

**DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION**

Final: May 16, 2001

**RCRA Corrective Action  
Environmental Indicator (EI) RCRIS Code (CA725)**

**Current Human Exposures Under Control**

**Facility Name:** NRG Fossil Fuel Plant – Middletown Station  
**Facility Address:** 1866 River Road  
**Facility EPA ID #:** CTD 000845230

1. 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?

  X   If yes - check here and continue with #2 below.

       If no - re-evaluate existing data, or

       If data are not available skip to #6 and enter "IN" (more information needed) status code.

**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 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 EI 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 are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY,

**Current Human Exposures Under Control  
Environmental Indicator (EI) RCRIS code (CA725)**

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

2. 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)?

<b>"Contaminated" Media</b>	<b>Yes</b>	<b>No</b>	<b>?</b>	<b>Rationale/Key Contaminants</b>
Groundwater	<b>X</b>			See notes to 725-2.
Air (indoors)		<b>X</b>		See notes to 725-2.
Soil (surface, e.g., <2 ft)	<b>X</b>			See notes to 725-2.
Surface Water		<b>X</b>		See notes to 725-2.
Sediment		<b>X</b>		See notes to 725-2.
Soil (subsurface e.g., >2 ft)	<b>X</b>			See notes to 725-2.
Air (outdoors)		<b>X</b>		See notes to 725-2.

\_\_\_\_\_ If no (for all media) - skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.

**X** 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): See notes to 725-2.

Footnotes:

<sup>1</sup> "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of

**Current Human Exposures Under Control  
Environmental Indicator (EI) RCRIS code (CA725)**

appropriately protective risk-based “levels” (for the media, that identify risks within the acceptable risk range).

<sup>2</sup> Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

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

Potential Human Receptors (Under Current Conditions)

<b>“Contaminated” Media</b>	<b>Residents</b>	<b>Workers</b>	<b>Day-Care</b>	<b>Construction</b>	<b>Trespassers</b>	<b>Recreation</b>	<b>Food<sup>3</sup></b>
Groundwater	No	No	No	No	No	No	No
Air (indoors)	-	-	-	-	-	-	-
Soil (surface, e.g., <2 ft)	No	Yes	No	Yes	Yes	No	No
Surface Water	-	-	-	-	-	-	-
Sediment	-	-	-	-	-	-	-
Soil (subsurface e.g., >2 ft)	No	No	No	Yes	No	No	No
Air (outdoors)	-	-	-	-	-	-	-

Instructions for Summary Exposure Pathway Evaluation Table:

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).

**Current Human Exposures Under Control  
Environmental Indicator (EI) RCRIS code (CA725)**

Page 4

- 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): See notes to 725-3 .

<sup>3</sup> Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.).

4. Can the exposures from any of the complete pathways identified in #3 be reasonably expected to be "significant"<sup>4</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 can not 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."
- If unknown (for any complete pathway) - skip to #6 and enter "IN" status code

Rationale and Reference(s): See notes to 725-4 .

<sup>4</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.

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).

Another page 4 was requested from the consultant in order to reconcile the discrepancy - #5 should not have been checked off. JAP 3/19/02  
Please see attachment.  
FAX dated Mar. 19, 2002, 13:00 from M&E

**Current Human Exposures Under Control  
Environmental Indicator (EI) RCRIS code (CA725)**

Page 5

\_\_\_\_\_ 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

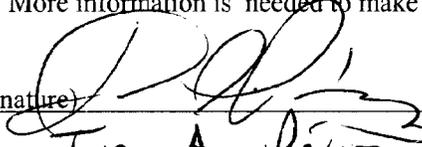
Rationale and Reference(s): Per the Instructions to 725-4, this section is not applicable.

6. Check the appropriate RCRIS 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):

  X   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 **NRG Fossil Fuel – Middletown Station facility**, EPA ID # **CTD000845230**, located at **Middletown Connecticut** under current and reasonably expected conditions. This determination will be re-evaluated 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.

Completed by (signature)  Date 3/16/02  
(print) Juan A. Perez  
(title) Environmental Scientist

Supervisor (signature)  Date 3/21/02  
(print) Matthew R. Hayward  
(title) Section Chief  
(EPA Region or State) Reg. I

Locations where References may be found:

Human Health Risk Assessment, May, 2001 (Metcalf & Eddy, Inc.)

March, 1999 Phase I Environmental Site Assessment (Metcalf & Eddy, Inc.)

April, 1999 Phase II Environmental Field Investigation Report (Metcalf & Eddy, Inc.)

November, 1999 Supplemental Site Investigation Report (Metcalf & Eddy, Inc.)

