
H-v	Orig.
H-1 through H-28	Orig.
I-1	Orig.
I-iii	Orig.
I-v	Orig.
I-1 through I-10	Orig.
J-1	Orig.
J-1 through J-6	Orig.
T J-1	Orig.
C1.1-1	2
T C1.1-1 through T C1.1-8	2
C1.2-1 through C1.2-22	2
T C1.2-1 (3 sheets)	2
C1.3-1 and C1.3-2	2
T C1.3-1	2
C1.4-1	2
T C1.4-1	2
C1.5-1	2
C1.6-1	2
T C1.6-1	2
C2/8.1-1	2
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TABLE 6.1-11

## PREOPERATIONAL ENVIRONMENTAL RADIOLOGICAL SURVEILLANCE PROGRAM

<u>Media</u>	<u>Sampling Locations</u>	<u>Sampling Frequency</u>	<u>Analyses</u>
<u>2 Year Requirement</u>			
Direct Radiation	3A1, 4A1, 6S1, 7A1, 1S1, 10A1, 15S1, 6A1, 7B1, 12D1, 5C1, 5D1, 12G2, 11G1, 6G1, 12G1, 12A1, 9E1	Quarterly	Gamma exposure
Fish Invertebrates Sediment and Indicator Organisms	3C1, 14B1, 13G2, 16A1	Semi-annually as available	Gamma-isotopic on edible portion, Sr-89/90, Gamma-isotopic
Fruits, vegetables leafy vegetables	8A1, 7C1, 5F2, 5D2, 5F4, 13H1	Annually	Gamma-isotopic, radioiodine
Soil	6S1, 7A1, 1S1, 10A1, 7B1, 12D1, 5C1, 4A1, 5F3, 12A1	Once every 3 years	Gamma-isotopic, Sr-90
Airborne particulates	3A1, 4A1, 6S1, 7A1, 10A1, 7B1, 5F3, 12G2, 11G1, 8G1, 12A1, 12D1, 5C1	Weekly Monthly Quarterly	Gross beta, Gamma-isotopic, Sr-89/90
Game	Local	Semi-annually	Gamma-isotopic
<u>1 Year Requirement</u>			
Milk	7F1, 8G1, 10F1	Monthly	Gamma-isotopic, Sr-89/90
Surface water	3C1, 14B1, 13G2	Semi-annually	Gamma-isotopic, H-3 Sr-89/90
Ground water	9A1, 5S1, 12S1	Quarterly	Gamma-isotopic, H-3
<u>6 Month Requirement</u>			
Airborne Iodine	3A1, 4A1, 6S1, 7A1, 10A1, 7B1, 12A1 12G2, 8G1	Weekly	Radioiodine
Milk	7F1, 8G1, 10F1	Semi-monthly	Radioiodine (during pasture season)



