UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE SECRETARY

In the Matter of

ENTERGY NUCLEAR OPERATIONS, INC.; ENTERGY NUCLEAR INDIAN POINT 2, LLC; ENTERGY NUCLEAR INDIAN POINT 3, LLC; HOLTEC INTERNATIONAL; and HOLTEC DECOMMISSIONING INTERNATIONAL, LLC; APPLICATION FOR ORDER CONSENTING TO TRANSFERS OF CONTROL OF LICENSES AND APPROVING CONFORMING LICENSE AMENDMENTS	Docket Nos.: 50-3 50-247 50-286 72-051

(Indian Point Nuclear Generating Station)

DECLARATION OF DANIEL J. EVANS

I, Daniel J. Evans, declare and state as follows:

1. I am the Director of the Bureau of Hazardous Waste and Radiation Management within the Division of Materials Management for the New York State Department of Environmental Conservation (DEC). I joined the DEC in 1989. Since joining DEC, I have held positions and roles with progressively increasing responsibility in multiple program areas such as Water Pollution Control, Solid Waste Management, Inactive Hazardous Waste Site Cleanup, Hazardous Waste Management and Environmental Radiation Control. I submit this declaration in support of the State of New York's petition for leave to intervene and request for a hearing in the above-captioned matter.

2. I hold a Bachelor of Science in Chemical Engineering from Rensselaer Polytechnic Institute and have been a Professional Engineer licensed in New York State since 1995. Additional details about my background and experience are included in my resume, which is attached to this declaration (Evans Exhibit A [Resume Daniel J. Evans]).

3. I assumed my current position, which is classified as a Professional Engineer 4, in 2018. In my current role, I lead a team of engineers, scientists and specialists who administer the State's hazardous waste management program as well as the environmental radiation program. This work includes the issuance of hazardous waste management permits pursuant to New York's delegated authority from the United States Environmental Protection Agency to implement the federal Resource Conservation and Recovery Act (RCRA) subtitle C, 42 U.S.C. §§ 6921–6939F; inspection and compliance enforcement of permitted RCRA facilities and facilities subject to RCRA requirements; oversight of remediation conducted under RCRA corrective action at permitted facilities; issuance of radiation control permits at facilities subject to 6 N.Y.C.R.R. part 380, inspection and compliance enforcement at facilities subject to part 380 and oversight of investigation and cleanup activities at properties historically contaminated with radioactive materials. This work draws on my extensive experience in the areas of environmental protection through the characterization, investigation and remediation of sites contaminated with hazardous constituents.

4. I have more than 23 years of experience in the investigation and cleanup of sites contaminated from past industrial practices under various regulatory

authorities including Federal Superfund, State Superfund, Brownfields, and RCRA. This experience also consists of oversight of RCRA permits currently or previously held by operating nuclear power plants including Unit 2 and Unit 3 at the Indian Point Nuclear Generating Station (Indian Point).

5. My experience in industrial facility permitting, site investigations and remediation provides me with insight into the effort and potential costs required to return facilities contaminated with non-radioactive constituents to beneficial reuse. It is in the interest of the State of New York to ensure that the entity responsible for decommissioning Indian Point has access to enough funding not only to radiologically decommission the facility, but also to remove non-radioactive contaminants and mixed wastes in such a way that the Indian Point site is restored consistent with DEC Commissioner's Policy 51 (Evans Exhibit B [CP-51/ Soil Cleanup Guidance, October 21, 2010]) for soils contamination and consistent with applicable standards for groundwater.

6. The opinions set forth in this affidavit are based upon my education, training, professional experience, review of DEC records relevant to this matter and my application of best professional judgment to the facts of this matter.

New York's RCRA Regulation

7. RCRA provides a cradle to grave regulatory scheme for the day-to-day handling of the treatment, storage and disposal of hazardous wastes. Specifically, RCRA was enacted to reduce or eliminate the generation of hazardous waste as expeditiously as possible, and to treat, store and dispose of hazardous waste "so as to

minimize the present and future threat to human health and the environment." 42 U.S.C. § 6902(b). RCRA establishes strict guidelines for the classification, handling and treatment of solid and hazardous waste.

8. Although RCRA is a comprehensive federal statutory and regulatory scheme, states retain the authority to regulate hazardous waste so long as the state's statutory and regulatory scheme is at least as stringent as the federal program, and the state's program is authorized by the federal Environmental Protection Agency (EPA). New York has enacted its own statutory and regulatory scheme at Environmental Conservation Law (ECL) article 27, title 9 and parts 370 through 374, 376 and 377 of chapter 6 of the New York Compilation of Codes, Rules and Regulations to regulate the management of hazardous waste "in a manner consistent with" RCRA. ECL § 27-0900. New York is an "authorized" state with respect to enforcement of RCRA's requirements and has authority under ECL article 27, title 9 to direct remediation at facilities where illegal releases of hazardous waste have occurred.

9. New York State's RCRA regulations establish the procedures for identifying solid wastes that are subject to regulation as hazardous wastes under 6 N.Y.C.R.R. parts 370 through 373 and 376. *See* 6 N.Y.C.R.R. § 371.1. These regulations include a hazardous waste manifest system and related standards for generators, transporters and facilities, 6 N.Y.C.R.R. § 372; regulations for the treatment, storage and disposal of hazardous waste and permit requirements and construction and operation standards for owners and operators of hazardous waste treatment,

storage and disposal facilities, 6 N.Y.C.R.R. § 373; and land disposal restrictions, 6 N.Y.C.R.R. § 376).

10. New York State's RCRA regulations were amended in September 2005 to allow facilities that store mixed waste—that is, waste that is both hazardous and radioactive—to apply for a permitting exemption so long as certain conditions are met. *See* 6 N.Y.C.R.R. pt. 374-1.9. The amendment allowed Entergy to seek exemptions from New York State RCRA regulation in part due to the fact that storage of low level radioactive waste at the facility is also regulated through its NRC license.

11. I have reviewed the RCRA permits and supporting documentation for Indian Point Unit 2 and Indian Point Unit 3 as well as petitions submitted by Entergy Nuclear Operations, Inc (Entergy), the permittee, in support of their October 2005 request for exemption from the permits as allowed under 6 N.Y.C.R.R. part 374-1.9. I also reviewed relevant parts of the license transfer application submitted to the NRC and Holtec's post-shutdown decommissioning activities report (PSDAR) and decommissioning cost estimate. Based on my review of these materials, in my professional opinion, a significant possibility exists that contamination not previously identified at Indian Point will require remediation and resultant site restoration work that exceeds the costs outlined in the PSDAR and cost estimate. The currently unknown levels and areas of contamination will likely greatly increase Holtec's decommissioning and site restoration costs.

RCRA Regulation of the Indian Point Facility

12. In 1980, the New York Power Authority, then the operator of Indian Point Unit 3, filed a Part A application for RCRA interim status and obtained RCRA

ID #NYD085503746. It operated as an interim hazardous waste storage facility until DEC issued a RCRA permit in 1996. The DEC permit allowed the storage of mixed wastes. In 2006, Entergy, on behalf of Indian Point Unit 3, certified that no wastes other than mixed wastes were ever stored in any amount or for any time at the permitted mixed waste storage location at Unit 3 (Evans Exhibit C [Letter from Fred Dacimo, Vice President Entergy Corporation, to Edwin E. Dassatti, April 25, 2006]). After closure of the permitted storage area, the RCRA permit for Unit 3 expired in 2006.

13. Even though Unit 3's permitted storage area was closed, the facility has generated and continues to generate hazardous wastes as would be expected at any large industrial facility. As indicated in hazardous waste manifest records submitted to DEC, more than four tons of ignitable waste, twenty tons of corrosive waste, and smaller amounts of waste containing hazardous metals, halogenated and non-halogenated solvents, and other hazardous wastes have been generated and shipped off-site since 2007 (Evans Exhibit D [Hazardous Waste Manifest Records for Entergy Indian Point 3, January 1, 2007 through January 1, 2020]). Non-radioactive hazardous wastes have been and continue to be managed at Unit 3 in a manner that does not currently require a RCRA permit.

14. Prior to issuing Indian Point Unit 3 a hazardous waste management permit in 1996, DEC staff reviewed hazardous waste management storage areas at the facility. These areas included current and former hazardous waste storage

facilities identified as SO1 and SO2 as well as new mixed waste storage areas identified as MW1, MW2, and MW3.

15. Prior to Unit 3's permit expiration, DEC staff reviewed hazardous waste storage areas again. This review was based upon Entergy's certification and upon DEC staff's knowledge of the facility's operations. In a letter dated September 1, 2006, it was determined that the permit could expire (Evans Exhibit J [Letter from Edwin Dassatti to Fred Dacimo, September 1, 2006]).

16. In 1980, Indian Point Unit 2 also filed a Part A Application for RCRA interim status and obtained RCRA ID #NYD991304411. Similar to Unit 3, Unit 2 operated as an interim status hazardous waste storage facility until its hazardous waste management permit was issued in 1997. This permit was extended through its 2007 expiration date via provisions of the State Administrative Procedures Act until it was terminated in 2013. The permit was issued to allow the storage of mixed waste. The permit authorized storage of up to 1,650 gallons of mixed waste in each of two container storage cargo units located just north of the closed Indian Point Unit 1 and up to 1,925 gallons of mixed waste in a container storage room.

17. Several solid waste management units, regulated under RCRA's corrective action program, were associated with Unit 2's hazardous waste management permit. Solid waste management units (SWMUs) refer to locations where solid waste is managed on a systematic basis. SWMUs are identified at the time of permit issuance as locations from which hazardous constituents might migrate, irrespective of whether the units were intended for the management of solid and/or hazardous

wastes. Additional SWMUs may be identified and added to the RCRA permit over time. At Unit 2, these units include container storage areas for storing used oil, hazardous waste containers, lab packs, and mixed wastes. There was also a 20,000-gallon mixing tank that was used to neutralize wastewater prior to discharge. These solid waste management units were given a status of no further action in the 1997 permit. A determination of no further action means that the department is not requiring any additional investigation or remediation at that location based on current information. However, that determination does not preclude additional action from being required in the future if conditions change or if new information indicates that additional measures are warranted.

18. For purposes of RCRA permitting and corrective action, Unit 2 includes the property associated with Unit 1 (Evans Exhibit E [Indian Point Site Plan, November 19, 2007]).

19. Similar to Unit 3, in October 2005 Entergy requested that the operating portion of the Unit 2 RCRA permit be terminated pursuant to the mixed waste exemption provisions contained in 6 N.Y.C.R.R. § 374-1.9 (Evans Exhibit F [Letter from Fred Dacimo, Vice President Entergy Corporation, to Edwin E. Dassatti, October 20, 2005]).

20. Indian Point Unit 2 has generated and continues to generate hazardous waste consistent with what would be expected at any large industrial facility. Hazardous waste manifest reports indicate that since 2007 Unit 2 has generated and shipped off-site more than two tons of hazardous PCB wastes, more than twenty-

eight tons of ignitable hazardous waste, three tons of corrosive hazardous waste, and smaller amounts of metals and halogenated and non-halogenated solvents (Evans Exhibit G [Hazardous Waste Manifest Records for Entergy Indian Point 2, January 1, 2007 through January 1, 2020]).

21. DEC evaluated Unit 2 again prior to permit termination. This evaluation included the collection of soil and groundwater samples at specific locations associated with RCRA waste handling units, potential PCB release areas and fueling operations as reported by Entergy in the RCRA Facility Investigation Report completed by GZA in June 2012 (Evans Exhibit I [Indian Point RCRA Facility Investigation Report, June 2012]). DEC concluded that, based on the sampling in those limited areas, no corrective action was needed at that time. This determination was sent to Entergy in a letter dated November 6, 2012 (Evans Exhibit K [Letter from Larry Rosemann to Fred Dacimo, November 6, 2012]).

22. Separate from the RCRA Permit, DEC and Consolidated Edison Company of New York, Inc., the former owner of Indian Point Units 1 and 2, entered into an order on consent on September 5, 2001 regarding the improper storage of mixed waste at Unit 1, including illegally storing mixed waste at Unit 1; failing to inspect container storage areas on a weekly basis; failing to label containers as "hazardous waste" to identify their contents; failing to visibly mark containers with the period of accumulation; and storing mixed waste in excess of one year without the proper recovery, treatment or disposal of such waste (*see* Evans Exhibit H [Order on Consent,

Matter of Consolidated Edison Company of New York, No. CO3-20010906-2754, September 5, 2001]).

Holtec's PSDAR and Cost Estimate Do Not Provide for Comprehensive Site Investigation, Characterization or Remediation

23. While determinations of no further action for both Unit 2 and Unit 3's RCRA permits were made based on then-available data, there remains a strong possibility that there may have been releases of hazardous materials over time at Indian Point that have not yet been detected. The PSDAR does not anticipate new evidence of legacy contamination. Given the likelihood of such contamination, the PSDAR should include provisions for additional sampling and investigation for non-radioactive contaminants.

24. Due to the existence of the large physical structures of the power generating facility, there are significant areas of the site that have never been adequately characterized and investigated. It is also likely that contamination exists in locations that will not become accessible until the physical plant is removed. Again, these considerations are notably absent from the PSDAR and cost estimate. Accordingly, the cost estimate for decommissioning must include funding for a full RCRA facility assessment as well as financial assurance to fund RCRA facility investigations and potential corrective action required to address identified contamination.[1] Depending on the results of the facility assessment, it is quite likely that hazardous materials

[1] A RCRA Facility assessment consists of three phases including a preliminary review (PR) of existing information such as inspection reports, permit applications, historical monitoring data, and interviews with staff. It then includes a visual site inspection (VSI) which entails the on-site collection of visual evidence of release. Finally, a sampling visit fills data gaps that remain upon completion of the PR and VSI by obtaining sampling and field data.

contamination will need to be addressed at the same time as radiological contamination. Holtec's decommissioning plan does not anticipate the cost of investigating and remediating both types of contamination.

25. PCBs are included in the lists of hazardous waste in the State. *See* 6 N.Y.C.R.R. § 371.4(e)). Used in transformers and other electrical equipment at power generation facilities in the mid-twentieth century, it is likely that previously undetected PCB contamination will be found during the course of site investigation at Indian Point and that the contamination will need remediation. *See* Heitzman decl. ¶ 15. The presence of PCBs and other hazardous constituents such as lead and halogenated solvents will be a significant and costly environmental cleanup obligation. Due to the existence of the physical structure of the Indian Point power generation facilities, assessment of contamination beneath the structures and in other significant areas of the Indian Point property has not been performed. A determination regarding any necessary remediation will not be able to be made until the decommissioning process is well underway.

26. In addition, mixed waste continues to be stored at Indian Point under an NRC license exemption from RCRA permitting. *See* Peterson decl. ¶ 7. This issue is not addressed in the PSDAR and cost estimate. An appropriate disposal location must be identified for the mixed waste and the cost of disposing of the waste must be accounted for in the PSDAR and cost estimate. The NRC license exemption conditions and those in 6 N.Y.C.R.R. § 374-1.9 must be maintained until the mixed waste is appropriately dispositioned off site.

27. If Indian Point is unable to meet the mixed waste exemption requirements prior to appropriately removing the mixed waste from the site prior to NRC license termination, the operator of Indian Point will have to apply for and obtain a new RCRA permit pursuant to 6 N.Y.C.R.R. part 373. Permitting will require compliance with all regulatory provisions including financial assurance and provisions for corrective action. Since this would be a new RCRA permit, compliance with the hazardous waste siting provisions in 6 N.Y.C.R.R. part 377 would need to be addressed.

The Holtec Cost Estimate is Deficient

28. Holtec's PSDAR and associated cost estimate make no mention of the need to store and ultimately locate an appropriate disposal location for the quantities of mixed waste generated from the operation of Indian Point through decommissioning. There is no waste disposal location identified, nor are costs estimated for disposal. Disposal options for this type of waste are extremely limited. Depending on the duration of storage and accounting for secure transportation to the identified site, this expense could be considerable.

29. More fundamentally, Holtec's cost estimate does not include funding for a full RCRA corrective action, which consists of a RCRA facility assessment as well as adequation contingencies for RCRA facility investigations and for potential corrective measures required as a result. Holtec's PSDAR and cost estimate wholly ignore this need. As discussed above, depending on the results of the necessary Indian Point facility assessment, it is quite likely that hazardous materials contamination will

need to be addressed at the same time as radiological contamination. Holtec's decommissioning plan must take into account the cost of investigating and remediating both types of contamination.

30. I, Daniel J. Evans, have read the above declaration, consisting of thirteen pages, and certify under penalty of perjury that the foregoing is true and correct. Executed this 4th day of February, 2020.

DANIEL J. EVANS, P.E.

DECLARATION OF DANIEL J. EVANS
LIST OF EXHIBITS

Exhibit A	Resume Daniel J. Evans
Exhibit B	CP-51/ Soil Cleanup Guidance, October 21, 2010
Exhibit C	Letter from Fred Dacimo, Vice President Entergy Corporation, to Edwin E. Dassatti, April 25, 2006
Exhibit D	Hazardous Waste Manifest Records for Indian Point Unit 3, January 1, 2007 through January 1, 2020
Exhibit E	Indian Point Site Plan, November 19, 2007
Exhibit F	Letter from Fred Dacimo, Vice President Entergy Corporation, to Edwin E. Dassatti, October 20, 2005
Exhibit G	Hazardous Waste Manifest Records for Indian Point Unit 2, January 1, 2007 through January 1, 2020
Exhibit H	Order on Consent, Matter of Consolidated Edison Company of New York, No. CO3-20010906-2754, September 5, 2001
Exhibit I	Indian Point RCRA Facility Investigation Report, June 2012
Exhibit J	Letter from Edwin Dassatti to Fred Dacimo, September 1, 2006
Exhibit K	Letter from Larry Rosemann to Fred Dacimo, November 6, 2012

Exhibit A

Resume of Daniel J. Evans

DANIEL J EVANS

EXPERIENCE

PROFESSIONAL ENGINEER 4 2018-PRESENT

NYS Department of Environmental Conservation
Division of Materials Management
Bureau of Hazardous Waste and Radiation Management *Albany, NY*

I serve as the Bureau Director in with oversight of a group of approximately 30 engineers, scientists, geologists, and specialists who administer the RCRA Hazardous Waste and Environmental Radiation Programs state wide. The bureau provides the technical lead for the review of Hazardous Waste Management Permit Applications, responsibility for the oversight of corrective action at permitted hazardous waste management facilities, coordination of compliance inspections and enforcement actions at both permitted and non-permitted hazardous waste management facilities and responsibility for maintaining state regulations that are equal to or more stringent that federal hazardous waste management regulations. I also oversee the control of discharges of radioactive materials to the environment through the state's radiation control permit program. Under my direction, we provide technical expertise and oversight of sites that were historically contaminated with radioactive materials including FUSRAP sites and sites containing technologically enhanced natural occurring radioactive materials (TENORM).

PROFESSIONAL ENGINEER 2 2010 - 2018

NYS Department of Environmental Conservation
Division of Environmental Remediation *Albany, NY*

I served as a section chief in charge of a section of engineers and geologists who manage cleanup of contaminated sites under CERCLA and RCRA authorities, Brownfield Cleanup Program, Voluntary Cleanup Program or Environmental Restoration Program. Technical challenges include the scoping of site characterizations, investigations and determination of final remedies, conducting public meetings, and recommending interim remedial measures where appropriate.

ENVIRONMENTAL ENGINEER 3 2003 - 2010

NYS Department of Environmental Conservation
Division of Solid & Hazardous Materials *Albany, NY*

I supervised a section of engineers and geologists who administer the RCRA Hazardous Waste Program for closing RCRA Treatment Storage and Disposal (TSD) units, post-closure permits, RCRA corrective action investigations, corrective measure studies, and interim and final remedies. I also supervised staff who wrote permits for Part 373 TSD facilities. Additional assignments included serving as the Division's representative on the Environmental Justice Task Force and on the ASTSWMO RCRA Corrective Action work group.

ENVIRONMENTAL ENGINEER 2 1998 - 2003
NYS Department of Environmental Conservation
Division of Solid & Hazardous Materials *Albany, NY*

Within the Bureau of Solid Waste & Land Management, I worked with regional DEC staff and with the NYC Department of Sanitation to bring Fresh Kills Landfill in Staten Island to final closure. Duties included the review of closure design documents such as landfill capping, landfill gas collection and control systems, leachate collection and treatment, and long term environmental monitoring. I also worked with Division of Air staff in completing Fresh Kills Landfill's Title V permit. My duties also included working with NYC and Region 2 on components of the NYC Solid Waste Management Plan. I was also the Division's Voluntary Cleanup Coordinator for solid waste disposal sites.

ENVIRONMENTAL ENGINEER 1 1993 - 1998
NYS Department of Environmental Conservation
Division of Hazardous Waste Remediation *Albany, NY*

As a project manager in the Bureau of Construction Services, I was responsible for representing the Department during the design and construction of the remediation of inactive hazardous waste sites. I participated in the design of plans and specifications for construction, evaluated treatment technologies, performed construction inspections, and managed state superfund construction contracts. Treatment technologies used in projects for which I was project manager included excavation and removal of PCB contaminated soils, landfill closures, soil vapor extraction systems, groundwater pump and treat systems, and soil stabilization by solidification.

JUNIOR/ASSISTANT ENVIRONMENTAL ENGINEER 1989 - 1993
NYS Department of Environmental Conservation
Division of Construction Management *Albany, NY*

Assisted municipalities in ensuring that their wastewater treatment projects met standards required by the State Revolving Fund and by the USEPA construction grants program. Job duties included compilation of data for project priority listings, coordination of environmental reviews, and review of Engineering Reports, Plans, Specifications, and Professional Service agreements for conformance with applicable standards, rules, and regulations. Duties required extensive communication with municipalities, consultants and NYSDEC regional personnel. On site inspection of project construction was also performed as part of this work

EDUCATION

BACHELOR OF SCIENCE, CHEMICAL ENGINEERING 1986
Rensselaer Polytechnic Institute *Troy, NY*

PROFESSIONAL LICENSES

Licensed New York State Professional Engineer

License No. 072027-1

Exhibit B

CP-51/ Soil Cleanup Guidance, October 21, 2010

CP-51 / Soil Cleanup Guidance

New York State Department of Environmental Conservation

DEC Policy

Issuing Authority: Alexander B. Grannis, Commissioner

Date Issued: October 21, 2010	**Latest Date Revised:**

I. Summary

This policy provides the framework and procedures for the selection of soil cleanup levels appropriate for each of the remedial programs in the New York State Department of Environmental Conservation (DEC) Division of Environmental Remediation (DER). This policy applies to the Inactive Hazardous Waste Disposal Site Remedial Program, known as the State Superfund Program (SSF); Brownfield Cleanup Program (BCP); Voluntary Cleanup Program (VCP); Environmental Restoration Program (ERP); Spill Response Program - Navigation Law (NL) section 176 (SRP); and the Resource Conservation and Recovery Act (RCRA) Corrective Action Program. It replaces *Technical and Administrative Guidance Memorandum (TAGM) 4046: Determination of Soil Cleanup Objectives and Cleanup Levels* (January 24, 1994); the *Petroleum Site Inactivation and Closure Memorandum* (February 23, 1998); and Sections III and IV of *Spill Technology and Remediation Series (STARS) #1* (August 1992).

This document is used in conjunction with the applicable statutes, regulations and guidance. Site-specific soil cleanup levels, determined in accordance with this guidance, are only applied after:

- the site, or area of concern, is fully investigated to determine the nature and extent of contamination;
- all sources of contamination are addressed consistent with the hierarchy provided in 6 NYCRR 375-1.8(c) or consistent with the RCRA Corrective Action Program (as appropriate);
- groundwater, if contaminated, has been evaluated for appropriate remedial actions consistent with 6 NYCRR 375-1.8(d) or consistent with the RCRA Corrective Action Program (as appropriate); and
- impacts on adjacent residential properties, surface water, aquatic ecological resources are evaluated, as well as indoor air, soil vapor, vapor intrusion and other appropriate media.

II. Policy

It is DEC's policy, consistent with applicable statutes and regulations, that all remedies will be protective of public health and the environment. DEC's preference is that remedial programs, including the selection of soil cleanup levels, be designed such that the performance standard results in the implementation of a permanent remedy resulting in no future land use restrictions. However, some of

DEC's remedial programs are predicated on future site use. Further, it is not always feasible to return to a condition where no restrictions are required.

The procedures set forth herein are intended for the use and guidance of both DEC and remedial parties to provide a uniform and consistent process for the determination of soil cleanup levels. This guidance is not intended to create any substantive or procedural rights, enforceable by any party in administrative or judicial litigation with DEC. DEC reserves the right to act at variance with these procedures to address site-specific circumstances and to change the procedures in this guidance at any time.

Please note that this guidance focuses only on soil cleanup levels. All remedies must be fully protective of public health and the environment and must prevent further off-site migration to the extent feasible, with special emphasis on preventing or minimizing migration onto adjacent residential properties. A remedial party is required to evaluate and investigate, if necessary, all environmental media including soil, groundwater, surface water, sediments, soil vapor, ambient air, and biota. [See 6 NYCRR 375-1.8(a)(6) or RCRA Corrective Action Program (as appropriate)]. This investigation will determine if any of the referenced media are, or may be, impacted by site contamination. Applicable guidance should be consulted for media other than soil.

Nothing contained in this guidance, in itself, forms the basis for changes to previously selected remedies. However, a change in the site remedy may be considered consistent with *DER-2: Making Changes to Selected Remedies* (April 1, 2008). [See Section VI, Related References.] To the extent that a change to a selected remedy at a site in one of DER's remedial programs is necessary as provided in DER-2, as applicable, the Soil Cleanup Objectives (SCOs) may be considered in the evaluation of appropriate changes to the selected remedy. For sites in other programs, applicable regulations and guidance must be used.

III. Purpose and Background

DEC has a number of different remedial programs that were developed over time based on separate and distinct authorities. These programs use different procedures to determine the extent of soil cleanup necessary to satisfy the remedial program goals. The purpose of this document is to set forth how soil cleanup levels are selected for the different programs.

Legislation establishing New York State's Brownfield Cleanup Program (Article 27, Title 14 of the Environmental Conservation Law [ECL]) required DEC, in consultation with the New York State Department of Health (NYSDOH), to develop an approach for the remediation of contamination at brownfield sites. The resulting regulation includes seven sets of SCOs. Four sets provide for the protection of public health for different land uses (residential, restricted residential, commercial, and industrial); two sets provide for the protection of other resources (groundwater and ecological resources); and one set includes SCOs for protection of public health and the environment for all uses (unrestricted use).

