

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No. 70-754/93-03

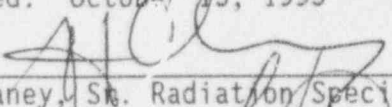
License No. SNM-960

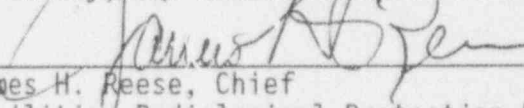
Licensee: General Electric Company (GE)  
Vallecitos Nuclear Center  
P. O. Box 460  
Pleasanton, California 94566

Facility Name: Vallecitos Nuclear Center (VNC)

Inspection at: VNC Site, Alameda County, California

Inspection Conducted: October 15, 1993

Inspector:  2/1/94  
H. Chaney, Sr. Radiation Specialist Date Signed

Approved by:  2/1/94  
James H. Reese, Chief Date Signed  
Facilities Radiological Protection Branch

Summary:

Areas Inspected: Ten soil samples (including one background sample) were collected and split among the licensee, NRC, and the State of California from GE property adjacent to State Highway 84 right-of-way. Inspection procedure 83890 was used.

Results: The licensee's, State of California, and NRC analyses indicated the presence of naturally occurring and GE traceable radionuclides. One sample (#10) showed trace amounts of cobalt-60 and plutonium-238, 239, and 240 that could possibly be associated with the Vallecitos Nuclear Center's operations, but is too near ambient levels for a direct comparison to be made. All radionuclides were well below the NRC staff guidelines (Termination of Byproduct, Source, and Special Nuclear Materials Licenses", Policy and Guidance Directive FC 83-23, dated November 4, 1983) for unrestricted release.

No violations or deviations were identified.

9402230176 940201  
PDR ADOCK 07000754  
C PDR

## DETAILS

### 1. Persons Contacted

#### Licensee

G. E. Cunningham, Senior Licensing Engineer  
A. Mindt, Specialist Radiation Protection

#### State of California Representative

Jeff Wong, Assoc. Health Physicist, Radiologic Health Branch, Department Of Health Services

### 2. Sample Locations and Analysis Results (93890)

On October 15, 1993, at approximately 10:30 a.m., representatives of the State of California, General Electric Company, and the NRC obtained soil samples from lands adjacent to GE Vallecitos property along California Highway 84 (Vallecitos Road). The samples were obtained to verify the radiological status of the property prior to turnover to the State of California for road widening.

Attachment 1 depicts the locations where the samples were obtained.

Attachment 2 contains the NRC's sample analyses results, provided by Oak Ridge Institute for Science and Education (NRC radioanalysis service contractor), for samples #1, #7, #9, and #10, dated December 7, 1993. Based upon previous State and GE sample analysis results for the Vallecitos facility, these samples were considered to have the highest potential for exhibiting radioactive contamination. All samples were analyzed for uranium and transuranics based on results of regional gamma spectrum analysis of each sample. Samples #9 and #10 showed evidence of Plutonium-238, 239, and 240 contamination, but in concentrations well below the current NRC's release guideline of 25 picoCuries per gram.

Attachment 3 is General Electric Company's gamma, beta, and alpha analyses for all ten samples, dated November 22, 1993. Sample #10 showed trace amounts of Cobalt-60 (0.05 picoCuries per gram). The levels present are near ambient concentrations for this geographical area of California and is well below the current NRC guideline for unrestricted release (8 picoCuries per gram).

Attachment 4 is the State of California's analyses for the ten soil samples, dated December 8, 1993. All samples were analyzed by gamma spectrum analysis and only Sample #10 showed any radioactivity above expected ambient levels. Sample #10 showed trace amounts (0.04 picoCuries per gram) of Cobalt-60, but in concentrations well below existing California release limits.

Even though analyses showed trace amounts of radioactivity, this radioactivity was near ambient and instrument detection sensitivity levels. The radioactivity levels are below current NRC release criteria