TABLE 6.1-12

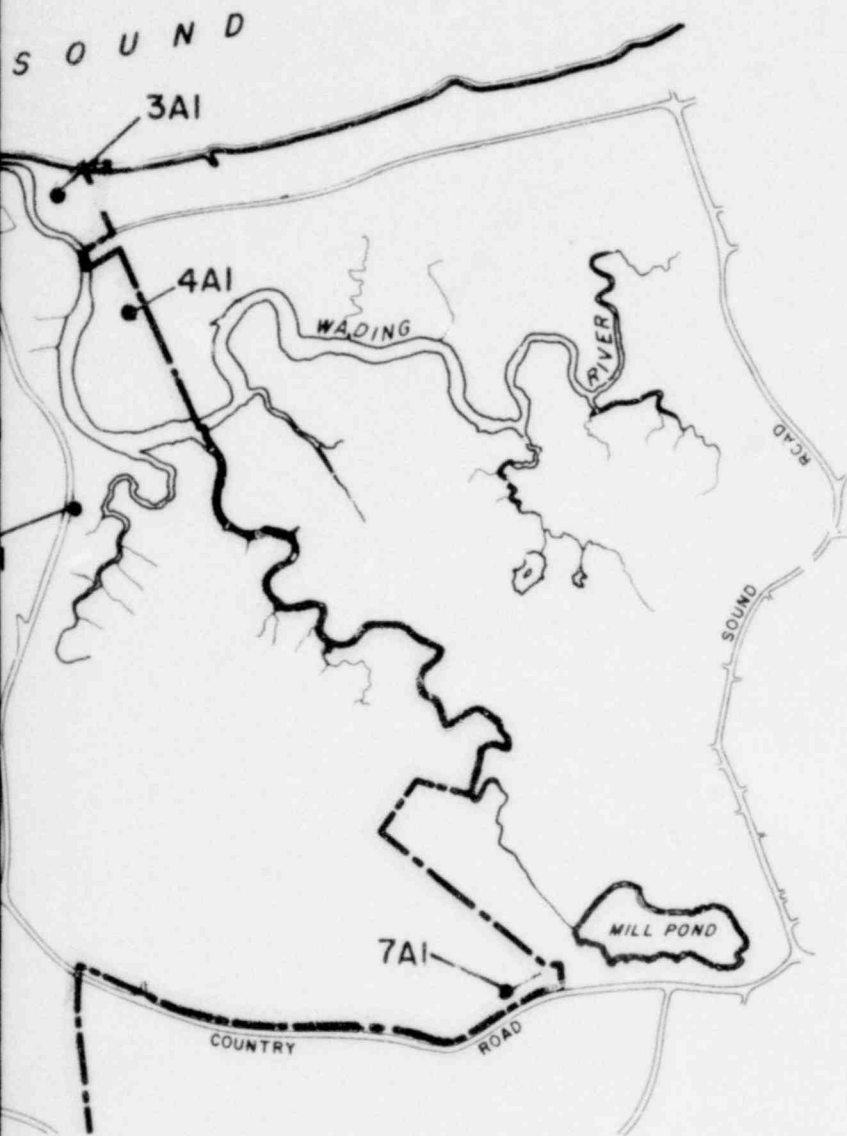
SAMPLING LOCATIONS,  
PREOPERATIONAL ENVIRONMENTAL RADIOLOGICAL SURVEILLANCE PROGRAM

<u>Designation</u>	<u>Location</u>
3A1	Nearest residence, 0.3 miles northeast
4A1	West End Creek Road, 0.3 miles east-northeast
6S1	Service road, 0.1 miles east-southeast
7A1	North Country Road, 0.6 miles southeast
1S1	Beach, 0.3 miles north
10A1	North Country Road, 0.3 miles south-southwest
15S1	Beach west of intake, 0.3 miles northwest
5S1	Well water, onsite 0.1 miles east of plant
12S1	Well water, onsite 0.15 miles west-southwest of plant
15S2	Onsite, 0.2 miles northwest of plant
16A1	Aquatic location, 0.3 miles north-northwest of plant
16S1	Onsite, 0.2 miles north-northwest of plant
6A1	Sound Road, 0.8 miles east-southeast of plant
7B1	Overhill Road, Wading River, 1.5 miles south-east of plant
12D1	North Shore Beach Substation, 3.8 miles west-southwest of plant
5C1	Wildwood State Park, 3.0 miles east of plant
5D1	Wildwood Beach, 3.5 miles east of plant
8A1	Small truck farm, 1 mile south-southeast of plant
7C1	Large truck farm, 2.3 miles southeast of plant
5F2	Vegetable farm, 7.6 miles east of plant
5D2	Peach orchard, 3.7 miles east of plant
5F4	Apple orchard, 9.4 miles east of plant
5F3	Dairy farm, 8.3 miles east of plant
12G2	Flowerfield Substation, 15 miles west-southwest of plant
11G1	MacArthur Substation, 15 miles southwest of plant
6G1	Hampton Bays Substation, 18 miles east-southeast of plant
12G1	Central Islip Substation, 20 miles west-southwest of plant
13H1	Farm in Huntington, 30 miles west of plant
8G1	Dairy in Center Moriches, 12 miles south-southeast of plant
9A1	U.S. Army housing, 1 mile south of plant
12A1	Meteorological tower, 0.9 miles west-southwest of plant
9E1	Brookhaven National Laboratories, 5 miles south of plant
3C1	Outfall area, aquatic location T-5, 2.5 miles northeast of plant