With the promulgation of the SCOs, it is necessary to discuss how the SCOs, and soil cleanup levels generally, are arrived at for a specific site. Some key definitions in understanding how cleanup levels for soil are arrived at follow.

Feasible, which means suitable to site conditions, capable of being successfully carried out with available technology, implementable and cost effective [see 6 NYCRR 375-1.2(s)].

Presumptive remedy, which means a technology or technique where experience has shown the remedy to be a proven solution for specific types of sites and/or contaminant classes [See *DER-15: Presumptive/Proven Remedial Technologies* February 27, 2007. Refer to Section VI, Related References.]

Soil cleanup level, which means the concentration of a given contaminant for a specific site that must be achieved under a remedial program for soil. Depending on the regulatory program, a soil cleanup level may be based on the regulation [6 NYCRR 375-6.8(a) or (b)], modified from the regulatory value based on site-specific differences, or based on other information, including background levels or feasibility. Soil cleanup levels may include:

- SCOs promulgated at 6 NYCRR 375-6;
- Supplemental Soil Cleanup Objectives (SSCOs);
- a "totals" approach for a family of contaminants known as Polycyclic Aromatic Hydrocarbons (PAHs);
- Presumptive remedy for Polychlorinated Biphenyls (PCBs); and
- Nuisance Condition.

Soil Cleanup Objective (SCO), which means the chemical concentrations for soil cleanup of individual chemicals contained in 6 NYCRR 375-6.8(a) or (b). The SCOs were developed using the process outlined in the Technical Support Document (TSD). The SCOs and the SSCOs defined below are applicable statewide and do not account for many site-specific considerations which could potentially result in higher levels. Soil concentrations that are higher than the SCOs and SSCOs are not necessarily a health or environmental concern. When an SCO (or SSCO) is exceeded, the degree of public health or environmental concern depends on several factors, including the magnitude of the exceedance, the accuracy of the exposure estimates, other sources of exposure to the contaminant, and the strength and quality of the available toxicological information on the contaminant.

Supplemental Soil Cleanup Objective (SSCO), which means a) an existing soil cleanup level for a contaminant which had been included in former TAGM 4046 and was not included in 6 NYCRR 375-6; b) has been developed using the same process used for development of the SCOs; and c) new cleanup levels for soil developed by the remedial party following the approach detailed in Appendix E of the TSD. The TSD provides information relative to the development of cleanup objectives for soil that are not set forth in 6 NYCRR 375-6. Cleanup objectives that have been established at the direction of DEC or the election of remedial parties are included in Table 1.

Technical Support Document (TSD), which refers to the document dated December 2006 detailing the development of the SCOs that were promulgated in 6 NYCRR 375-6. It provides the technical background and provides a detailed discussion of the considerations for development of the SCOs for the different land uses and exposure pathways. The TSD is available on DEC's website [see Section VI, Related References].

The purpose of this guidance is NOT to focus on media other than soil. Accordingly, the remedial program may require remedial activities to address media other than soil (e.g., groundwater, surface

water, sediment, and vapor). Applicable guidance should be consulted for media other than soil. This guidance is to be used in conjunction with the applicable statutes, regulations and guidance. Site-specific soil cleanup levels, determined in accordance with this guidance, are only applied after:

- the site, or area of concern, is fully investigated to determine the nature and extent of contamination;
- all sources of contamination are addressed consistent with the hierarchy provided in 6 NYCRR 375-1.8(c) or consistent with the RCRA Corrective Action Program (as appropriate);
- groundwater, if contaminated, has been evaluated for appropriate remedial actions consistent with 6 NYCRR 375-1.8(d) or consistent with the RCRA Corrective Action Program (as appropriate); and
- an evaluation of impacts on adjacent residential properties, surface water, aquatic ecological resources, as well as indoor air, soil vapor, vapor intrusion and other appropriate media.

IV. Responsibility

The responsibility for maintaining and updating this policy lies with DER. DEC staff are responsible for implementing this policy, with input (as applicable) from NYSDOH.

V. Procedures

A. General Approaches to the Selection of Soil Cleanup Levels

The determination of soil cleanup levels for a site is dependent on:

1. The regulatory program pursuant to which the site is being addressed;
2. Whether the groundwater beneath or down gradient of the site is, or may become contaminated with site-related contaminants;
3. Whether ecological resources constitute an important component of the environment at or adjacent to a site, and which are, or may be, impacted by site-related contaminants; and
4. Other impacted environmental media such as surface water, sediment, and soil vapor.

After fully evaluating the nature and extent of soil contamination associated with a site, the soil cleanup levels will be based on one, or a combination of, the following four approaches.

Approach 1: **Utilize the Unrestricted Use Soil Cleanup Objectives** [see 6 NYCRR Table 375-6.8(a)]. Under this approach, the soil cleanup levels will be established consistent with the SCOs set forth in 6 NYCRR Table 375-6.8(a). For contaminants of concern which are not included in the rule, DEC may direct development of a soil cleanup level which is protective of public health and the environment without restrictions following the procedure outlined in Appendix E of the TSD. Under this approach, the unrestricted SCOs are applied throughout the soil matrix to the top of bedrock (including the saturated zone).

Approach 2: **Utilize the Restricted Use Soil Cleanup Objectives** [see 6 NYCRR Table 375-6.8(b)]. Under this approach, soil cleanup levels will be established consistent with the SCOs set forth in 6 NYCRR Table 375-6.8(b) selecting the lowest SCO in the categories described in A

through C below. Generally, after source removal, the soil cleanup levels do not need to be achieved to more than 15 feet below ground surface or to the top of bedrock, whichever is shallower.

A. Select the applicable land use category for the protection of public health (residential, restricted residential, commercial or industrial);

B. Determine if the SCOs for the protection of groundwater are applicable (see Section V.D); and

C. Determine if the SCOs for the protection of ecological resources are applicable (see Section V.C).

Approach 3: **Limited Site-Specific Modifications to Soil Cleanup Objectives.** This approach allows for consideration of site-specific information to modify the SCOs promulgated in 6 NYCRR Tables 375-6.8 (a) and (b) following the approach detailed in Appendix E of the TSD. The equations and basic methodology specified for calculating the 6 NYCRR 375-6.8 (a) and (b) values may not be modified under this approach. However, in instances where site-specific parameters were used in the calculation of the SCOs, site data different from the assumptions used to calculate the SCOs may be used to modify the soil cleanup levels for a specific site. These instances are very limited and occur only in certain pathways that are listed below.

- Protection of groundwater pathway
- Particulate inhalation pathway
- Volatile inhalation pathway
- Protection of ecological resources pathway

It should be noted that even if site-specific data modifies these pathways, it may not result in modifying the SCOs because the lowest value from all applicable pathways is used to determine each SCO. The inhalation pathway is very seldom the controlling pathway in the determination of the protection of public health. The specific parameters that can be modified are identified in Appendix E of the TSD (e.g., inhalation dispersion terms, fraction of organic carbon in soil, etc.).

The remedial party should consider the cost of collecting the data necessary to support a request to modify the SCOs with the potential for deriving a higher SCO that provides an appropriate level of protection. The remedial party may be required to submit additional data to support the use of modified SCOs. Once DEC approves one or more modified SCOs, they are applied in the manner described under Approach 2.

Approach 4: **Site-Specific Soil Cleanup Objectives.** Under this approach, the remedial party may propose site-specific cleanup levels or approaches for soil which are protective of public health and the environment based on other information. This approach sets forth a flexible framework to develop soil cleanup levels by allowing the remedial party to conduct a more detailed evaluation of site information in an effort to calculate protective soil cleanup levels or approaches unique to a site. Under this approach, the remedial party may propose a remedy that does not include specific soil cleanup levels (e.g., excavate the top 6 feet in an area extending 75 feet in all directions from boring B12); modify the input parameters used in the SCO calculations; use site data to improve or confirm predictions of exposures to receptors to contaminants of concern; analyze site-specific risks using

risk assessments; use toxicological information available from alternate sources; or consider site background and historic fill. Data supporting these site-specific adjustments or use of alternate methodologies must also be provided to DEC for review and approval to ensure that the resulting soil cleanup levels are protective.

The Approach 4 framework leaves DEC with discretion to determine whether a different approach is appropriate for the site and, if a different approach is to be used, the proper method of implementation. The remedial party should consider the cost of collecting the data necessary to develop site-specific soil cleanup levels (or approaches) with the potential for deriving a soil cleanup level which is higher than a particular SCO and which provides an appropriate level of protection. The remedial party may also be required to submit additional data to support the use of methodologies in the calculation of site-specific soil cleanup levels or to support the proposed approach.

B. Application of Soil Cleanup Levels for the Specific Remedial Programs: Soil cleanup levels are determined on a site-specific basis depending on the program under which the site is being remediated. In some cases (e.g., BCP Track 1 or Track 2), the soil cleanup levels are the SCOs taken directly from 6 NYCRR 375-6. In other cases, soil cleanup levels may be derived from the Part 375 SCOs but modified based on other information. In yet other cases, the soil cleanup levels may have no relationship or connection to the SCOs, but rather be developed in accordance with DEC-approved methodologies or approaches.

1. <u>Inactive Hazardous Waste Disposal Site Remedial Program (State Superfund Program)</u>: The goal of the remedial program for a specific site is to restore that site to pre-disposal conditions, to the extent feasible. The unrestricted use SCOs are considered to be representative of pre-disposal conditions unless an impact to ecological resources has been identified (see 6 NYCRR 375-2.8(b)(2)). However, it must be recognized that achievement of this goal may not be feasible in every case. At a minimum, all remedies must be protective of public health and the environment. The following procedure is used to determine the most feasible remedy.

(a) The remedial party shall evaluate, and if feasible, implement a cleanup utilizing Approach 1 (application of unrestricted SCOs).

(b) Where DEC determines that achieving unrestricted SCOs is not feasible as documented in a feasibility study, the remedial party may evaluate alternatives to remediate the site to the greatest extent feasible (see *DER-10: Technical Guidance for Site Investigation and Remediation*, Chapter 4.3). [See Section VI, Related References.] In this event, the remedial party may propose soil cleanup levels in accordance with any of the general approaches. However, when considering restricted use soil cleanup levels, the remedial party should apply the least restrictive use category feasible. For purposes of this discussion, residential use is the least restrictive use and industrial use is the most restrictive category. This process starts with consideration of residential use, followed by restricted residential use, commercial use, and then industrial use. The evaluation proceeds through the different land uses until a feasible remedy is found. This evaluation is not bound to the SCOs in regulation or SSCOs set forth in this guidance but may result in a site-specific soil cleanup level that is between the SCOs or soil cleanup level for two different land uses (e.g., above the restricted residential SCO and below the commercial SCO).

2. <u>Brownfield Cleanup Program</u> The remedy shall be fully protective of public health and the environment, including, but not limited to, groundwater according to its classification pursuant to ECL 17-0301, drinking water, surface water, air (including indoor air), sensitive populations (including children), and ecological resources (including fish and wildlife). Soil cleanup levels corresponding to the cleanup track under which the site is being remediated are required to be met. The four cleanup tracks are:

<u>Track 1</u>: Cleanups pursuant to this track must achieve unrestricted use of the site. This track requires that the remedial party implement a cleanup utilizing Approach 1. Institutional and engineering controls are allowed only for periods of less than five years (defined as short-term controls) except in the limited instance where a volunteer has conducted remedial activities resulting in a bulk reduction in groundwater contamination to asymptotic levels.

<u>Track 2</u> : Cleanups pursuant to this track may consider the current, intended, or reasonably anticipated future use in determining the appropriate cleanup levels for soil. This track requires that the remedial party implement a cleanup that achieves the SCOs in the tables in 6 NYCRR 375-6.7(b) for the top 15 feet of soil (or bedrock if less than 15 feet). This track follows approach 2. Institutional and engineering controls are allowed for soil (for the top 15 feet of soil or bedrock if less than 15 feet) for less than five years (defined as short-term controls). Institutional and engineering controls which limit site use and the use of onsite groundwater can be used without regard to duration. Track 2 cleanups at restricted residential, commercial or industrial use sites require site management plans to ensure that material removed from the site (post remedial action) is managed appropriately and to ensure that any buffer zone protecting adjacent residential use sites or ecological resources is maintained.

<u>Track 3</u>: Cleanups pursuant to this track may consider the current, intended, or reasonably anticipated use in determining the appropriate cleanup levels for soil. This track requires that the remedial party implement a cleanup utilizing Approach 3 for those SCOs which the remedial party seeks to modify an established SCO. Institutional and engineering controls are allowed for soil (for the top 15 feet of soil or bedrock if less than 15 feet) for less than 5 years (defined as short-term controls). Institutional and engineering controls which limit site use and the use of on-site groundwater can be used without regard to duration. Track 3 cleanups at restricted residential, commercial or industrial use sites require site management plans to ensure that material removed from the site (post remedial action)is managed appropriately and to ensure that any buffer zone protecting adjacent residential use sites or ecological resources is maintained.

<u>Track 4</u>: Cleanups pursuant to this track may consider the current, intended, or reasonably anticipated use in determining the appropriate cleanup levels for soil. This track allows for the development of site-specific soil cleanup levels below the cover system in accordance with Approach 4. Track 4 remedies must address all sources as a component of the remedy. Short- and long-term institutional and engineering controls are allowed to achieve protection of public health and the environment. The remedy under Track 4 must provide a cover system over exposed residual soil contamination. Soils which are not otherwise covered by structures such as buildings, sidewalks or pavement (i.e., exposed surface soils) must be covered with soil that complies with the use-based SCOs in 6 NYCRR Table 375-6.8(b) levels for the top one foot (non-residential uses) or top two feet (restricted residential use).

3. Environmental Restoration Program: The goal of the program for a specific site is to select a remedy that is protective of public health and the environment, including, but not limited to, groundwater according to its classification pursuant to ECL 17-0301, drinking water, surface water and air (including indoor air), sensitive populations (including children) and ecological resources (including fish and wildlife). At a minimum, the remedy selected shall eliminate or mitigate all significant threats to public health and to the environment presented by contaminants disposed at the site through the proper application of scientific and engineering principles. Soil cleanup levels may be developed in accordance with Approaches 1 – 4 without restriction.

4. Voluntary Cleanup Program: The goal of the program for a specific site is to select a remedy that is protective of public health and the environment for the contemplated use. The soil cleanup levels may be developed in accordance with Approaches 1 – 4 without restriction.

5. Petroleum Spill Response Program: The goal of the Petroleum Spill Response Program is to achieve pre-spill conditions [6 NYCRR 611.6(a)(4)]. Remedial activities under this program shall be undertaken relative to the petroleum contamination that was released along with any co-mingled contamination from other sources. The remedial party shall achieve, to the extent feasible, the unrestricted SCOs for petroleum-related contaminants listed in 6 NYCRR Table 375-6.8(a). For petroleum contaminants not included in 6 NYCRR Table 375-6.8(a) (discussed in Section E below), the remedial party shall apply, to the extent feasible, the soil cleanup levels provided in Table 1. For ease of implementation, two lists of petroleum contaminants (Gasoline and Fuel Oil, Tables 2 and 3) are attached. The tables combine the applicable petroleum-related SCOs from 6 NYCRR 375-6.8(a) and the applicable petroleum related SSCOs from Table 1. Where DEC determines that it is not feasible to achieve the soil cleanup levels as set forth in this paragraph, the remedial party may propose soil cleanup levels in accordance with any of the general approaches. However, when considering restricted use soil cleanup levels, the remedial party should apply the least restrictive use category feasible.

For purposes of this discussion, residential use is the least restrictive use, and industrial use is the most restrictive category. This process starts with consideration of residential use, followed by restricted residential use, commercial use, and then industrial use. The evaluation proceeds through the different land uses until a feasible remedy is found. If the protection of groundwater or ecological SCOs apply, the lower of the applicable protection of the public health SCO or the applicable protection of groundwater or ecological SCO should be achieved to the extent feasible. This evaluation is not bound to the SCOs in regulation or the SSCOs set forth in this guidance but may result in a site-specific soil cleanup level that is between the SCOs or soil cleanup level for two different land uses (e.g., above the restricted residential SCO and below the commercial SCO).

6. RCRA Corrective Action Program: The RCRA program was promulgated to regulate facilities that actively manage hazardous waste. DER administers the RCRA Corrective Action Program, with a goal of achieving soil cleanup levels at Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) that eliminate risks to public health and the environment (i.e., clean the site to unrestricted use) or control said risks (i.e., clean the site or unit(s) to the lowest possible soil cleanup objective, regardless of site use), to the extent feasible. This goal takes into account that certain units at the facility may be permitted to manage hazardous waste under New York State's Hazardous Waste Management (HWM) regulations (6 NYCRR Part 373). The requirements of active HWM facilities, as well as the site's history, will be considered when soil cleanup levels are determined. Selected remedies must be protective of public health and the environment. Soil cleanup levels will be selected using the following procedure.

(a) The remedial party shall evaluate, and if feasible, implement a cleanup utilizing Approach 1. Under this approach, the unrestricted SCOs apply to the entire soil matrix to the top of bedrock. For contaminants not listed in 6 NYCRR 375-6, a new or existing SSCO may be used.

(b) If DEC determines that achieving unrestricted SCOs is not feasible, the remedial party may evaluate other alternatives to remediate the site. In this event, the remedial party may propose soil cleanup levels in accordance with any of the general approaches. However, when considering restricted use soil cleanup levels, the remedial party shall apply the use category which is both feasible and least restricted. For purposes of this discussion, residential use is the least restricted category and industrial use is the most restricted category. A soil cleanup level between two different land uses (e.g., residential and restricted residential) may be determined to be feasible, and if selected, must be achieved.

Any soil cleanup levels specified in regulation (i.e., 6 NYCRR 373-2.6(b)-(k) for "regulated units" as defined in 6 NYCRR 373-2.6 (a)(1)(ii)) or in a DEC enforceable document (Part 373 permits, Consent Orders, etc.) shall take precedence over the soil cleanup levels which could be established through use of this document.

C. Determination of Whether Ecological Resources SCOs Apply to a Site: SCOs developed to protect ecological resources (ESCOs) are incorporated in the Unrestricted Use SCO in 6 NYCRR Table 375-6.8(a) and are included as a separate category in 6 NYCRR Table 375-6.8(b). For contaminants of concern which do not have a calculated ESCO in regulation, DEC may direct the remedial party to develop a soil cleanup level which is protective of ecological resources where appropriate, based on the process outlined in Appendix E of the TSD.

The presence of ecological resources and any impact to those resources will be assessed during the remedial investigation. For sites where there is the potential for an ecological resource impact to be present, or where it is likely to be present, an assessment of fish and wildlife resource impacts will be performed. For sites in DER's SSF, BCP, VCP and ERP, the assessment will be performed in accordance with DEC's guidance, *Fish and Wildlife Impact Analysis for Inactive Hazardous Waste Sites*, October, 1994, as described in DER-10, Section 3.10. For sites in the RCRA Corrective Action Program, the assessment will be performed using the above referenced fish and wildlife impact analysis document as guidance, and by consulting with appropriate personnel in DEC's Division of Fish, Wildlife and Marine Resources.

Soil cleanup levels which are protective of ecological resources must be considered and applied, as appropriate, for the upland soils (not sediment) at sites where DEC determines, based on the foregoing analysis, that:

- ecological resources are present, or will be present, under the reasonably anticipated future use of the site, and such resources constitute an important component of the environment at, or adjacent to, the site;

- an impact or threat of impact to the ecological resource has been identified; and

- contaminant concentrations in soil exceed the ESCOs as set forth in 6 NYCRR 375-6.8(b) or the Protection of Ecological Resources SSCOs contained in this document.

Sites or portions thereof that will be covered by buildings, structures or pavement are not subject to the ESCOs. Further, ecological resources do not include pets, livestock, agricultural or horticultural crops, or landscaping in developed areas. (See 6 NYCRR 375-6.6 for more detail.)

D. Determination of Whether Protection of Groundwater SCOs Apply: SCOs developed to protect groundwater are incorporated in the Unrestricted Use SCOs in 6 NYCRR Table 375-6.8(a) and are included as a separate category in 6 NYCRR Table 375-6.8(b). For contaminants of concern which do not have a protection of groundwater SCO, DEC may direct the remedial party to develop a soil cleanup level which is protective of groundwater using the process in Appendix E of the TSD.

1. Except as provided for in (2) below, the protection of groundwater SCOs will be applicable where:

   (i) contamination has been identified in on-site soil by the remedial investigation; and
   (ii) groundwater standards are, or are threatened to be, contravened by the presence of soil contamination at concentrations above the protection of groundwater SCOs.

2. DEC may provide an exception to the applicability of the protection of groundwater SCOs, as set forth in 6 NYCRR 375-6.5(a)(1), when (i), (ii), and (iii) exist and either (iv) or (v) also apply, as described below.

   (i) The groundwater standard contravention is the result of an on-site source which is addressed by the remedial program.
   (ii) An environmental easement or other institutional control will be put in place which provides for a groundwater use restriction.
   (iii) DEC determines that contaminated groundwater at the site:
      (a) is not migrating, nor is likely to migrate, off-site; or
      (b) is migrating, or is likely to migrate, off-site; however, the remedy includes active groundwater management to address off-site migration.
   (iv) DEC determines the groundwater quality will improve over time.
   (v) The groundwater contamination migrating from the site is the result of an off-site source of contamination, and site contaminants are not contributing consequential amounts to the groundwater contamination.

3. In determining whether to provide the exemption set forth in subparagraph 2 above, DEC will consider:

   (i) all of the remedy selection criteria at 6 NYCRR 375-1.8(h) or in the RCRA Corrective Action program;
   (ii) the amount of time that the groundwater will need to be actively managed for the protection of public health and the environment; and
   (iii) the potential impact that groundwater contamination may have on media not specifically addressed by the SCOs (e.g., vapor intrusion, protection of surface water, and protection of aquatic ecological resources).

E. Supplemental Soil Cleanup Objectives: SSCOs are either existing cleanup levels in Table 1 or are new soil cleanup levels developed by the remedial party as part of its remedial program. These SSCOs are in addition to the SCOs that are included in Part 375.

Existing SSCOs: The Table 1 list of SSCOs includes contaminants from former TAGM 4046 that were not included in 6 NYCRR 375-6.8 and soil cleanup levels developed using the process detailed in Appendix E of the TSD but not promulgated. For those contaminants which were part of the former TAGM 4046, soil cleanup levels exist for the protection of public health (based on ingestion) and for the protection of groundwater. In some cases, to be determined on a site-by-site basis, evaluation of other factors is likely needed for the protection of public health, especially when the use of a site includes residential use.

These other factors include other exposure pathways (e.g., homegrown vegetable ingestion, inhalation and dermal contact), potential non-site exposures to the contaminant and current toxicological data on the contaminant. In these instances, DEC (in consultation with NYSDOH) will determine if the additional factors have been adequately addressed. The SSCOs identified in Table 1 (subject to the limitation described above) may be used as if they were included in Part 375. A remedial party is not required to use the SSCOs set forth in Table 1. In lieu of applying an SSCO, the remedial party may elect to develop a soil cleanup level (using the process described in Appendix E of the TSD and discussed below.) Table 1 also includes SSCOs that were developed for some pathways using the same process detailed in the TSD. A remedial party may elect to use those SSCOs directly or confirm that the calculated value for that pathway is correct.

New SSCOs: The remedial party may elect to, or DEC may direct a remedial party to, develop a contaminant-specific SCO for any contaminant not included in 6 NYCRR Tables 375-6.8(a) or (b). Generally, DEC will request that an SCO be developed only where the contaminant is a predominant contaminant of concern (COC) at the site and is not otherwise being addressed to DEC's satisfaction as part of the proposed remedy. This could happen, for example, when a remedial party is seeking a Track 1 cleanup and non-SCO/SSCO contaminants are present and may not be satisfactorily addressed by the remedial activities addressing the SCOs or SSCOs. Guidance on the process for developing new SCOs is provided in Appendix E of the TSD. DEC will include all newly developed soil cleanup levels, developed and approved pursuant to this paragraph in a revised Table 1. The developed SSCO must:

1. be developed utilizing the same methodologies that were used by DEC to develop SCOs that are set forth in Part 375; and

2. apply the maximum acceptable soil concentrations (caps), as set forth in section 9.3 of the TSD.

F. Use of SCOs and SSCOs as a Screening Tool: The SCOs and SSCOs may be used to identify areas of soil contamination and to determine the extent of soil contamination. As noted in Section V.K, consideration of other media is required to determine if remedial action is needed.

1. At sites or areas of concern where contaminant concentrations are equal to or below the unrestricted SCOs in 6 NYCRR Table 375-6.8(a), no action or study is warranted because of soil contamination.

2. The exceedance of one or more applicable SCOs or SSCOs, (which is the lower of protection of public health, protection of groundwater, or protection of ecological resources soil cleanup objectives as described in Section III below), alone does not trigger the need for remedial action, define "unacceptable" levels of contaminants in soil, or indicates that a site qualifies for any DEC remedial program (e.g., BCP, SSF). As noted in the definition of SCO above, SCOs and SSCOs are applicable statewide and do not account for many site-specific considerations which could potentially result in higher levels. Therefore, soil concentrations that are higher than the applicable SCOs or SSCOs are not necessarily health or environmental concerns.

3. When an applicable SCO or SSCO is exceeded, the degree of public health or environmental concern depends on several factors, including:

    - magnitude of the exceedance;
    - accuracy of the exposure estimates;
    - other sources of exposure to the contaminant; and
    - strength and quality of the available toxicological information on the contaminant.

G. Soil Cleanup Levels for Nuisance Conditions: Experience has shown that contaminants in soil that meets the DEC-approved soil cleanup levels can exhibit a distinct odor or other type of nuisance (e.g., staining). This is true even though the contaminants will not leach from the soil (e.g., certain soils with more insoluble substances at higher concentrations). When DEC determines that soil remaining after the remedial action will result in the continuation of a nuisance (e.g., odors, staining, etc), DEC will require that additional remedial measures be evaluated, and may require additional remedial actions be taken to address the nuisance condition.

