

November 21, 1994

MEMORANDUM TO: DAVID J. CHAWAGA, REGIONAL STATE LIAISON OFFICER  
OFFICE OF THE REGIONAL ADMINISTRATOR, REGION I

FROM: JOHN D. KINNEMAN, CHIEF  
SITE DECOMMISSIONING SECTION  
DIVISION OF RADIATION SAFETY AND SAFEGUARDS

SUBJECT: SUMMARY OF MEETING WITH WESTINGHOUSE ELECTRIC CORPORATION  
AND THE NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

Background

Representatives from Westinghouse Electric Corporation (Westinghouse) requested a meeting with the State of New Jersey Department of Environmental Protection (New Jersey DEP) to discuss applicable criteria for the cleanup of the Westinghouse facility in Bloomfield, New Jersey (NRC License No. SMB-1527). Both groups requested that Region I representatives also attend. This facility (which, for a time was leased by Westinghouse to North American Phillips Lighting Corporation) consists of nine major buildings that were contaminated with uranium and thorium from past licensed, pre-World War II, and Manhattan Engineering District operations. The facility is currently licensed by the Nuclear Regulatory Commission for decommissioning the buildings and grounds. The portion of the facility west of Arlington Avenue was released for unrestricted use in 1992 following remediation and review of final and confirmatory radiological surveys.

Westinghouse received a letter (copy attached) that provided comments from New Jersey DEP on the "Data Summary Report - Exterior Soil and Groundwater", produced by Westinghouse for the Bloomfield, New Jersey facility. This letter, dated July 28, 1994, includes comments on the remediation of residual radiological and hazardous material contamination at the facility. The letter also includes soil cleanup standards for radionuclides. The standards are under development by New Jersey DEP as a result of legislation enacted by the New Jersey Legislature. This legislation, the Industrial Site Recovery Act (ISRA) or S-1070, establishes the bases for cleanup criteria for sites contaminated with hazardous materials in New Jersey.

Meeting Summary

Representatives from the New Jersey DEP, Bureau of Environmental Radiation; Westinghouse; Scientific Ecology Group, Inc. (Westinghouse's radiological remediation contractor); and the USNRC Region I, Site Decommissioning Section met at the New Jersey DEP facilities at 729 Alexander Road, Princeton, New Jersey on September 28, 1994. The New Jersey DEP representatives discussed the general requirements of ISRA, the development of proposed standards pursuant to the legislation and the applicability of the legislation to the ongoing cleanup efforts at the Westinghouse Bloomfield, New Jersey facility.

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In accordance with ISRA, the criteria for cleanups will be based on an excess lifetime cancer risk of one in one million ( $10^{-6}$ ) or on regional natural background levels, if the risks associated with the background levels are greater than  $10^{-6}$ . Since background levels of radiation result in an estimated lifetime cancer risk of greater than  $10^{-6}$ , the New Jersey DEP plans to use the "regional natural background level" in developing the cleanup criteria. The New Jersey DEP staff has decided that four radiation exposure pathways will be considered; external gamma radiation, indoor radon, internally deposited radionuclides and ground water. For the external gamma radiation pathway, the criterion under development will be set such that contamination remaining on a site will not contribute an incremental annual dose equivalent in excess of one standard deviation from the mean value of the terrestrial component of the natural background exposure rate. A value of approximately 6 to 10 millirem per year is under consideration. The criteria for internally deposited radionuclides will allow an addition of no more than 25% to the 40 millirem annual average dose equivalent from inhaled and ingested radionuclides, resulting in an allowed increment of 10 millirem per year from this pathway. The radionuclide standards for the ground water pathway are the applicable values in the EPA drinking water regulations (4 millirem per year). The radon pathway is typically not applicable to NRC regulated materials, and was not discussed in detail.

The preliminary limits for the incremental concentrations above background for naturally occurring radionuclides are tabulated on page 8 of the July 28, 1994 New Jersey DEP letter to Westinghouse. A two-tiered standard for residential and non-residential use is proposed. The tabulated values for residential use (equivalent to the NRC terminology of "release for unrestricted use") are lower than the corresponding current NRC guidelines (1981 Branch Technical Position on Disposal or Onsite Storage of Thorium or Uranium Wastes From Past Operations and the 1992 Action Plan to Ensure Timely Cleanup of Site Decommissioning Management Plan Sites). The standards for non-residential use are generally higher by an approximate factor of two, primarily due to a reduced occupancy consideration.

The standards under development to support implementation of ISRA do not address, nor are they intended to address, residual surface contamination on structures (floors, walls, etc.). New Jersey DEP expects to use current NRC guidelines for surface contamination. New Jersey DEP intends to apply the standards under development to residual soil contamination at facilities within the state, including those currently licensed by the NRC. If contamination is in or will enter the public domain, New Jersey feels that their regulations apply since the material entered the public domain through a spill or other "release". The NRC representatives suggested that NRC regulations may pre-empt the application of the State's regulations to contamination caused by operations licensed by the NRC; however, the subject of pre-emption was beyond the scope of this meeting.