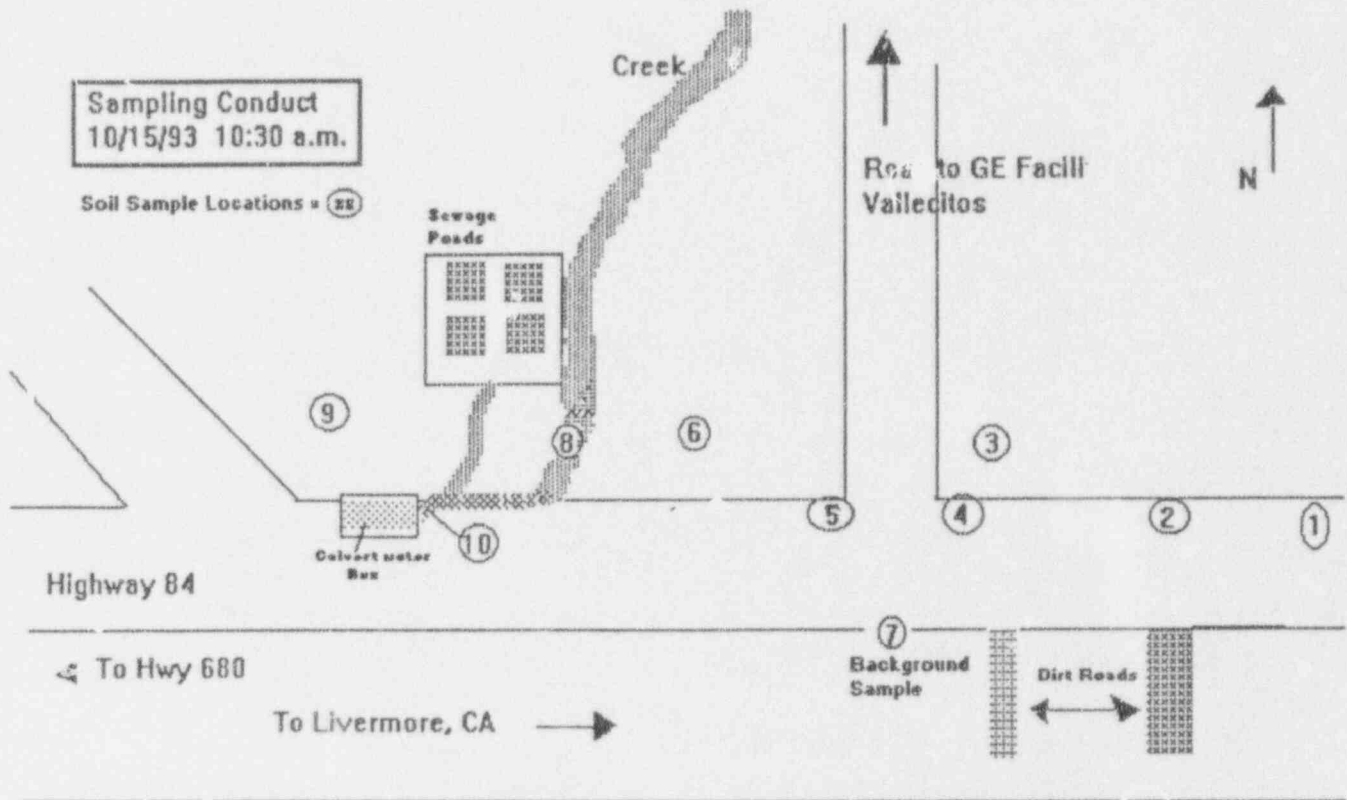
established in Policy and Guidance Directive FC 83-23, "Termination of Byproduct, Source, and Special Nuclear Materials Licenses," dated November 4, 1983. The land is considered suitable for turnover to the State without restriction on use.

No violations or deviations of NRC regulations were identified. General Electric and the State were notified of the findings.

3. Exit Interview

The inspector met with the licensee representatives, denoted in Section 1, at the conclusion of the inspection and sampling on October 15, 1993. The scope and findings of the inspection were summarized.

The licensee was informed that no violations or deviations were identified.



The samples were collected from land that will be transferred to the State of California for Highway 84 (Vailectos Road) widening project. Construction is to begin in early December 1993.

(x) = Samples to ORISE

No. Location

- 1 NE Corner of highway 84 right-of-way, on the northside embankment of roadside ditch. Approximately 625 feet east of the GE turn-in.
- 2 Halfway between No. 1 sample and the turn-in to the GE Site, in northside embankment of the roadside ditch.
- 3 East Corner of the GE turn-in (GE property)
- 4 South of No. 3 sample, in ditch embankment.
- 5 South of the west corner of the GE turn-in, in roadside ditch embankment.
- 6 Approximately 400 feet west of the GE turn-in, on GE Property.
- 7 Background Sample - Approximately 75 feet directly across from the GE turn-in, in roadside ditch embankment.
- 8 In creek bed (dry, run north to south on GE property, drainage from areas around old reactors) just below the south-east corner of the lower sewage ponds, GE property.
- 9 Approximately 100 feet west of the lower sewage ponds western corner, on GE property.
- 10 South of the sewage ponds on state property, in the under-road culvert at the confluence of the creek, the east-west running roadside ditch (adjacent to GE property)

GE Licenses:

SNM-960 Doc: 70-754  
SNM-1270 Doc: 70-1220

On October 15, 1993, ten (10) soil samples were collected from State of California and GE Vallecitos property. The soil samples were split between GE, the State, and the NRC. They are approximately 2-3 pounds each. Some are dry and but most are moist to wet. One sample is a background sample (#7).

