

9/1/90 Pnm

SCOPE OF WORK FOR A RCRA SITE INVESTIGATION (RSI)
AT
PERSON GENERATING STATION
PUBLIC SERVICE COMPANY
ALBUQUERQUE, NEW MEXICO

PURPOSE

The purpose of this RCRA Site Investigation (RSI) is to determine the nature and extent of releases of hazardous waste or hazardous constituents from the Equipment Wash Station and the Below Grade Waste Oil Tank at the Person Generating Station, Public Service Company (PNM) which are RCRA regulated units. In addition, the RSI will gather all necessary data to support the Corrective Measures Study. In order to define the scope of the RSI Workplan, the Description of Current Conditions (Task I), shall include under The Nature and Extent of Contamination Section (Task I.B.), summary and assessment of the investigative and remedial efforts conducted at the site to date. This summary shall follow the format of the Site Investigation (Task III), incorporating the appropriate portions of the RSI Workplan requirements. The RSI Workplan proposed for further investigation under Task III shall then address those portions of the investigation not adequately defined by the Task I report, as determined by EID. The Permittee shall furnish all personnel, materials, and services necessary for, or incidental to, performing the RSI at PNM. The term "site" refers to the Equipment Wash Station and the Below Grade Waste Oil Tank.

SCOPE

The RCRA Site Investigation consists of six tasks:

Task I: Description of Current Conditions

- A. Site Background
- B. Nature and Extent of Contamination
- C. Implementation of Interim Measures

Task II: RSI Workplan

- A. Project Management Plan
- B. Data Collection Quality Assurance Plan
- C. Data Management Plan
- D. Health and Safety Plan

E. Community Relations Plan

Task III: Site Investigation

- A. Environmental Setting
- B. Source Characterization
- C. Contamination Characterization
- D. Potential Receptor Identification

Task IV: Investigative Analysis

- A. Data Analysis
- B. Protection Standards

Task V: Laboratory and Bench-Scale Studies

Task VI: Reports

- A. Preliminary and Workplan
- B. Progress
- C. Draft and Final

TASK I: PRELIMINARY REPORT: DESCRIPTION OF CURRENT CONDITIONS

The Permittee shall submit for EID approval a Preliminary Report providing the background information pertinent to the site, contamination and any type of on-going corrective action as set forth below. The data gathered during any previous investigations or inspections and other relevant data shall be included.

A. Site Background

The Permittee report shall summarize the regional location, pertinent boundary features, general site physiography, hydrogeology, and historical use of the site for the treatment, storage or disposal of solid and hazardous waste. The Permittee's report shall include:

1. Map(s) depicting the following:
 - a. General geographic location;
 - b. Property lines, with the owners of all adjacent property clearly indicated;

- c. Topography (with a contour interval sufficient in detail to indicate surface water flow and drainage and a scale of 1 inch - 200 feet), waterways, floodplains, water features, drainage patterns, run-on and run-off controls, and surface water containment areas;
- d. The location and boundaries of the Equipment Wash Station and the Below Grade Waste Oil Tank.
- e. All known past solid or hazardous waste treatment, storage or disposal areas regardless of whether they were active on November 19, 1980;
- f. All known past and present product and waste underground and above ground tanks, piping, and storage areas;
- g. Surrounding land uses (residential, commercial, agricultural, recreational);
- h. All buildings, process areas, utilities, paved areas, easements, rights-of-way, and other features; and
- i. The location of all production and groundwater monitoring wells. These wells shall be clearly labeled and ground and top of casing elevations included (these elevations may be included as an attachment).

All maps shall be consistent with the requirements set forth in 40 CFR §270.14 and be of sufficient detail and accuracy to locate and report all current and future work performed at the site;

- 2. A history and description of ownership and operation, solid and hazardous waste generation, treatment, storage and disposal activities at the site; and
- 3. Approximate dates or periods of past product and waste spills, identification of the materials spilled, the amount spilled, the location where spilled, and a description of the response actions conducted (local, state, or federal response units or private parties), including any inspection reports or technical reports generated as a result

of the response.

B. Nature and Extent of Contamination

The Permittee shall include in the Preliminary Report the existing information on the nature and extent of contamination.

1. The Permittee's report shall summarize all possible source areas of contamination by wastes or products. This, at a minimum, should include all regulated units, solid waste management units, spill areas, and other suspected source areas of contamination. For each area, the Permittee shall identify the following:
 - a. Location of unit/area (which shall be depicted on a site map);
 - b. Quantities of solid and hazardous wastes;
 - c. Hazardous waste or hazardous constituents, to the extent known; and
 - d. Identification of areas where additional information is necessary.
2. The Permittee shall prepare an assessment and description of the existing degree and extent of contamination. This should include:
 - a. Available monitoring data and qualitative information on locations and levels of contamination at the site;
 - b. All potential migration pathways including information on geology, pedology, hydrogeology, physiography, hydrology, water quality, meteorology, and air quality; and
 - c. The potential impact(s) on human health and the environment, including demography, groundwater and surface-water use, and land use.