New Jersey DEP expects to have a draft of the standards available for review by "interested parties" in the first or second quarter of calendar year 1995. Interested parties can then comment on the standards prior to implementation. The actual values for the standards are likely to change from those appearing in the letter to Westinghouse; however, the pathways and approach to the

derivation of the values will likely remain as described. Alternatives such as on-site mixing, deeper burial or alternative use for the contaminated material, may also be allowed for soils that exceed the final limits.

Representatives from Westinghouse voiced their concern that they felt that they have an approved decommissioning plan and have spent a significant sum of time and money to meet the decommissioning values in their approved plan. Westinghouse representatives stated they have worked to be particularly cooperative in their dealings with both the State of New Jersey and the USNRC and felt that the implementation of new rules at such a late hour is not fair. In particular, they felt that their plan, which was submitted to New Jersey in November 1986, should be "grandfathered" since it was submitted, and as they understood, approved, prior to the consideration of this new legislation. Westinghouse expects to complete the decommissioning of the facility by early 1995 and be ready for an NRC confirmatory survey at that time. Westinghouse also expressed concern on the finality issue, and if the site could ever be revisited. The New Jersey DEP representative stated that there was guidance in the regulation concerning the revisiting of sites by New Jersey DEP once remediation was completed. New information concerning a site had to raise the risk factor by a factor of ten before further remediation would be required.

This information is provided to keep you informed about activities of New Jersey which affect NRC licenses.

Docket No. 040-08976

Attachment: Letter from New Jersey DEP to Westinghouse dated July 28, 1994.

D. J. Chawaga

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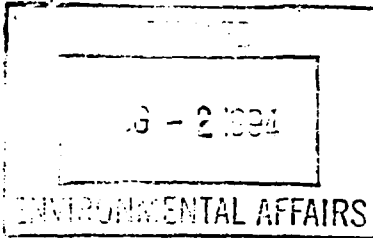
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State of New Jersey  
DEPARTMENT OF ENVIRONMENTAL  
PROTECTION AND ENERGY

CHRISTINE TODD WHITMAN  
Governor

ROBERT C. SHINN, JR.  
Commissioner

JUL 28 1994

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

Timothy Basilone  
Westinghouse Electric Corporation  
11 Stanwix Street  
Pittsburgh, PA 15222-1384

Re: North American Philips Lighting Corporation  
Bloomfield Twp., Essex County  
Data Summary Report Exterior Soil and Groundwater Revised: March 1994  
ISRA Case #86070

Dear Mr. Basilone:

Pursuant to the authority vested in the Commissioner of the New Jersey Department of Environmental Protection (NJDEP) by the Industrial Site Recovery Act (ISRA) and delegated to the Chief of the Bureau of Environmental Evaluation and Cleanup Responsibility Assessment (BEECRA) pursuant to N.J.S.A. 13:1B-4, the referenced Data Summary Report Exterior Soil and Groundwater is hereby approved as conditioned below:

The "Technical Requirements for Site Remediation" (N.J.A.C. 7:26E) became effective July 1, 1993. These rules provide the Department's minimum requirements concerning the environmental investigation and remediation at contaminated sites or sites at which contamination is suspected. These rules replace the Division of Responsible Party Site Remediation's Remedial Investigation Guide, the ECRA Cleanup Plan Guide, the Bureau of Underground Storage Tanks' (BUST) Scope of Work document (and appendices) and parts of the BUST Technical Guidance Document. Documents submitted to the NJDEP in accordance with the "Technical Requirements for Site Remediation" (N.J.A.C. 7:26E) will help reduce the time necessary for the NJDEP oversight of your case.

All future submissions (entitled Remedial Investigation Workplan, Remedial Investigation Report and/or Remedial Action Workplan) shall follow N.J.A.C. 7:26E requirements. The above referenced submission generally did not follow N.J.A.C. 7:26E.

Additionally, North American Philips Lighting Corporation (NAPL) shall submit a revised schedule pursuant to N.J.A.C. 7:26E-4.8(b)1 within 15 days of receipt of this document.

## I SOIL CONDITIONS

The Department acknowledges that North American Philips Lighting Corporation plans to remediate the soils to the Non-Residential Direct Contact Soil Cleanup Criteria (NRDCSCC) and/or the Impact to Ground Water Soil Cleanup Criteria.

North American Philips Lighting Corporation shall inform the Department, per Section 4i of P.L. 1993. c139., as to the basis upon which the decision was made to remediate soils to the Non-Residential Direct Contact Soil Cleanup Criteria and/or Impact to Ground Water Soil Cleanup Criteria. North American Philips Lighting Corporation shall submit to the Department, per P.L. 1993. c139. Section 4i paragraph 6, the cost difference between implementing the residential criteria and non-residential criteria.