H. Subsurface Soil Cleanup for Total Polycyclic Aromatic Hydrocarbons: For non-residential use sites (i.e., commercial or industrial use sites) where the ESCOs are not applicable, DEC may approve a remedial program which achieves a soil cleanup level of 500 parts per million (ppm) for total PAHs for all subsurface soil. The 500 ppm soil cleanup level is in lieu of achieving all of the PAH-specific SCOs in 6 NYCRR 375-6. For purposes of this provision, subsurface soil shall mean the soil beneath permanent structures, pavement, or similar cover systems; or at least one foot of soil cover (which must meet the applicable SCOs). Institutional controls (e.g., an environmental easement) along with a site management plan will be required when this soil cleanup level is employed at a site. This cleanup level is determined to be feasible and protective based on DEC's experience in its various remedial programs. This approach has existed in TAGM 4046 since it was first issued in 1992.

I. Soil Cleanup for PCBs: DEC may approve a remedial program which achieves a soil cleanup level for PCBs as set forth herein:

1. **For Non-BCP sites:** An acceptable presumptive remedy for soil where neither the unrestricted SCOs nor the ESCOs are applied in the remedial program may include a soil cleanup level for PCBs of 1 ppm in the surface soils and 10 ppm in subsurface soils.

2. **For BCP sites:** An acceptable presumptive remedy for soil may include a soil cleanup level for PCBs of 1 ppm (the applicable SCO) in the surface soils and 10 ppm in subsurface in limited circumstances as follows:

- cleanup track is Track 4;
- site use will be restricted residential, commercial or industrial; and
- ESCOs do not apply.

3. **At industrial use sites,** a level of 25 ppm for PCBs provided that access is limited and individual occupancy is restricted to less than an average of 6.7 hours per week.

For purposes of this provision, subsurface soil shall mean:

- soil beneath permanent structures, pavement, or similar cover systems;
- soil beneath 1 foot of soil cover for commercial and industrial uses; or
- soil beneath 2 feet of soil cover for residential and restricted residential uses.

Institutional controls (i.e., an environmental easement), along with a site management plan, will be required when this soil cleanup level is employed at a site. As with all presumptive remedies, just because a remedy is presumptive does not mean that it will work at every site. For example, this presumptive remedy for PCBs in soil is not applicable at most landfills. This cleanup level is determined to be feasible and protective based on DEC's experience in its various remedial programs. Further, this approach has existed in TAGM 4046 since it was first issued in 1992.

J. Sampling and Compliance with Soil Cleanup Levels: The number of samples to determine if the SCOs have been achieved should be sufficient to be representative of the area being sampled. See attached Table 4 for suggested sampling frequency and subdivision 5.4(e) of DER-10 for details. This frequency can be used for confirmatory samples or for backfill. It is DEC's goal that all confirmatory samples demonstrate that the remedy has achieved the DEC-approved soil cleanup levels. However, recognizing the heterogeneity of contaminated sites and the uncertainty of sampling and analysis, DEC project manager has limited discretion to determine that remediation is complete where some discrete samples do not meet the soil cleanup levels established for a site. See DER-10 for more information regarding the determination that remediation is complete.

K. Other Considerations: All remedies must be fully protective of public health and the environment and prevent off-site migration to the extent feasible with special emphasis for the prevention or minimization of migration onto adjacent residential properties or into ecological resources. A remedial party is required to investigate all environmental media including soil, groundwater, surface water, sediments, soil vapor, indoor air, and biota. (See 6 NYCRR 375-1.8(a)(6) or RCRA Corrective Action Program). This investigation will determine if any of the referenced media are, or may be, impacted by site contamination. However, the SCOs do not directly address these other media. DEC may require remedial actions to address such media and impacts, including but not limited to the application of lower soil cleanup levels or buffer zones where it determines, based on the investigation, that any of these media are, or may be, impacted by site contamination.

VI. Related References:

- Environmental Conservation Law, Article 27 Titles 3, 5, 9, 13 and 14.
- Article 12 of the Navigation Law, Section 178.

- 6 NYCRR Part 375, Environmental Remediation Programs. December 14, 2006.
- 6 NYCRR Subparts 373-1, 373-2 and 373-3, Requirements for Hazardous Waste Management Facilities. September 6, 2006.
- 6 NYCRR Part 611, Environmental Priorities and Procedures in Petroleum Cleanup and Removal. November 5, 1984 (amended).
- Development of Soil Cleanup Objectives: Technical Support Document. New York State Department of Environmental Conservation. December 14, 2006.
- Supplemental Guidance to RAGS: Calculating the Concentration Term. United States Environmental Protection Agency. Publication 9285.7-081. May 1992.
- New York State Guidelines for Urban Erosion and Sediment Control. 1997.
- Fish and Wildlife Impact Analysis for Inactive Hazardous Waste Sites. New York State Department of Environmental Conservation. October 1994.
- Program Policy DER-2, *Making Changes to Selected Remedies*. New York State Department of Environmental Conservation. April 1, 2008.
- Program Policy DER-10, *Technical Guidance for Site Investigation and Remediation*. New York State Department of Environmental Conservation. May 3, 2010.
- Program Policy DER-15, *Presumptive/Proven Remedial Technologies*. New York State Department of Environmental Conservation. February 27, 2007.

TABLES

1 - Supplemental Soil Cleanup Objectives
2 - Soil Cleanup Levels for Gasoline Contaminated Soils
3 - Soil Cleanup Levels for Fuel Oil Contaminated Soils
4 - Recommended Number of Soil Samples for Soil Imported to or Exported From a Site

Table 1

Supplemental Soil Cleanup Objectives
(ppm)

Contaminant	CAS Number	Residential	Restricted Residential	Commercial	Industrial	Protection of Ecological Resources	Protection of Ground-water
METALS							
Aluminum	7429-90-5					10,000 [a,b]	
Antimony	7440–36-0					12[c]	
Boron	7440-42-8					0.5	
Calcium	7440-70-2					10,000 [a,b]	
Cobalt	7440-48-4	30				20	
Iron	7439-89-6	2,000					
Lithium	7439-93-2					2	
Molybdenum	7439-98-7					2	
Technetium	7440-26-8					0.2	
Thallium	7440-28-0					5 [c]	
Tin	7440-31-5					50	
Uranium	7440-61-1					5	
Vanadium	7440-62-2	100 [a]				39[b]	
PESTICIDES							
Biphenyl	92-52-4					60	
Chlordecone (Kepone)	143-50-0					0.06	
Dibenzofuran	132-64-9						6.2
2,4-D (2,4-Dichloro-phenoxyacetic acid)	94-75-7	100 [a]					0.5
Furan	110-00-9					600	
Gamma Chlordane	5103-74-2	0.54					14
Heptachlor Epoxide	1024-57-3	0.077					0.02
Methoxychlor	72-43-5	100 [a]				1.2	900

Contaminant	CAS Number	Residential	Restricted Residential	Commercial	Industrial	Protection of Ecological Resources	Protection of Ground-water
Parathion	56-38-2	100 [a]					1.2
2,4,5-T	93-76-5	100 [a]					1.9
2,3,7,8-TCDD	1746-01-6					0.000001	
2,3,7,8-TCDF	51207-31-9					0.000001	
SEMIVOLATILE ORGANIC COMPOUNDS							
Aniline	62-53-3	48	100[a]	500[a]	1000[a]		0.33[b]
Bis(2-ethylhexyl) phthalate	117-81-7	50				239	435
Benzoic Acid	65-85-0	100[a]					2.7
Butylbenzyl-phthalate	85-68-7	100 [a]					122
4-Chloroaniline	106-47-8	100 [a]					0.22
Chloroethane	75-00-3						1.9
2-Chlorophenol	95-57-8	100 [a]				0.8	
3-Chloroaniline	108-42-9					20	
3-Chlorophenol	108-43-0					7	
Di-n-butyl-phthalate	84-74-2	100 [a]				0.014	8.1
2,4-Dichlorophenol	120-83-2	100 [a]				20	0.40
3,4-Dichlorophenol	95-77-2					20	
Diethylphthalate	84-66-2	100 [a]				100	7.1
Di-*n*-hexyl-phthalate	84-75-3					0.91	
2,4-Dinitrophenol	51-28-5	100 [a]				20	0.2
Dimethylphthlate	131-11-3	100 [a]				200	27
Di-n-octylphthlate	117-84-0	100 [a]					120
1,2,3,6,7,8-HCDF	57117-44-9					0.00021	
Hexachloro-benzene	118-74-1	0.41					1.4
2,6-Dinitrotoluene	606-20-2	1.03					1.0
Isophorone	78-59-1	100 [a]					4.4

Contaminant	CAS Number	Residential	Restricted Residential	Commercial	Industrial	Protection of Ecological Resources	Protection of Ground-water
4-methyl-2-pentanone	108-10-1						1.0
2-methyl-naphthalene	91-57-6	0.41					36.4
2-Nitroaniline	88-74-4						0.4
3-Nitroaniline	99-09-2						0.5
Nitrobenzene	98-95-3	3.7	15	69	140	40	0.17[b]
2-Nitrophenol	88-75-5					7	0.3
4-Nitrophenol	100-02-7					7	0.1
Pentachloroaniline	527-20-8					100	
2,3,5,6-Tetrachloroaniline	3481-20-7					20	
2,3,4,5-Tetrachlorophenol	4901-51-3					20	
2,4,5-Trichloroaniline	636-30-6					20	
2,4,5-Trichlorophenol	95-95-4	100 [a]				4	0.1
2,4,6-Trichlorophenol	88-06-2					10	
VOLATILE ORGANIC COMPOUNDS							
2-Butanone	78-93-3	100 [a]					0.3
Carbon Disulfide	75-15-0	100 [a]					2.7
Chloroacetamide	79-07-2					2	
Dibromochloro-methane	124-48-1					10	
2,4-Dichloro aniline	554-00-7					100	
3,4-Dichloroaniline	95-76-1					20	
1,2-Dichloropropane	78-87-5					700	
1,3-Dichloropropane	142-28-9						0.3
2,6-Dinitrotoluene	606-20-2	1.03					0.17[b]
Ethylacetate	141-78-6					48	

Contaminant	CAS Number	Residential	Restricted Residential	Commercial	Industrial	Protection of Ecological Resources	Protection of Ground-water
4-methyl-2-pentanone	108-10-1						1.0
113 Freon (1,1,2- TFE)	76-13-1	100 [a]					6
isopropylbenzene	98-82-8	100 [a]					2.3
p-isopropyltoluene	99-87-6						10
Hexachlorocyclo-pentadiene	77-47-4					10	
Methanol	67-56-1					6.5	
N-nitrosodiphenyl-amine	86-30-6					20	
Pentachloro-benzene	608-93-5					20	
Pentachloronitro-benzene	82-68-8					10	
Styrene	100-42-5					300	
1,2,3,4-Tetrachlorobenzene	634-66-2					10	
1,1,2,2-Tetrachloroethane	79-34-5	35					0.6
1,1,2,2-Tetrachloroethylene	127-18-4					2	
1,2,3-Trichlorobenzene	87-61-6					20	
1,2,4-Trichlorobenzene	120-82-1					20	3.4
1,2,3-Trichloropropane	96-18-4	80					0.34

[a] SCOs for organic contaminants (volatile organic compounds, semivolatile organic compounds, and pesticides) are capped at 100 ppm for residential use, 500 ppm for commercial use, 1000 ppm for industrial use. SCOs for metals are capped at 10,000 ppm.

[b] Based on rural background study

[c] SCO limited by contract required quantitation limit.

Table 2

Soil Cleanup Levels for Gasoline Contaminated Soils

Contaminant	CAS Registry Number	Soil Cleanup Level (ppm)
Benzene	71-43-2	0.06
n-Butylbenzene	104-51-8	12.0
sec-Butylbenzene	135-98-8	11.0
Ethylbenzene	100-41-4	1.0
Isopropylbenzene	98-82-8	2.3
p-Isopropyltoluene	99-87-6	10.0
Methyl-Tert-Butyl-Ether	1634-04-4	0.93
Naphthalene	91-20-3	12.0
n-Propylbenzene	103-65-1	3.9
Tert-Butylbenzene	98-06-6	5.9
Toluene	108-88-3	0.7
1,2,4-Trimethylbenzene	95-63-6	3.6
1,3,5-Trimethylbenzene	108-67-8	8.4
Xylene (Mixed)	1330-20-7	0.26

Table 3

Soil Cleanup Levels for Fuel Oil Contaminated Soil

Contaminant	CAS Registry Number	Soil Cleanup Level (ppm)
Acenaphthene	83-32-9	20
Acenaphthylene	208-96-8	100
Anthracene	120-12-7	100
Benz(a)Anthracene	56-55-3	1.0
Dibenzo(a,h)Anthracene	53-70-3	0.33
Benzene	71-43-2	0.06
n-Butylbenzene	104-51-8	12.0
sec-Butylbenzene	135-98-8	11.0
Tert-Butylbenzene	98-06-6	5.9
Chrysene	218-01-9	1.0
Ethylbenzene	100-41-4	1.0
Fluoranthene	206-44-0	100
Benzo(b)Fluoranthene	205-99-2	1.0
Benzo(k)Fluoranthene	207-08-9	0.8
Fluorene	86-73-7	30
Isopropylbenzene	98-82-8	2.3
p-Isopropyltoluene	99-87-6	10.0
Naphthalene	91-20-3	12.0
n-Propylbenzene	103-65-1	3.9
Benzo(g,h,i)Perylene	191-24-2	100
Phenanthrene	85-01-8	100
Pyrene	129-00-0	100
Benzo(a)Pyrene	50-32-8	1.0
Indeno(1,2,3-cd)Pyrene	193-39-5	0.5
1,2,4-Trimethylbenzene	95-63-6	3.6
1,3,5-Trimethylbenzene	108-67-8	8.4
Toluene	108-88-3	0.7
Xylene (Mixed)	1330-20-7	0.26

Table 4

Recommended Number of Soil Samples for Soil Imported To or Exported From a Site

Contaminant	VOCs[a]	SVOCs, Inorganics & PCBs/Pesticides	
Soil Quantity (cubic yards)	**Discrete Samples**	**Composite**	**Discrete Samples/Composite**
0-50	1	1	Each composite sample for analysis is created from 3-5 discrete samples from representative locations in the fill.
50-100	2	1	
100-200	3	1	
200-300	4	1	
300-400	4	2	
400-500	5	2	
500-800	6	2	
800-1000	7	2	
➢ 1000	Add an additional 2 VOC and 1 composite for each additional 1000 Cubic yards or consult with DER.[b]		

[a] VOC samples cannot be composited. Discrete samples must be taken to maximize the representativeness of the results.

[b] For example, a 3,000 cubic yard soil pile to be sampled and analyzed for VOCs would require 11 discrete representative samples. The same pile to be sampled for SVOCs would require 4 composite samples with each composite sample consisting of 3-5 discrete samples.

Exhibit C

Letter from Fred Dacimo, Vice President Entergy Corporation,
To Edwin E. Dassatti, April 25, 2006

Entergy

Indian Point 3, LLC, NPP
Entergy Nuclear Operations
Indian Point Energy Center
450 Broadway, Suite 3
Buchanan, NY 10511
Tel. 914 736-8000

Mr. Edwin E. Dassatti
Director, Bureau of Hazardous Waste & Radiation Management
New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233-7258

April 25, 2006

RE: Termination of the Indian Point 3, LLC Mixed Waste Storage Part 373 Permit (NYD085503746), associated with the Claim for Conditional Exemption for Low-level Mixed Waste Storage And Disposal under 6 NYCRR 374-1.9

Dear Mr. Dassatti:

In accordance with your letter of April 7, 2006, termination of the Indian Point 3, LLC Part 373 permit requires certification by Entergy that two conditions have been met. The two conditions and associated certification are provided as an attachment to this letter.

Should you have any additional questions or require any additional actions to complete the termination of this permit, please contact Dara Gray of my staff at (914)736-8414.

Sincerely,

Fred Dacimo
Vice President

Cc: Lynn Winterberger, NYSDEC
M. Duke, NYSDEC – Region 3
K. Grzyb, NYSDEC – Region 3

Indian Point 3, LLC Mixed Waste Storage Part 373 Permit (NYD085503746)
Certification for Permit Termination

CONDITIONS

1. Materials stored in Conditionally Exempt Mixed Waste Storage Areas

   Since establishing the mixed waste storage areas in 1996, the facility has never stored [in any amount, or for any length of time], any wastes solely meeting the definition of hazardous wastes and not meeting the definition of mixed wastes.

2. Corrective Action Issues

   There are presently no corrective action issues at Indian Point 3, LLC.

CERTIFICATION

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Certified By:

Fred Dacimo, Vice President _____
Name, Title Signature/Date

Exhibit D

Hazardous Waste Manifest Records for Indian Point Unit 3,
January 1, 2007 through January 1, 2020

NEW YORK STATE OF OPPORTUNITY. Department of Environmental Conservation

GEN / OFFEROR, WASTE SHIPPED BY WASTE CODE

SEARCH **Generator starts with 'NYD085503746'. Date Shipped is between 01/01/2007 and 01/01/2020.**

DISCLAIMER: Waste may be double counted if it was manifested under more than one waste code. Do not add waste quantity totals.

GEN / OFFEROR ID: **NYD085503746**

NAME: ENTERGY

SITE ADDRESS: 450 BROADWAY, BUCHANAN, NY 10511

MAILING ADDRESS: 450 BROADWAY, SUITE 3, BUCHANAN, NY 10511

TSDF ID	TSDF NAME	GEN / OFFEROR SIGN DATE	MANIFEST NO.	PAGE #	LINE #	TSDF / RECEIVER RECEIVED DATE	TOTAL QTY	UNIT WT / VOL	SPECIFIC GRAVITY
WASTE CODE: B001	**PCB Oil (concentrated) from transformers, capacitors, etc.**								
RID040098352	NORTHLAND ENVIRONMENTAL INC	10/22/2012	004977858FLE	1	3	10/22/2012	7	lbs	1.00
TOTAL QUANTITY (Kg/Tons):	**3.18 / 0.00**								
WASTE CODE: D001	**Ignitable**								
ARD069748192	CLEAN HARBORS	10/11/2007	000985347FLE	1	1	11/02/2007	100	lbs	1.00
ARD069748192	CLEAN HARBORS	10/11/2007	000985347FLE	1	2	11/02/2007	100	lbs	1.00
ARD069748192	CLEAN HARBORS	10/11/2007	000985347FLE	1	3	11/02/2007	1	lbs	1.00
ARD069748192	CLEAN HARBORS	10/11/2007	000985347FLE	1	4	11/02/2007	8	lbs	1.00
ARD069748192	CLEAN HARBORS	10/11/2007	000985347FLE	2	1	11/02/2007	9	lbs	1.00
ARD069748192	CLEAN HARBORS	04/29/2010	003100024FLE	1	1	05/15/2010	200	lbs	1.00
ARD069748192	CLEAN HARBORS	04/29/2010	003100024FLE	1	2	05/15/2010	200	lbs	1.00
NCD000648451	CLEAN HARBORS	05/06/2008	000390677FLE	2	1	05/15/2008	4	lbs	1.00
NCD000648451	CLEAN HARBORS	05/06/2008	000390677FLE	2	2	05/15/2008	79	lbs	1.00
NCD000648451	CLEAN HARBORS	05/06/2008	000390677FLE	2	3	05/15/2008	287	lbs	1.00
NCD000648451	CLEAN HARBORS	05/06/2008	000390677FLE	2	4	05/15/2008	41	lbs	1.00
OHD000816629	SPRING GROVE RESOURCE RECOVERY INC	08/24/2010	003032853FLE	1	1	09/08/2010	100	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	08/01/2012	004973870FLE	1	1	08/01/2012	500	lbs	1.00

TSDF ID	TSDF NAME	GEN / OFFEROR SIGN DATE	MANIFEST NO.	PAGE #	LINE #	TSDF / RECEIVER RECEIVED DATE	TOTAL QTY	UNIT WT / VOL	SPECIFIC GRAVITY
WASTE CODE:	**D001 Ignitable**								
RID040098352	NORTHLAND ENVIRONMENTAL INC	08/01/2012	004973870FLE	1	2	08/01/2012	45	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	08/01/2012	004973870FLE	2	1	08/01/2012	10	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	08/01/2012	004973870FLE	2	3	08/01/2012	50	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	08/01/2012	004973870FLE	2	4	08/01/2012	120	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	10/22/2012	004977858FLE	1	1	10/22/2012	350	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	10/22/2012	004977858FLE	1	2	10/22/2012	10	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	10/22/2012	004977858FLE	2	1	10/22/2012	5	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	02/27/2013	004977865FLE	1	1	02/27/2013	1,200	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	01/15/2014	006941422FLE	1	1	01/15/2014	240	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	01/15/2014	006941422FLE	1	2	01/15/2014	25	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	01/15/2014	006941422FLE	1	4	01/15/2014	80	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/05/2014	007681390FLE	2	1	06/06/2014	30	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/05/2014	007681390FLE	2	5	06/06/2014	15	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/05/2014	007681390FLE	2	6	06/06/2014	60	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/05/2014	007681390FLE	3	1	06/06/2014	30	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	08/18/2014	007680909FLE	2	1	08/18/2014	25	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	08/18/2014	007680909FLE	2	4	08/18/2014	15	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	12/01/2014	008234916FLE	1	1	12/01/2014	550	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	12/01/2014	008234916FLE	2	1	12/01/2014	80	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	04/27/2015	008226997FLE	2	1	04/27/2015	40	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	04/27/2015	008226997FLE	2	2	04/27/2015	20	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	08/31/2015	008917014FLE	2	1	08/31/2015	90	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	10/13/2016	009424324FLE	2	1	10/13/2016	400	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	10/13/2016	009424324FLE	2	2	10/13/2016	1,700	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	10/13/2016	009424324FLE	2	5	10/13/2016	80	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	04/05/2017	010384167FLE	2	2	04/05/2017	365	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	05/01/2017	010385673FLE	1	1	05/01/2017	500	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	12/13/2017	010957556FLE	1	1	12/13/2017	1,100	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	02/12/2018	010959239FLE	2	1	02/12/2018	122	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/06/2018	011507055FLE	1	1	06/06/2018	280	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/06/2018	011507055FLE	2	1	06/06/2018	80	lbs	1.00

TSDF ID	TSDF NAME	GEN / OFFEROR SIGN DATE	MANIFEST NO.	PAGE #	LINE #	TSDF / RECEIVER RECEIVED DATE	TOTAL QTY	UNIT WT / VOL	SPECIFIC GRAVITY
WASTE CODE: D001 Ignitable									
TOTAL QUANTITY (Kg/Tons): 4,248.15 / 4.67									
WASTE CODE: D002 Corrosive									
ARD069748192	CLEAN HARBORS	10/11/2007	000985347FLE	2	4	11/02/2007	4	lbs	1.00
ARD069748192	CLEAN HARBORS	10/11/2007	000985347FLE	2	5	11/02/2007	60	lbs	1.00
ARD069748192	CLEAN HARBORS	10/11/2007	000985347FLE	2	6	11/02/2007	2	lbs	1.00
CTD002593887	BRIDGEPORT UNITED RECYCLING INC	06/06/2008	000082435UIS	1	1	06/06/2008	4,715	gal	1.00
CTD002593887	BRIDGEPORT UNITED RECYCLING INC	07/06/2012	005843779JJK	1	1	07/13/2012	750	gal	1.00
NCD000648451	CLEAN HARBORS	05/06/2008	000390677FLE	1	1	05/15/2008	3	lbs	1.00
NCD000648451	CLEAN HARBORS	05/06/2008	000390677FLE	1	2	05/15/2008	7	lbs	1.00
NCD000648451	CLEAN HARBORS	05/06/2008	000390677FLE	1	3	05/15/2008	9	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	08/01/2012	004973870FLE	2	2	08/01/2012	20	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	08/01/2012	004973870FLE	2	3	08/01/2012	50	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	10/22/2012	004977858FLE	2	1	10/22/2012	5	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	01/15/2014	006941422FLE	1	3	01/15/2014	25	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/05/2014	007681390FLE	2	3	06/06/2014	5	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/05/2014	007681390FLE	2	4	06/06/2014	1	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/05/2014	007681390FLE	2	8	06/06/2014	50	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	08/18/2014	007680909FLE	2	3	08/18/2014	10	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	12/01/2014	008234916FLE	2	1	12/01/2014	80	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	10/13/2016	009424324FLE	2	3	10/13/2016	20	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	10/13/2016	009424324FLE	2	4	10/13/2016	120	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/06/2018	011507055FLE	2	2	06/06/2018	1	lbs	1.00
TOTAL QUANTITY (Kg/Tons): 20,931.85 / 23.03									
WASTE CODE: D003 Reactive									
ARD069748192	CLEAN HARBORS	10/11/2007	000985347FLE	1	3	11/02/2007	1	lbs	1.00
TOTAL QUANTITY (Kg/Tons): 0.45 / 0.00									

TSDF ID	TSDF NAME	GEN / OFFEROR SIGN DATE	MANIFEST NO.	PAGE #	LINE #	TSDF / RECEIVER RECEIVED DATE	TOTAL QTY	UNIT WT / VOL	SPECIFIC GRAVITY
WASTE CODE: D004 Arsenic									
ARD069748192	CLEAN HARBORS	10/11/2007	000985347FLE	2	3	11/02/2007	5	lbs	1.00
TOTAL QUANTITY (Kg/Tons): 2.27 / 0.00									
WASTE CODE: D005 Barium									
ARD069748192	CLEAN HARBORS	06/13/2007	000905873FLE	1	1	07/17/2007	125	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/05/2014	007681390FLE	2	7	06/06/2014	70	lbs	1.00
TOTAL QUANTITY (Kg/Tons): 88.64 / 0.10									
WASTE CODE: D006 Cadmium									
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/05/2014	007681390FLE	2	9	06/06/2014	1,000	lbs	1.00
TOTAL QUANTITY (Kg/Tons): 454.55 / 0.50									
WASTE CODE: D007 Chromium									
ARD069748192	CLEAN HARBORS	10/11/2007	000985347FLE	1	4	11/02/2007	8	lbs	1.00
CTD002593887	BRIDGEPORT UNITED RECYCLING INC	07/06/2012	005843779JJK	1	1	07/13/2012	750	gal	1.00
NCD000648451	CLEAN HARBORS	05/06/2008	000390677FLE	2	1	05/15/2008	4	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	08/01/2012	004973870FLE	2	1	08/01/2012	10	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/05/2014	007681390FLE	2	7	06/06/2014	70	lbs	1.00
TOTAL QUANTITY (Kg/Tons): 2,885.01 / 3.17									
WASTE CODE: D008 Lead									
ARD069748192	CLEAN HARBORS	06/13/2007	000905873FLE	1	1	07/17/2007	125	lbs	1.00
ARD069748192	CLEAN HARBORS	10/11/2007	000985347FLE	2	5	11/02/2007	60	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	08/01/2012	004973870FLE	1	4	08/01/2012	5	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/20/2013	006494099FLE	1	1	06/20/2013	175	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	12/01/2014	008234916FLE	2	2	12/01/2014	80	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	04/27/2015	008226997FLE	1	1	04/27/2015	100	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	08/31/2015	008917014FLE	2	2	08/31/2015	200	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	04/05/2017	010384167FLE	2	1	04/05/2017	93	lbs	1.00
TOTAL QUANTITY (Kg/Tons): 380.90 / 0.42									

