DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

RCRA Corrective Action
Environmental Indicator (EI) RCRAInfo Code CA750
Migration of Contaminated Groundwater 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 (EI) 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 EI 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 "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of contaminated groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater 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 EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration / Applicability of EI Determinations

EI Determinations 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).

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

1. Has **all** available relevant/significant information on known and reasonably suspected releases to the groundwater media, 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 #8 and enter "IN" (more information needed) status code.

2. Is **groundwater** known or reasonably suspected to be **contaminated**[1] above appropriately protective levels (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

   _____ If yes - continue after identifying key contaminants, citing appropriate levels, and referencing supporting documentation.

   ✓ If no - skip to #8 and enter "YE" status code, after citing appropriate levels, and referencing supporting documentation to demonstrate that groundwater is not known or reasonably suspected to be contaminated.

   _____ If unknown - skip to #8 and enter "IN" status code.

   Rationale and Reference(s):

[1] "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 appropriate levels (appropriate for the protection of the groundwater resource and its beneficial uses).

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, groundwater is not known or reasonably suspected to be contaminated above appropriately protective 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. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within existing area of contaminated groundwater[2] as defined by the monitoring locations designated at the time of this determination)?

_____ If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the existing area of groundwater contamination[2]).

_____ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the existing area of groundwater contamination[2]) - skip to #8 and enter "NO" status code, after providing an explanation.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s): Not Applicable.

4. Does contaminated groundwater **discharge** into **surface water** bodies?

_____ If yes - continue after identifying potentially affected surface water bodies.

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[2]"existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of contamination that can and will be sampled/tested in the future to physically verify that all contaminated groundwater remains within this area, and that the further migration of contaminated groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

_____ If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater contamination does not enter surface water bodies.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s): Not Applicable.

5. Is the **discharge** of contaminated groundwater into surface water likely to be **insignificant** (i.e., the maximum concentration[3] of each contaminant discharging into surface water is less than 10 times their appropriate groundwater level, and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or ecosystems at these concentrations)?

_____ If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: (1) the maximum known or reasonably suspected concentration[3] of key contaminants discharged above their groundwater level, the value of the appropriate level(s), and if there is evidence that the concentrations are increasing; and (2) provide a statement of professional judgment/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or ecosystem.

_____ If no - (the discharge of contaminated groundwater into surface water is potentially significant) - continue after documenting: (1) the maximum known or reasonably suspected concentration[3] of each contaminant discharged above its groundwater level, the value of the appropriate level(s), and if there is evidence that the concentrations are increasing; and (2) for any contaminants discharging into surface water in concentrations[3] greater than 100 times their appropriate groundwater levels, the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

_____ If unknown - enter "IN" status code in #8.

6. Can the **discharge** of contaminated groundwater into surface water be shown to be **currently acceptable** (i.e., not cause impacts to surface water, sediments or ecosystems that should not be allowed to continue until a final remedy decision can be made and implemented[4])?

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[3] As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

[4] Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

_____ If yes - continue after either: (1) identifying the final remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site's surface water, sediments, and ecosystems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR (2) providing or referencing an interim assessment[5] appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialist, including ecologist) adequately protective of receiving surface water, sediments, and ecosystems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment levels, as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological risk assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

_____ If no - (the discharge of contaminated groundwater cannot be shown to be currently acceptable) - skip to #8 and enter "NO" status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or ecosystems.

_____ If unknown - skip to #8 and enter "IN" status code.

7. Will groundwater **monitoring**/measurement data (and surface water/sediment/ecological data, as necessary) be collected **in the future** to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the existing area of contaminated groundwater?

_____ If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the existing area of groundwater contamination.

_____ If no - enter "NO" status code in #8.

_____ If unknown - enter "IN" status code in #8.

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[5]The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or ecosystems.

Rationale and references: Not Applicable.

8. Check the appropriate RCRAInfo status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain supervisor (or appropriate manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

✓ **YE - Yes**, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that **the migration of contaminated groundwater is under control at the Indian Point Unit 3 facility, EPA ID # NYD085503746, located at 450 Broadway, Buchanan, New York.** Specifically, this determination indicates that the migration of contaminated groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the existing area of contaminated groundwater. This determination will be reevaluated when the agency becomes aware of significant changes at the facility.

____ NO - Unacceptable migration of contaminated groundwater is observed or expected.

____ IN - More information is needed to make a determination.

Completed by: A C ____ Date: 3/2/10
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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
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Locations where references may be found:

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