TABLE 6.1-12 (CONT'D)

<u>Designation</u>	<u>Location</u>
14B1	Outfall area, aquatic location T-4, 1.5 miles west-northwest of plant
13G2	Background aquatic location, 13 miles west of plant
7F1	Dairy farm, 9.6 miles southeast of plant
10F1	Goat farm, 9.28 miles south-southwest of plant

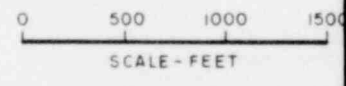
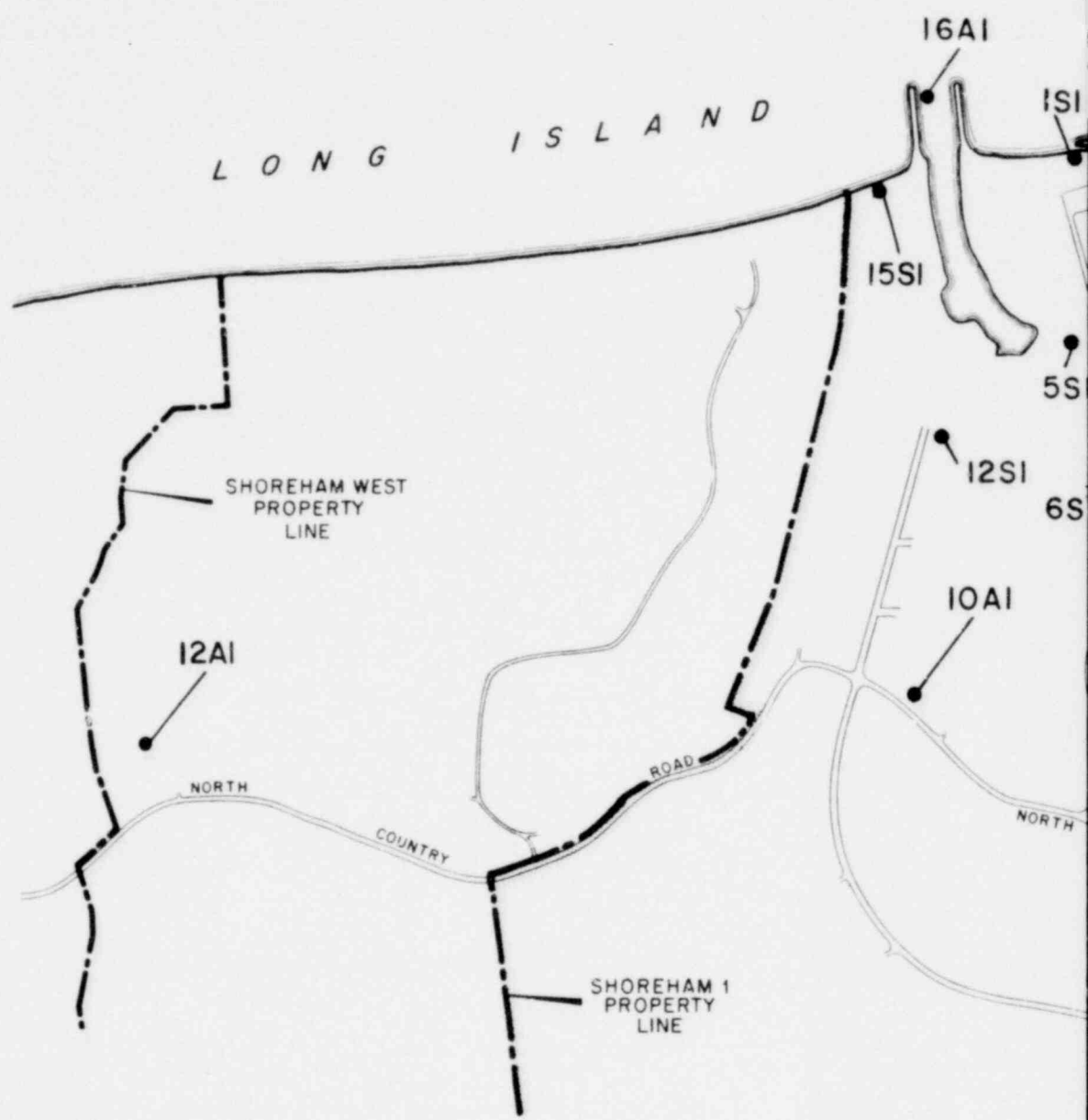
1245 225