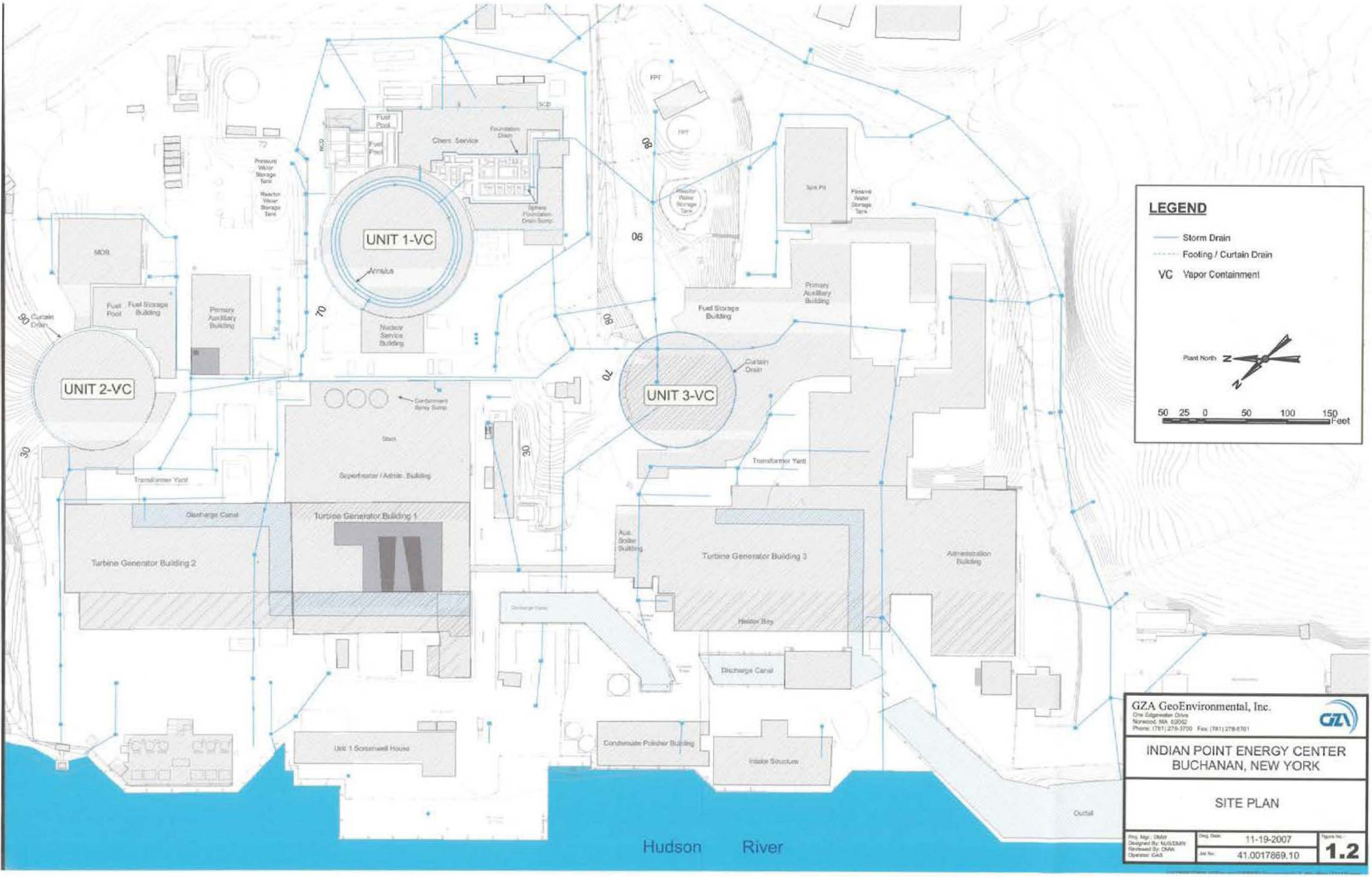
TSDF ID	TSDF NAME	GEN / OFFEROR SIGN DATE	MANIFEST NO.	PAGE #	LINE #	TSDF / RECEIVER RECEIVED DATE	TOTAL QTY	UNIT WT / VOL	SPECIFIC GRAVITY
WASTE CODE: D009 Mercury									
ARD069748192	CLEAN HARBORS	10/11/2007	000985347FLE	2	2	11/02/2007	1	lbs	1.00
ARD069748192	CLEAN HARBORS	10/11/2007	000985347FLE	2	6	11/02/2007	2	lbs	1.00
CTD000604488	CLEAN HARBORS OF CONNECTICUT INC	01/08/2010	002996026FLE	1	1	01/08/2010	200	lbs	1.00
NCD000648451	CLEAN HARBORS	05/06/2008	000390677FLE	1	4	05/15/2008	4	lbs	1.00
NCD000648451	CLEAN HARBORS	05/06/2008	000390677FLE	2	5	05/15/2008	12	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	08/01/2012	004973870FLE	1	3	08/01/2012	3	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	08/01/2012	004973870FLE	1	4	08/01/2012	5	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/05/2014	007681390FLE	2	2	06/06/2014	7	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	08/18/2014	007680909FLE	2	2	08/18/2014	1	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	04/05/2017	010384167FLE	2	3	04/05/2017	82	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	10/30/2017	010421804FLE	1	1	10/30/2017	2	lbs	1.00
TOTAL QUANTITY (Kg/Tons): 144.98 / 0.16									
WASTE CODE: D010 Selenium									
ARD069748192	CLEAN HARBORS	10/11/2007	000985347FLE	2	5	11/02/2007	60	lbs	1.00
NCD000648451	CLEAN HARBORS	05/06/2008	000390677FLE	1	1	05/15/2008	3	lbs	1.00
TOTAL QUANTITY (Kg/Tons): 28.63 / 0.03									
WASTE CODE: D011 Silver									
ARD069748192	CLEAN HARBORS	10/11/2007	000985347FLE	2	1	11/02/2007	9	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	08/01/2012	004973870FLE	2	1	08/01/2012	10	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	08/01/2012	004973870FLE	2	2	08/01/2012	20	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/05/2014	007681390FLE	2	5	06/06/2014	15	lbs	1.00
TOTAL QUANTITY (Kg/Tons): 24.55 / 0.03									
WASTE CODE: D018 Benzene									
RID040098352	NORTHLAND ENVIRONMENTAL INC	10/13/2016	009424324FLE	2	5	10/13/2016	80	lbs	1.00
TOTAL QUANTITY (Kg/Tons): 36.36 / 0.04									

TSDF ID	TSDF NAME	GEN / OFFEROR SIGN DATE	MANIFEST NO.	PAGE #	LINE #	TSDF / RECEIVER RECEIVED DATE	TOTAL QTY	UNIT WT / VOL	SPECIFIC GRAVITY
WASTE CODE: F001	**The following spent halogenated solvents used in degreasing: tetrachloroethylen...**								
OHD000816629	SPRING GROVE RESOURCE RECOVERY INC	08/24/2010	003032853FLE	1	1	09/08/2010	100	lbs	1.00
TOTAL QUANTITY (Kg/Tons):	**45.45 / 0.05**								
WASTE CODE: F003	**The following spent non-halogenated solvents: xylene, acetone, ethyl acetate, e...**								
ARD069748192	CLEAN HARBORS	04/29/2010	003100024FLE	1	2	05/15/2010	200	lbs	1.00
NCD000648451	CLEAN HARBORS	05/06/2008	000390677FLE	2	2	05/15/2008	79	lbs	1.00
NCD000648451	CLEAN HARBORS	05/06/2008	000390677FLE	2	3	05/15/2008	287	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	01/15/2014	006941422FLE	1	4	01/15/2014	80	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/05/2014	007681390FLE	2	6	06/06/2014	60	lbs	1.00
TOTAL QUANTITY (Kg/Tons):	**320.90 / 0.35**								
WASTE CODE: F005	**The following spent non-halogenated solvents: toluene, methyl ethyl ketone, car...**								
ARD069748192	CLEAN HARBORS	04/29/2010	003100024FLE	1	2	05/15/2010	200	lbs	1.00
NCD000648451	CLEAN HARBORS	05/06/2008	000390677FLE	2	3	05/15/2008	287	lbs	1.00
OHD000816629	SPRING GROVE RESOURCE RECOVERY INC	08/24/2010	003032853FLE	1	1	09/08/2010	100	lbs	1.00
TOTAL QUANTITY (Kg/Tons):	**266.81 / 0.29**								
WASTE CODE: U002	**2-Propanone (I)**								
ARD069748192	CLEAN HARBORS	04/29/2010	003100024FLE	1	1	05/15/2010	200	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/05/2014	007681390FLE	2	6	06/06/2014	60	lbs	1.00
TOTAL QUANTITY (Kg/Tons):	**118.18 / 0.13**								
WASTE CODE: U003	**Acetonitrile (I,T)**								
RID040098352	NORTHLAND ENVIRONMENTAL INC	08/01/2012	004973870FLE	2	3	08/01/2012	50	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/05/2014	007681390FLE	2	6	06/06/2014	60	lbs	1.00
TOTAL QUANTITY (Kg/Tons):	**50.00 / 0.06**								

TSDF ID	TSDF NAME	GEN / OFFEROR SIGN DATE	MANIFEST NO.	PAGE #	LINE #	TSDF / RECEIVER RECEIVED DATE	TOTAL QTY	UNIT WT / VOL	SPECIFIC GRAVITY
WASTE CODE:	**U056**	**Benzene, hexahydro- (I)**							
ARD069748192	CLEAN HARBORS	04/29/2010	003100024FLE	1	1	05/15/2010	200	lbs	1.00
TOTAL QUANTITY (Kg/Tons):		**90.91 / 0.10**							
WASTE CODE:	**U117**	**Ethane, 1,1'-oxybis-(I)**							
RID040098352	NORTHLAND ENVIRONMENTAL INC	10/22/2012	004977858FLE	1	4	10/22/2012	10	lbs	1.00
TOTAL QUANTITY (Kg/Tons):		**4.55 / 0.01**							
WASTE CODE:	**U154**	**Methanol (I)**							
ARD069748192	CLEAN HARBORS	04/29/2010	003100024FLE	1	1	05/15/2010	200	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	08/01/2012	004973870FLE	2	3	08/01/2012	50	lbs	1.00
TOTAL QUANTITY (Kg/Tons):		**113.64 / 0.12**							
WASTE CODE:	**U220**	**Benzene, methyl-**							
ARD069748192	CLEAN HARBORS	04/29/2010	003100024FLE	1	1	05/15/2010	200	lbs	1.00
TOTAL QUANTITY (Kg/Tons):		**90.91 / 0.10**							

Exhibit E

Indian Point Site Plan, November 19, 2007



GZA GeoEnvironmental, Inc.
One Edgewater Drive
Norwood, MA 02062
Phone: (781) 278-3700 Fax: (781) 278-5701

INDIAN POINT ENERGY CENTER
BUCHANAN, NEW YORK

SITE PLAN

Proj. Mgr.: DMW Designed By: NJS/EMW Reviewed By: DMW Operator: GAS	Dwg. Date: 11-19-2007 Job No: 41.0017869.10	Figure No.: 1.2

Exhibit F

Letter from Fred Dacimo, Vice President Entergy Corporation,
to Edwin E. Dassatti, October 20, 2005

Entergy

Entergy Nuclear Northeast
Entergy Nuclear Operations, Inc
Indian Point 2 NPP
450 Broadway, Suite 1
Buchanan, NY 10511
Tel. (914) 736-8000

October 20, 2005
IPEC-ADM-05-135

Edwin Dassatti
Director, Bureau of Hazardous Waste & Radiation Management
New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233-3506

RE: HSWA Permit NYD991304411

Mr. Dassatti:

This letter is being sent as formal notification to the NYSDEC that the Entergy Nuclear Northeast - Indian Point 2 facility qualifies for the low-level mixed waste (LLMW) storage and treatment conditional exemption as per 6 NYCRR 374-1.9(b). Because of this, Indian Point 2 will be taking the conditional exemption from 371.1(d) as provided in 374-1.9.

This letter certifies that:

- The LLMW waste is stored in tanks or containers in compliance with the requirements of our license that apply to the proper storage of low-level radioactive waste (not including those license requirements that relate solely to record keeping);
- The LLMW is stored in tanks or containers in compliance with chemical compatibility requirements of a tank or container in 6 NYCRR 373-2.9(h), 373-2.10(j), 373-3.9(g), or 373-3.10(j);;
- Facility personnel who manage stored conditionally exempt LLMW are trained in a manner that ensures that the conditionally exempt waste is safely managed and includes training in chemical waste management and hazardous materials incidents response that meets the personnel training standards found in 6 NYCRR 373-3.2(g)(1)(iii);
- An inventory will be conducted on the stored conditionally exempt LLMW at least annually and inspected at least quarterly; and
- An accurate emergency plan will be maintained and provided to all local authorities that may have to respond to a fire, explosion, or release of hazardous waste or hazardous constituents. The plan describes emergency response arrangements with local authorities; describes evacuation plans; list the names, addresses, and telephone numbers of all facility personnel qualified to work with local authorities as emergency coordinators; and lists emergency equipment.

This requested exemption would be assumed to take effect when return receipts have been received from this certified letter.

The following information is included as required per 6 NYCRR 374-1.9(3)(i):

Name:	Entergy Nuclear Northeast Indian Point 2, LLC
Address:	450 Broadway Suite 1 P.O. Box 259 Buchanan, NY 10511
RCRA ID No.:	NYD991304411
NRC License No.:	DPR-5 (Unit 1); DPR-26 (Unit 2)
Waste Codes:	B0007 D001, D002, D007, D008, D009, D010 F001, F002, F003, F005
Storage Units:	Mixed Waste Storage Shed 1 Mixed Waste Storage Shed 2 Unit 1 Mixed Waste Storage Room Unit 1 Vapor Containment, 108' Storage Area Unit 1 Vapor Containment, 70' Storage Area Unit 1 Reactor Internals Storage Pit

As an authorized representative of Entergy Nuclear Northeast, I certify that the information in this notification is true, accurate, and complete.

By claiming this exemption, we believe that our Mixed Waste Storage Part 373 Permit is no longer needed and would like to initiate the process to cancel this permit.

Should you have any questions regarding this, please contact either Dara Gray (914) 736-8414 or Pat Donahue (914) 736-8405, of my staff

Sincerely,

Fred Dacimo
Site Vice President

Cc: Margaret Duke
Regional Permit Administrator
New York State Department of Environmental Conservation, Region 3
21 South Putt Corners Road
New Paltz, NY 12561-1696

Jane M. Kenny
Regional Administrator
United States of Environmental Protection Agency
Division of Environmental Planning and Protection
Region II
290 Broadway
New York, New York 10007-1866

Exhibit G

Hazardous Waste Manifest Records for Indian Point Unit 2,
January 1, 2007 through January 1, 2020

NEW YORK STATE OF OPPORTUNITY. Department of Environmental Conservation

GEN / OFFEROR, WASTE SHIPPED BY WASTE CODE

SEARCH **Generator starts with 'NYD991304411'. Date Shipped is between 01/01/2007 and 01/01/2020.**

DISCLAIMER: Waste may be double counted if it was manifested under more than one waste code. Do not add waste quantity totals.

GEN / OFFEROR ID: **NYD991304411**

NAME: ENTERGY NUCLEAR OPERATIONS

SITE ADDRESS: 450 BROADWAY, BUCHANAN, NY 10511

MAILING ADDRESS: BROADWAY & BLEAKY, BUCHANAN, NY 10511

TSDF ID	TSDF NAME	GEN / OFFEROR SIGN DATE	MANIFEST NO.	PAGE #	LINE #	TSDF / RECEIVER RECEIVED DATE	TOTAL QTY	UNIT WT / VOL	SPECIFIC GRAVITY
WASTE CODE: B001	**PCB Oil (concentrated) from transformers, capacitors, etc.**								
RID040098352	NORTHLAND ENVIRONMENTAL INC	10/22/2012	004971409FLE	2	2	10/22/2012	55	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	09/30/2013	006944401FLE	2	4	09/30/2013	110	lbs	1.00
TOTAL QUANTITY (Kg/Tons):	**75.00 / 0.08**								
WASTE CODE: B004	**PCB Articles containing 50 ppm or greater of PCBs, but less than 500 ppm PCBs, ...**								
KSD981506025	CLEAN HARBORS004408971 (ARAGONITE)	07/28/2016	009517090FLE	1	1	08/03/2016	477	kg	1.00
NYD082785429	CHEMICAL POLLUTION CONTROL	10/26/2011	004995457FLE	2	4	10/28/2011	10	kg	1.00
OHD000816629	SPRING GROVE RESOURCE RECOVERY INC	06/01/2011	003884351FLE	1	2	06/14/2011	80	kg	1.00
OHD986975399	EMERALD TRANSFORMER PPM LLC	11/10/2009	002626143FLE	1	1	11/23/2009	137	kg	1.00
OHD986975399	EMERALD TRANSFORMER PPM LLC	12/31/2012	004848943FLE	1	1	01/03/2013	1,193	kg	1.00
PAD085690592	REPUBLIC ENVIRONMENTAL/STERICYCLE	03/13/2012	005155464FLE	1	1	03/25/2012	5	kg	1.00
TOTAL QUANTITY (Kg/Tons):	**1,902.01 / 2.09**								

TSDF ID	TSDF NAME	GEN / OFFEROR SIGN DATE	MANIFEST NO.	PAGE #	LINE #	TSDF / RECEIVER RECEIVED DATE	TOTAL QTY	UNIT WT / VOL	SPECIFIC GRAVITY
WASTE CODE: B005	**PCB Articles, other than transformers, that contain 500 ppm or greater of PCBs,...**								
ARD069748192	CLEAN HARBORS	10/11/2007	000985349FLE	2	6	11/02/2007	440	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	08/01/2012	004975275FLE	2	1	08/01/2012	200	lbs	1.00
TOTAL QUANTITY (Kg/Tons):	**290.91 / 0.32**								
WASTE CODE: D001	**Ignitable**								
ARD069748192	CLEAN HARBORS	10/11/2007	000985349FLE	1	1	11/02/2007	50	lbs	1.00
ARD069748192	CLEAN HARBORS	10/11/2007	000985349FLE	1	2	11/02/2007	220	lbs	1.00
ARD069748192	CLEAN HARBORS	10/11/2007	000985349FLE	1	3	11/02/2007	300	lbs	1.00
ARD069748192	CLEAN HARBORS	10/11/2007	000985349FLE	2	1	11/02/2007	4	lbs	1.00
ARD069748192	CLEAN HARBORS	12/29/2008	002314499FLE	1	1	01/03/2009	2,000	lbs	1.00
ARD069748192	CLEAN HARBORS	12/29/2008	002314499FLE	1	2	01/03/2009	500	lbs	1.00
ARD069748192	CLEAN HARBORS	12/29/2008	002314499FLE	1	3	01/03/2009	500	lbs	1.00
ARD069748192	CLEAN HARBORS	12/29/2008	002314499FLE	2	2	01/03/2009	130	lbs	1.00
ARD069748192	CLEAN HARBORS	08/25/2009	002666125FLE	1	1	09/02/2009	800	lbs	1.00
ARD069748192	CLEAN HARBORS	08/25/2009	002666125FLE	1	2	09/02/2009	800	lbs	1.00
ARD069748192	CLEAN HARBORS	09/03/2009	002666249FLE	1	1	09/19/2009	400	lbs	1.00
ARD069748192	CLEAN HARBORS	09/03/2009	002670243FLE	1	1	09/19/2009	15	lbs	1.00
ARD069748192	CLEAN HARBORS	09/03/2009	002670243FLE	1	2	09/19/2009	150	lbs	1.00
ARD069748192	CLEAN HARBORS	09/03/2009	002670243FLE	1	3	09/19/2009	200	lbs	1.00
ARD069748192	CLEAN HARBORS	09/22/2009	002626082FLE	1	1	10/05/2009	150	lbs	1.00
ARD069748192	CLEAN HARBORS	09/22/2009	002626082FLE	1	2	10/05/2009	1,600	lbs	1.00
ARD069748192	CLEAN HARBORS	09/22/2009	002626082FLE	1	3	10/05/2009	4,800	lbs	1.00
ARD069748192	CLEAN HARBORS	09/22/2009	002626082FLE	2	1	10/05/2009	120	lbs	1.00
ARD069748192	CLEAN HARBORS	09/28/2009	002626086FLE	1	1	10/08/2009	60	lbs	1.00
ARD069748192	CLEAN HARBORS	09/28/2009	002626086FLE	1	2	10/08/2009	5	lbs	1.00
ARD069748192	CLEAN HARBORS	09/28/2009	002626086FLE	1	3	10/08/2009	5	lbs	1.00
ARD069748192	CLEAN HARBORS	09/28/2009	002626086FLE	1	4	10/08/2009	1,050	lbs	1.00
ARD069748192	CLEAN HARBORS	09/28/2009	002626086FLE	2	1	10/08/2009	20	lbs	1.00
ARD069748192	CLEAN HARBORS	09/28/2009	002626086FLE	2	2	10/08/2009	10	lbs	1.00
ARD069748192	CLEAN HARBORS	09/28/2009	002626087FLE	1	1	10/04/2009	4,000	lbs	1.00
ARD069748192	CLEAN HARBORS	09/28/2009	002626087FLE	1	2	10/04/2009	1,600	lbs	1.00
ARD069748192	CLEAN HARBORS	09/28/2009	002626087FLE	1	3	10/04/2009	400	lbs	1.00

TSDF ID	TSDF NAME	GEN / OFFEROR SIGN DATE	MANIFEST NO.	PAGE #	LINE #	TSDF / RECEIVER RECEIVED DATE	TOTAL QTY	UNIT WT / VOL	SPECIFIC GRAVITY
WASTE CODE: D001 Ignitable									
ARD069748192	CLEAN HARBORS	10/01/2009	002626092FLE	1	1	10/08/2009	300	lbs	1.00
ARD069748192	CLEAN HARBORS	10/01/2009	002626092FLE	1	2	10/08/2009	6,400	lbs	1.00
ARD069748192	CLEAN HARBORS	10/01/2009	002626092FLE	1	3	10/08/2009	800	lbs	1.00
ARD069748192	CLEAN HARBORS	10/01/2009	002626092FLE	2	2	10/08/2009	15	lbs	1.00
ARD069748192	CLEAN HARBORS	10/05/2009	002626094FLE	1	1	10/18/2009	250	lbs	1.00
ARD069748192	CLEAN HARBORS	10/05/2009	002626094FLE	1	2	10/18/2009	10	lbs	1.00
ARD069748192	CLEAN HARBORS	10/05/2009	002626094FLE	1	3	10/18/2009	1,600	lbs	1.00
ARD069748192	CLEAN HARBORS	10/05/2009	002626094FLE	2	1	10/18/2009	40	lbs	1.00
ARD069748192	CLEAN HARBORS	06/01/2011	003884350FLE	1	1	06/11/2011	65	lbs	1.00
ARD069748192	CLEAN HARBORS	06/01/2011	003884350FLE	1	2	06/11/2011	900	lbs	1.00
NYD082785429	CHEMICAL POLLUTION CONTROL	11/13/2010	005109554JJK	1	1	11/17/2010	50	gal	1.00
NYD082785429	CHEMICAL POLLUTION CONTROL	07/28/2011	004993222FLE	1	1	08/01/2011	450	lbs	1.00
NYD082785429	CHEMICAL POLLUTION CONTROL	07/28/2011	004993222FLE	1	2	08/01/2011	2,700	lbs	1.00
NYD082785429	CHEMICAL POLLUTION CONTROL	07/28/2011	004993222FLE	1	3	08/01/2011	200	lbs	1.00
NYD082785429	CHEMICAL POLLUTION CONTROL	07/28/2011	004993222FLE	2	3	08/01/2011	80	lbs	1.00
NYD082785429	CHEMICAL POLLUTION CONTROL	07/28/2011	004993222FLE	2	5	08/01/2011	150	lbs	1.00
NYD082785429	CHEMICAL POLLUTION CONTROL	08/25/2011	004993773FLE	2	1	08/29/2011	200	lbs	1.00
NYD082785429	CHEMICAL POLLUTION CONTROL	10/26/2011	004995457FLE	2	1	10/28/2011	2,100	lbs	1.00
NYD082785429	CHEMICAL POLLUTION CONTROL	10/26/2011	004995457FLE	2	5	10/28/2011	10	lbs	1.00
NYD082785429	CHEMICAL POLLUTION CONTROL	10/26/2011	004995457FLE	3	1	10/28/2011	400	lbs	1.00
NYD082785429	CHEMICAL POLLUTION CONTROL	10/26/2011	004995457FLE	3	2	10/28/2011	100	lbs	1.00
NYD082785429	CHEMICAL POLLUTION CONTROL	10/26/2011	004995457FLE	3	3	10/28/2011	50	lbs	1.00
PAD085690592	REPUBLIC ENVIRONMENTAL/STERICYCLE	07/21/2010	000891269FLE	1	1	07/21/2010	200	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	03/13/2012	005155463FLE	2	1	03/16/2012	25	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	03/13/2012	005155463FLE	2	2	03/16/2012	600	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	03/13/2012	005155463FLE	2	4	03/16/2012	80	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	03/13/2012	005155463FLE	3	1	03/16/2012	150	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	03/13/2012	005155463FLE	3	2	03/16/2012	40	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	05/03/2012	005154727FLE	1	1	05/07/2012	200	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	05/03/2012	005154727FLE	1	2	05/07/2012	40	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	05/03/2012	005154727FLE	2	2	05/07/2012	1,600	lbs	1.00