**Current Human Exposures Under Control  
Environmental Indicator (EI) RCRIS code (CA725)**

Page 6

Contact telephone and e-mail numbers

(name) Nelson Abrams / John Cardoni  
(phone #) 908-437-7080  
(e-mail) john-cardoni@aqualliance.com

**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.**

**Current Human Exposures Under Control  
Environmental Indicator (EI) RCRIS code (CA725)**

Page 7

**Rationale and References  
For  
Documentation of Environmental Indicator Determination  
RCRA Corrective Action Environmental Indicator Code CA 725**

**Background**

A Phase I Environmental Site Assessment (“ESA”) conducted in 1988 by CL&P, along with a Phase II ESA and Supplemental Environmental Site Investigation, conducted in 1999, by CL&P & NRG respectively, indicates the following:

**Site History**

The Middletown Generating Facility (“the facility”) was constructed in 1953 by the Hartford Electric Light Company, and began operation in 1954 as a coal-burning generating facility. In 1958, the facility switched from coal to No. 6 Fuel oil. In 1980, the Hartford Electric Light Company was purchased by Connecticut Light and Power Company, a division of the Northwest Utilities Services Company. The facility currently generates electricity via four (4) steam powered generators powered by No. 6 fuel oil and/or natural gas. A kerosene - powered internal combustion unit (ICU) or jet engine/generator is also used to produce electricity on an intermittent basis.

*Investigate. Should be "Northeast".  
Clarified via telephone  
call on March 7, 2002  
JAP*

The facility’s current operation consists of the generating station, which has four (4) units. Units 1 and 4 are fueled by oil, while Units 2 and 3 have oil and natural gas dual fuel capability. The generating station is located within the central portion of the site. An electrical switchyard, a cooling tower, a parking garage, a storage building, a wastewater treatment plant, a closed settling pond, and former ash settling ponds are located to the east of the generating station. Bulk fuel oil storage tanks, a warehouse, and various aboveground storage tanks used to store lighter grade fuel oil and fuel additives are located to the west of the generating station. A barge dock, used for transfer of fuel oil from barges to the bulk storage tanks is located along the bank of the Connecticut River.

**Areas of Environmental Concern**

- **Former Ash Settling Basins / Former Coal Ash Disposal Area/ Former Equalization Basins** - Fly ash and bottom ash from coal-fired boilers were historically disposed in ash lagoons located on the eastern portion of the site. A wastewater equalization basin (EB-2) was constructed in 1978, in the midst of the ash disposal area. The basin was used to accept wastewaters from boiler cleaning operations and store them prior to treatment in the facility’s wastewater treatment plant. This impoundment was operated under RCRA Interim status by virtue of CL&P’s submittal of a Part B permit application. RCRA closure was initiated in 1989. It included drainage of excess wastewater from the basin, removal of bottom sludge, sub-liner soil sampling, and removal/disposal of the Hypalon liner. With the exception of minor cobalt contamination beneath a localized tear of the basin liner, all soil samples obtained from the impoundment bottom met the closure criteria, as was set forth in the RCRA basin closure documents. The soil identified as containing excess cobalt was removed and disposed off-site. Certification of closure documentation was submitted to EPA Region I and the

**Current Human Exposures Under Control**  
**Environmental Indicator (EI) RCRIS code (CA725)**

Page 8

CTDEP on 8/29/91. Additional supporting documentation was submitted to both agencies on August 29, 1991. To date, neither EPA, nor the CTDEP have commented on the closure documentation.

A network of monitoring wells was installed around the former basin as part of the on-going RCRA Post Closure monitoring program. Post-closure groundwater monitoring is ongoing. That monitoring was originally performed on a quarterly basis, but has been reduced to a biannual schedule. The most recent RCRA annual groundwater monitoring report indicates that none of the groundwater quality indicators exceeded their regulatory values. Elevated levels of selenium were detected, but are believed to be attributed to the leaching of coal ash deposits. Consequently, minimal additional investigation of the EB-2 area was warranted during M&E's site investigation activities.

A total of 31 soil borings were advanced in this area, as part of the limited Phase II ESA, primarily in the former ash settling basins/coal ash disposal area. Seven (7) were advanced in the initial Phase II SI; five (5) within the former ash settling lagoons (two for groundwater sampling only), and two (2) near former basin EB-2. The Connecticut Remediation Standard Regulation (CTRSR) criteria for arsenic, beryllium, and thallium were exceeded in all of the soil samples collected from this area during this initial investigation. Arsenic and lead exceeded the applicable CTRSR criteria in four (4) of seven (7) groundwater samples collected from this area.