1215 226

**FIGURE 6.I-19  
NEARSITE RADIOLOGICAL  
SURVEILLANCE LOCATIONS**

SHOREHAM NUCLEAR POWER STATION  
UNIT 1  
LONG ISLAND LIGHTING COMPANY  
ENVIRONMENTAL REPORT



1215 227

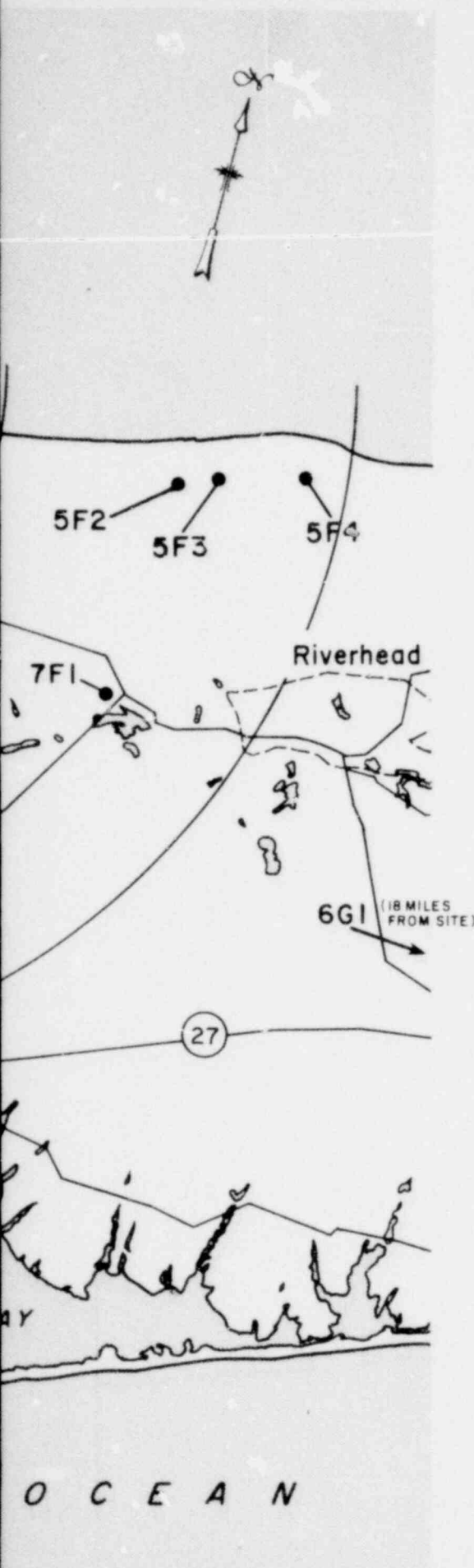


FIGURE 6.1-20  
 OFFSITE RADIOLOGICAL  
 SURVEILLANCE LOCATIONS

SHOREHAM NUCLEAR POWER STATION  
 UNIT 1

LONG ISLAND LIGHTING COMPANY  
 ENVIRONMENTAL REPORT

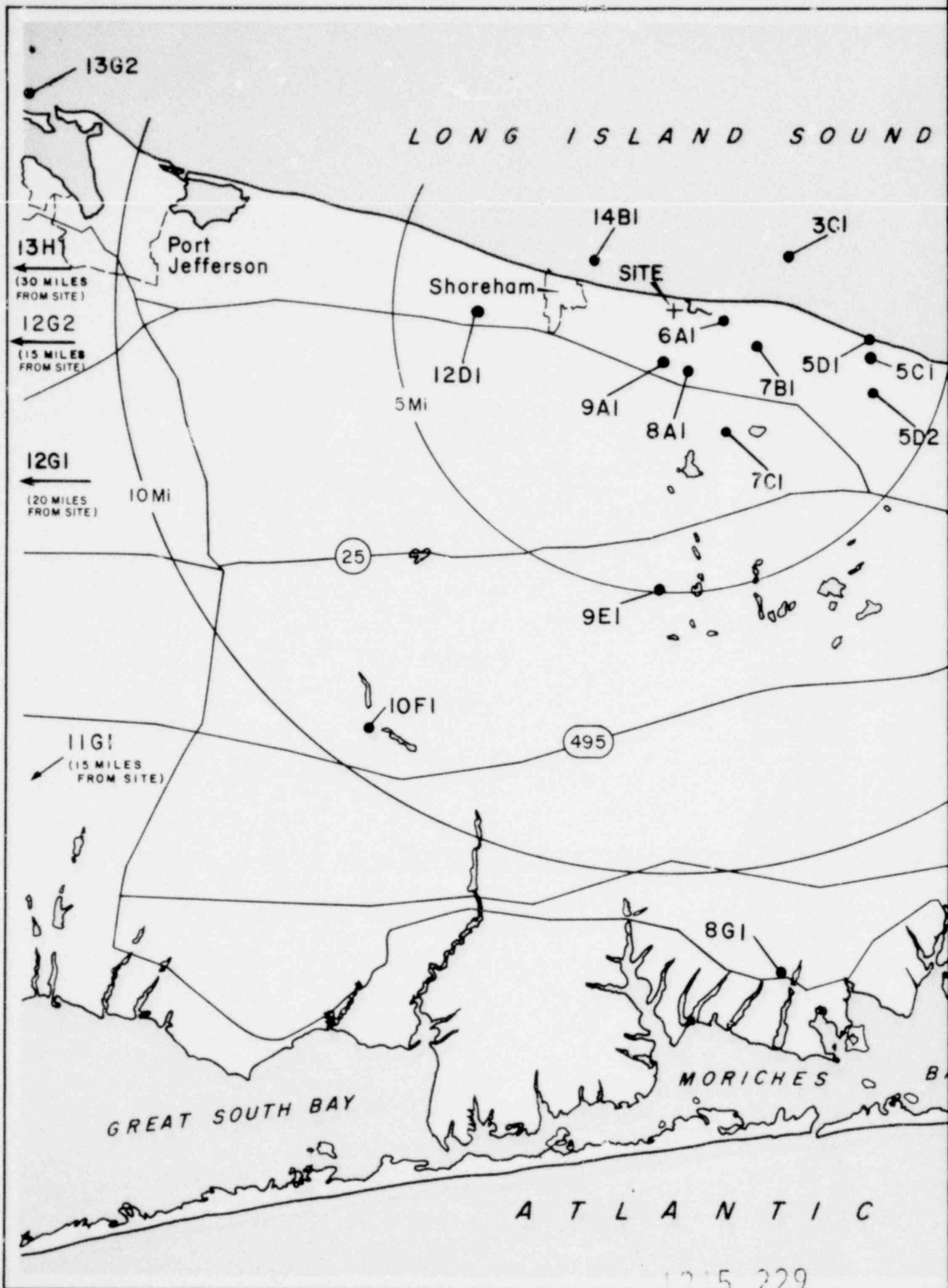


TABLE A 3.2-1

## PREOPERATIONAL ENVIRONMENTAL RADIOLOGICAL SURVEILLANCE PROGRAM

<u>Media</u>	<u>Sampling Locations</u>	<u>Sampling Frequency</u>	<u>Analyses</u>
<u>2 Year Requirement</u>			
Direct Radiation	3A1, 4A1, 6S1, 7A1, 1S1, 10A1, 15S1, 6A1, 7B1, 12D1, 5C1, 5D1, 12G2, 11G1, 6G1, 12G1, 12A1, 9E1	Quarterly	Gamma exposure
Fish Invertebrates Sediment and Indicator Organisms	3C1, 14B1, 13G2, 16A1	Semi-annually as available	Gamma-isotopic on edible portion, Sr-89/90, Gamma-isotopic
Fruit, vegetables leafy vegetables	8A1, 7C1, 5F2, 5D2, 5F4, 13B1	Annually	Gamma-isotopic, radioiodine
Soil	6S1, 7A1, 1S1, 10A1, 7B1, 12D1, 5C1, 4A1, 5F3, 12A1	Once every 3 years	Gamma-isotopic, Sr-90
Airborne particulates	3A1, 4A1, 6S1, 7A1, 10A1, 7B1, 5F3, 12G2, 11G1, 8G1, 12A1, 12D1, 5C1	Weekly Monthly Quarterly	Gross Beta, Gamma-isotopic, Sr-89/90