TSDF ID	TSDF NAME	GEN / OFFEROR SIGN DATE	MANIFEST NO.	PAGE #	LINE #	TSDF / RECEIVER RECEIVED DATE	TOTAL QTY	UNIT WT / VOL	SPECIFIC GRAVITY
WASTE CODE:	**D001 Ignitable**								
RID040098352	NORTHLAND ENVIRONMENTAL INC	05/03/2012	005154727FLE	2	3	05/07/2012	2	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	05/03/2012	005154727FLE	2	4	05/07/2012	20	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	05/04/2012	004976220FLE	1	1	05/07/2012	1,200	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	08/01/2012	004975275FLE	1	1	08/01/2012	45	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	08/01/2012	004975275FLE	2	3	08/01/2012	30	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	10/22/2012	004971409FLE	1	1	10/22/2012	2,000	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	10/22/2012	004971409FLE	1	2	10/22/2012	5	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	10/22/2012	004971410FLE	2	1	10/23/2012	500	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	10/22/2012	004971410FLE	2	4	10/23/2012	20	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	12/19/2012	004995799FLE	1	1	12/27/2012	1,200	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	12/19/2012	004995799FLE	2	1	12/27/2012	80	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	02/27/2013	006495428FLE	1	1	02/27/2013	600	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	02/27/2013	006495428FLE	2	1	02/27/2013	160	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/18/2013	006493505FLE	1	1	06/18/2013	1,600	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/18/2013	006493505FLE	3	1	06/18/2013	80	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/18/2013	006493505FLE	3	4	06/18/2013	15	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	09/30/2013	006944401FLE	2	1	09/30/2013	7	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	09/30/2013	006944401FLE	2	2	09/30/2013	16	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	09/30/2013	006944401FLE	2	3	09/30/2013	120	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	01/15/2014	006941327FLE	2	1	01/15/2014	385	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	01/15/2014	006941327FLE	2	2	01/15/2014	40	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	01/15/2014	006941327FLE	2	3	01/15/2014	5	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	03/13/2014	006497148FLE	2	2	03/13/2014	110	gal	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	03/13/2014	006497148FLE	2	3	03/13/2014	200	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	03/13/2014	006497148FLE	2	4	03/13/2014	20	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	03/13/2014	006497148FLE	2	5	03/13/2014	180	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	03/13/2014	006497148FLE	2	6	03/13/2014	30	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	03/13/2014	006497148FLE	2	7	03/13/2014	220	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/05/2014	006941424FLE	1	1	06/06/2014	35	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/05/2014	006941424FLE	1	2	06/06/2014	180	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	07/29/2014	007691973FLE	2	2	07/29/2014	15	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	07/29/2014	007691973FLE	2	4	07/29/2014	150	lbs	1.00

TSDF ID	TSDF NAME	GEN / OFFEROR SIGN DATE	MANIFEST NO.	PAGE #	LINE #	TSDF / RECEIVER RECEIVED DATE	TOTAL QTY	UNIT WT / VOL	SPECIFIC GRAVITY
WASTE CODE:	**D001 Ignitable**								
RID040098352	NORTHLAND ENVIRONMENTAL INC	07/29/2014	007691973FLE	2	5	07/29/2014	40	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	07/29/2014	007691973FLE	2	6	07/29/2014	50	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	03/13/2015	008245247FLE	2	1	03/13/2015	950	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	03/13/2015	008245247FLE	2	4	03/13/2015	75	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	04/27/2015	008226996FLE	2	1	04/27/2015	20	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	04/27/2015	008226996FLE	2	2	04/27/2015	130	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	05/28/2015	008222070FLE	1	1	05/28/2015	2	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	05/28/2015	008222070FLE	2	1	05/28/2015	80	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	08/31/2015	008917013FLE	2	1	08/31/2015	400	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	08/31/2015	008917013FLE	2	2	08/31/2015	160	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	08/31/2015	008917013FLE	2	4	08/31/2015	6	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	09/09/2015	008917168FLE	2	1	09/09/2015	600	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	09/09/2015	008917168FLE	2	2	09/09/2015	150	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	10/21/2015	008917890FLE	2	1	10/21/2015	350	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	10/21/2015	008917890FLE	2	2	10/21/2015	110	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	10/21/2015	008917890FLE	2	3	10/21/2015	20	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	10/21/2015	008917890FLE	2	5	10/21/2015	15	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	01/13/2016	007891229FLE	2	2	01/13/2016	5	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	01/13/2016	007891229FLE	2	3	01/13/2016	450	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/13/2016	009443760FLE	2	1	06/13/2016	10	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/13/2016	009443760FLE	2	2	06/13/2016	1	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/13/2016	009443760FLE	3	1	06/13/2016	45	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/13/2016	009443760FLE	3	4	06/13/2016	110	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/13/2016	009443760FLE	3	5	06/13/2016	350	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	07/27/2016	009411633FLE	2	1	07/27/2016	20	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	09/21/2016	009417755FLE	2	1	09/21/2016	30	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	09/21/2016	009417755FLE	2	2	09/21/2016	5	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	09/21/2016	009417755FLE	3	1	09/21/2016	500	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	09/21/2016	009417755FLE	3	2	09/21/2016	3	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	02/27/2017	009781981FLE	2	1	02/28/2017	120	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	04/05/2017	010384168FLE	2	1	04/05/2017	24	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	04/05/2017	010384168FLE	2	3	04/05/2017	265	lbs	1.00

TSDF ID	TSDF NAME	GEN / OFFEROR SIGN DATE	MANIFEST NO.	PAGE #	LINE #	TSDF / RECEIVER RECEIVED DATE	TOTAL QTY	UNIT WT / VOL	SPECIFIC GRAVITY
WASTE CODE: D001 Ignitable									
RID040098352	NORTHLAND ENVIRONMENTAL INC	08/29/2017	010409820FLE	1	2	08/31/2017	5	gal	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	08/29/2017	010409820FLE	1	3	08/31/2017	5	gal	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	09/11/2017	010386483FLE	2	1	09/11/2017	90	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	09/11/2017	010386483FLE	2	5	09/11/2017	20	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	09/11/2017	010386483FLE	2	6	09/11/2017	15	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	12/13/2017	010957555FLE	1	1	12/13/2017	550	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	12/13/2017	010957555FLE	1	2	12/13/2017	10	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	12/13/2017	010957555FLE	2	1	12/13/2017	120	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	12/13/2017	010957555FLE	2	2	12/13/2017	35	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	02/12/2018	010959240FLE	2	1	02/12/2018	2	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/06/2018	011507056FLE	2	1	06/06/2018	45	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/06/2018	011507056FLE	2	2	06/06/2018	2	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/06/2018	011507056FLE	2	5	06/06/2018	15	lbs	1.00
TXD982290140	CLEAN HARBORS	09/28/2009	002626088FLE	1	1	10/16/2009	34	lbs	1.00
TXD982290140	CLEAN HARBORS	09/28/2009	002626088FLE	1	2	10/16/2009	6	lbs	1.00
TXD982290140	CLEAN HARBORS	09/28/2009	002626088FLE	2	1	10/16/2009	1	lbs	1.00
TXD982290140	CLEAN HARBORS	07/27/2010	003032520FLE	1	1	08/12/2010	95	lbs	1.00
TOTAL QUANTITY (Kg/Tons): 25,617.19 / 28.18									
WASTE CODE: D002 Corrosive									
ARD069748192	CLEAN HARBORS	10/11/2007	000985349FLE	2	3	11/02/2007	90	lbs	1.00
ARD069748192	CLEAN HARBORS	10/11/2007	000985349FLE	2	5	11/02/2007	35	lbs	1.00
ARD069748192	CLEAN HARBORS	12/29/2008	002314499FLE	1	4	01/03/2009	90	lbs	1.00
ARD069748192	CLEAN HARBORS	12/29/2008	002314499FLE	2	1	01/03/2009	20	lbs	1.00
ARD069748192	CLEAN HARBORS	09/22/2009	002626082FLE	1	4	10/05/2009	150	lbs	1.00
ARD069748192	CLEAN HARBORS	09/28/2009	002626086FLE	2	3	10/08/2009	100	lbs	1.00
ARD069748192	CLEAN HARBORS	09/28/2009	002626086FLE	2	4	10/08/2009	10	lbs	1.00
ARD069748192	CLEAN HARBORS	09/28/2009	002626086FLE	2	5	10/08/2009	75	lbs	1.00
ARD069748192	CLEAN HARBORS	09/28/2009	002626086FLE	2	6	10/08/2009	50	lbs	1.00
ARD069748192	CLEAN HARBORS	09/28/2009	002626086FLE	2	8	10/08/2009	5	lbs	1.00
ARD069748192	CLEAN HARBORS	09/28/2009	002626087FLE	1	4	10/04/2009	800	lbs	1.00
ARD069748192	CLEAN HARBORS	10/01/2009	002626092FLE	2	1	10/08/2009	100	lbs	1.00

TSDF ID	TSDF NAME	GEN / OFFEROR SIGN DATE	MANIFEST NO.	PAGE #	LINE #	TSDF / RECEIVER RECEIVED DATE	TOTAL QTY	UNIT WT / VOL	SPECIFIC GRAVITY
WASTE CODE: D002 Corrosive									
ARD069748192	CLEAN HARBORS	10/05/2009	002626094FLE	1	4	10/18/2009	100	lbs	1.00
ARD069748192	CLEAN HARBORS	06/01/2011	003884350FLE	1	3	06/11/2011	25	lbs	1.00
MDD980555189	CLEAN HARBORS OF BALTIMORE INC	01/26/2010	002952806FLE	1	1	02/16/2010	10	lbs	1.00
NYD082785429	CHEMICAL POLLUTION CONTROL	07/28/2011	004993222FLE	1	1	08/01/2011	450	lbs	1.00
NYD082785429	CHEMICAL POLLUTION CONTROL	07/28/2011	004993222FLE	2	1	08/01/2011	300	lbs	1.00
NYD082785429	CHEMICAL POLLUTION CONTROL	07/28/2011	004993222FLE	2	2	08/01/2011	175	lbs	1.00
NYD082785429	CHEMICAL POLLUTION CONTROL	08/25/2011	004993773FLE	2	2	08/29/2011	30	lbs	1.00
NYD082785429	CHEMICAL POLLUTION CONTROL	08/25/2011	004993773FLE	2	3	08/29/2011	500	lbs	1.00
NYD082785429	CHEMICAL POLLUTION CONTROL	10/26/2011	004995457FLE	2	2	10/28/2011	20	lbs	1.00
NYD082785429	CHEMICAL POLLUTION CONTROL	10/26/2011	004995457FLE	2	3	10/28/2011	140	lbs	1.00
OHD000724153	CLEAN HARBORS ENVIRONMENTAL SERVICES INC	01/08/2010	002952806FLE	1	1	01/21/2010	-10	lbs	1.00
OHD000724153	CLEAN HARBORS ENVIRONMENTAL SERVICES INC	01/08/2010	002996025FLE	1	1	01/21/2010	10	lbs	1.00
OHD000816629	SPRING GROVE RESOURCE RECOVERY INC	03/18/2011	003080743FLE	1	1	03/31/2011	50	lbs	1.00
PAD085690592	REPUBLIC ENVIRONMENTAL/STERICYCLE	07/21/2010	000891269FLE	1	2	07/21/2010	5	gal	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	03/13/2012	005155463FLE	2	3	03/16/2012	8	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	03/13/2012	005155463FLE	3	2	03/16/2012	40	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	05/03/2012	005154727FLE	2	1	05/07/2012	400	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	05/03/2012	005154727FLE	2	3	05/07/2012	2	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	05/04/2012	004976220FLE	1	1	05/07/2012	1,200	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	10/22/2012	004971410FLE	2	2	10/23/2012	25	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	10/22/2012	004971410FLE	2	3	10/23/2012	15	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	02/27/2013	006495428FLE	2	2	02/27/2013	40	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/18/2013	006493505FLE	3	2	06/18/2013	1	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/18/2013	006493505FLE	3	3	06/18/2013	75	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	03/13/2014	006497148FLE	1	1	03/13/2014	650	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	03/13/2014	006497148FLE	2	4	03/13/2014	20	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	03/13/2014	006497148FLE	2	8	03/13/2014	60	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	07/29/2014	007691973FLE	2	1	07/29/2014	20	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	07/29/2014	007691973FLE	2	3	07/29/2014	20	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	03/13/2015	008245247FLE	2	2	03/13/2015	20	lbs	1.00

TSDF ID	TSDF NAME	GEN / OFFEROR SIGN DATE	MANIFEST NO.	PAGE #	LINE #	TSDF / RECEIVER RECEIVED DATE	TOTAL QTY	UNIT WT / VOL	SPECIFIC GRAVITY
WASTE CODE: D002 Corrosive									
RID040098352	NORTHLAND ENVIRONMENTAL INC	03/13/2015	008245247FLE	2	3	03/13/2015	10	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	03/13/2015	008245247FLE	2	5	03/13/2015	3	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	04/27/2015	008226996FLE	2	3	04/27/2015	10	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	08/31/2015	008917013FLE	2	3	08/31/2015	85	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	10/21/2015	008917890FLE	2	3	10/21/2015	20	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	10/21/2015	008917890FLE	2	4	10/21/2015	2	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	10/21/2015	008917890FLE	3	1	10/21/2015	45	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	01/13/2016	007891229FLE	2	1	01/13/2016	75	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/13/2016	009443760FLE	3	1	06/13/2016	45	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/13/2016	009443760FLE	3	3	06/13/2016	30	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	09/21/2016	009417755FLE	2	3	09/21/2016	25	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	04/05/2017	010384168FLE	2	4	04/05/2017	75	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	09/11/2017	010386483FLE	2	2	09/11/2017	7	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	09/11/2017	010386483FLE	2	3	09/11/2017	10	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	09/11/2017	010386483FLE	2	6	09/11/2017	15	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	12/13/2017	010957555FLE	2	2	12/13/2017	35	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/06/2018	011507056FLE	2	1	06/06/2018	45	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/06/2018	011507056FLE	2	2	06/06/2018	2	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/06/2018	011507056FLE	2	3	06/06/2018	10	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/06/2018	011507056FLE	2	4	06/06/2018	5	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/06/2018	011507056FLE	2	6	06/06/2018	20	lbs	1.00
TOTAL QUANTITY (Kg/Tons): 2,971.26 / 3.27									
WASTE CODE: D005 Barium									
ARD069748192	CLEAN HARBORS	06/13/2007	000905872FLE	1	1	07/17/2007	100	lbs	1.00
TOTAL QUANTITY (Kg/Tons): 45.45 / 0.05									

TSDF ID	TSDF NAME	GEN / OFFEROR SIGN DATE	MANIFEST NO.	PAGE #	LINE #	TSDF / RECEIVER RECEIVED DATE	TOTAL QTY	UNIT WT / VOL	SPECIFIC GRAVITY
WASTE CODE: D006 Cadmium									
ARD069748192	CLEAN HARBORS	09/03/2009	002670243FLE	2	1	09/19/2009	400	lbs	1.00
UTD982598898	ENVIROCARE OF UTAH CLIVE DISPOSAL SITE	07/09/2015	009926453JJK	1	1	07/13/2015	205	lbs	1.00
TOTAL QUANTITY (Kg/Tons): 275.00 / 0.30									
WASTE CODE: D007 Chromium									
ARD069748192	CLEAN HARBORS	10/11/2007	000985349FLE	2	1	11/02/2007	4	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/06/2018	011507056FLE	2	5	06/06/2018	15	lbs	1.00
TOTAL QUANTITY (Kg/Tons): 8.64 / 0.01									
WASTE CODE: D008 Lead									
ARD069748192	CLEAN HARBORS	06/13/2007	000905872FLE	1	1	07/17/2007	100	lbs	1.00
ARD069748192	CLEAN HARBORS	10/11/2007	000985349FLE	2	6	11/02/2007	440	lbs	1.00
ARD069748192	CLEAN HARBORS	09/03/2009	002670243FLE	1	4	09/19/2009	60	lbs	1.00
ARD069748192	CLEAN HARBORS	09/28/2009	002626086FLE	2	2	10/08/2009	10	lbs	1.00
ARD069748192	CLEAN HARBORS	04/02/2010	003060664FLE	1	1	04/25/2010	143	lbs	1.00
ARD069748192	CLEAN HARBORS	04/02/2010	003060664FLE	1	2	04/25/2010	909	lbs	1.00
ARD069748192	CLEAN HARBORS	08/24/2010	003032851FLE	1	1	09/09/2010	170	lbs	1.00
CTD000604488	CLEAN HARBORS OF CONNECTICUT INC	11/10/2009	002626144FLE	1	1	11/11/2009	2,860	lbs	1.00
NCD000648451	CLEAN HARBORS	05/06/2008	000390676FLE	1	1	05/15/2008	5,689	lbs	1.00
NCD000648451	CLEAN HARBORS	05/06/2008	000390676FLE	1	2	05/15/2008	329	lbs	1.00
NYD082785429	CHEMICAL POLLUTION CONTROL	10/26/2011	004995457FLE	3	4	10/28/2011	100	lbs	1.00
OHD000816629	SPRING GROVE RESOURCE RECOVERY INC	12/12/2008	002314498FLE	1	1	01/13/2009	250	lbs	1.00
OHD000816629	SPRING GROVE RESOURCE RECOVERY INC	03/18/2011	003080695FLE	1	1	03/31/2011	200	lbs	1.00
OHD000816629	SPRING GROVE RESOURCE RECOVERY INC	03/18/2011	003080743FLE	1	1	03/31/2011	50	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	08/01/2012	004975275FLE	2	2	08/01/2012	85	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	10/22/2012	004971409FLE	2	1	10/22/2012	15	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	03/13/2014	006497148FLE	2	1	03/13/2014	45	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/05/2014	006941423FLE	1	1	06/06/2014	60	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	08/18/2014	007680908FLE	2	1	08/18/2014	200	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	07/27/2016	009411633FLE	3	1	07/27/2016	200	lbs	1.00

TSDF ID	TSDF NAME	GEN / OFFEROR SIGN DATE	MANIFEST NO.	PAGE #	LINE #	TSDF / RECEIVER RECEIVED DATE	TOTAL QTY	UNIT WT / VOL	SPECIFIC GRAVITY
WASTE CODE: D008 Lead									
RID040098352	NORTHLAND ENVIRONMENTAL INC	04/05/2017	008917129FLE	1	1	04/05/2017	150	lbs	1.00
UTD982598898	ENVIROCARE OF UTAH CLIVE DISPOSAL SITE	08/24/2007	002226794JJK	1	1	08/28/2007	281	kg	1.00
UTD982598898	ENVIROCARE OF UTAH CLIVE DISPOSAL SITE	05/14/2009	001837166JJK	1	1	05/18/2009	2	kg	1.00
UTD982598898	ENVIROCARE OF UTAH CLIVE DISPOSAL SITE	02/07/2013	009926090JJK	1	1	02/11/2013	980	kg	1.00
UTD982598898	ENVIROCARE OF UTAH CLIVE DISPOSAL SITE	02/11/2013	009926097JJK	1	1	02/19/2013	142	kg	1.00
UTD982598898	ENVIROCARE OF UTAH CLIVE DISPOSAL SITE	03/03/2016	009926552JJK	1	1	03/07/2016	11	kg	1.00
UTD982598898	ENVIROCARE OF UTAH CLIVE DISPOSAL SITE	06/20/2016	009926560JJK	1	1	06/24/2016	703	kg	1.00
UTD982598898	ENVIROCARE OF UTAH CLIVE DISPOSAL SITE	09/02/2016	009926575JJK	1	1	09/06/2016	1,027	kg	1.00
UTD982598898	ENVIROCARE OF UTAH CLIVE DISPOSAL SITE	02/13/2017	009926648JJK	1	1	02/17/2017	27	kg	1.00
UTD982598898	ENVIROCARE OF UTAH CLIVE DISPOSAL SITE	06/01/2017	009926675JJK	1	1	06/05/2017	928	kg	1.00
UTD982598898	ENVIROCARE OF UTAH CLIVE DISPOSAL SITE	08/17/2017	009926780JJK	1	1	08/22/2017	95	kg	1.00
UTD982598898	ENVIROCARE OF UTAH CLIVE DISPOSAL SITE	09/01/2017	009926801JJK	1	1	09/05/2017	178	kg	1.00
UTD982598898	ENVIROCARE OF UTAH CLIVE DISPOSAL SITE	10/12/2017	009926804JJK	1	1	10/17/2017	4	kg	1.00
UTD982598898	ENVIROCARE OF UTAH CLIVE DISPOSAL SITE	06/07/2018	009926887JJK	1	1	06/11/2018	1,370	lbs	1.00
UTD982598898	ENVIROCARE OF UTAH CLIVE DISPOSAL SITE	06/07/2018	009926887JJK	1	2	06/11/2018	255	lbs	1.00
TOTAL QUANTITY (Kg/Tons): 10,600.74 / 11.66									
WASTE CODE: D009 Mercury									
ARD069748192	CLEAN HARBORS	10/11/2007	000985349FLE	2	4	11/02/2007	16	lbs	1.00
ARD069748192	CLEAN HARBORS	09/28/2009	002626086FLE	2	7	10/08/2009	10	lbs	1.00
CTD000604488	CLEAN HARBORS OF CONNECTICUT INC	04/29/2010	003100022FLE	1	1	04/29/2010	200	lbs	1.00
MA5000004713	VEOLIA ES TECHNICAL SOLUTIONS	08/14/2007	000111397VES	1	1	08/24/2007	60	kg	1.00
NYD082785429	CHEMICAL POLLUTION CONTROL	07/28/2011	004993222FLE	2	4	08/01/2011	75	lbs	1.00
OHD000816629	SPRING GROVE RESOURCE RECOVERY INC	06/01/2011	003884351FLE	1	1	06/14/2011	80	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/20/2013	006493506FLE	2	1	06/21/2013	125	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/05/2014	006941423FLE	1	2	06/06/2014	5	lbs	1.00

TSDF ID	TSDF NAME	GEN / OFFEROR SIGN DATE	MANIFEST NO.	PAGE #	LINE #	TSDF / RECEIVER RECEIVED DATE	TOTAL QTY	UNIT WT / VOL	SPECIFIC GRAVITY
WASTE CODE:	**D009**	**Mercury**							
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/13/2016	009443760FLE	3	2	06/13/2016	5	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	04/05/2017	008917129FLE	1	2	04/05/2017	95	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	08/29/2017	010409820FLE	1	1	08/31/2017	2	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/06/2018	011507056FLE	2	2	06/06/2018	2	lbs	1.00
TOTAL QUANTITY (Kg/Tons):		**339.54 / 0.37**							
WASTE CODE:	**D010**	**Selenium**							
RID040098352	NORTHLAND ENVIRONMENTAL INC	03/13/2014	006497148FLE	1	1	03/13/2014	650	lbs	1.00
TOTAL QUANTITY (Kg/Tons):		**295.46 / 0.33**							
WASTE CODE:	**D011**	**Silver**							
ARD069748192	CLEAN HARBORS	09/28/2009	002626086FLE	2	2	10/08/2009	10	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	08/31/2015	008917013FLE	2	4	08/31/2015	6	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/06/2018	011507056FLE	2	5	06/06/2018	15	lbs	1.00
TOTAL QUANTITY (Kg/Tons):		**14.10 / 0.02**							
WASTE CODE:	**D022**	**Chloroform**							
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/06/2018	011507056FLE	2	1	06/06/2018	45	lbs	1.00
TOTAL QUANTITY (Kg/Tons):		**20.45 / 0.02**							
WASTE CODE:	**D035**	**Methyl ethyl ketone**							
ARD069748192	CLEAN HARBORS	12/29/2008	002314499FLE	1	2	01/03/2009	500	lbs	1.00
ARD069748192	CLEAN HARBORS	08/25/2009	002666125FLE	1	2	09/02/2009	800	lbs	1.00
ARD069748192	CLEAN HARBORS	09/22/2009	002626082FLE	1	2	10/05/2009	1,600	lbs	1.00
ARD069748192	CLEAN HARBORS	09/28/2009	002626087FLE	1	2	10/04/2009	1,600	lbs	1.00
ARD069748192	CLEAN HARBORS	09/28/2009	002626087FLE	1	3	10/04/2009	400	lbs	1.00
ARD069748192	CLEAN HARBORS	10/01/2009	002626092FLE	1	2	10/08/2009	6,400	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	03/13/2012	005155463FLE	3	1	03/16/2012	150	lbs	1.00
TOTAL QUANTITY (Kg/Tons):		**5,204.54 / 5.72**							

TSDF ID	TSDF NAME	GEN / OFFEROR SIGN DATE	MANIFEST NO.	PAGE #	LINE #	TSDF / RECEIVER RECEIVED DATE	TOTAL QTY	UNIT WT / VOL	SPECIFIC GRAVITY
WASTE CODE: D040	**Trichloroethylene**								
ARD069748192	CLEAN HARBORS	10/11/2007	000985349FLE	2	2	11/02/2007	15	lbs	1.00
ARD069748192	CLEAN HARBORS	04/02/2010	003060664FLE	1	1	04/25/2010	143	lbs	1.00
ARD069748192	CLEAN HARBORS	08/24/2010	003032851FLE	1	1	09/09/2010	170	lbs	1.00
TOTAL QUANTITY (Kg/Tons):	**149.09 / 0.16**								
WASTE CODE: F001	**The following spent halogenated solvents used in degreasing: tetrachloroethylen...**								
ARD069748192	CLEAN HARBORS	04/02/2010	003060664FLE	1	1	04/25/2010	143	lbs	1.00
ARD069748192	CLEAN HARBORS	08/24/2010	003032851FLE	1	1	09/09/2010	170	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	04/05/2017	010384168FLE	2	2	04/05/2017	1	lbs	1.00
TOTAL QUANTITY (Kg/Tons):	**142.72 / 0.16**								
WASTE CODE: F002	**The following spent halogenated solvents: tetrachloroethylene, methylene chlori...**								
ARD069748192	CLEAN HARBORS	04/02/2010	003060664FLE	1	1	04/25/2010	143	lbs	1.00
ARD069748192	CLEAN HARBORS	08/24/2010	003032851FLE	1	1	09/09/2010	170	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	04/05/2017	010384168FLE	2	2	04/05/2017	1	lbs	1.00
TOTAL QUANTITY (Kg/Tons):	**142.72 / 0.16**								
WASTE CODE: F003	**The following spent non-halogenated solvents: xylene, acetone, ethyl acetate, e...**								
ARD069748192	CLEAN HARBORS	12/29/2008	002314499FLE	1	3	01/03/2009	500	lbs	1.00
ARD069748192	CLEAN HARBORS	09/22/2009	002626082FLE	1	1	10/05/2009	150	lbs	1.00
ARD069748192	CLEAN HARBORS	09/28/2009	002626086FLE	1	4	10/08/2009	1,050	lbs	1.00
ARD069748192	CLEAN HARBORS	09/28/2009	002626086FLE	2	1	10/08/2009	20	lbs	1.00
ARD069748192	CLEAN HARBORS	10/01/2009	002626092FLE	1	1	10/08/2009	300	lbs	1.00
ARD069748192	CLEAN HARBORS	10/05/2009	002626094FLE	1	1	10/18/2009	250	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	06/18/2013	006493505FLE	3	1	06/18/2013	80	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	03/13/2014	006497148FLE	2	5	03/13/2014	180	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	10/21/2015	008917890FLE	2	5	10/21/2015	15	lbs	1.00
TOTAL QUANTITY (Kg/Tons):	**1,156.81 / 1.27**								

TSDF ID	TSDF NAME	GEN / OFFEROR SIGN DATE	MANIFEST NO.	PAGE #	LINE #	TSDF / RECEIVER RECEIVED DATE	TOTAL QTY	UNIT WT / VOL	SPECIFIC GRAVITY
WASTE CODE: F005	**The following spent non-halogenated solvents: toluene, methyl ethyl ketone, car...**								
ARD069748192	CLEAN HARBORS	12/29/2008	002314499FLE	1	3	01/03/2009	500	lbs	1.00
ARD069748192	CLEAN HARBORS	04/02/2010	003060664FLE	1	1	04/25/2010	143	lbs	1.00
ARD069748192	CLEAN HARBORS	08/24/2010	003032851FLE	1	1	09/09/2010	170	lbs	1.00
PAD085690592	REPUBLIC ENVIRONMENTAL/STERICYCLE	07/21/2010	000891269FLE	1	1	07/21/2010	200	lbs	1.00
TOTAL QUANTITY (Kg/Tons):	**460.45 / 0.51**								
WASTE CODE: U080	**Methane, dichloro-**								
RID040098352	NORTHLAND ENVIRONMENTAL INC	04/05/2017	010384168FLE	2	2	04/05/2017	1	lbs	1.00
RID040098352	NORTHLAND ENVIRONMENTAL INC	09/11/2017	010386483FLE	2	4	09/11/2017	1	lbs	1.00
TOTAL QUANTITY (Kg/Tons):	**0.90 / 0.00**								

Exhibit H

Order on Consent, Matter of Consolidated Edison Company of New York, No. CO3-20010906-2754, September 5, 2001

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

In the Matter of the Alleged Violations of Environmental Conservation Law ("ECL") of the State of New York, and Title 6 of the Official Compilation of Codes, Rules, Regulations of the State of New York ("6 NYCRR") by:

Order on Consent

Consolidated Edison Company of New York, Inc.