North American Philips Lighting Corporation is also advised that Section 36 of P.L. 1993. c139., has specific requirements when a property is remediated to the Non-Residential Direct Contact Soil Cleanup Criteria and/or the Impact to Ground Water Soil Cleanup Criteria (i.e. the area(s) to be included in the Declaration of Environmental Restriction (DER) must be delineated to the Residential Direct Contact Soil Cleanup Criteria). North American Philips Lighting Corporation may refer to N.J.A.C. 7:26E-4.1(b) for establishing a contaminant gradient.

This information as well as, a map delineating the area(s) to be included in the Declaration of Environmental Restriction to the Residential Direct Contact Soil Cleanup Criteria (RDCSCC) at all depths where contamination was found and a proposal for implementing engineering/institutional controls shall be included in the final Remedial Action Workplan proposal. The Department's latest version of a Declaration of Environmental Restriction is attached.

North American Philips Lighting Corporation shall be advised that the Department has re-evaluated the Residential Direct Contact Soil Cleanup Criteria (RDCSCC) for lead. The RDCSCC for lead is 400 ppm.

All future submittals shall use the following Area of Concern (AOC) designations as required pursuant to N.J.A.C. 7:26E-1.8:

- AOC A - Outside Burn Area
- AOC B - Hazardous Waste Storage Pad Area
- AOC C - Underground Fuel Oil Storage Area
- AOC D - Storage and Incineration Area
- AOC E - Alcohol Storage Area
- AOC F - Railroad Loading/Unloading Area
- AOC G - Truck Loading/Unloading Area (Between Buildings 3 and 4)
- AOC H - Alcohol/Solvent Storage and Temporary Hazardous Waste Staging Area
- AOC I - Truck Loading/Unloading Area (Between Buildings 5 and 6)
- AOC J - Stained Soil Near Building 2 Neutralization Room Area
- AOC K - Green-Stained Soil Area
- AOC L - Areas Near Neutralization Room Near Buildings 2 and 9
- AOC R - Random Area(s)
- AOC T - Transformer Substation Area
- AOC U - Filled Reservoir Area
- AOC V - Muriatic Tank Area

North American Philips Lighting Corporation shall submit figures and tables which indicate the exceedances of the Residential Direct Contact Soil Cleanup Criteria at each individual AOC.

Pilot test results will need to be submitted which indicate that subsurface remediation can occur for organics such as chlorinated solvents as well as, for heavier fuels.

#### SPECIFIC AREAS OF ENVIRONMENTAL CONCERN

##### 1. Soil AOC I- Area A, B, C, D, T and Filled Reservoir

Previous sampling had indicated inorganics (As, Sb, Cd, Cu, Pb, Hg, and Zn) as well as, VO's above the Non-Residential Direct Contact Soil Cleanup Criteria. In addition, 16 TPHC samples (UST post-ex) were above 10,000 ppm. Details of the tank closure were provided in the Closure Plan Implementation Summary dated July, 1992 (Keating). It was noted that 791 tons of impacted soil as well as 3,500 gallons of residual fuel and sludges were removed as part of the UST project.

Exterior soil removal took place as depicted in figure 2-2. Post-ex samples were analyzed for PPM, TPHC and VO's. Excavation areas were designated A and B. Some of the excavated areas were extended and thus soils represented by many of the perimeter samples were removed from the site. Approximately 20 post-ex samples were collected. Depths of the excavations ranged from 6" up to 5 feet.

In general, VO, BN and TPH results appear to be below the residential direct contact soil cleanup criteria, except for A-2, A-3, PX-A5 and PX-A12.

As for subsurface soils, previous studies had detected elevated VO's in the subsurface to depths of 15.5 feet in the vicinity of the former "burn area" and liquid waste incinerator. These VO's include: Bromoform, Chloroform, 1,2 DCA, PCE and TCE. Other VO "hits" were seen at AW-2 (8-8.5 feet), AW-6 (8-8.5 and 15-15.5 feet) and BW-1 (18-8.5 feet).

In regards to TPHC, levels above 10,000 ppm are present in the vicinity of the former day tank (UST #5), UST #4 and the connecting pipeline (Figure 2-1) where soils were not removed during the UST closure project.

Proposal: NAPL proposes to use a soil vapor and groundwater extraction system to address subsurface VO's and biodegradable TPHC, present in the subsurface.

The three treatment areas are depicted on figure 2-10. This remedial plan involves extracting subsurface soil vapor concurrently from the same extraction wells and removing VO's and TPHCs from both air and water streams.

Implementation is described as the following tasks:

- 1 Final Design
- 2 System Installation
- 3 System Start-Up
- 4 Operation, Maintenance, and Monitoring

Requirement: Conditionally Acceptable;

- a. Although it is stated that the post-ex frequency was in accordance with 7:26E-6.4, it does not appear that enough samples, especially perimeter samples, were collected. Sampling pursuant to Table 2-3 of N.J.A.C. 7:26E shall take place. Field methods are encouraged.