Game	Local	Semi-annually	Gamma-isotopic
<u>1 Year Requirement</u>			
Milk	7F1, 8G1, 10F1	Monthly	Gamma-isotopic, Sr-89/90
Surface water	3C1, 14B1, 13G2	Semi-annually	Gamma-isotopic, H-3 Sr-89/90
Ground water	9A1, 5S1, 12S1	Quarterly	Gama-isotopic, H-3
<u>6 Month Requirement</u>			
Airborne Iodine	3A1, 4A1, 6S1, 7A1, 10A1, 7B1, 12A1 12G2, 8G1	Weekly	Radioiodine
Milk	7F1, 8G1, 10F1	Semi-monthly	Radioiodine (during pasture season)



TABLE A 3.2-2

SAMPLING LOCATIONS,  
PREOPERATIONAL ENVIRONMENTAL RADIOLOGICAL SURVEILLANCE PROGRAM

<u>Designation</u>	<u>Location</u>
3A1	Nearest residence, 0.3 miles northeast
4A1	West End Creek Road, 0.3 miles east-northeast
6S1	Service road, 0.1 mile east-southeast
7A1	North Country Road, 0.6 miles southeast
1S1	Beach, 0.3 miles north
10A1	North Country Road, 0.3 miles south-southwest
15S1	Beach west of intake, 0.3 miles northwest
5S1	Well water, onsite 0.1 miles east of plant
12S1	Well water, onsite 0.15 miles west-southwest of plant
15S2	Onsite, 0.2 miles northwest of plant
16A1	Aquatic location, 0.3 miles north-northwest of plant
16S1	Onsite, 0.2 miles north-northwest of plant
6A1	Sound Road, 0.8 miles east-southeast of plant
7B1	Overhill Road, Wading River, 1.5 miles south-east of plant
12D1	North Shore Beach Substation, 3.8 miles west-southwest of plant