24 soil borings were advanced in this area during the supplemental Phase II SI. Soil borings were advanced using hand augering, to a maximum depth of four (4) feet. Three (3) soil samples were collected from each boring, for a total of 72 soil samples. Arsenic was encountered above the CTRSR criteria in 21 of those soil borings, and in the majority of samples collected from those borings. Beryllium, nickel, and thallium were encountered above CTRSR criteria in various soil samples, at a reduced frequency.

Two (2) groundwater samples were also collected from existing permanent monitoring wells as part of the supplemental site investigation. No contaminants were detected in excess of CTRSR criteria.

- **Internal Combustion Unit and Fuel Storage/Usage (ICU)** - The facility's ICU is fueled by two 25,000 gallon aboveground storage tanks (ASTs) which contain kerosene.

Soil borings were scheduled to be advanced in this area during the Phase II ESA, but were deleted from the sampling program due to interference with underground utilities.

- **Transformer Nos. 1 through 4** – These units are the step-up transformers for the main power generating station. There are presently no PCB-contaminated oils in any of these units. Some oil drips were visible at one of the transformers (Unit No.3) during the Phase I ESA. These units once contained PCBs but are now labeled as “Non-PCB Containing Fluids.”

Soil borings were scheduled to be advanced in this area during the Phase II ESA, but were deleted from the sampling program due to interference of underground utilities in the area.

- **East and West Bulk Storage Day Tanks** -The east and west bulk storage day tanks each contain approximately 316,000 gallons of No. 6 fuel oil which are used to fuel the burners within the generating station. Both tanks are heated with steam and are insulated.

**Current Human Exposures Under Control  
Environmental Indicator (EI) RCRIS code (CA725)**

Page 9

Four (4) hand augered soil borings were advanced in this area during the Phase II ESA. A soil sample was collected from each boring. The CTRSR criteria were not exceeded in any of the samples.

- **Petroleum Bulk Storage Tank Farm / Former Coal Storage Area** - The petroleum bulk storage tank farm (Tank Nos. 1 through 6) is located on the western side of the site in an area known as "Oil City." The tanks contain No. 6 fuel oil and are located within the area formerly used to store coal.

Thirteen (13) soil borings were advanced in this area during the Phase II ESA. A soil sample was collected from each boring. The applicable CTRSR criteria were not exceeded in any of the soil samples. One (1) of five (5) groundwater samples collected from the area contained arsenic at a level equal to the applicable CTRSR Surface Water Protection Criteria.

- **South Day Tank** – This is an insulated 704,000 gallon vessel containing No. 6 fuel oil. On October 25, 1998 an overfill occurred at this tank, resulting in the discharge of approximately 17,000 gallons of No. 6 fuel oil. The discharge migrated partially around the South Day Tank and into the containment area of Tank No. 6. CL&P obtained the services of an environmental cleanup contractor (AET) to remediate the discharge.

Three (3) soil borings were advanced in this area during the Phase II ESA. A soil sample was collected from each boring, while a groundwater sample was collected from one (1) of the borings. The CTRSR criteria were not exceeded in any soil or groundwater samples collected from this area.

- **No. 2 Ignition Oil ASTs** – The facility has a 10,000 gallon tank and a 8,000 gallon tank that store No. 2 fuel oil and waste oil used in firing the boilers for all of the turbines within the generating station. One of the tanks was also allowed to temporarily store PCB contaminated oil for use in firing the boilers (via permit by CTDEP). Presently, only non-PCB waste oil (via permit) is mixed with the fuel oil to fire the boilers within the station.

Two (2) soil borings were advanced in this area during the Phase II ESA. A soil sample was collected from each boring, while a groundwater sample was collected from one (1) of the borings. The CTRSR criteria were not exceeded in any soil or groundwater samples collected from this area.

- **North and South Fuel Oil Additive ASTs** - The fuel oil additive tanks contain magnesia-oxide; a fuel catalyst that allows for a more efficient and complete burning of the No. 6 fuel oil. The North Tank holds 5,000 gallons of the additive while the South Tank holds 6,000 gallons. Both tanks have secondary containment constructed of concrete. No visual evidence of staining or discharges was observed.

One (1) soil boring was scheduled to be advanced near the ASTs as part of the Phase II ESA, but was deleted from the sampling program due to interference from underground utilities in the area.

- **Oil/Water Separators** - Facility personnel positively identified two (2) underground oil/water separators at the site, with the possibility that a third might exist at an unspecified location. Access to the interior of these units was not possible during the site visit. Available information does not indicate potential impacts to the surrounding environment.