The samples were collected from land that will be transferred to the State of California for Highway 84 (Vallecitos Road) widening project. Construction is to begin in early December 1993.

Soil sample data:

<u>No.</u>	<u>Location</u>
1	NE Corner of highway 84 right-of-way, on the northside embankment of roadside ditch. Approximately 625 feet east of the GE turn-in.
2	Halfway between No. 1 sample and the turn-in to the GE Site, in northside embankment of the roadside ditch.
3	East Corner of the GE turn-in (GE property)
4	South of No. 3 sample, in ditch embankment.
5	South of the west corner of the GE turn-in, in roadside ditch embankment.
6	Approximately 400 feet west of the GE turn-in, on GE Property.
7	<u>Background Sample</u> - Approximately 75 feet directly across from the GE turn-in, in roadside ditch embankment.
8	In creek bed (dry, runs north to south on GE property, drainage from areas around old reactors and other facilities) just below the south-east corner of the lower sewage ponds, GE property.
9	Approximately 100 feet west of the lower sewage ponds western corner, on GE property.
10	South of the sewage ponds on state property, in the under-road culvert at the confluence of the creek, the east-west running roadside ditch (adjacent to GE property), and the sewage pond outfall. All south of the GE turn-in.

License No. SNM-960

General Electric Company, Vallecitos Nuclear Center  
P. O. Box 460, Pleasanton, California 94566

December 7, 1993

Mr. Dean Chaney  
U.S. Nuclear Regulatory Commission  
Region V  
1450 Maria Lane, Suite 210  
Walnut Creek, CA 94596-5368

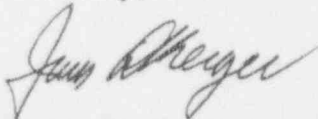
Subject: ANALYTICAL RESULTS — GE VALLECITOS SAMPLES (RFTA 94-006)

Dear Mr. Chaney:

Attached are the results of analyses, performed on the four soil samples from the General Electric (Vallecitos) facility, submitted by your office. These results do not identify levels of uranium, above those typically present in background soil. Samples # 9 and # 10 contained evidence of low level Pu-239/240 contamination; however, concentrations were well below typical guideline levels (25 pCi/g) for plutonium in soil. There were not significant concentrations of Pu-238.

If there are any questions, I may be reached at (615) 576-3305.

Sincerely,



James D. Berger  
Program Director  
Environmental Survey and  
Site Assessment Program

JDB:kew

Attachment

cc: T. Mo/NRC/NMSS  
D. Tiktinsky, NRC/NMSS  
M. Landis, ORISE  
PMDA, 6E6  
File/236

~~9312290170~~

RADIONUCLIDE CONCENTRATIONS IN SOIL  
GE VALLECITOS

Sample ID	Radionuclide Concentration (pCi/g)			
	U-235	U-238	Th-238	Pu-239/240
#1	0.05 ± 0.02	0.3 ± 0.1	0.04 ± 0.05	0.11 ± 0.10
#7	0.07 ± 0.02	0.9 ± 0.2	0.06 ± 0.06	0.09 ± 0.09
#9	0.09 ± 0.03	0.9 ± 0.2	0.06 ± 0.06	0.16 ± 0.08
#10	0.04 ± 0.01	0.5 ± 0.1	0.12 ± 0.11	0.85 ± 0.28

<sup>1</sup>Uncertainties represent the 95% confidence level, based only on counting statistics.

December 7, 1993

Post-it™ brand fax transmittal memo 7571		# of pages *
To DEPN CHANEY	From GENE CUNNINGHAM	
Co.	Co.	
Dept.	Phone # 510-862-4330	
Fax # 975-0857	Fax # 862-7616	

cc: DRF AOO-02971-4  
F. A. ARLT  
G. E. CUNNINGHAM

TO: A. F. MINDT  
FROM: L. K. KESSLER *L K Kessler*  
SUBJECT: SOIL SAMPLES (ROADWAY 10/15/93)

SAMPLE ID	pCi/gram					
	Gross Alpha	Gross Beta	Co-60	Cs-137	U-235	K-40
ROADWAY-1	12	15	-	.02	.05	5.8
ROADWAY-2	16	21	-	.02	-	7.9
ROADWAY-3	15	17	-	-	-	4.6
ROADWAY-4	9	16	-	-	.07	4.5
ROADWAY-5	< 9	14	-	-	-	4.9
ROADWAY-6	< 9	19	-	.2	-	6.4
ROADWAY-7	16	23	-	.13	-	6.5
ROADWAY-8	< 9	12	-	.06	-	4.1
ROADWAY-9	18	17	-	.22	.07	5.7
ROADWAY-10	11	11	.05	.06	-	3.9

These samples were analyzed according to Analytical Chemistry Procedure 3.21, Rev. 0, Determination of Gross Alpha and Gross Beta Activity in Soil and Vegetation and Gamma Activity in Soil. Potassium-40, a naturally occurring radiation, has not been reported previously but, due to some recent interest, is included here.