5C1	Wildwood State Park, 3.0 miles east of plant
5D1	Wildwood Beach, 3.5 miles east of plant
8A1	Small truck farm, 1 mile south-southeast of plant
7C1	Large truck farm 2.3 miles southeast of plant
5F2	Vegetable farm, 7.6 miles east of plant
5D2	Peach orchard, 3.7 miles east of plant
5F4	Apple orchard, 9.4 miles east of plant
5F3	Dairy farm, 8.3 miles east of plant
12G2	Flowerfield Substation, 15 miles west-southwest of plant
11G1	McArthur Substation, 15 miles southwest of plant
6G1	Hampton Bays Substation, 18 miles east-southeast of plant
12G1	Central Islip Substation, 20 miles west-southwest of plant
13H1	Farm in Huntington, 30 miles west of plant
8G1	Dairy in Center Moriches, 12 miles south-southeast of plant
9A1	U.S. Army housing, 1 mile south of plant
12A1	Meteorological tower, 0.9 miles west-southwest of plant
9E1	Brookhaven National Laboratories, 5 miles south of plant



TABLE A 3.2-2 (CONT'D)

<u>Designation</u>	<u>Location</u>
3C1	Outfall area, aquatic location T-5, 2.5 miles northeast of plant
14B1	Outfall area, aquatic location T-4, 1.5 miles west-northwest of plant
13G2	Background aquatic location, 13 miles west of plant
7F1	Dairy farm, 9.6 miles southeast of plant
10F1	Goat farm, 9.28 miles south-southwest of plant

1215 232