- b. Parameter selection was also inadequate. BN sampling shall occur for all tanks. As for UST #5, as previously proposed, PPM analyses shall also take place.

These additional sampling/parameter requirements will aid in baseline (SVE) characterization. North American Philips Lighting Corporation shall also determine if SVE can treat the BN contamination that is present in this area.

- c. Since free product was present in DTW-1 as well as, on top of the perched water table, free product removal shall be initiated immediately.
- d. Since the non-residential direct contact soil cleanup criteria were used for evaluation purposes, a figure as well as, a table shall be re-submitted for all previous areas (A, B, C etc.) which indicates all exceedances throughout the soil column, of the Residential Direct Contact Soil Cleanup Criteria. As stated above NAPL shall delineate to the Residential Direct Contact Soil Cleanup Criteria.
- e. A pilot test shall be performed in order to determine if this site is a candidate for soil venting. NAPL however, shall contact Air Quality Regulation, specifically the Bureau of New Source Review at (609) 633-2753 about obtaining the necessary air permits prior to conducting the pilot test. Approval will only be granted if soil venting results are positive for the contamination that is present (TPHC and VOs).
- f. A discussion shall be presented regarding the source of PCBs in excavation areas A and B and the adequacy of the post-ex sample frequency.
- g. Again, 1) all cap (10,000 and 1,000ppm) exceedances will need to be remediated and 2) delineation will need to occur to the most conservative criteria.

## 2. Soil AOC II - Area J, K and Muriatic Tank Area

This area is located south of Building 2 (between buildings 2 and 6, figure 2-3). In 1993, near surface soil samples were collected by Cummings/Riter in order to further delineate the area to be excavated.

Proposal: NAPL proposes soil venting as previously described which will take place in the area as depicted on figure 2-10. The area includes sample locations PX-B6, as well as J-3 and J-2 which had indicated VO "hits".

Requirement: Conditionally Acceptable;

- a. Figures/tables shall be submitted for each previous area - J, K, etc. As stated above a DER is required for all areas where the Residential Direct Contact Soil Cleanup Criteria has been exceeded. Therefore, figure/tables shall be submitted which indicate these exceedances. NAPL shall also delineate/extrapolate, pursuant to N.J.A.C. 7:26E-4.1(b), to the Residential Direct Contact Soil Cleanup Criteria.
- b. Again, a pilot test shall be performed, with the pilot test results submitted for DEPE review.
- c. Since 1,100 tons of material were disposed of, manifests shall be submitted for all excavated areas.



- d. The nature of the backfill shall be described for all excavated areas. Since engineering controls may also be required, the thickness of the backfill shall also be discussed.

### 3. Soil Area III - Area F

This area includes the railroad area to the south and east of Buildings 3, 4, 5 and 6. It was noted that the three previous soil investigations have been completed since 1987. Arsenic as well as other metals (Be, Cu, Pb, Hg) and BNS were detected.

Near surface soil samples were collected and analyzed for PPM, VO's, and TPHC to further delineate the area to be excavated. The areas excavated were designated E and F (figure 2-6) and nine post-ex samples were collected.

It should also be noted that samples PX-E2 through E-5 indicated Be results ranging from 1.1 to 1.2 ppm.

Proposal: NAPL's proposal appears to be for no further action.

Requirement: Conditionally Acceptable;

- a. Delineation to the Residential Direct Contact Soil Cleanup Criteria is required.
- b. In order to either close out or "restrict" the previous area of concern (i.e. AOC F) figures/tables shall be submitted which indicate exceedances of the Residential Direct Contact Soil Cleanup Criteria.
- c. Manifest again shall also be submitted.
- d. A discussion, shall also be presented in regards to depth and nature of backfill material.

### 4. Soil Area IV - Area G, H, I, L and R

This soil area encompasses areas represented by the soil samples not located in the three other soil AOC as depicted on figure 2-7. Included was the former 500 gallon gasoline tank.

Proposal: NAPL's proposal appears to be for no further action.

Requirement: Conditionally Acceptable;

- a. Again, delineation is required to the Residential Direct Contact Soil Cleanup Criteria. This shall occur at a minimum at PX-GL for As, Cd and Pb.
- b. Figure/tables indicating exceedances of the Residential Direct Contact Soil Cleanup Criteria shall be submitted for each previous area (G, H, I, L, R and gasoline tank etc.) in order to include these areas in the required DER.
- c. As previously required, manifests shall be submitted as well as, a discussion of the backfill material.

### 5. Mercury Cleanup

Hazardous materials associated with building materials are no longer addressed under the ISRA investigation unless there is a potential for these hazardous materials to impact the soils or waters of the State. As for soil concerns, interior soils had previously been removed in building 9, the north end of building 2 and a portion of building 6. Results are summarized in Appendix B (Vol. II).