## DEPARTMENT OF HEALTH SERVICES

2151 BERKELEY WAY  
BERKELEY, CA 94704-1011Gene E. Cunningham  
General Electric Company  
Vallecitos Nuclear Center  
P.O. Box 460, Vallecitos Road  
Pleasanton, CA 94566

December 08, 1993

93 DEC -0 PM 1:09



Reference: Radioactive Materials License No. 0017-60

Dear Mr. Cunningham:

On October 15, 1993, the Department collected soil samples at locations along Vallecitos Road, controlled by or adjacent to the G. E. Vallecitos Nuclear Center. The area is to be released to the California Department of Transportation. The samples were collected with Mr. Dean Cheaney, of the Nuclear Regulatory Commission (NRC), Region V, and in the presence of Mr. A. Frank Mindt, of G. E. Vallecitos. The samples were then split with the NRC and G.E. Vallecitos.

The results of the radioanalysis by the California Sanitation and Radiation Laboratory (SLR) indicate general agreement to the radioanalytical results reported by G.E. Vallecitos. The SRL's results for nine of the ten collected samples indicated the presence of only naturally occurring and global-fallout radionuclides, at levels consistent with normal ambient environments. One sample (Roadway #10) indicated a trace amount of cobalt-60 (0.04 +/- 0.02 pCi/gram dry weight), which may be associated with Vallecitos Nuclear Center's operations. This concentration of cobalt-60 in soil is below that which would require restriction.

Based upon these results, the Department concurs with Vallecitos Nuclear Center's release of the area for unrestricted use.

If you have any question, please call me at (510) 540-2360.

Sincerely,

Jeffrey W. Wong  
Associate Health Physicist  
Radiologic Health Branch

Enclosure: SRL Lab analysis

cc: License #0017-60  
Dean Cheaney, U.S.N.R.C. Region V

<u>Sample</u>	<u>Description</u>	<u>Analysis</u>	<u>Result (pCi/g dry wt.)</u>	<u>Isotope</u>
---------------	--------------------	-----------------	-------------------------------	----------------

6600	R61637		7.18 ± 0.40	K-40
ROADWAY (1)			0.39 ± 0.08	Th-232
			0.31 ± 0.04	U-238
			0.04 ± 0.01	Cs-137
6601	R61638		8.32 ± 0.44	K-40
ROADWAY (2)			0.46 ± 0.06	Th-232
			0.39 ± 0.04	U-238
			0.03 ± 0.02	Cs-137
6602	R61639		5.87 ± 0.39	K-40
ROADWAY (3)			0.27 ± 0.05	Th-232
			0.32 ± 0.04	U-238
			0.04 ± 0.02	Cs-137
6603	R61640		6.18 ± 0.43	K-40
ROADWAY (4)			0.44 ± 0.07	Th-232
			0.34 ± 0.05	U-238
			0.02 ± 0.01	Cs-137
6604	R61641		4.66 ± 0.31	K-40
ROADWAY (5)			0.22 ± 0.05	Th-232
			0.21 ± 0.02	U-238
6605	R61642		5.24 ± 0.38	K-40
ROADWAY (6)			0.43 ± 0.06	Th-232
			0.38 ± 0.05	U-238
			0.08 ± 0.17	Cs-137

Sample	Description	Analysis	Result (pCi/g dry wt.)	Isotope
6606	R61643	gamma scan	7.11 ± 0.58	K-40
	ROADWAY (7)		0.42 ± 0.10	Th-232
			0.40 ± 0.07	U-238
			0.09 ± 0.03	Cs-137
6607	R61644		4.83 ± 0.50	K-40
	ROADWAY (8)		0.40 ± 0.07	Th-232
			0.35 ± 0.06	U-238
			0.08 ± 0.03	Cs-137
6608	R61645		5.79 ± 0.41	K-40
	ROADWAY (9)		0.48 ± 0.07	Th-232
			0.44 ± 0.05	U-238
			0.18 ± 0.03	Cs-137
6609	R61646		3.29 ± 0.29	K-40
	ROADWAY (10)		0.25 ± 0.04	Th-232
			0.23 ± 0.04	U-238
			0.04 ± 0.02	Co-60
			0.07 ± 0.02	Cs-137