

**Current Human Exposures Under Control  
Environmental Indicator (EI) RCRAInfo Code CA725  
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**DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION**

**RCRA Corrective Action  
Environmental Indicator (EI) RCRAInfo Code CA725  
Current Human Exposures Under Control**

**Facility Name:** Indian Point Unit 3  
**Facility Address:** 450 Broadway, Buchanan, New York 10511  
**Facility EPA ID #:** NYD085503746

**BACKGROUND**

**Definition of Environmental Indicators (for the RCRA Corrective Action)**

Environmental Indicators (EIs) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EIs developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

**Definition of "Current Human Exposures Under Control" EI**

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no unacceptable human exposures to contamination (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all contamination subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

**Relationship of EI to Final Remedies**

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EIs are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Current Human Exposures Under Control" EI is for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

**Duration / Applicability of EI Determinations**

EI Determination status codes should remain in RCRAInfo national database ONLY as long as they remain true (i.e., RCRAInfo status codes must be changed when the regulatory authorities become aware of contrary information).

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**Site Background**

Indian Point Unit 3 (IP-3) is a nuclear powered electricity generating plant located in the village of Buchanan, Westchester County, New York. The facility was constructed on former park land in the mid 1970s and encompasses approximately 75 acres on the east bank of the Hudson River. Consolidated Edison, Inc. built the plant and transferred ownership to the New York Power Authority in 1975. Entergy Corporation purchased the plant in 2000 and is the current owner and operator. In 1996 NYSDEC issued a RCRA Hazardous Waste Management Permit for storage of mixed radiological and hazardous wastes because no suitable treatment or storage facility exists for this type of waste. Hazardous wastes (excluding mixed wastes) were, and still are, stored for less than 90 days prior to transport off site for disposal. In 2006, Entergy claimed a mixed waste exemption for the mixed waste storage units and requested termination of the Part 373 permit. In November, 2006 the permit was terminated.

**EI DETERMINATION**

- Has **all** available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

- If yes - check here and continue with #2 below.
- If no - reevaluate existing data, or
- If data are not available skip to #6 and enter "IN" (more information needed) status code.

- Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be **contaminated**<sup>1</sup> above appropriately protective risk-based levels (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

	YES	NO	?	Rationale/Key Contaminants
Groundwater		✓		No releases from SWMUs, RUs, or AOCs.
Air (indoors)		✓		No releases from SWMUs, RUs, or AOCs.
Surface Soil (i.e., <2 ft)		✓		No releases from SWMUs, RUs, or AOCs.
Surface Water		✓		No releases from SWMUs, RUs, or AOCs.
Sediment		✓		No releases from SWMUs, RUs, or AOCs.
Subsurface Soil (i.e., >2 ft)		✓		No releases from SWMUs, RUs, or AOCs.
Air (outdoors)		✓		No releases from SWMUs, RUs, or AOCs.

- If no (for all media) - skip to #6, and enter "YE," status code after providing or citing appropriate levels and referencing sufficient supporting documentation

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<sup>1</sup>"Contamination" and "contaminated" describe media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based levels (for the media, that identify risks within the acceptable risk range).

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demonstrating that these levels are not known or reasonably expected to be exceeded.

\_\_\_\_\_ If yes (for any media) - continue after identifying key contaminants in each contaminated medium, citing appropriate levels (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

\_\_\_\_\_ If unknown (for any media) - skip to #6 and enter "IN" status code.

**Rationale and Reference(s):**

In June, 1995, during the application process for the facility's Part 373 mixed waste storage permit, a Visual Site Inspection (VSI) and RCRA Facility Assessment (RFA) were conducted at the site's solid waste management units (SWMUs). The VSI report concluded that: (1) the existing hazardous waste storage units were in good condition and there was no evidence of releases from them; (2) no further investigation of the storage units was warranted; and (3) there was no indication of any other SWMUs on site. The RFA report identified all known SWMUs and AOCs on site and concluded that no further action was required at any of the units or areas. In 2006, as part of the claim for the mixed waste exemption, the site owner certified that no hazardous waste not meeting the definition of mixed waste had ever been stored in the mixed waste storage units and that there were no corrective action issues at IP-3. There are no known releases from any SWMU or AOC on the site. Therefore, no media are known or reasonably suspected to be contaminated above appropriately protective risk-based levels from releases subject to RCRA Corrective Action.