Appendix B contains 1) laboratory summary sheets (Lab Resources), 2) Table 1 (Hg & Ni) and 3) various figures. It should be noted that Hg results (Table 1) ranged from 0.787 up to 1,740 ppm.

Proposal: No additional action is warranted (per Vol. I, revised 1994). However, the response (Appendix A) to the DEP's draft letter indicates delineation at the Building 9 floor will take place.

Requirement: Conditionally Acceptable;

- a. A clarification, as to what the actual proposal is, shall be submitted.
- b. As previously required, potential impacts to groundwater will need to be discussed for the above mentioned areas.
- c. Where the Residential Direct Contact Soil Cleanup Criteria have been exceeded, delineation/extrapolation, in accordance with N.J.A.C. 7:26E-4.1(b), is required in order to determine the volume of soil exceeding 14 ppm Hg. Figures and tables will need to be submitted which indicate all sample locations where the Residential Direct Contact Soil Cleanup Criteria have been exceeded.
- d. The QA/QC submitted for this area is generally acceptable.

### 6. Building 9

Proposal: It is stated that Westinghouse will continue to properly dispose of building materials as well as, adhere to NESHAP's regulations.

Requirement: Acceptable.

### 7. Radiological Cleanup

Background: The site, specifically Building 7, was involved in the purification of uranium during the early 1940's as part of the Manhattan project. This area was evaluated by the U.S. Department of Energy (DOE) under the Formerly Utilized Sites Remedial Action Program (FUSRAP), cleaned up by Westinghouse Electric Corporation in 1979-1980, and has since been dropped from consideration for remediation under FUSRAP. Radium was present as a contaminant of the processed uranium. The site was used for various manufacturing processes utilizing thorium, primarily for mantels in gas lanterns.

Review of our files on the former Westinghouse Electric Corporation site indicates that the company had licenses with the U.S. Nuclear Regulatory Commission (NRC) and its predecessor, the U.S. Atomic Energy Commission, for a

variety of radioactive materials. Source material licenses were held for uranium and thorium dating back to at least the early 1960's. The license applications indicated that natural thorium was used in mercury vapor lamps and thorium-tungsten wire and welding rods. Radium-226 was used in alphascope pressure gauges. In addition, review of our license records indicates that this site has not had a license for state (New Jersey) regulated radioactive material. Radiological decontamination has been done by Westinghouse (the former owner and holder of the USNRC license) as part of USNRC's license termination process.

The Department has completed a review of radiological test data for the exterior soil samples provided by North American Phillips Lighting Corporation (formerly the Westinghouse Electric Corporation), Bloomfield, New Jersey. The reports reviewed include:

- 1) Table 7 from the "Radiological Survey of Portions of the Bloomfield Lamp Plant, Westinghouse Electric Corporation" prepared by Oak Ridge Associated Universities (April 1992) (Table 7)
- 2) Appendix B; "Rad Cleanup and Mercury Decontamination Data" from a Cummings Riter report dated March 1994 (which includes information on radiological soil samples collected from 10/2/89 to 6/13/90; (Appendix B).
- 3) Sample data for radionuclide samples taken from Canberra/RMC Radiological Survey dated 12/22/87 (before cleanup).
- 4) Laboratory Resources' Radiochemistry Results for Westinghouse, Bloomfield (dated March 1994) for water samples collected on July 20 and 21, 1993.

Proposal: It is stated that this was completed in May, 1992 and that final NRC inspections and clearance are pending.

Requirements: Conditionally Acceptable;

North American Philips Lighting Corporation shall submit all previous correspondence from the NRC, to the Department. NAPL shall also, inform the Department as to why the final NRC inspections and clearance are "pending".

a. Pre-remediation soil sample data in the Canberra/RMC Radiological Survey dated 12/22/87 indicates elevated levels of thorium-232 and uranium-238 in buildings 7 and 8. Building 8 soils had highs of 190 pCi/g thorium-232 (sample 024) and 900 pCi/g uranium-238 (sample 034). A soil sample taken adjacent to Building 7 showed a thorium-232 concentration of 150 pCi/g (sample 015).

However, there is no reference to either building 7 or 8 in any of the post remediation sampling reports. Because some of the radionuclide levels are significantly high, it is imperative that the Department receive verification that these areas were in fact remediated to acceptable levels. Also, this data does not delineate the vertical extent of the contamination. Such information is necessary to determine whether the remediation has effectively removed the radionuclides in question. (see comment #3)

b. While the post-remediation soil data from Table 7 and Appendix B indicate that the areas included in the report have been remediated to near background radionuclide concentrations, again the Department did not find any discussion on the vertical extent of contamination and, therefore, must conclude that it has not been delineated. The Department recommends that the USNRC's "Manual

for Conducting Radiological Surveys in Support of License Termination", Draft Report for Comment, February 1993, (NUREG/CR-5849) be used as guide in developing a sampling program that not only delineates the lateral extent, but also the vertical extent of contamination. Instances where the 15 cm depth is representative of the soil column (e.g. depth to an impervious surface such as concrete is less than 0.3 meters and therefore an examination of the vertical extent of contamination may not be warranted) should be identified. The only definitive conclusion one can make from the data as it is presented is that in most of the reported areas the surface 15 cm are "clean". This is not sufficient information on which to base a decision regarding the adequacy of the remediation.