C. Implementation of Interim Measures

The PNM shall submit a report describing all interim measures which were or are being undertaken at the site other than those specified in the permit. This shall include:

1. Objectives of the interim measures: how the measure

is mitigating a potential threat to human health and the environment and/or is consistent with and integrated into any long term solution at the site;

2. Design, construction, operation, and maintenance requirements;
3. Schedules for design, construction and monitoring; and
4. Schedule for progress reports.

TASK II: RSI WORKPLAN REQUIREMENTS

The Permittee shall prepare a RCRA Site Investigation (RSI) Workplan. This RSI Workplan shall include the development of several plans, which shall be prepared concurrently. During the RCRA Site Investigation, it may be necessary to revise the RSI Workplan to increase or decrease the detail of information collected to accommodate the site specific situation. The RSI Workplan shall include the following:

A. Project Management Plan

The Permittee shall prepare a Project Management Plan which will include a discussion of the technical approach, schedules, budget, and personnel. The Project Management Plan will also include a description of qualifications of personnel performing or directing the RSI, including contractor personnel. This plan shall also document the overall management approach to the RCRA Site Investigation.

B. Data Collection Quality Assurance Plan

The Permittee shall prepare a plan to document all monitoring procedures, sampling, field measurements and sample analysis performed during the investigation to characterize the environmental setting, source, and contamination, so as to ensure that all information, data and resulting decisions are technically sound, statistically valid, and properly documented.

1. Data Collection Strategy

The strategy section of the Data Collection Quality Assurance Plan shall include but not be limited to the following:

- a. Description of the intended uses for the data, and the necessary level of precision and

accuracy for these intended uses;

- b. Description of methods and procedures to be used to assess the precision, minimum detection limits, units of measurement, calibration of instruments, accuracy and completeness of the measurement data;
- c. Description of the rationale used to assure that the data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition. Examples of factors which shall be considered and discussed include:
 - (1) Environmental conditions at the time of sampling;
 - (2) Number of sampling points;
 - (3) Representativeness of selected media; and
 - (4) Representativeness of selected analytical parameters.
- d. Description of the measures to be taken to assure that the following data sets can be compared to each other:
 - (1) RSI data generated by the Permittee over time;
 - (2) RSI data generated by an outside laboratory or consultant versus data generated by the Owner/Operator;
 - (3) Data generated by separate consultants or laboratories; and
 - (4) Data generated by an outside consultant or laboratory over time.
- e. Details relating to the schedule and information to be provided in quality assurance reports. The reports should include but not be limited to:
 - (1) Periodic assessment of measurement data accuracy, precision, and completeness;
 - (2) Results of performance audits;

- (3) Results of system audits;
- (4) Significant quality assurance problems and recommended solutions; and
- (5) Resolutions of previously stated problems.

2. Sampling

The Sampling section of the Data Collection Quality Assurance Plan shall discuss:

- a. Selecting appropriate sampling locations, depths, sampling equipment, sample containers, etc.;
- b. Providing a statistically sufficient number of sampling sites;
- c. Measuring all necessary ancillary data;
- d. Determining conditions under which sampling should be conducted;
- e. Determining which media are to be sampled (e.g., groundwater, air, soil, sediment, etc.);
- f. Determining which parameters are to be measured and where;
- g. Selecting the frequency of sampling and length of sampling period;
- h. Selecting the types of sample (e.g., composites vs. grabs) and number of samples to be collected;
- i. Measures to be taken to prevent contamination of sampling equipment and cross contamination between sampling points; and
- j. Field blanks, trip blanks, and replicate samples.
- k. Documenting field sampling operations and procedures, including:
 - (1) Documentation of procedures for preparation of reagents or supplies which become an integral part of the sample (e.g., filters and adsorbing reagents);

- (2) Procedures and forms for recording the exact location and specific considerations associated with sample acquisition;
 - (3) Documentation of specific sample preservation method;
 - (4) Calibration of field devices;
 - (5) Collection of replicate samples;
 - (6) Submission of field-biased blanks and trip blanks, where appropriate;
 - (7) Potential interferences present at the site;
 - (8) Construction materials and techniques, associated with recovery wells, monitoring wells and piezometers;
 - (9) Field equipment listing and sample containers and their materials of construction;
 - (10) Sampling order; and
 - (11) Decontamination procedures.
- l. Selecting appropriate sample containers;
 - m. Sample preservation; and
 - n. Chain-of-custody, including:
 - (1) Standardized field tracking reporting forms to establish sample custody in the field prior to and during shipment;
 - (2) Pre-prepared sample labels containing all information necessary for effective sample tracking; and,
 - (3) Pre-prepared seals for sample containers cross-referenced to the tracking reports.