Respondent

Index No. CO3-20010905-2574

WHEREAS:

1. The New York State Department of Environmental Conservation (the "Department") is responsible for enforcement of Article 27, Title 9 of the Environmental Conservation Law ("ECL") and the hazardous waste management rules and regulations promulgated thereunder in 6 NYCRR Part 370 *et seq.* This Order is issued pursuant to the Department's authority under Articles 3, 27, and 71 of the ECL.

2. Consolidated Edison Company of New York, Inc. (the "Respondent") acknowledges that it owns, and conducts operations at, its facility located at Broadway and Bleakley Avenue, Buchanan, New York (the "facility"); and that those operations, and the hazardous waste–including mixed waste–generated during the course of those operations are subject to ECL Article 27, Title 9 and the hazardous waste management regulations promulgated pursuant thereto, contained in 6 NYCRR Parts 370 to 374 and 376.

3. A. For purposes of this Order, "mixed waste" is as defined in 40 CFR 255.210; however, the "hazardous waste" as used in that provision shall refer to "hazardous waste" as defined in 6 NYCRR Part 371. Pursuant to 6 NYCRR 371.4(e), materials containing 50 ppm or greater of polychlorinated biphenyls ("PCBs") are regulated as a hazardous waste under New York State law.

B. The United States Environmental Protection Agency has afforded a regulatory exemption, effective November 13, 2001, for the storage and treatment of mixed waste subject to regulation by the Nuclear Regulatory Commission. The Department is in the process of considering a proposed rulemaking to adopt a similar provision for qualifying mixed waste.

4. A record review of Respondent's facility was conducted by an authorized representative of the Department by telephone on August 16, 2001. As a result, Respondent violated the following hazardous waste management regulations at 6 NYCRR resulting from

Respondent's improper storage of mixed waste at the facility (for purposes of this Order, "the mixed waste"):

A. 372.2(a)(8)(ii): Acted as an illegal storage facility with respect to the storage of the mixed waste in the Unit 1 Reactor Internal Storage Pit, the Unit 1 Vapor Containment 108-foot Elevation Floor Storage Area, and the Unit 1 Vapor Containment 70-foot Elevation Floor Storage area since February 2000.

B. 373-3.9(e): Failed to inspect container storage areas referenced above in Subparagraph 4.A on a weekly basis.

C. 373-3.9(d)(3) and 376.5(a)(1)(ii): Failed to label containers stored in the Unit 1 Reactor Internals Storage Pit area with the words "Hazardous Waste" and with other words to identify the contents.

D. 372.2(a)(8)(ii), 373-1.1(d)(1)(iii)(c)(2), 373-1.1(d)(1)(iv)(d), and 376.5(a)(1)(ii)(b): Failed to visibly mark containers stored in the Unit 1 Reactor Internals Storage Pit area with the period of accumulation for each container.

E. 376.5(a)(1)(ii): Stored the mixed waste in the storage areas referenced above in Subparagraph 4.A of this Order in excess of one year, since February 2000, for the purpose of accumulation necessary to facilitate proper recovery, treatment or disposal.

5. Respondent certifies that the mixed waste is being stored at the facility in a manner protective of the public health, safety, and welfare and the environment in compliance with 40 CFR 761.65(a)(1) but that it cannot dispose of the mixed waste off-site because of the present unavailability of a mixed waste treatment/disposal facility. The Department believes that no mixed waste treatment/disposal facilities will come into existence in the near future; therefore, it recognizes the need to keep the mixed waste stored on-site provided the storage is undertaken in a manner protective of the public health, safety, and welfare and the environment and in accordance with the requirements of the Nuclear Regulatory Commission pertaining to mixed waste storage and treatment.

6. Respondent voluntarily notified the Department of the violations that are the subject of this Order.

7. In March 2001, pursuant to 6 NYCRR 621.13 and 373-1.7, Respondent submitted an application for major modification to the Part 373 Hazardous Waste Management Permit, NYD991304411, to account for the storage and associated activities of the mixed waste.

8. Respondent waives its right to a hearing or to otherwise contest the Department's allegations, consents to the issuance of this Order and agrees to be bound by its terms.

NOW, THEREFORE, HAVING CONSIDERED THIS MATTER AND BEING DULY ADVISED, IT IS ORDERED THAT:

I. Respondent shall pay a penalty for the cited violations in the amount of $9,000.00 to be paid withing 30 days of the effective date of this Order.

II. Respondent is authorized to continue the on-site storage of and related activities that have been conducted to date for the mixed waste, pending the Department's action on proposed rulemaking referenced in Paragraph 3 of this Order. Respondent and its successors and assigns, including its successors in title to the facility, shall maintain the storage of the mixed waste in a manner protective of the public health, safety, and welfare and of the environment and in accordance with the requirements of the Nuclear Regulatory Commission pertaining to mixed waste storage and treatment.

III. Respondent shall take all reasonable and diligent efforts to locate and contract with an authorized, commercially reasonable as determined by the Department in consultation with Respondent, mixed waste treatment/disposal facility that will accept the mixed waste and to treat or dispose of the mixed waste within 30 days after the facility's agreement to accept the mixed waste for treatment/disposal; or with such further time as the Department determines is appropriate under the circumstances. Such efforts shall include, but will not be limited to, quarterly searches. Until such a facility becomes available, Respondent shall, beginning December 1, 2001 and on the first day of each three month period thereafter, provide the Department with a certification that (1) describes the efforts Respondent made to locate and contract with an authorized mixed waste treatment/disposal facility; (2) there is no mixed waste treatment/disposal facility available that can accept for treatment or disposal the mixed waste; (3) the continued storage at the facility was necessary to protect the public health, safety, welfare and environment; and (4) during the entire quarter that is the subject of the certification, Respondent complied with the container and storage requirements of the Nuclear Regulatory Commission relating to mixed waste.

IV. Respondent shall commence an investigation and report to the Department within 60 days of the effective date of this Order as to the possibility of remote monitoring in lieu of weekly inspections pursuant to 6 NYCRR 373-3.9(e) and, if such remote monitoring is possible and approved by the Department, shall implement a remote monitoring system within 60 days of Department approval of the remote monitoring plan.

V. Within 15 days after the effective date of this Order, Respondent shall make a request to the Nuclear Regulatory Commission to provide to the Department within 60 days after the effective date of this Order a written concurrence by that Commission that the mixed waste is being stored in compliance with its requirements. Failure to secure an adequate response from Nuclear Regulatory Commission within 60 days of the effective date of his Order shall not constitute a violation of this Paragraph.

VI. SETTLEMENT AND RESERVATION OF RIGHTS

A. Except for Respondent's obligations as provided in Paragraph I and as otherwise provided in Paragraph IX of this Order, Respondent's obligations under this Order shall terminate upon transfer of ownership of the facility to a transferee that agrees in writing to undertake and continue Respondent's obligations under this Order.

B. Upon completion of all obligations in this Order, this Order settles only all claims for civil and administrative penalties concerning the violations described in Paragraph 4 of this Order against Respondent and its successors and assigns (including successors in title to the facility).

C. Except as provided in Subparagraph VI.B of this Order, nothing contained in this Order shall be construed as barring, diminishing, adjudicating or in any way affecting any of the civil, administrative, or criminal rights of the Department or of the Commissioner or her designee (including, but not limited to, nor exemplified by, the rights to recover natural resources damages and to exercise any summary abatement powers) or authorities with respect to any party, including Respondent.

VII. ACCESS

For the purpose of monitoring or determining compliance with this Order, Respondent hereby provides to employees and agents of the Department access to the facility and to any site or records owned, operated, controlled or maintained by Respondent and its successor and assigns, in order to inspect and/or perform such tests as the Department may deem appropriate, to copy such records, or to perform any other lawful duty or responsibility. Every effort shall be made by the Department to conduct such inspections during Respondent's and its successors and assigns normal business hours.

VIII. FAILURE, DEFAULT AND VIOLATION OF ORDER

A. Respondent's failure to comply with any provision of this Order shall constitute a default and a failure to perform an obligation under this Order and shall be deemed to be a violation of both this Order and the ECL.

B. Respondent's failure to comply fully and in a timely fashion with any provision, term, or condition of this Order shall constitute a default and a failure to perform an obligation under this Order and under the ECL and shall constitute sufficient grounds for modification or revocation of any permit, license, certification, or approval issued to Respondent by the Department relating to the facility.

C. Any violation of terms or conditions of this Order shall result in a penalty of TWENTY FIVE HUNDRED DOLLARS ($2,500.00) per day, per violation.

IX. INDEMNIFICATION

Respondent shall indemnify and hold harmless the Department, the State of New York, and their representatives and employees for all claims, suits, actions, damages and costs of every name and description arising out of or resulting from the fulfillment or attempted fulfillment of this Order. Respondent's obligations under this Paragraph IX shall terminate upon the transfer of title of the facility; however, this Paragraph shall be effective against Respondent's successors or assigns, including its successors in title to the facility.

X. BINDING EFFECT

The provisions of this Order shall bind the Respondent and its successors and assigns, including its successors in title to the facility.

XI. MODIFICATION

No change in this Order shall be made or become effective except as set forth by a written order of the Commissioner or the Commissioner's designee.

XII. COMMUNICATIONS

All written communications required by this Order to the Department shall be transmitted by United States Postal Service, by private courier service, or by hand delivery to:

Division of Environmental Enforcement

Attn: Hazardous Waste Compliance Counsel

New York State Department of Environmental Conservation

625 Broadway Albany, New York 12233-5500

All written communications required by this Order to the Respondent shall be transmitted by United States Postal Service, by private courier service, or by hand delivery to:

Jeffrey L. Riback, Esq.

Consolidated Edison Company of New York, Inc.

4 Irving Place

New York, NY 10003

XIII. **ENTIRE ORDER**

The provisions of this Order constitute the complete and entire Order issued to the Respondent concerning resolution of the violations identified in Paragraph 4 of this Order. No term, condition, understanding, or agreement purporting to modify or vary any term of this Order shall be binding unless made in writing and subscribed by the party to be bound. No informal oral or written advice, guidance, suggestion, or comment by the Department regarding any report, proposal, plan, specification, schedule, comment, or statement made or submitted by Respondent shall be construed as relieving Respondent of its obligations to obtain such formal approvals as may be required by this Order.

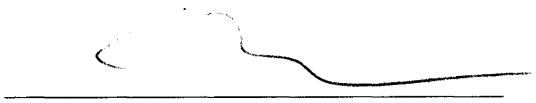
XIV. **EFFECTIVE DATE**

The effective date of this Order is the date that the Commissioner or his designee signs it. The Department will provide Respondent (or the Respondent's counsel) with a fully executed copy of this Order as soon as practicable after the Commissioner or the Commissioner's designee signs it.

Dated: 7-5-11

ERIN M. CROTTY, COMMISSIONER

NEW YORK STATE DEPARTMENT OF
ENVIRONMENTAL CONSERVATION



By: Carl Johnson, Deputy Commissioner

CONSENT BY RESPONDENT

Respondent hereby consents to the issuing and entering of the foregoing Order, waives its right to a hearing as provided by law, and agrees to be bound by the provisions, terms and conditions herein.

By: _____

Title: Vice President EHS

Date: Sept 5 '01

State of New York)

County of New York)

On this 5th day of Sept., in the year 2001, before me, the undersigned personally appeared N. Peter Lanahan, personally known to me or proved to be on the basis of satisfactory evidence to the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

_____

JAMES J. DIXON, ESQ.
Notary Public, State of New York
No. 5003440
Qualified in Westchester County
Commission Expires October 19, 2002

Exhibit I

Indian Point RCRA Facility Investigation Report, June 2012

FINAL
RCRA FACILITY INVESTIGATION REPORT
INDIAN POINT ENERGY CENTER
450 BROADWAY
BUCHANAN, NEW YORK
EPA ID: NYD991304411

PREPARED FOR:
New York State Department of Environmental Conservation
Division of Solid and Hazardous Materials
625 Broadway
Albany, New York 12233

On behalf of:
Entergy Nuclear Northeast
Indian Point Energy Center
450 Broadway
Buchanan, New York

PREPARED BY:
GZA GeoEnvironmental, Inc.
One Edgewater Drive
Norwood, Massachusetts 02062

655 Winding Brook Drive, Suite 402
Glastonbury, CT 06033

104 West 29th Street, 10th Floor
New York, New York 10001

June 2012
File No. 01.0017869.92

GZA
GeoEnvironmental, Inc.

Engineers and
Scientists

June 13, 2012
File No. 01.0017869.92

Mr. Larry Rosenmann
New York State Department of Environmental Conservation (NYSDEC)
Division of Environmental Remediation
625 Broadway
Albany, NY 12233-7258

One Edgewater Drive
Norwood
Massachusetts
02062
781-278-3700
FAX 781-278-5701

655 Winding Brook Drive
Suite 402
Glastonbury, Connecticut
06033
860-286-8900
FAX 860-652-8590

104 West 29th Street
10th Floor
New York, New York
10001
212-594-8140
FAX 212-279-8180
http://www.gza.com

Re: Final RCRA Facility Investigation Report
Indian Point Energy Center
450 Broadway, Buchanan, New York
EPA ID: NYD991304411

Dear Mr. Rosenmann:

On behalf of Entergy Nuclear Northeast, GZA GeoEnvironmental, Inc. (GZA) is submitting the analytical results and findings of a RCRA Facility Investigation (RFI) conducted at the Site referenced above. The investigation was performed to assist the NYSDEC in determining whether to continue the facility's Part 373 Permit as a Corrective Action Permit. In accordance with an August 2008 RFI Work Plan prepared by GZA, bedrock core samples from the Site were analyzed to evaluate whether previously detected metals concentrations in soil were representative of natural levels in the blast rock fill material emplaced across the facility during its construction. In addition, groundwater samples previously tested for metals were analyzed for volatile organic compounds in 2008 at NYSDEC's request. In 2011, groundwater samples from multiple screened intervals at multiple depths, including those previously analyzed, were collected and tested for dissolved and total metals.

As described in the attached report, the data indicate that concentrations of chromium and selenium in soil samples from the Site are statistically consistent with natural concentrations in the bedrock cores. Concentrations of arsenic and thallium, neither of which is documented to have been used or stored at the facility, appear to be representative of analytical artifacts, consistent with the findings of the USEPA Office of Technical Standards regarding false positives for these compounds via EPA Method 6010. No volatile organic compounds were detected in any of the groundwater samples collected at NYSDEC's request. Further, the results of the confirmatory groundwater sampling conducted in 2011 indicated that dissolved concentrations for the four metals previously detected at the Site were all below detection limits, with the exception of detection of As at only one location, and that detection below the TOGS 1.1.1 Ambient Water Quality Standards (AWQS) and Guidance Values and Groundwater Effluent Limitations that are applicable at the Site.

In summary, the RFI findings support the termination of the facility's Part 373 Permit. Please contact us at 781-278-3805 if you have any questions relative to the data and/or analyses presented in this report.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.

Vijayalakshmi K. Radics
Senior Technical Specialist

David Winslow
Consultant/Reviewer

Matthew J. Barvenik, LSP
Senior Principal

cc: Dara Gray, Entergy Nuclear Northeast
Fred R. Dacimo, Entergy Nuclear Northeast
Kelli Dowell, Entergy Nuclear Northeast

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1.0 INTRODUCTION

GZA GeoEnvironmental Inc. (GZA) has prepared this RCRA Facility Investigation Report (RFIR) on behalf of Entergy Nuclear Northeast (Entergy) for the Indian Point Energy Center (IPEC, Site). The scope of the investigation was provided in the RCRA Facility Investigation Work Plan (RFIWP), prepared by GZA, dated August 2008 and approved by the New York State Department of Environmental Conservation (NYSDEC) on September 16, 2008. Specifically, the RFIWP outlined an investigation to evaluate bedrock-blast rock fill as the source of Arsenic (As), Selenium (Se), Thallium (Tl) and total Chromium (Cr) detected above NYSDEC Technical and Operational Guidance Series 1.1.1 (TOGS 1.1.1) Ambient Water Quality Standards (AWQS) and Guidance Values and Groundwater Effluent Limitations in samples collected in October 2007. In addition, groundwater samples were collected from select wells in 2008 and were analyzed for Volatile Organic Compounds (VOCs) at the request of the NYSDEC.

The 2008 sampling event was followed by a focused groundwater investigation in 2011, which was designed to assess more representative dissolved versus total metals concentrations in groundwater samples collected from multiple locations and well depths at the Site. The results of the 2011 investigation, and findings and conclusions relative to the need for Corrective Actions at the Site, are also presented herein.

This report is subject to the limitations presented in **Appendix A**.

2.0 BACKGROUND

The Site is located at 450 Broadway, Buchanan, New York (**Figure 1 –** Site Location Map). It is bounded to the west and north by the Hudson River, to the northeast by Charles Point Marina, to the southeast by Broadway and John Walsh Boulevard public roads, and to the southwest by the LaFarge Gypsum Plant. The Site is situated in a suburban area characterized by residential, commercial, light industrial, and warehouse properties.

2.1 SITE DESCRIPTION

The Site is improved with two operating nuclear power plants (Unit 2 and Unit 3) and one in SAFSTOR (Unit 1). A Site Plan is included as **Figure 2**. For clarity, descriptions within this report refer to compass directions within the Site based upon plant north (parallel to the Hudson River). The Site encompasses approximately 160 acres of land. The Site buildings are generally surrounded by paved roadways, sidewalks and parking areas. The areas immediately adjacent to buildings and parking areas are landscaped. The northern and southern portions of the Site are wooded with some wetland areas present on the northern Site boundary.

2.2 SITE HISTORY

During the late nineteenth century, the north end of the Site was heavily surface-mined. A lime kiln and blast furnace existed on the shoreline (within or next to the Site), but were moved elsewhere after raw materials became harder to locate nearby. Around 1900, light farming operations and a brickyard owned by Charles Southard existed on or near the Site. In the 1920's, the Day Line, a steam liner servicing the Hudson River, selected the Site for operations and acquired 320 acres for park ground. Indian Point Park opened on June 26th, 1923. In 1949, the Hudson River Day Line, its steamboats, and certain landings were sold to another private steamboat operation. Indian Point Park was not purchased in the deal; however, in 1950, arrangements were made to allow the new "Day Line" to continue landing at the park.

Indian Point Park closed in 1956 and Consolidated Edison of New York (Con Ed) bought the property and began construction of a nuclear-powered electricity generating plant in 1958. Indian Point Unit 1 went on line in 1962. In 1974, the Nuclear Regulatory Commission (NRC) introduced more stringent safety standards for nuclear power plants. Continued operation of the Unit 1 facility would have required substantial upgrades to comply with these standards, and based on an economic study performed at the time, Con Ed opted to cease operations at Unit 1 and construct two new units (Unit 2 and Unit 3). Unit 2 began commercial service in 1974 and Unit 3 was sold to New York Power Authority (NYPA) in 1976. In 2001, Entergy purchased both Units 1 and 2 from Con Ed, and Unit 3 from NYPA.

2.3 REGULATORY HISTORY

In 1997, the NYSDEC granted a 6 NYCRR Part 373 Hazardous Waste Management operating permit to the Consolidated Edison Company of New York (Con Ed) for the on-Site storage of mixed wastes. In 2006, when the permit was scheduled to expire, Entergy submitted a request to the NYSDEC to terminate the storage portion of the permit based on the conditional exemption for the storage of mixed wastes. According to information provided by Entergy, the NYSDEC then required that Entergy submit a permit renewal application in the form of an application for a Corrective Action Permit. Along with the Corrective Action Permit application, Entergy submitted a summary and operational history of all the waste management units and mixed waste storage areas that had been identified as potential Solid Waste Management Units (SWMUs) in the original Part 373 Permit Application.

2.3.1 SWMU Locations and Descriptions

As shown on **Figure 3,** the SWMUs are located within the developed portions of the Site. Most of the units are found within what is referred to as the Power Block Area, the area of the Site used for the generation of electrical power.

The SWMUs include the following areas:

SW-1 – Outside Used Oil Storage Area – a paved area used to temporarily store drums of used non-hazardous oil and oil debris prior to shipment off-site for recycling.

SW-1a – Outside Hazardous Waste Storage Shed – A self-contained cargo container used to accumulate various hazardous wastes such as spent solvents and paints in drums prior to shipment off-site for disposal. It also may have been used to store corrosive solids and various liquids containing RCRA metals. It was located in the former 90-day storage area (SW-1) and is no longer used.

SW-2 – 20,000 gallon Mixing Tank – This is a steel tank located within a moat at the 5-foot elevation of the Unit 1 turbine building. The tank had historically been used to add acid and caustics to neutralize wastewater prior to discharge.

SW-3 – Lab Packing Storage Building – An enclosed flammable materials cabinet located in the GT1 alleyway. It was used to store various spent laboratory chemicals and packaging materials prior to sending lab pack shipments off-Site. It may have been used to store mercury regulators prior to shipment off-site.

SW-4 – Used Oil Storage Building – A self-contained cabinet which was used to accumulate used non-hazardous oil in drums prior to shipment off-site. It was historically located in the GT1 Alleyway.

SW-5 – Mixed Waste Storage Room – This room is located on the 53-foot elevation of the IP1-Chemical Systems Building. It was used to store non-ignitable mixed wastes, such as waste paints and thinners, Freon wastes, as well as non-hazardous radioactive oil wastes.

SW-6 – Former Fabrication Shop Storage Area – This area may have been used to store waste oils, solvents, and paints in the past.

SW-7 – Mixed Waste Cargo Unit – This was a hazardous materials storage building with integral secondary containment. It was used to store ignitable mixed waste such as radioactively contaminated waste paint thinner.

SW-8 – Mixed Waste Cargo Unit – This was a hazardous materials storage building with integral secondary containment. It was used for the storage of nonhazardous wastes, drums and other equipment. It was permitted for the storage of ignitable mixed wastes in case additional storage capacity was required.

New SW-9 – Hazardous Materials Cargo Container – This storage container was previously moved to the 90-day storage area and used to store drums, supplies, and some hazardous materials.

New SW-10 – Reactor Internals Storage Pit – This area is located within the Unit 1 Reactor Building. Mixed waste was generated as a result of the removal and processing of PCB-containing sludge from the Unit 1 water storage pool.

New SW-11 – Unit 1 Containment 108-foot Elevation Floor Storage Area – PCB-containing mixed waste is stored in a segregated area of the Unit 1 Containment floor at the 108' elevation.

New SW-12 – Unit 1 Containment 70-foot Elevation Floor Storage Area – PCB-containing mixed waste is stored behind the Nuclear Boiler No. 11 and the containment entrance at the Unit 1 Containment 70' elevation.

The NYSDEC reviewed Entergy's *Solid Waste Management Unit Current Conditions Report* and *Corrective Measures Implementation Plan for the Unit 1 Containment Spray Sump*, as well as ConEd's *Final Phase II Summary Report.* After this document review, the NYSDEC requested environmental sampling to determine whether the Part 373 Permit should be continued as a Corrective Action Permit. Specifically, the NYSDEC selected on-Site locations for the collection of groundwater and/or surface soil samples, and required laboratory analysis of the samples for metals, polychlorinated biphenyls (PCBs), volatile organic compounds (VOCs), and semi-volatile organic compounds (SVOCs).

To comply with the NSYDEC's requirements, GZA on behalf of Entergy collected six soil and thirteen groundwater samples[1] in October and November 2007 at locations designated by the NYSDEC. Metals were detected in some of the soil and groundwater samples; therefore, the analytical data were compared to Part 375 Soil Cleanup Objectives (SCOs)[2] for the Protection of Groundwater, and NYSDEC Technical and Operational Guidance Series 1.1.1 (TOGS 1.1.1) Ambient Water Quality Standards (AWQS) as described below.