In addition, NUREG/CR-5849 requires that affected areas be surveyed and sampled using grid systems of specified sizes. Neither the narratives nor the sampling location charts included in the data provided, indicate that this was done. In addition, many of the sampling location charts, most notably the reservoir data in Appendix B, do not include dimensions so the Department could not determine if an adequate number of readings and soil samples were taken. Table 7 (pages 58 to 60) does not list the dates or specific locations in the area of concern from which the samples were collected. Therefore, the Department is not able to determine if the areas were correctly surveyed and sampled, and therefore if the contamination was properly delineated.

c. The Bureau of Environmental Radiation (BER) is currently developing soil cleanup standards for radionuclides in accordance with the requirements of S-1070. Because naturally occurring background levels of radionuclides in the environment exceed the S-1070 criterion for lifetime cancer risk of one in one million, BER has based these soil standards on natural variations in background radiation from several common pathways. Currently the soil standard estimates, averaged over 100 meters with no one sample exceeding 3 times the standard value, are as follows:

<u>Radionuclide</u>	<u>Allowable Increment</u> <u>Above Background (pCi/g)*</u>	
	Residential	Non-residential
Ra-226	3	6
Pb-210	3	6
Th-232	3	6
Ra-228	3	6
Th-228	3	6
U-238+U-234	20	20
U-235	23	48
Pa-231	5	7
Ac-227	5	7

\* These standards are based on a contamination zone of 3 feet or less, and a minimum of one foot of clean cover over contaminated soil.

If NAPL does not agree to apply these soil standards to the site, NAPL can propose alternate standards as long as it is demonstrated that the proposed remedy will result in the following criteria being met:

1. Annual effective dose from external gamma radiation does not exceed 6 mrem above background, and;

2. Annual committed effective dose from internally deposited radionuclides received via soil and groundwater ingestion, inhalation of re-suspended dust particles and/or consumption of food products grown on the site, do not exceed 10 mrem, and;
3. If radium-226 is present as a contaminant in the soils, the resultant indoor radon concentrations in the lowest level of a structure built on the site does not exceed 3 pCi/l above natural background concentrations, and;
4. The radionuclides in the soil would not result in ground water radionuclide concentrations exceeding New Jersey standards.

The Department is available to meet with you regarding the application of these standards on the subject site.

d. The results in the "Radiochemistry Results for Westinghouse, Bloomfield" for water samples collected in July 1993, indicate that the radionuclide levels in ground water are within the standards established by the U.S. Environmental Protection Agency's National Primary Drinking Water Regulations and therefore, meet the NJDEP's Ground Water Quality Standards. However, because sampling locations are not identified, an analysis of the radiological impacts to groundwater from this site can not be undertaken. Sampling locations must be presented prior to making any determination on the extent of, or lack of, groundwater contamination at this site.

e. The documents provided did not contain a laboratory data deliverables package, therefore no review of quality assurance data for soil samples was performed. The laboratory data deliverables the Department did receive were for metal analyses and not radionuclides. The package received for the water samples analyses were also incomplete, consisting only of the test results, the chain of custody forms and sample identification information. The analytical data report for the radionuclide and groundwater analyses should be provided so that a proper quality assurance review can be performed.

North American Philips Lighting Corporation shall provide the information requested above as well as, an overall report detailing the Radiological Cleanup at the site.

#### 8. Storm and Sanitary Sewer Systems

A second round of STS (storm sewer) sampling took place during the fall of 1993. In addition, remediation was conducted at basins 13A, 20 and 24 (due to the presence of Hg and radionuclides). Also at this time, sewers were videotaped in order to determine if breaches in integrity were present.

Table 4-1 indicates that only STS-1 (storm sewer) was re-sampled (11/11/93). Results (aqueous) indicate little or no organic impact and the following metals were detected (ppb):

Sb	58
Cd	18
Cu	95
Pb	10
Hg	0.6
Ni	59
Zn	268

These results (inorganic) are generally less than or equal to the previous round - 6/21/91.

Television inspection logs have been submitted and are dated either November, 1993 or March 1994. Significant findings are as follows:

- There was a 4 inch separation in the line that extends from ST 6C to ST 6D;
- Although breaches were not found in many lines, no indication (positive or negative) is listed under comments for a majority of lines;
- Many lines were filled with sand, stone, mud, roots, oil, grease, etc. therefore, an inspection was not performed;
- It is not clear if logs were submitted for all lines.