**Current Human Exposures Under Control  
Environmental Indicator (EI) RCRIS code (CA725)**

Page 10

Soil borings were scheduled to be advanced near one of the oil/water separators located on the west side of the station, but were deleted from the sampling program due to interference from underground utilities.

- **Septic Systems** - The site is served by one large septic system located between the switchyard and the parking garage. A second, smaller septic system may also be located along the south side of the facility's storage building.

Three (3) soil borings were advanced in the area of the septic system leachfield located between the T&D Switchyard and the parking garage. One (1) soil sample was collected from each, while a total of four (4) groundwater samples were collected from the three borings. The applicable CTRSR criteria were not exceeded for either soil or groundwater samples collected from the area of the larger septic system.

Soil borings were scheduled to be advanced near the smaller septic system, but were deleted from the sampling program due to interference with underground utilities.

- **T&D Switchyard** - The switchyard located on the eastern side of the generating station is owned and operated by the Transmission and Distribution division of CL&P. The switchyard contains numerous transformers and circuit breakers that once contained PCB contaminated oil. All of these units have since been drained and replaced with non-PCB oils.

Soil borings were to be advanced around the perimeter of the switchyard, but were deleted from the sampling program due to interference from underground utilities.

### **Discussion**

The following notes and associated attachments expand on the conclusions reached in each step of the Environmental Indicator Determination for RCRIS Code CA 725. Headings used for these notes correspond to the item numbers in the determination work sheet.

#### **General**

- In this evaluation, the Connecticut DEP's Industrial/Commercial Direct Exposure criteria were used to evaluate the risk (if any) that these soils pose to human receptors, through direct contact;
- Groundwater in the aquifer beneath the section of Middletown in which the facility is located is classified as GB, according to the CTDEP's Water Quality Classification System. Because this classification indicates that groundwater in this area is unsuitable for drinking without treatment, and because the subject facility and surrounding community are serviced with public water, ingestion of contaminated groundwater is not a viable route of exposure. Consequently, the USEPA's Maximum Contaminant levels (MCLs) for drinking water are not considered valid regulatory standards for the purpose of this discussion, and groundwater contaminant concentrations were not compared to them, as part of this exercise.

**Current Human Exposures Under Control  
Environmental Indicator (EI) RCRIS code (CA725)**

Page 11

**752.2 – Media Contamination Determination**

- **Groundwater** – As stated, groundwater in the vicinity of the facility is classified as GB. Use of site groundwater for drinking water is not reasonable under current or future land use scenarios. Because there is no reasonable pathway between on-site constituents in groundwater and potential on-site human receptors under current or future land use, comparison of contaminant concentrations to the MCLs is not warranted.

It should be noted that the most recent RCRA annual groundwater monitoring report indicates that none of the groundwater quality indicators exceeded their regulatory values. Elevated levels of selenium were detected, but are believed to be attributable to the leaching of coal ash deposits

For a detailed discussion of potential groundwater impacts, please refer to the accompanying “Documentation of Environmental Indicator Determination - Migration of Contaminated Groundwater Under Control” document.

- **Air (Indoors)** – Groundwater contamination is limited to RCRA metals. The CTDEP has not promulgated volatilization criteria for these contaminants. There is, therefore, no valid regulatory criterion for evaluating the potential impact of soil and/or groundwater contaminants upon indoor air quality.
- **Surface Soil** – Surface soil contamination at the subject site was limited to RCRA metals in the former ash settling basins. The primary contaminant of concern is arsenic, detected from < 0.006 ppm (the MDL) to 191 ppm.
- **Surface Water** – While there are no surface water bodies on the premises of the Middletown facility, the entire northern portion of the facility is bordered by the Connecticut River. It has been determined that groundwater from the site discharges to the Connecticut River.

While contaminants have been detected in groundwater in excess of SWPC, it is not known whether contaminants have actually discharged to the Connecticut River at or above those concentrations. Flow calculations do indicate that, due to the high base flow in the Connecticut River, it is highly unlikely that groundwater contaminated in excess of SWPC would adversely impact that River.

For a detailed discussion of potential impacts to surface water, please refer to the accompanying “Documentation of Environmental Indicator Determination - Migration of Contaminated Groundwater Under Control” document.

- **Sediment** – M&E collected a number of sediment samples from the Connecticut River, adjacent to the Middletown facility. No applicable human health standards for sediments were found to exist during the course of this evaluation. In lieu of a more appropriate criterion, the contaminant concentrations were compared to the I/C DEC for soil.