References: (1) New York Power Authority (November, 1995) *6 NYCRR Part 373 Permit Application, Indian Point Unit No. 3 Nuclear Power Plant*; (2) NYSDEC (September, 1996) *New York Power Authority Indian Point Unit No. 3 Part 373 Permit*; (3) NYSDEC Region 3 (June, 1995) *Visual Site Inspection (VSI) Report*; (4) NYSDEC Region 3 (June, 1995) *Indian Point #3 Nuclear Power Plant, RCRA Facility Assessment (RFA) Report*.

3. Are there **complete pathways** between contamination and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

Contaminated Media	Potential Human Receptors (Under Current Conditions)						
	Residents	Workers	Daycare	Construction	Trespassers	Recreation	Food*
Groundwater	—	—	—	—	—	—	—
Air (indoors)	—	—	—	—	—	—	—
Surface Soil (<2 ft)	—	—	—	—	—	—	—
Surface Water	—	—	—	—	—	—	—
Sediment	—	—	—	—	—	—	—
Subsurface Soil (>2 ft)	—	—	—	—	—	—	—
Air (outdoors)	—	—	—	—	—	—	—

\* Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

Instructions for Summary Exposure Pathway Evaluation Table:

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1. Strike out specific media, including human receptors spaces, for media which are not contaminated as identified in #2 above.
2. Enter "yes" or "no" for potential completeness under each Contaminated Media – Human Receptor combination (pathway).

(Note: In order to focus the evaluation to the most probable combinations some potential Contaminated Media - Human Receptor combinations (pathways) do not have check spaces ("—"). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.)

\_\_\_\_\_ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).

\_\_\_\_\_ If yes (pathways are complete for any Contaminated Media - Human Receptor combination) - continue after providing supporting explanation.

\_\_\_\_\_ If unknown (for any Contaminated Media - Human Receptor combination) - skip to #6 and enter "IN" status code

**Rationale and Reference(s):** Not Applicable

4. Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **significant**<sup>2</sup> (i.e., potentially unacceptable because exposures can be reasonably expected to be: (1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable levels (used to identify the contamination); or (2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable levels) could result in greater than acceptable risks)?

\_\_\_\_\_ If no (exposures cannot be reasonably expected to be significant (i.e., potentially unacceptable) for any complete exposure pathway) - skip to #6 and enter "YE" status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to contamination (identified in #3) are not expected to be significant.

\_\_\_\_\_ If yes (exposures could be reasonably expected to be significant (i.e., potentially unacceptable) for any complete exposure pathway) - continue after providing a description (of each potentially unacceptable exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to contamination (identified in #3) are not expected to be significant.

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<sup>2</sup> If there is any question on whether the identified exposures are significant (i.e., potentially unacceptable) consult a human health Risk Assessment specialist with appropriate education, training and experience.

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\_\_\_\_\_ If unknown (for any complete pathway) - skip to #6 and enter "IN" status code

**Rationale and Reference(s):** Not Applicable.

5. Can the significant **exposures** (identified in #4) be shown to be within **acceptable** limits?

\_\_\_\_\_ If yes (all significant exposures have been shown to be within acceptable limits) - continue and enter "YE" after summarizing and referencing documentation justifying why all significant exposures to contamination are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

\_\_\_\_\_ If no (there are current exposures that can be reasonably expected to be unacceptable) - continue and enter "NO" status code after providing a description of each potentially unacceptable exposure.

\_\_\_\_\_ If unknown (for any potentially unacceptable exposure) - continue and enter "IN" status code

**Rationale and Reference(s):** Not Applicable.

6. Check the appropriate RCRAInfo status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain supervisor (or appropriate manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

**YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI determination, **current human exposures are expected to be under control at the Indian Point Unit 3 facility, EPA ID # NYD085503746, located at 450 Broadway, Buchanan, New York** under current and reasonably expected conditions. This determination will be reevaluated when the Agency/State becomes aware of significant changes at the facility.**

\_\_\_\_\_ NO - Current human exposures are NOT under control.

\_\_\_\_\_ IN - More information is needed to make a determination.

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Completed by: Alex C. Czuhanic Date: 3/2/10  
Alex Czuhanic  
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Supervisor: Denise M. Radtke Date: 3/2/10  
Denise Radtke  
Engineering Geologist 3

Director: Robert J. Phaneuf Date: 3/4/10  
Robert J. Phaneuf, P.E. - Acting Director  
Bureau of Hazardous Waste and Radiation Management  
Division of Solid and Hazardous Materials  
New York State Department of Environmental Conservation