Proposal: NAPL's proposal appears to be for no further action.

Requirement: Conditionally Acceptable;

- a. Television inspection logs shall be submitted for all lines. All logs, including those previously submitted shall indicate the presence/absence of breaches.
- b. NAPL shall identify where breaches occurred, as with the storm sewer under Arlington Ave, sampling shall take place adjacent to this pipe.
- c. NAPL shall identify where inspection could not be performed, the percentage of this line compared to the total length of line shall be determined so as to see if a significant (> 25%) amount of line has not been investigated. If this is the case, then either cleaning or sampling adjacent to these lines shall be completed.
- d. As for manhole 20, where Hg was removed, the integrity of downstream lines shall be investigated.
- e. The dip in the line between ST5 and ST6 shall be discussed further (i.e. was it a breach and if so, sampling shall take place).
- f. The issues of 1) sediment sampling at outfall locations and 2) catch basin integrity shall be re-visited (discussed again) so as to determine if NFA is appropriate.

#### 9. New Areas of Concerns (Excavation Area G)

In addition to the six recently excavated areas, (A-F) two additional areas were identified during sampling. The two areas are adjacent to the parking lot along Arlington Ave., (South of Building 6).

Post-ex results (PX-GL and - G2) taken from the base, revealed the following exceedances of the Residential Direct Contact Soil Cleanup Criteria (ppm):

	<u>As</u>	<u>Cd</u>
PX-GL	150	1.3
PX-G2		1.5

Proposal: NAPL proposes no further action since the elevated arsenic level is most likely related to fill materials or disposed combustion products used by the Railroad.

Requirement: Conditionally Acceptable;

a. Although these soils may represent "historic fill" NAPL shall delineate/extrapolate these contaminants to the Residential Direct Contact Soil Cleanup Criteria (i.e 20 ppm for As and 1.0 ppm for Cd). Figures and tables, again, shall be submitted which indicate the exceedances of the Residential Direct Contact Soil Cleanup Criteria.

b. Clarification shall be submitted regarding the relationship between excavation area G and the excavation/post-ex sample (Px-G1) that took place in AOC IV.

#### 10. Subsurface Soils

Proposal: NAPL proposes a soil vapor and groundwater extraction system to address subsurface contaminants, as discussed under Soil AOC I.

Requirement: Conditionally Acceptable;

a. Comments d and e (AOC I) apply to the SVE proposal. It should again be stressed that bench scale pilot study results will need to be successful for all types of contaminants found in the subsurface, from chlorinated solvents to heavier fuels oil constituents.

b. A discussion shall be presented regarding inorganic impacts to groundwater.

#### QA/QC

The lab utilized-Lab Resources(NJ #77490) is acceptable based on N.J.A.C. 7:26E requirements.

The analytical data(2940/L2-05-131,L2-06-084) are conditionally acceptable - pending submission of a reduced deliverable package (per 7:26 E, Appendix A) for the TPHC samples associated with 2940/L2-05-131.

#### **II GROUND WATER CONDITIONS**

1. North American Philips Lighting Corporation (NAPL) proposes a combined soil vapor extraction (SVE) and groundwater treatment system to address residual organic contamination in three areas of the southwestern corner of the site. While the treatment system appears to be appropriate for the shallow overburden aquifer, the proposal cannot be approved without a more detailed description, including locations of extraction points, location of the treatment system and documentation of permission to discharge from the local sewerage authority.

2. Analyses of groundwater samples from discrete intervals within the site's production wells indicate that chlorinated volatile organic contamination increases with depth in the bedrock. The highest concentration (>2.6 ppm total VOC's) is observed at depths greater than 400 feet grading toward total

concentrations of about 1 ppm at a depth from 100 feet to 125 feet. NAPL states that the source for the deep bedrock contamination is off-site, however, the contaminants observed in the deepest water-bearing unit are the same as those found in the overburden aquifer.

NAPL provides no documentation of off-site or regional volatile organic contamination in the deep bedrock groundwater or of regional bedrock flow patterns to support their claim of an off-site source. NAPL must provide documentation, such as groundwater quality data from wells keyed into the same water bearing unit from other sites in the area, other wells in the area of similar depths as identified by the well search and regional deep groundwater flow direction, to support the probability of an off-site source of contamination in the deep bedrock aquifer. If convincing documentation is not provided, NAPL will be held responsible for the contamination, and remediation of the deep aquifer may be required.

The source of the shallow bedrock contamination also is not defined. NAPL must provide information regarding the probable source of contamination in the shallow bedrock aquifer.

3. NAPL proposes to:

- a. modify two existing monitoring wells, CC-5S and CC-4, in order to eliminate potential cross-contamination with adjacent monitoring wells and to screen them across the appropriate water bearing zone (Approximate 125 foot interval).
- b. modify the production wells by sealing them from 110 to 133 feet in depth and installing screens in the water bearing interval.
- c. conduct groundwater quality analysis on a semi-annual basis for the next two years by sampling all on-site monitoring wells.