2.3.2 Comparison of 2007 Data to Screening Values

Summaries of the 2007 soil and groundwater results, and comparisons to background concentrations and/or the screening values described above, are presented in **Tables 1** and **2**, respectively. Note that the tables also include data collected between 2008 and 2011, which are discussed later in this RFIR. The results of the 2007 soil and groundwater sampling requested by the NYSDEC are summarized below:

- Arsenic (As) was detected in soils at concentrations ranging from 30.3 to 37.4 mg/kg, exceeding the Part 375 SCO of 16 mg/kg, in 4 samples (MW47, MW53, MW66, and MW111).
- Arsenic concentrations in all thirteen of the groundwater samples analyzed in 2007 were below the AWQS of 25 µg/l.
- Total Chromium (Cr) was detected at 30.1 mg/kg in one soil sample (MW111), exceeding the Part 375 SCO of 19 mg/kg. Chromium was identified by the NYSDEC as one of two metals (the other being selenium) that were listed on the facility's existing Part 373 permit and that may have been stored on site in permitted solid waste management units (SWMUs).

[1] The thirteen groundwater samples were collected from eleven groundwater monitoring well locations (MW41, MW42, MW47, MW55, MW57, MW60, MW62, MW63, MW101, MW108, and MW111), with two depth intervals sampled at wells MW60 and MW62.

[2] As stated in the guidance, the SCOs may be used to identify areas of soil contamination and to determine the extent of soil contamination. However, the exceedance of one or more applicable SCOs alone does not trigger the need for remedial action, define unacceptable levels of contaminants in soil, or indicate that a site qualifies for any DEC remedial program. Consideration of other media is required to determine if remedial action is needed.

- Chromium concentrations in all thirteen of the groundwater samples analyzed in 2007 were below the AWQS of 50 µg/l.

- Selenium (Se) was detected at concentrations ranging from 10.5 to 38.3 mg/kg, exceeding the Part 375 SCO of 4 mg/kg, in four soil samples (MW47, MW53, MW66, and MW108.

- Selenium was detected at concentrations ranging from 18 to 24 µg/l, greater than the AWQS of 10 µg/l, in groundwater samples from wells MW57, MW108 and MW111.

- Thallium (Tl) was detected in Site soil samples at concentrations ranging from 1.76 to 41 mg/kg. There is no promulgated standard for Tl. However, the NYSDEC referenced background values for Tl presented by Jakubowska, et al. (2007); while highly questionable for use as a standard[3], the Tl concentrations did exceed these cited Tl values in soil samples MW47, MW53, MW66, and MW111.

- Thallium was also detected in groundwater at concentrations ranging from 9.98 to 13.2 µg/l, exceeding its AWQS of 0.5 µg/l, in samples from wells MW42, MW55, MW57, MW108, and MW111. The Tl groundwater data were reported as estimated values on the laboratory analytical report (i.e., the concentrations were detected above the detection limit of 5 µg/l but were below the reporting limit of 20 µg/l).

- Other contaminants, such as volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and polychlorinated biphenyls (PCBs) were detected in Site soil and/or groundwater, but only at very low concentrations. Therefore, the NYSDEC did not require further investigation of these contaminants[4].

Upon receipt of the 2007 soil and groundwater results, the NYSDEC issued a letter in June 2008 indicating that the 2007 sampling had been conducted to aid their decision whether to continue the facility's Part 373 permit as a corrective action permit. Due to the metals concentrations detected in soil and groundwater, the NYSDEC requested that Entergy conduct a RCRA Facility Investigation (RFI) prior to the NYSDEC's decision on continuing the Part 373 permit. Accordingly, Entergy was directed to submit a RCRA Facility Investigation Work Plan (RFIWP) designed to identify the source(s) of metal contamination on-site; evaluate the vertical and horizontal extent of metal contamination in on-site soil and groundwater; and evaluate the potential migration of metal contaminants off-site.

In August 2008, GZA on behalf of Entergy submitted an RFIWP outlining an investigation to evaluate bedrock-blast rock fill as the source of the As, Cr, Se and Tl detected in soil and groundwater. Based on the general lack of likely IPEC sources for these compounds

[3] Note that the NYSDEC cited reference indicated: "a range in thallium concentration in non-polluted soils between 0.08 to 1.5 *u*g/g." However, the soil samples tested were all from European or Asian countries. Moreover, the paper also indicated that other soil samples exhibited naturally occurring thallium concentrations as high as 55 *u*g/g in soils derived from calcareous bedrock.

[4] It should be noted that the NYSDEC-selected monitoring wells were re-sampled due to the somewhat elevated temperature of the original samples upon receipt by the laboratory.

and the known presence of large quantities of blast rock fill material at the Site as described in **Section 3.2**, it was hypothesized that the somewhat elevated metals concentrations detected during the 2007 sampling event could be representative of naturally occurring metals-containing minerals in the underlying Inwood Marble and/or its integral hydrothermal joint fillings. The RFIWP was conditionally approved by the NYSDEC on September 16, 2008, and the results of the subsequent bedrock core analyses as well as additional groundwater sampling for metals are presented in Sections 4 and 5 of this RFIR.

To provide further background for the interpretation of the bedrock core and additional groundwater analyses, the following section (Section 3) summarizes information regarding the Site's physical setting, geology, and hydrogeology based on literature review and hydrogeological investigations conducted at IPEC.

3.0 PHYSICAL SETTING

3.1 TOPOGRAPHY AND DRAINAGE PATTERNS

The surface topography of the Site slopes downward relatively steeply to the west towards the Hudson River and is characterized by ground surface elevations ranging from approximately 10 to 140 feet above the National Geodetic Vertical Datum of 1929 (NGVD 29). Refer to **Figure 1** for Site topography.

Topographic divides were used to define the drainage area and the surface water drainage patterns, which are portrayed on **Figure 4.** Surface water within the drainage basin flows roughly perpendicular to ground surface elevation contours, toward the Hudson River[5].

Within the power block area, approximately 90% of the ground surface is covered by pavement or structures. Therefore, surface infiltration (and associated leaching of metals from surficial soils to groundwater) is low in this area. At developed portions of the Site, stormwater is directed toward and collected in catch basins and discharged to surface water bodies. Stormwater discharge from the Site is generally routed to the cooling water Discharge Canal[6], and then the Hudson River.

3.2 OVERBURDEN GEOLOGY

The Lower Hudson Valley has been subjected to repeated glacial advance and retreat, creating a typical glacial morphology of main and tributary valleys and bedrock ledges. The glaciers have controlled the deposition of unconsolidated deposits in the region, although these are absent locally due to erosion and excavation. Glacial till lies directly on the bedrock surface and is generally less than 10 feet thick, although it is locally thicker

5 Additional hydrogeologic discussions can be found in the Hydrogeologic Site Investigation Report dated January 7, 2008 and prepared by GZA GeoEnvironmental, Inc, on behalf of Enercon Services, Inc. for Entergy Nuclear Northeast, Indian Point Energy Center, 450 Broadway, Buchanan, NY 10511.

6 There are also a limited number of stormwater outfalls that discharge directly to the Hudson River. See above cited report for further information.

against steep north-facing bedrock slopes. The till is typically unstratified and poorly sorted. Locally, it consists of a silty, fine- to medium-grained, brown, sandy matrix containing fine gravel to boulder-size bedrock fragments. Fluvial and lacustrine glacial deposits occur in valley bottoms and valley walls. The glacio-fluvial deposits are typically medium to coarse sand and gravel with minor silt. The lacustrine deposits are finely laminated and varved clays, transitioning to fine- to medium-grained sand, and the fluvial/deltaic sediments are mixtures of coarser sands and gravels and finer sands to clays. Recent deposits are essentially flood plain and marsh deposits along the Hudson River, its tributaries, and small enclosed drainage basins.

The overburden geology at the Site is limited to a layer ranging from ground surface to between 3.5 and 59 feet below ground surface (bgs), with thicknesses generally increasing towards the Hudson River. Native materials occur as open areas of glacial till overlying bedrock, or silty clays, organic silt and clay, and sandy material overlain by granular fill. A 20- to 50-foot-thick sequence of river sediments is found along the Hudson River above bedrock. In the power block area, overburden materials are dominated by anthropogenic fill. Soil-based fill materials at the Site consist primarily of silty clay, sand and gravel mixtures (i.e., regraded/transported on-site glacial till) or gravel/cobble/boulder-size blast rock. In areas adjacent to structures excavated into bedrock, the fill occurs as concrete, compacted granular soils, and blast rock fill. **Figure 5** portrays the conceptual overburden geology. As shown on the figure, the soil samples in which metals concentrations exceeded SCOs in 2007 (MW47, MW53, MW66 and MW111) were collected from filled areas proximate to on-Site structures; therefore, as described in **Section 4.1**, the bedrock core investigation described in this report was conducted to evaluate whether the metals concentrations were consistent with naturally occurring bedrock as would be expected of blast rock fill materials.

3.3 BEDROCK GEOLOGY

Prior to the initiation of this program, the geology of the Site had been investigated and reported by Dames & Moore (1975) and GZA (2008). **Figure 6** shows the bedrock geology of the region and the Site. The Site is located in a complex of Cambro-Ordovician rock represented by the Manhattan Formation and predominantly the Inwood Marble Formation in angular unconformity. The oldest rock is the Inwood Formation, which was derived from deposition of carbonate materials in a shallow inland sea during the Cambrian through the early Ordovician period. The Manhattan Formation is interpreted to post-date the Middle Ordovician regional unconformity with the Inwood Marble and represents sediments derived from continental or volcanic island materials in deeper waters.

During the Ordovician period, an island arc system consisting of a series of volcanic islands appeared off the coast of what is currently North America as a subduction zone, developed in response to oceanic crust colliding with continental crust. The presence of the volcanic island arc system resulted in interlayering of volcanic material with the sedimentary rocks of the Inwood Marble and Manhattan Formations. As continued subduction occurred and continental land mass began to collide with continental North America during the Taconic and Acadian Orogenies, the rocks of the Inwood Marble Formation and the Manhattan Formation underwent substantial metamorphism and deformation.

The Inwood Marble is a relatively pure carbonate rock of dolomitic and/or calcitic mineralogy with silica-rich zones. The rock tends to be coarsely saccharoidal with remnant foliation and intercalated mica schist. The color and crystalline texture vary from place to place due to the various levels of metamorphism; the color is typically white to blue-grey. The metamorphic grade is locally elevated due to minor intrusions. The common minerals are calcite, dolomite, muscovite, quartz, pyrite and microcline. The Manhattan Formation is represented on the Site by three distinct members. The lower member is an assemblage of schist, schistose gneiss and amphibolites intercalated with marble, white quartzite and fine-grained metapelite. The marble-bearing lower member of the Manhattan Formation likely represents transition from a shallow carbonate sea to deeper water sedimentation and may be the equivalent to the Balmville Limestone which occurs in Dutchess County. The middle member is garnet-rich mica schist. The upper member consists of biotite-muscovite mica schist with quartz-feldspar laminae.

The original sediments have undergone repeated intense phases of burial, metamorphism, uplift, folding and faulting due to: three phases of continental collision (the Taconic, Acadian, and Alleghanian); continental rifting as the present Atlantic Ocean began to form in the Mesozoic; erosion/uplift; and recent glacial rebound. All of these processes have resulted in the presence of fractures that affect the hydraulic properties of the material. The main deformational events are represented by multiple superimposed textures and structures including faults, healed breccias, crenulations, foliation slips, micro-faults, and continuous/truncated joints/fractures. The first phase of fold deformation (F_1) was essentially ductile and produced isoclinal folds contemporaneous with the most intense metamorphism. It was at this time that the dominant foliation likely developed along original bedding planes. The cooling period following this phase marks the onset of regional brittle faulting and development of fractures along the bedding planes. The second phase of folding (F_2) is characterized by flexural slip, indicative of brittle conditions, producing distinct fault and fracture orientations: a conjugate system normal to the foliation; west-northwest and north-south conjugate strike-slip faults; northwest faults and fractures parallel to the direction of extension; and thrust and extension fractures parallel to the foliation.

The Cortlandt Complex (a large igneous intrusion located east of the Site) was intruded during the F_2 phase. The post-Cortlandt dislocations were associated with a third phase of folding (F_3) causing a mutual rotation of the structural elements producing a complex of conjugate features with a wide range of orientations as described by Dames & Moore and found during our study. On the Site, the regional features are represented by north-northeast and north-northwest trending faults in cross-cutting relationships, representing a conjugate system with a north-south regional compression direction. The final tectonic event was associated with a shear system oriented northeast, reactivating movement along northeast-trending faults and minor north-northeast to north-northwest-trending faults. In addition to these major events, there has been minor normal movement on north-south and northwest-trending faults associated with continental rifting during the Mesozoic Era.

Finally, post-deformational uplift and glacial rebound have resulted in a series of fractures related to expansion, after the rock mass/ice load was removed during erosion and glacial retreat. These manifest themselves as semi-sinuous or undulating horizontal relief fractures. A description of the fracturing and associated mineralization observed in bedrock core samples from the Site is presented in **Section 4.3** and **Table 3** of this RFIR.

3.4 GROUNDWATER FLOW AND HYDROSTRATIGRAPHIC UNITS

Groundwater recharge at and near the Site is limited to precipitation, i.e., there is no significant artificial recharge or irrigation in the area Surface infiltration is limited within the SWMU area, since pavement, buildings, or other structures cover more than 90% of the surface.

Groundwater at the Site occurs in either of two hydrostratigraphic units (overburden or bedrock) which have been shown to be in hydraulic communication (GZA 2008). The presence of water-saturated overburden at the Site is discontinuous, and occurs predominantly at the lower elevations of the Site along the Hudson River, within depressions in bedrock, and within anthropogenic backfill associated with structures generally founded within bedrock excavations. Past studies have shown that the bedrock beneath the Site is considerably fractured and contains sufficient interconnectivity to allow representation of the groundwater flow regime as a non-homogeneous, anisotropic, porous media at a Site-wide scale, with the hydraulic conductivity generally higher in the horizontal than in the vertical direction. In addition, it appears that the upper portions of the rock are more conductive than the deep zone, as is generally typical in the northeast. These findings suggest that the bulk of the groundwater moves at shallower depth.

Each of the three Units at Indian Point (IP1, IP2 and IP3) has active foundation drains that capture the majority of the groundwater flow through the power block area. This water is conveyed, via gravity flow and/or pumping, to the Discharge Canal, where it is mixed with cooling water (at a typical rate of about 2 million gallons per minute), prior to release into the Hudson River. The foundation drains, as well as the overall construction of the plant within an excavation blasted out of the bedrock surface, establishes a local depression in the water table thus causing groundwater to flow towards the power block from the north, east and south, with discharge only to the Hudson River to the west.

3.5 RECEPTORS, SURFACE WATER BODIES, AND DRINKING WATER WELLS

According to the NYSDEC, there are no active potable water wells or other production wells proximate to the Site[7]. There is also no current or reasonably anticipated use of groundwater at the Site. Drinking water in the area (Town of Buchanan and City of Peekskill) is supplied by the municipality and is sourced from surface water reservoirs located in Westchester County and the Catskills region of New York. **Figure 7** portrays the locations of surface water reservoirs. As shown on the figure, the nearest reservoir (Camp Field Reservoir) is located 3.3 miles north-northeast of the Site and its surface water elevation is over 300 feet above IPEC, in a cross-gradient direction and several watersheds away. In addition, groundwater flow directions on the Site are to the west towards the Hudson River. Therefore, it is not possible for the groundwater at the Site to impact these drinking water sources.

[7] During the hydrogeologic site investigation (GZA, 2008), the NYSDEC requested that the New York State Department of Health assess the presence of drinking water supply wells in the vicinity of the Site. The NYSDEC informed Entergy and GZA that no drinking water supply wells were located in the vicinity of the Site; see NYS Dept. of Environmental Conservation Community Fact Sheet, September, 2007. GZA also engaged Environmental Data Resources, Inc. to conduct a search for public water supply wells within 1 mile of the Site. According to records maintained by the USEPA, there were no water supply wells located within the search radius.

At this Site, the potential migration of contaminated groundwater is the only pathway of potential interest. The contaminants of interest are not volatile; therefore, they remain in the subsurface bedrock, soil, and groundwater until discharged to the river.

Potential environmental receptors include fish and invertebrates in the Hudson River. The Ambient Water Quality Standards (AWQS) used in this document are protective of these receptors, and can be used to screen potential impacts, with dissolved concentrations below the AWQS indicating that no further investigation of the exposure pathway to environmental receptors in the river is required.

4.0 2008 SAMPLING PROGRAM

4.1 OBJECTIVES AND RATIONALE

As described earlier, in 2007 the NYSDEC directed Entergy to collect soil and groundwater at specific locations, presumably associated with RCRA waste handling units, potential PCB release areas, or fueling operations. As documented in GZA's subsequent February 2008 Sampling and Analysis Report and summarized in **Section 2.3** of this RFIR, Site soils were found to contain low levels of As, Cr, Se and Tl above NYSDEC Part 375 SCOs for Protection of Groundwater. In addition, Tl and Se were found above AWQS in Site groundwater.

There appears to be no Site history of As, or Tl usage, and only the possibility of some limited storage of chromium and selenium compounds at a few of the SWMUs. It is noted that specific isotopes of Tl and Se can be associated with nuclear fuel. However, if the concentrations of these elements detected on Site were due to the radioactive Tl and/or Se isotopes, then the radioactivity of the associated soil samples would have been quite high. This was not the case, and therefore, GZA concluded that the presence of these metals was not the result of contamination by nuclear fuel.

Based upon our review of the sampling data, as well as the nuclear power plant operational history, we hypothesized that the elevated metals may be related to Site-specific background as opposed to RCRA releases. As discussed in **Section 3.2,** the overburden and fill history of the Site is complex. Several different types of overburden exist at the Site, including native glacial deposits, native river deposits, fill material consisting of blast rock, and fill material likely consisting of reworked native overburden. A large portion of the overburden within the power block area is characterized as blast rock fill. As such, this fill should show trace element geochemistry signatures similar to the host bedrock. Additionally, the metals content of the glacially-derived overburden should exhibit heterogeneities associated with the parent rock and sediments related to glacial transport.

Review of the 2007 data indicated that each of the soil samples exhibiting metal concentrations above standards was located in areas characterized by blast rock fill; thus the elevated metal concentrations in Site soil and groundwater could be due to naturally-occurring metals within the Inwood Marble and/or its integral hydrothermal joint fillings. The 2007 NYSDEC-designated sampling protocol did not include the collection of any samples to characterize background concentrations of metals. Therefore, as described in

GZA's August RFIWP, the focus of the 2008 investigation was to first establish Site-specific background concentrations for the metals of concern in bedrock, to provide a basis for comparison of the data collected at the Site.

On September 16, 2008, the NYSDEC issued a letter in response to our RFIWP. In the letter, the NYSDEC stated that other source areas of these metals may exist on Site such as metal sewer pipes, fly ash in concrete and flowable concrete fill, and pesticides. GZA duly notes that these sources would not fall under RCRA waste regulations because they are not associated with releases from waste storage units. The presence of these metals in construction materials would not be regulated under RCRA until the construction materials entered the waste stream during decommissioning and demolition. Likewise, pesticides, if used at the Site, would have been applied as intended by the manufacturer, and thus would not be considered the result of a release from a waste storage unit.

4.2 2008 FIELD PROGRAM SUMMARY

The scope of the 2008 field program consisted of evaluation of the bedrock cores currently stored on-Site to establish the metal contents within the different lithologies on site. Once specific lithologic units were established, GZA selected intervals for collection of rock core samples for laboratory analysis as described in the following section.

In addition, as requested by the NYSDEC, GZA collected groundwater samples from monitoring wells MW42-49, MW47-56, MW62-18, MW62-53, and MW101 (**Appendix B**), and submitted them for VOC analysis in accordance with EPA Method 8260.

4.3 BEDROCK CORE ANALYSIS

4.3.1 Selection of Core Samples

GZA evaluated the bedrock core logs and optical televiewer logs prepared during the hydrogeologic site investigation (GZA 2008) to identify different lithologic units within the Site bedrock. Within these lithologic units, we further evaluated the logs to select sample intervals which avoided zones that were characterized by a relatively high frequency of open water-bearing factures. The rationale for this approach is that water-bearing fractures would be more likely to be subject to any Site-related contamination due to groundwater migration or impact from drilling fluids, as opposed to being representative of naturally occurring metals concentrations within the bedrock. Conversely, we specifically targeted healed fractures, since these intervals represent geothermal and geochemical conditions in the geologic past that likely resulted in zones more concentrated in trace elements due to hydrothermal alteration and precipitation of minerals. The healed nature of these fractures limits the potential for impact by contaminants associated with the current hydrogeologic regime.

Following the core log evaluations, we further evaluated the individual cores on December 23, 2008 through visual examination to select sample intervals based upon the above criteria. **Table 3** provides a summary, including rock core description and depth interval, of the samples selected for analysis. The selected core samples were then placed in plastic bags and wrapped in bubble wrap for protection. On December 24, 2008, the core samples were transported by courier to GZA's environmental laboratory (NYSDOH ELAP # 11063) under chain of custody procedures.

Once the core samples arrived at the laboratory, we further selected the sample aliquot from the interior of the core. This was accomplished by using a water-cooled diamond-bladed saw to slice a section of the core. The outer portions of the core section were removed using the same techniques until a rectangular piece of rock had been extracted from the inside of the core. The core samples were then crushed into a fine powder which was subsequently mixed such that the laboratory subsample was representative of the entire core sample submitted. The powdered sample was analyzed for As, Cr, Se and Tl using EPA Method 6010B ICP/AES.

4.3.2 Quality Assurance/Quality Control

The following QA/QC procedures were utilized during rock core sample preparation:

- The diamond saw blade, shroud and cooling water reservoir were decontaminated between each sample. Decontamination consisted of a potable water rinse, an Alconox/water rinse, followed by a potable water rinse and a final deionized water rinse.

- The mortar and pestle was decontaminated between each sample. Decontamination consisted of scrubbing the ceramic mortar and pestle with potable water and Alconox followed by a potable water rinse and a final deionized water rinse.

- The diamond blade and mortar and pestle were retained for potential further testing.

- A duplicate sample was prepared and analyzed for the 24 rock core samples analyzed.

- A rinse blank from the mortar and pestle or other crushing device was collected and analyzed for every twelve samples analyzed.

- A rinse blank from the diamond saw was collected for the 24 rock core samples analyzed.

- All appropriate laboratory QA/QC measures were employed. These include method blanks, laboratory spikes, laboratory matrix spikes, and laboratory matrix spike duplicates.

4.3.3 Rock Core Analytical Results

The bedrock core samples were analyzed for naturally occurring levels of As, Cr, Se and Tl at the GZA laboratory in Hopkinton, Massachusetts via EPA Method 6010B ICP/AES, and the results were compared to the analytical results for the soil samples collected from the Site in November 2007. The laboratory analytical reports are included in **Appendix C** and are summarized in **Table 4**.

As shown on Table 4, naturally occurring concentrations of Cr in the bedrock cores ranged from none detected to 35 mg/kg, well above the Part 375 SCO of 19 mg/kg. The highest concentration of Cr in bedrock was found in garnet-mica schist. Concentrations of Cr in the 2007 soil samples ranged from 2.17 to 30.1 mg/kg, within the range detected in the bedrock.

Naturally occurring concentrations of Se in the bedrock cores ranged from none detected to 34 mg/kg, well above the Part 375 SCO of 4 mg/kg. The highest concentration of Se in bedrock was found in garnet-mica schist. Concentrations of Se in the 2007 soil samples ranged from none detected to 38.8 mg/kg, generally consistent with the range found in the bedrock samples.

Naturally occurring concentrations of Tl in the bedrock cores ranged from none detected to 9.3 mg/kg, well above the NYSDEC referenced background values for Tl (0.08 to 1.5 mg/kg). The highest concentration of Tl in rock was from garnet-mica schist. The concentrations of Tl in the 2007 soil samples ranged from 1.76 to 41 mg/kg.

Naturally occurring concentrations of As in rock cores ranged from none detected to 11 mg/kg, somewhat below the Part 375 SCO of 16 mg/kg. The highest concentrations of As were found in a gray marble characterized by healed microfractures and vugs with calcite crystal growth. Concentrations of As in the 2007 soil samples ranged from 5.12 to 37.4 mg/kg.

4.3.4 Statistical Analysis

In order to evaluate whether the concentration distribution of As, Cr, Se and Tl in soils is naturally occurring (i.e. ubiquitous to the fill used on the Site), we performed various statistical analyses on the data. It should be noted that our sample set consisted of only 6 soil samples, while a statistically valid sample set would require a greater number of samples. However, we believe the data can be used as a screening method to test our hypothesis and evaluate recommendations for further study.

We performed the following statistical analysis:

- Measurement of mean, median, and standard deviation;
- Coefficient of Variation;
- Normal Probability Plots; and
- Log-transformed Probability Plots.

The statistical analysis results are presented in **Table 5** and **Appendix D**.

4.3.4.1 Mean, Median and Standard Deviation

The mean and median concentrations of each metal in soil and rock samples are presented in **Table 5**. As shown in the tables, the mean and median were consistently lower in the bedrock core samples than in soil samples. However, when we incorporate the standard deviation data, we can see that there is significant overlap in concentrations for Cr and Se in soil and rock samples. Based upon the standard deviation around the mean, both the Cr and Se levels in the soil samples were statistically (within one standard deviation) indistinguishable from naturally occurring levels in the bedrock.

4.3.4.2 Coefficient of Variation

A Coefficient of Variation (CV) analysis was run on As, Cr, Se and Tl. A CV measures the relative variability of the data set and provides an approximate indication of the likelihood that the data are normal. In all cases, the CV was less than 1 indicating that the distribution was lognormal. A normal or lognormal distribution indicates that the collected samples are from a single source of the contaminant such as naturally occurring bedrock, or present in the fill material from a similarly derived single source. It would not be expected that the soil samples would show this type of variation if the contamination was from an industrial source given the wide distribution of the soil samples across the Site relative to any one storage location (i.e., it is unlikely that such a source would be sufficiently wide-spread to reach all the sampling locations on the Site).