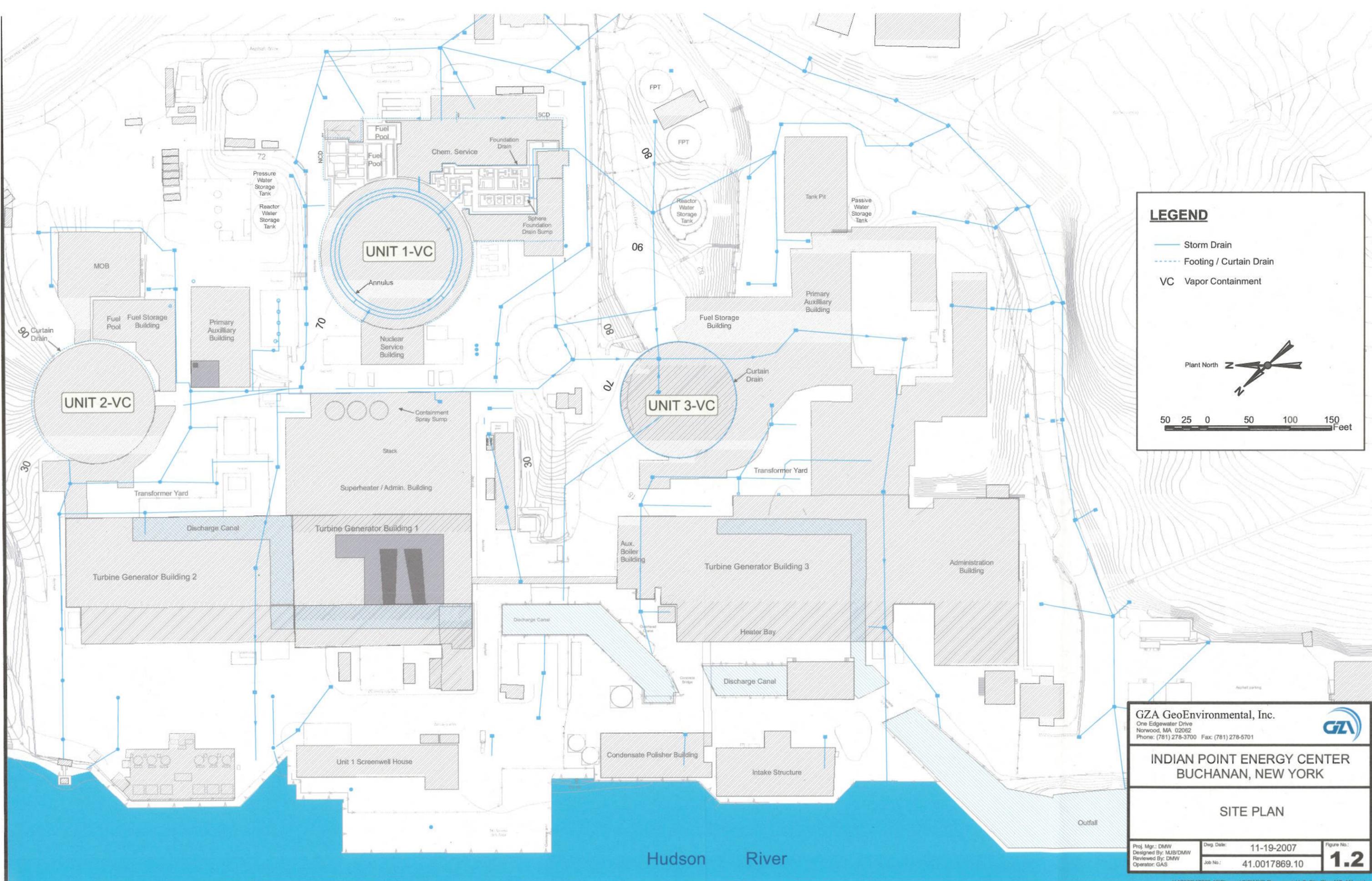
Locations where references may be found:

New York State Department of Environmental Conservation  
Division of Solid and Hazardous Materials  
625 Broadway 9<sup>th</sup> Floor  
Albany, New York 12233-7258

Contact telephone and e-mail:

Alex Czuhanic (NYSDEC)  
(518) 402-8594  
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**FINAL NOTE: The Human Exposures EI is a qualitative screening of exposures and the determinations within this document should not be used as the sole basis for restricting the scope of more detailed (e.g., site-specific) assessments of risk.**



**LEGEND**

- Storm Drain
- - - Footing / Curtain Drain
- VC Vapor Containment

Plant North

50 25 0 50 100 150 Feet

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	Dwg. Date: 11-19-2007	Figure No.:
Designed By: MJB/DMW	Reviewed By: DMW	Job No.: 41.0017869.10
Operator: GAS		<b>1.2</b>

Hudson River