NAPL previously proposed remediation of the shallow bedrock aquifer if contaminant levels exceeded the Ground Water Quality Standards (GWQS) for a Class IIA aquifer. Volatile organic compound concentrations in this aquifer in the southwestern corner of the site are substantially higher than the GWQS. NAPL must explain and justify the elimination of the proposed remediation. NAPL's proposal for monitoring cannot be approved until the requested information is received.

4. A monitoring well was previously required downgradient of the neutralization room in Building 9. Execution of this requirement was postponed until demolition of Building 9 was complete. NAPL shall inform the Department if Building 9 has been demolished and if it has been, NAPL must perform the previously required groundwater investigation in the vicinity of the neutralization pits.

5. NAPL has informed the Department that four dry wells may exist on the property in the vicinity of buildings 7, 8 and 9. NAPL shall submit a map to the Department detailing the exact location of these dry wells. NAPL shall also submit the results of the preliminary assessment to the Department with a proposal for a remedial investigation in accordance with N.J.A.C. 7:26E.



### III General Requirements

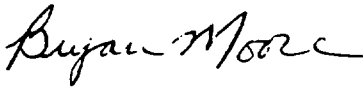
1. North American Philips Lighting Corporation shall accomplish this investigation and any further analytical investigations by the methods outlined in the Site Investigation/Remedial Investigation Workplan. If any change in methods outlined in the Site Investigation/Remedial Investigation Workplan is necessary or if any delays are encountered, North American Philips Lighting Corporation shall inform BEECRA in writing prior to implementation.
2. North American Philips Lighting Corporation shall submit the results or additional workplans, in triplicate, within 90 days of receipt of this document. Please note that only one copy of the Quality Assurance/Quality Control Deliverables is needed.
3. North American Philips Lighting Corporation shall submit summarized analytical results in accordance with the Technical Requirements For Site Remediation, N.J.A.C. 7:26E-2.
4. North American Philips Lighting Corporation shall collect all samples in accordance with the sampling protocol outlined in the May, 1992 edition of the NJDEP's "Field Sampling Procedures Manual".
5. North American Philips Lighting Corporation shall notify the assigned BEECRA Case Manager at least 14 calendar days prior to implementation of any field activities included in the Site Investigation/Remedial Investigation Workplan. If North American Philips Lighting Corporation fails to initiate sampling within 30 calendar days of the receipt of this approval, any requests for an extension of the required time frames may be denied.
6. On January 14, 1994, Acting Commissioner Fox signed the ISRA Fee Rule (Amendments and New Rules at N.J.A.C. 7:14B) which was proposed on April 5, 1993. This rule appeared in the February 22, 1994 N.J. State Register. Effective February 22, 1994, the NJDEP will be billing North American Philips Lighting Corporation for the NJDEP's oversight of all work conducted at the site. Documents submitted to the NJDEP in accordance with the "Technical Requirements for Site Remediation" (N.J.A.C. 7:26E) will help reduce the time necessary for the NJDEP oversight of your case. At this time, the NJDEP intends to process bills on a semi-annual basis. Please consult the April 5, 1993 and February 22, 1994 N.J. State Registers for details. Copies can be obtained by contacting the Office of Administrative Law at (609) 588-6500.
7. All sampling results shall be submitted with a data presentation and proposal for further action that is fully supported by that data, pursuant to the Technical Requirements for Site Remediation, N.J.A.C. 7:26E. Technically and administratively incomplete submissions which are not prepared pursuant to N.J.A.C. 7:26E may be rejected.
8. If contamination is determined to exist above a level found acceptable by NJDEP, North American Philips Lighting Corporation shall prepare and submit a Remedial Action Workplan developed pursuant to N.J.A.C. 7:26E to address the contamination. If the data from implementation of the approved Site Investigation/Remedial Investigation Workplan indicate the presence of contamination, but is not sufficient to define the full horizontal and vertical limits in accordance with N.J.A.C. 7:26E-4, then such areal definition shall be proposed as a Remedial Investigation which meets the criteria of N.J.A.C. 7:26E. Be advised that, in accordance with P.L. 1993 c.139, section 4f, North American Philips Lighting Corporation may remediate the site without prior

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submission or approval from the NJDEP; however, prior approval must be obtained from the NJDEP for a remedial action involving ground water or surface water or for the closure of an underground storage tank subject to N.J.S.A. 58:10A.

If you have any questions, please contact the Case Manager, Stephen Myers, at (609) 633-7141.

Sincerely,

*for* 

Douglas Stuart, Chief  
Bureau of Environmental Evaluation  
and Cleanup Responsibility Assessment

enclosure

c: Frank Camera, BEERA  
Rob Lux, BGWPA  
Fred Sickles, BER  
Richard Proctor, Bloomfield Twp. Health Officer