4.3.4.3 Normal and Lognormal Probability Plots

Probability plots were prepared for As, Cr, Se, and Tl using both normal and lognormal plots. The results of the tests showed that Cr and Se were composed of a uniform population and showed a normal distribution. This would indicate that the contaminants are either naturally occurring or ubiquitous to the fill material and not a result of independent industrial releases. However, the results showed that As and Tl potentially had bimodal populations. This could be the result of potential release areas of As and Tl, or outlying data points, different fill sources, or an insufficient population of sample points.

In conclusion, from a statistical perspective, both the Cr and Se levels in the soil samples were statistically (within one standard deviation) indistinguishable from naturally occurring levels in the bedrock, but As and Tl in the bedrock did not statistically overlap with soil concentrations. Therefore, the As and Tl results are further discussed in **Section 5.4** of this RFIR.

4.4 GROUNDWATER SAMPLING

At the NYSDEC's request, GZA collected groundwater samples from five (5) on Site monitoring well installations (MW42-49, MW47-56, MW62-18, MW62-53 and MW101) in October 2008 for VOC analysis. The samples were collected using low-flow procedures, which allowed collection of groundwater samples at discrete sampling zones while generally limiting sample turbidity and the accumulation of wastewater. Groundwater quality parameters, including dissolved oxygen, turbidity, temperature,

conductivity, and pH, were measured in the field using YSI Water Quality Sondes and flow-through cells. Sampling logs are included in **Appendix B**.

The groundwater samples were analyzed for VOCs via EPA Method 8260 at the GZA laboratory in Hopkinton, Massachusetts. The laboratory analytical reports are included in **Appendix C,** and the analytical data are summarized on **Table 6**.

The groundwater samples collected from wells MW42-49, MW47-56, MW62-18, MW62-53 and MW101) in October 2008 did not contain any exceedances of NYSDEC AWQS for VOCs. VOCs were below reported detection limits in these samples, with the exception of chloromethane and toluene[8], which were detected at concentrations below the NYSDEC AWQS of 5 µg/L.

4.5 2008 FINDINGS AND CONCLUSIONS

All four of the metals of concern (As, Cr, Se, and Tl) are naturally occurring in the bedrock core samples. The highest concentrations of these metals were found within marble characterized by healed microfractures (breccias) as well as within schist samples. Detections of Cr in soil samples collected in 2007 fell within the range of those found in the bedrock samples, and the majority of Se detections in soil samples collected in 2007 also fell within the range of those found in the bedrock samples.

With the exception of As, the naturally occurring concentrations in the bedrock samples for all the metals of concern were well above their Part 375 SCO or "cited background" values. That is, the naturally occurring levels of three of the four metals of concern found in the bedrock exceed at least one NYSDEC standard or "cited standard". Hence exceedance of these standards cannot be used, in and of itself, to infer that the soils are contaminated from some waste storage practice on site.

Based upon a comparison of the laboratory analytical results for the soil samples to the naturally occurring metals levels in the bedrock core, it appears that the presence of Cr and Se in soils may be completely explained by the use of blast rock fill on the Site, as indicated by statistical analyses in **Section 4.3**. In particular, blast rock from healed breccias and mica schist contained higher concentrations of trace metals and could account for the concentrations of the metals of concern in soil samples.

Although As and Tl were not detected in bedrock core samples at concentrations as high as found in the soils, Tl was present at elevated concentrations in the bedrock relative to its "cited non-polluted soil background" value. It may be the case that an insufficient number of samples were collected to fully support the statistical analysis. Likewise, it is possible that the rock core samples collected were not taken from the lithologies containing As and Tl at concentrations statistically similar to the soil samples. Note that the statistical analysis described in **Section 4.3** does not preclude the possibility that the As and Tl concentrations detected at the Site may be attributable to naturally occurring levels detected in bedrock, but their presence was further investigated in 2011 as described later in this RFIR.

[8] Chloromethane was detected at 2.85 µg/L in MW-42-49. Toluene was detected at 0.65 µg/L in MW-62-18.

Review of the 2007 analytical data had indicated the absence of a correlation between sampling locations with elevated levels of Se and Tl in groundwater and those with elevated levels in soil. In addition, the 2008 VOC groundwater analytical data showed an absence of VOC detections above AWQS in any of the groundwater samples requested by the NYSDEC. The materials known to be stored, or previously stored, within the Site SWMUs contain(ed) VOCs, so if a release had occurred from the SWMUs resulting in Se and Tl contamination of Site groundwater, VOC impact would also be likely. Given the absence of such impact, additional investigations of the groundwater were deemed warranted, and were conducted as described in the following section of this RFIR

5.0 2011 GROUNDWATER INVESTIGATION

5.1 OBJECTIVES AND RATIONALE

As described above, the 2008 investigation was focused on evaluating naturally occurring metals concentrations in bedrock core samples to provide a basis for comparison of soil analytical results. In contrast, the 2011 investigation was focused on evaluating metals concentrations in groundwater, with the goal of combining data from the two investigations to assess the potential for a metals release and the need for corrective actions associated with the SWMUs at the Site. Specifically, the objectives of the 2011 investigation were to:

- confirm the presence of metals in groundwater by re-sampling the wells that had been sampled in 2007,
- evaluate whether any metals concentrations identified represented dissolved metals or particulate matter entrained in the groundwater, and
- evaluate the vertical distribution of metals within the overburden and bedrock wells by collecting groundwater samples from discrete sampling intervals at each of the monitoring well locations.

5.2 2011 FIELD PROGRAM SUMMARY

In August 2011, GZA collected groundwater samples from the eleven monitoring wells that had been previously sampled in 2007, and submitted the samples for confirmatory analysis of metals concentrations. Samples were collected from each depth interval at each monitoring location, for a total of 36 sampling intervals, using either the low flow method or a modified well volume purge method. The low flow method allows collection of representative groundwater samples from discrete sampling zones within a monitoring installation, while limiting the accumulation of wastewater[9]. The modified traditional purge method[10], which allows for the collection of a representative groundwater sample

[9] As described in: Low-Flow Sample Collection, GZA, 7/18/2007

[10] As described in: Modified Traditional Groundwater Sample Collection, GZA, 7/18/2007

from a monitoring installation after purging 1.5 volumes of water[11], was used in wells where low flow sampling was not practical. **Appendix E** includes a summary of the sampling methods and equipment and sample collection depths during this sampling event.

With both sampling methods, GZA used dedicated sampling equipment, including polyethylene and/or nylon tubing and submersible electric pumps, to the extent practical. The use of dedicated sampling equipment limits the possibility of cross-contamination between monitoring installations and/or individual multi-level samples within a single installation. During the sampling, GZA field personnel measured turbidity, dissolved oxygen, temperature, conductivity, and pH in the field with an appropriately calibrated YSI multi-meter. Sampling Data Sheets summarizing water quality data and sampling information are presented in **Appendix E**.

During this sampling event, two samples were collected and analyzed from each interval to evaluate whether the previously observed elevated metals concentrations were potentially false positives due to sample turbidity (where the metals are actually part of the soil matrix and are not moving with the groundwater). One of the samples was collected directly in an acid-preserved container and analyzed for total arsenic, chromium, thallium, and selenium using EPA Method 6010B ICP. The second sample was processed in the field through a filter to remove fines within the sample matrix, and was analyzed for dissolved arsenic, chromium, thallium, and selenium using EPA Method 6010B ICP. In addition, the samples were subsequently re-analyzed for thallium using EPA Method 6020A ICP-MS; additional information about the analytical methods is provided below. For quality control /quality assurance purposes, two field blanks and two duplicate samples were submitted for analysis of total and dissolved metals. The analyses were performed by Life Science Laboratories, Inc. of East Syracuse, NY, a laboratory certified by the NY State Department of Health. The laboratory analytical reports are presented in **Appendix F**. **Table 2** presents a summary of the groundwater analytical results for the metals of concern, including data from both the 2007 and 2011 sampling events.

5.3 2011 GROUNDWATER SAMPLING RESULTS

As shown on Table 2, in contrast to the 2007 sampling event, only arsenic and chromium were detected at all in the groundwater samples in 2011, and then at concentrations significantly below the TOGS AWQS. Specifically, the following metals were detected during the 2011 sampling event:

- As was detected at concentrations of 17 µg/L, 18 µg/L, and 10 µg/L in groundwater samples MW63-18(T), MW63-18(D), and MW63-34(D), respectively. The reported detection limit for As was 10 µg/L, and the TOGS AWQS is 25 µg/L. The results are consistent with 2007 data, which reported 19 µg/L As in MW63-34 (unfiltered sample), and indicate that As in this area of the Site is consistently below groundwater standards.

[11] When external factors (such as well-surface-flooding from storm water runoff or overland flow of plant component leaks) might have infiltrated the top of the well and impacted ambient groundwater conditions at a specific sampling location, GZA typically purged three to five volumes of water (using the modified traditional purge method) prior to collection of a sample to attempt to obtain a representative groundwater sample.

- Cr was detected at concentrations of 16 µg/L and 14 µg/L in unfiltered samples MW42-78(T) and MW47-80(T), respectively. MW47-80 had relatively high turbidity, at 176.3 NTUs; the turbidity in MW42-78 was 4.07 NTUs. No Cr was present in the corresponding filtered samples MW42-78(D) and MW47-80(D) at the reported detection limit of 10 µg/L, suggesting that the data represent entrained particulates rather than dissolved Cr in the groundwater. During the 2007 sampling event, Cr was reported in soil sample MW47 at 2.17 mg/kg, significantly below the SCO for the protection of groundwater of 19 mg/kg, and in unfiltered groundwater samples MW42-49 at 8 µg/L and MW47-56 at 1.89 µg/L, indicating that Cr in this area of the Site is consistently below both soil cleanup levels and groundwater standards.

- Neither Se nor Tl was detected in any of the 2011 groundwater samples at the reported detection limits of 10 µg/L and 5 µg/L, respectively. This is in contrast to the 2007 results, in which groundwater samples from wells MW57, MW108 and MW111 exceeded the Se AWQS of 10 µg/L, and thallium results for MW42, MW55, MW57, MW108, and MW111 ranged from 9.98 to 13.2 µg/L. Note that the thallium data reported in 2007 represented estimated values reported via EPA Method 6010, whereas the 2011 data represents concentrations measured by EPA Method 6020. Additional information about the two methods is presented below.

5.4 ANALYTICAL METHODS

Metals in soil and groundwater are commonly analyzed via either EPA Method 6010B or EPA Method 6020A. Both methodologies involve the use of Inductively Coupled Plasma (ICP), which is created by passing a stream of argon gas through very high-energy radio frequency radiation. The argon gas atoms absorb the radiation and ionize (Chapnick et al., 2010). Metals are introduced into the plasma in an aerosol form, which is then ionized for detection.

The difference between EPA Methods 6010B and 6020A lies in the method of detection. EPA Method 6010B uses Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES) to measure light emitted at the characteristic spectrum of the metal being analyzed, whereas Method 6020A uses a mass spectrometer (ICP-MS) to measure the mass and charge of metal ions. Each of the methods may be affected by matrix interferences; specifically, arsenic results via ICP-AES may be biased by the presence of aluminum[12], chromium, and vanadium, and thallium results via ICP-AES may be biased by the presence of aluminum, calcium (note: Site bedrock is a marble), magnesium and iron[13] (Chapnick et al, 2010). The analytical methodologies include procedures to compensate for such interferences; however, the USEPA Office of Technical Standards estimated in 2010 that environmental data reported using ICP-AES has a false-positive rate for thallium of 99.9% and for arsenic of 25 to 50%. Chapnick et al. presented case studies, summarized below, to demonstrate matrix effects on the accuracy of arsenic and thallium results.

[12] From EPA Method 6010B, "[..] 100 mg/L of Al would yield a false signal for As equivalent to approximately 1.3 mg/L. Therefore, the presence of 10 mg/L of Al would result in a false signal for As equivalent to approximately 0.13 mg/L. The interference effects must be evaluated for each individual instrument since the intensities will vary."

[13] From the Massachusetts Department of Environmental Protection, Compendium of Analytical Methods: "Iron interference on thallium may not be adequately corrected in all matrices by ICP interelement correction factors (IECs). Data users should consider that detected thallium results above the applicable regulatory standard may be false positives and should be confirmed by an alternate analysis, such as ICP-MS."

- In case study 1, soil samples from a school in Forest Hills, New York were analyzed by ICP-AES and then re-analyzed within holding times by ICP-MS. The results indicated that arsenic measured by ICP-AES ranged from 12.6 mg/kg to 34 mg/kg; re-analysis of the same soil samples by ICP-MS resulted in arsenic concentrations ranging from 0.772 mg/kg to 5.64 mg/kg (generally an order of magnitude lower). Similarly, thallium concentrations in soil ranged from 3.06 mg/kg to 6.56 mg/kg via ICP-AES and from 0.0516 to 0.117 mg/kg via ICP-MS (nearly two orders of magnitude lower).

- In case study 2, groundwater samples from a Superfund site in Acton, Massachusetts were reported to have thallium concentrations ranging from 3.8 µg/l to 21.6 µg/l when analyzed by ICP-AES. Samples from the same wells, analyzed via ICP-MS one to two years later, had thallium concentrations of less than 1.0 µg/l. In addition, the interelement interference check sample, which contained high levels of interfering elements aluminum, calcium, iron and magnesium, was analyzed as part of the ICP-AES procedure. This sample yielded a value of 6 µg/l thallium; Chapnick et al. concluded that this was confirmation of the false-positives reported by ICP-AES, since the check sample should have had no detectable thallium.

- Chapnick et al further noted that there are no spectral interferences for thallium via ICP-MS; therefore, the results of analysis for thallium via ICP-MS are likely to be more reliable than the results via ICP-AES. However, analysis for arsenic via ICP-MS may be biased by the presence of calcium chloride isotopes present in samples high in calcium; by the reaction of the argon in ICP plasma gas with chlorine to form argon chloride isotopes, and by the formation of argon hydride and bromium hydride isotopes in the presence of deuterium. This was assumed to be the case in case study 3 in the Chapnick et al. paper, which is summarized below.

- Case study 3 compared arsenic data for groundwater samples analyzed by both ICP-MS and an alternative method, hydride generation atomic fluorescence spectroscopy (HGAF). These data demonstrated that all sample results by ICP-MS were higher than or equivalent to the data reported by HGAF. It was concluded that the higher ICP-MS results were likely due to interference by bromide, suggesting that ICP-MS may also result in false positives or high-biased data for arsenic.

The 2007 and 2008 soil, rock, and groundwater samples from the Site were analyzed for metals via EPA Method 6010B (ICP-AES). In addition to the As, Cr, Se and Tl that are the focus of this memorandum, the laboratory reported the presence of aluminum, calcium, magnesium and/or iron, which are known to contribute to matrix interference for arsenic and thallium via ICP-AES. Given: (1) the EPA alert regarding the high rate of false positives for arsenic and thallium via ICP-AES; (2) the Chapnick case studies documenting false positives for these compounds due to matrix interference; (3) the confirmed presence of interfering elements in the soil and groundwater known to present spectral interferences during the ICP-AES procedure; (4) the co-location of high concentrations of arsenic and thallium in soil at MW47, MW53, MW66, and MW111 compared to consistently lower concentrations at MW101 and MW108: and (5) the absence of any documented arsenic or thallium sources at the Site, it is likely that the arsenic and thallium data reported in 2007 and 2008 represent ICP-AES false positive results similar to those reported in the case studies above.

Although not completely conclusive, further indication that the 2007 ICP-AES/6010 results may represent false positives was provided by re-analysis of the groundwater samples for thallium via ICP-MS in 2011. The results indicated that thallium was not detected at the reporting limit of 5 µg/l via ICP-MS in any of the samples, unlike in 2007 when estimated thallium concentrations of up to 13.2 µg/l were reported via ICP-AES. A similar re-analysis for arsenic via ICP-MS was not deemed applicable due to: (1) the high calcium concentrations in soil and groundwater samples collected during previous investigations; (2) the presence of chloride reported in the groundwater at 500 mg/L (a concentration reported by Cai et al. (2000) to be sufficiently high to result in a 10-fold high bias in reported arsenic values); and (3) the likely presence of deuterium, all of which can contribute to matrix interferences and false positives for arsenic via ICP-MS.

5.5 2011 FINDINGS AND CONCLUSIONS

The 2011 investigation included the collection of groundwater samples from 36 screened intervals at eleven groundwater monitoring wells, and the analysis of both filtered and unfiltered samples from each of these locations for metals by ICP-AES and/or ICP-MS. The results of these analyses are presented below.

- Analysis of 78 groundwater samples (including duplicates) for As, Cr, Se by ICP-AES and Tl by ICP-MS in August 2011 indicated that only As and Cr were detected in the groundwater. As was detected in samples MW63-18 and MW63-34, and Cr was detected in samples MW42-78 and MW47-80**. However, neither As nor Cr exceeded its applicable TOGS AWQS in any of the samples, and Se and Tl were not detected at all.**

- Filtering the samples from well MW63 did not result in lower As concentrations, suggesting that the arsenic may be present in the dissolved phase in this well. The 2011 concentrations were consistent with the 2007 arsenic concentrations at this location, but **as stated above, were lower than the TOGS AWQS of 25 µg/L**, and if anything, are likely biased high due to elemental interferences within the matrix.

- Comparison of the filtered and unfiltered samples from MW42-78 and MW47-80 indicates that the filtered samples had non-detectable concentrations of chromium, suggesting that the Cr in the unfiltered samples may represent particulate material entrained in the samples, not dissolved Cr in the groundwater. **No dissolved chromium was detected in any of the groundwater samples during the 2011 event**.

- Based on the 2011 data, **dissolved metals concentrations in groundwater are below reported detection limits for Cr, Se, and Tl, and with the exception of well MW63, below reported detection limits for As. Both total and dissolved metals concentrations, when detected, were below TOGS AWQS.**

6.0 SUMMARY OF RCRA FACILITY INVESTIGATION

Upon completion of the 2011 groundwater investigation, the soil, bedrock core and groundwater analytical data collected between 2007 and 2011 were combined onto a single figure (**Figure 8 –Metals Summary Map**). The figure shows the layout of the Site, including structures and buildings; identifies the locations of Solid Waste Management Units (SWMUs); and presents the sampling locations from the 2007, 2008, and 2011 RCRA investigations. In addition to depicting the distribution of metals in various media at the Site, the figure graphically presents the data compared to published and Site-specific background values as well as regulatory screening levels, and thus serves as the basis for the findings and conclusions presented below.

Cr and Se

- The Cr and Se concentrations detected in surficial soil samples in 2007 are statistically similar to the bedrock core data collected in 2008, and are thus likely to represent naturally occurring concentrations. Therefore, no additional investigation of sources or extent in soil, or Corrective Actions, are recommended for these compounds.

- Both Cr and Se were detected in (unfiltered) groundwater samples in 2007. To investigate whether these compounds represented dissolved metals or entrained particulate material, both filtered and unfiltered groundwater samples were collected from the same wells in 2011 and were analyzed for metals. The results indicated that Se was not detected in any of the 78 filtered and unfiltered samples analyzed during this phase of work. Cr was only present in unfiltered samples, and is thus likely representative of particulate material rather than dissolved Cr. The Cr concentrations in the unfiltered samples did not exceed AWQS. Therefore, no additional investigation of sources or extent in groundwater, or Corrective Actions, are recommended for these compounds.

As and Tl

- The As and Tl concentrations detected in surficial samples in 2008 could not be conclusively attributed to bedrock blast fill. Analysis of groundwater samples collected in 2011 reported total and dissolved As at well MW63, but consistent with the 2007 investigation, the concentrations were below AWQS. In contrast to the groundwater results reported in 2007, no Tl was detected in any of the groundwater samples collected in 2011.

- The reported As and Tl concentrations in soil were co-located at four of the six locations sampled in 2007, but no sources of these compounds were identified in nearby SWMUS. Furthermore, there does not appear to be a correlation between higher As and Tl concentrations in soil and proximity to SWMU locations. However, both compounds are known to have a high rate of false positives via the analytical method used in 2007 (ICP-AES), especially when matrix interferences are present. The presence of such interfering elements has been confirmed in both soil and groundwater samples from the Site. Further, confirmatory analysis of the groundwater

samples for Tl by ICP-MS[14] in 2011 indicated that thallium was not detected at the reporting limit of 5 µg/l via ICP-MS in any of the samples, unlike in 2007 when estimated thallium concentrations of up to 13.2 µg/l were reported via ICP-AES. Based on the lack of sources, the co-location of the samples, the known spectral interferences, and the documented rate of false positives, the As and Tl concentrations at IPEC appear to be attributable to analytical artifacts as opposed to a RCRA release. Therefore, no additional investigation of sources or extent, or Corrective Actions, are recommended for these compounds.

Potential Impact to Groundwater

- The 2007 surficial soil samples that exceeded SCOs for the protection of groundwater were collected from the power block area of the Site, 90% of which is covered by pavement or structures. Therefore, surface infiltration and associated leaching of metals to groundwater is low in this area.

- The groundwater data from 2011 indicates that dissolved concentrations for the four metals of concern were all below detection limits, with the exception of detection of As at only one location, and that detection below the TOGS 1.1.1 Ambient Water Quality Standards (AWQS) and Guidance Values and Groundwater Effluent Limitations.

- Based on the limited surface infiltration and leaching of metals to groundwater, and the low concentrations of dissolved metals, when present, in Site groundwater monitoring wells, no Corrective Action of metals in soil or groundwater is warranted.

In summary, sufficient information has been collected to show that the metals at the site are either consistent with naturally occurring concentrations (chromium and selenium) or likely representative of false positives associated with the analytical method (arsenic and thallium). The distribution of the data does not suggest correlation with Site-specific sources, and dissolved concentrations, when present, are below applicable AWQS. Based on the results of the investigations to date, sufficient information has been collected to support a decision that no Corrective Action is needed. Therefore, it is requested that the Part 373 permit not be continued as a Corrective Action Permit, but that the NYSDEC terminate the permit for the facility.

[14] Confirmatory analysis of the groundwater samples for As by ICP-MS was not deemed applicable due to the presence of different interfering factors (calcium, chloride, and/or deuterium) which contribute to false positives for As via ICP-MS.

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Exhibit J

Letter from Edwin Dassatti to Fred Dacimo, September 1, 2006

New York State Department of Environmental Conservation
Division of Solid and Hazardous Materials
Bureau of Hazardous Waste and Radiation Management, 9th Floor
625 Broadway, Albany, New York 12233-7258
Phone: (518) 402-8594 • **FAX:** (518) 402-9024
Website: www.dec.state.ny.us

Denise M. Sheehan
Commissioner

September 1, 2006

Mr. Fred Dacimo
Site Vice President
Entergy Nuclear Northeast, Inc.
450 Broadway, Suite 3
Buchanan, NY 10511

Dear Mr. Dacimo:

Re: Expiration of the Indian Point 3, Part 373 Permit (NYD085503746), associated with the Claim for Conditional Exemption for Low-level Mixed Waste Storage and Disposal under 6 NYCRR 374-1.9

The Department has reviewed your April 25, 2006 letter certifying that the facility has only stored wastes meeting the definition of mixed wastes and has never stored wastes classified solely as a hazardous waste. The letter also certified that there are presently no corrective action issues at the facility. Thank you for providing the April certifications in support of the October 26, 2005 letter requesting termination of your Part 373 Hazardous Waste Management Permit due to the claim for conditional exemption for low-level mixed waste storage and disposal. Based on a review of the facility's operations and the aforementioned submittals, the Department has determined that the permit can either be terminated or allowed to expire.

As the permit is set to expire on September 9, 2006, the Department will allow the permit to expire as opposed to starting permit termination procedures. The Department will issue a public notice in the Environmental Notice Bulletin (ENB) regarding the permit expiration and the justification for allowing the permit to expire. The Department will send you a copy of the ENB notice for you to publish in the local paper.

If you have any questions regarding this letter, please contact Lynn M. Winterberger, P.E., of my staff, at (518) 402-8594.

Sincerely,

Edwin E. Dassatti, P.E.
Director
Bureau of Hazardous Waste & Radiation Management

cc: D. Gray, Entergy

e-cc: L. Winterberger
D. Evans
R. Stanton, Reg. 3
M. Duke, Reg. 3
M. Merriman, Reg. 3

e-bcc: M. Sheen, Reg. 7
P. Counterman
R. Phaneuf

Exhibit K

Letter from Larry Rosemann to Fred Dacimo, November 6, 2012

New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau A, 12th Floor
625 Broadway, Albany, New York 12233-7015
Phone: (518) 402-9625 • **Fax:** (518) 402-9627
Website: www.dec.ny.gov

Joe Martens
Commissioner

NOV 06 2012

Mr. Fred Dacimo, V.P.
Entergy Operations
Indian Point Energy Center
450 Broadway, Suite 1
Buchanan, New York 10511

Re: Final RCRA Facility Investigation Report
Indian Point Energy Center
450 Broadway, Buchanan, NY
EPA ID: NYD991304411
RCRA ID: 360038

Dear Mr. Dacimo:

The Department of Environmental Conservation (the Department) has reviewed the referenced report. The report concludes that there is sufficient information to demonstrate that no Corrective Action is required for the site's groundwater. The Department concurs with that conclusion and hereby approves this report.

Based on this approval and the information currently available, no additional Corrective Action is required for the Indian Point 2 site at this time.

Should you have any questions, please feel free to contact me at (518) 402-9622 or by email at larosenm@gw.dec.state.ny.us.

Sincerely,

Larry A. Rosenmann

cc: Dara Gray

ecc: L. Winterberger
D. Evans
J. Harrington
T. Killeen

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE SECRETARY

In the Matter of

ENTERGY NUCLEAR OPERATIONS, INC.; ENTERGY NUCLEAR INDIAN POINT 2, LLC; ENTERGY NUCLEAR INDIAN POINT 3, LLC; HOLTEC INTERNATIONAL; and HOLTEC DECOMMISSIONING INTERNATIONAL, LLC; APPLICATION FOR ORDER CONSENTING TO TRANSFERS OF CONTROL OF LICENSES AND APPROVING CONFORMING LICENSE AMENDMENTS	Docket Nos.: 50-3 50-247 50-286 72-051

(Indian Point Nuclear Generating Station)

CERTIFICATION OF SERVICE

Pursuant to 10 C.F.R. § 2.305, I certify that I served the foregoing Declaration of Daniel J. Evans via the NRC's Electronic Information Exchange on this 12th day of February, 2020.

Signed (electronically) by

Joshua M. Tallent
Assistant Attorney General
Environmental Protection Bureau
The Capitol
Albany, NY 12224
(518) 776-2456
Joshua.Tallent@ag.ny.gov