DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA725)

Current Human Exposures Under Control

Facility Name: **PNM Person Generating Station**
Facility Address: **Broadway and Rio Bravo SE, Albuquerque**
Facility EPA ID #: **NMT360010342**

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 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 "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, 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"**[1] 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	**X**			**Chlorinated VOCs**
Air (indoors)[2]		**X**		
Surface Soil (e.g., <2 ft		**X**		
Surface Water		**X**		
Sediment		**X**		
Subsurf. Soil (e.g., >2 ft)	**X**			**Chlorinated VOCs, VOCs, SVOCs and Metals**
Air (outdoors)		**X**		

_____ 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): **Eight sites including four leach fields, a waste oil tank (unlined dry well), the bone yard, a spin-off-filter area and the natural pit area were investigated as potential release sites. Two of these sites, the waste oil tank and the natural pit area were determined to have had releases to the soil above regulatory limits.**

The waste oil tank (a.k.a., unlined dry well) was used to dispose of used petroleum products, solvents (primarily 1,1,1-trichloroethane, and tetrachloroethylene) and paints. The waste petroleum products also had concentrations of metals, primarily lead above action levels. The areal extent of soil contamination was estimated to be a 30' radius around the waste oil tank, with vertical extent to the water table (RCRA Permit Renewal Application, Volume 1: General Facility Information; Person Generating Station, Public Service Company of New Mexico, March 1998).

The natural pit area (NPA) received wastes containing organics (toluene and naphthalene) and metals (lead, arsenic and chromium). The original areal extent of the NPA was about 40' by 70'. The vertical extent of the soil contamination extended to 10 feet bgs (Closure Report: PNM Person Generating Station Hazardous Waste Storage Facility—Natural Pit Area NMT360010342, November 30, 1998).

Chlorinated solvent-based groundwater contamination (with the waste oil tank as the contaminant release site) is present, currently at levels slightly above WQCC Standards (Public Service Company of New Mexico Person Generating Station Groundwater Treatment System, Treatment Effectiveness Report Fourth Quarter 2005, February 13, 2006). GW contamination has migrated off site to the east.

Footnotes:

[1] "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 appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

[2] 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)						
"Contaminated" Media	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food[3]
Groundwater	No	No	No	No			No
~~Air (indoors)~~							
~~Soil (surface, e.g., <2 ft)~~							
~~Surface Water~~							
~~Sediment~~							
~~Soil (subsurface e.g., >2 ft)~~							
~~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.

__X__ 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): **Original surficial soil TPH, VOC, and RCRA heavy metal soil contamination above action levels at two SMWUs—the Natural Pit Area and the Spin-off Filter Area—has been excavated. Confirmatory soil sampling have documented that contamination concentrations are below site-established cleanup action levels, and these SWMUs were given NFA status (Fact Sheet/Statement of Basis, PNM Persons (*sic*) Station Proposals for No Further Action Status for 7 Solid Waste Management Units/Areas of Concern, May 13, 2005; C. Padilla, Director of NMED/Water and Waste Management Division to J. Hale, PNM, Final Permit Decision: Class 3 Permit Modification—Petition for No Further Action For Seven Solid Waste Management Units/Areas of Concern Person Generating Station NMT3600010342 HWB-PNM-05-001, August 3, 2005). Groundwater contaminants, comprising the VOCs 1,1-DCE and PCE, has migrated offsite;**

operation of a remedial extraction/treatment system has controlled overall contaminant migration and reduced contaminant concentrations in the shallow ground water plume (Public Service Company of New Mexico Person Generating Station Groundwater Treatment System, Treatment Effectiveness Report Fourth Quarter 2005, February 13, 2006). The remedial extraction system since 2002 is comprised of 8 extraction wells (the deepest is 285 feet below ground surface) and 2 in-series GAC units; the treated water is discharged to the irrigation pond at the UNM Championship Golf Course. 34 monitor wells are sampled semiannually to monitor the operational effectiveness of this remedial system (Groundwater Monitoring Data Annual Report, 2004, Volume I, Person Generating System, May 2005). 15 deeper monitor wells (the deepest is 947 feet below ground surface) are also monitored on the same schedule.

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[3] 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"**[4] (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): _____

[4] 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).

_____ 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): _____

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 **PNM Person Generating Station** facility, EPA ID # **NMT360010342**, located at **Broadway and Rio Bravo SE, Albuquerque** 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 03/16/06
(print) David L. Mayerson
(title) Environmental Scientist/Specialist

Supervisor (signature) _____ Date 4/12/06
(print) Steve Pullen
(title) Environmental Supervisor
NMED / HWB

Locations where References may be found:

New Mexico Environment Dept. Hazardous Waste Bureau, 2905 Rodeo Park Drive East, Building 1, Santa Fe, NM 87505

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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.