While measurable concentrations of various contaminants were encountered in many of the samples, no samples exhibited a contaminant concentration in excess of this criteria.

- **Subsurface Soil** – As can be seen from the attached tables, limited surface soil contamination was encountered in the former ash settling basins.

**Current Human Exposures Under Control**  
**Environmental Indicator (EI) RCRIS code (CA725)**

Page 12

- **Air (Outdoors)** - Groundwater contamination is limited to RCRA metals. The CTDEP has not promulgated Volatilization Criteria for these contaminants. There is, therefore, no valid regulatory criterion for evaluating the potential impact of soil and/or groundwater contaminants upon indoor air quality.

### **752.3 - Exposure Pathway Determination**

Given the contaminant concentrations and locations, along with current site use and site development, viable pathways do not appear to exist for human exposure to contaminants detected in various media on-site. The rationale for this determination is presented below, for each environmental media.

- **Groundwater** – According to the CTDEP’s Water Quality Classification system, groundwater in the aquifer beneath the section of Middletown in which the facility is located is classified as GB. Because this classification indicates that groundwater in this area is unsuitable for drinking without treatment, and because the subject facility and surrounding community are serviced with public water, ingestion of contaminated groundwater is not a viable route of exposure, nor will it be in the future, under foreseeable scenarios.

Furthermore, there is no viable indirect route for exposure of facility employees or construction workers to contaminated groundwater.

- **Air (Indoors)** – Groundwater contamination from RCRA units is limited to RCRA metals and phenanthrene. No volatilization of these materials would be expected, under normal conditions. Consequently, no viable exposure pathway exists.
- **Surface Soil** – Contaminated surface soil is limited to the Former Ash Settling Basins/Formal Coal Disposal Area. While site workers, construction workers and trespassers may be exposed to contaminated surface soils in this area, any exposure would be minimal and short-lived. However, further risk evaluation would be required to verify a determination of “no significant exposure”.
- **Surface Water** – Surface water samples were not collected from the Connecticut River, in the vicinity of the Plant, as part of this exercise. The portion of the River in the immediate vicinity of the plant is not, however, used for any purpose which would lead to prolonged direct contact with contaminants (if present) originating from the plant.

Furthermore, there are no commercial shellfish beds or finfish harvesting areas in the vicinity of the plant.

For a detailed discussion of potential impacts to surface water, please refer to the accompanying “Documentation of Environmental Indicator Determination - Migration of Contaminated Groundwater Under Control” document..

- **Sediment** – No sediment samples exhibited contamination above the I/C DEC for soil.
- **Subsurface Soil** – As stated, limited subsurface soil contamination was encountered at the subject site in the former ash settling basins/former coal disposal area. Facility personnel and trespassers will not come into contact with subsurface soil in this area during normal work assignments. While construction workers may be exposed to contaminated subsurface soils during excavation, any such exposure would be minimal and short-lived. Furthermore, because the site is not used for growing food crops, indirect exposure, via ingestion of contaminated food, is not a viable pathway.

**Current Human Exposures Under Control**  
**Environmental Indicator (EI) RCRIS code (CA725)**

Page 13

- **Air (Outdoors)** - Groundwater contamination from RCRA units is limited to RCRA metals. No volatilization of these materials would be expected under normal conditions. Furthermore, because the majority of the soil surfaces are covered with gravel, roadways, or permanent structures, the potential for wind entrainment of contaminants present in surface soils is negligible.

**752.4 – Exposures can not be reasonably expected to be significant**

The only identified areas with a complete exposure pathway with the potential to pose an unacceptable risk to human health are the Former Ash Settling Basins/former coal ash disposal area. As detailed in the attached “Human Health Risk Assessment”, the residual surface soil contamination identified in these areas would not reasonably be expected to pose a current or future significant risk to human health, in the absence of remedial action.

*Attachment*



**Fax**

Fax #: 617-918-1294  
To: Juan Perez  
Company: USEPA

Total Pages: 2  
From: Nelson J. Abrams  
Date:

**Message:**

Juan!  
Attached is the revised page 4 of the  
Middlebarn EIfom - CA725. Please  
call if you have any questions.

Regards,  
Nelson

**CONFIDENTIALITY NOTICE**

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This page was requested via telephone on March 19, 2002. JAA

Current Human Exposures Under Control  
Environmental Indicator (EI) RCRIS code (CA725)

Page 4

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): See notes to 725-3.

<sup>3</sup> Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.).

4. Can the exposures from any of the complete pathways identified in #3 be reasonably expected to be "significant"<sup>4</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 can not 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."

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

Rationale and Reference(s): See notes to 725-4.

<sup>4</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.

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).