3. Field Measurements

The Field Measurements section of the Data Collection Quality Assurance Plan shall discuss:

- a. Selecting appropriate field measurement devices, locations, depths, etc.;
- b. Providing a statistically sufficient number of field measurements;
- c. Measuring all necessary ancillary data;
- d. Determining conditions under which field measurement should be conducted;
- e. Determining which media are to be addressed by appropriate field measurements (e.g., ground water, air, soil, sediment, etc.);
- f. Determining which parameters are to be measured and where;
- g. Selecting the frequency of field measurement and length of field measurements period; and
- h. Documenting field measurement operations and procedures, including:
 - (1) Procedures and forms for recording raw data and the exact location, time, and site specific considerations associated with the data acquisition;
 - (2) Calibration of field devices;
 - (3) Potential interferences present at the site;
 - (4) Field equipment listing;
 - (5) Order in which field measurements were made;
 - (6) Decontamination procedures; and
 - (7) Collection of replicate measurements.

4. Sample Analysis

The Sample Analysis section of the Data Collection Quality Assurance Plan shall specify the following:

- a. Chain-of-custody procedures, including:
 - (1) Identification of a responsible party to act as sample custodian at the laboratory

site authorized to sign for incoming field samples, verification that seals are intact upon receipt, verification that the samples were sufficiently cooled with ice, obtain documents of shipment, and verify the data entered onto the sample custody records;

- (2) Provision for a laboratory sample custody log consisting of serially numbered standard lab tracking report sheets; and
 - (3) Specification of laboratory sample custody procedures for sample handling, storage, and dispersement for analysis.
- b. Sample storage and holding times;
 - c. Sample preparation methods;
 - d. Analytical procedures, including:
 - (1) Scope and application of the procedure;
 - (2) Sample matrix;
 - (3) Potential interferences;
 - (4) Precision and accuracy of the methodology; and
 - (5) Method detection limits.
 - e. Calibration procedures and frequency;
 - f. Data reduction, validation and reporting;
 - g. Internal quality control checks, laboratory performance and systems audits and frequency, including:
 - (1) Method blank(s);
 - (2) Laboratory control sample(s);
 - (3) Calibration check sample(s);
 - (4) Replicate sample(s);
 - (5) Matrix-spiked sample(s);
 - (6) "Blind" quality control sample(s);

- (7) Control charts;
- (8) Surrogate samples;
- (9) Zero and span gases;
- (10) Reagent quality control checks; and
- (11) Recommended vs actual holding times for samples.
- (12) Name and address of laboratory to be used for sample analysis.

The Permittee shall specify the name and address of the laboratory to be used for sample analysis. The EID reserves the right to conduct a performance and QA/QC audit of the above specified laboratory before or during sample analysis. If the audit reveals deficiencies in lab performance or QA/QC, resampling and analysis will be required.

- h. Preventive maintenance procedures and schedules;
- i. Corrective action (for laboratory problems); and
- j. Turnaround time.

C. Data Management Plan

The Permittee shall develop and initiate a Data Management Plan to document and track investigation data and results. This plan shall identify and set up data documentation materials and procedures, project file requirements, and project-related progress reporting procedures and documents. The plan shall also provide the format to be used to present the raw data and conclusions of the investigation.

1. Data Record

The data record shall include the following:

- a. Unique sample or field measurement code;
- b. Sampling or field measurement location and sample or measurement type;

- c. Sampling or field measurement raw data;
- d. Laboratory analysis ID number;
- e. Property or component measured;
- f. Result of analysis (e.g., concentration); and
- g. Actual holding time of all samples, making special note of those samples which exceeded recommended holding times.

2. Tabular Displays

The following data shall be presented in tabular displays:

- a. Unsorted (raw) data;
- b. Results for each medium, or for each constituent monitored;
- c. Data reduction for statistical analysis;
- d. Sorting of data by potential stratification factors (e.g., location, soil layer, topography); and
- e. Summary data.

3. Graphical Displays

The following data shall be presented in graphical formats (e.g., bar graphs, line graphs, area or plan maps, isopleth plots, cross-sectional plots or transects, three dimensional graphs, etc.):

- a. Display sampling location and sampling grid;
- b. Indicate boundaries of sampling area, and areas where more data are required;
- c. Displays levels of contamination at each sampling location;
- d. Display geographical extent of contamination;
- e. Display contamination levels, averages, and maxima;
- f. Illustrate changes in concentration in relation to distance from the source, time, depth or

other parameters; and

- g. Indicate features affecting intramedia transport and show potential receptors,

D. Health and Safety Plan

PNM shall prepare a site Health and Safety Plan. Because PNM is responsible for site safety, EID will not approve this plan, but will reserve the right to disapprove it and require modifications.

1. Major elements of the Health and Safety Plan shall include:
 - a. Site description including availability of resources such as roads, water supply, electricity and telephone service;
 - b. Describe the known hazards and evaluate the risks associated with the incident and with each activity conducted;
 - c. List key personnel and alternates responsible for site safety, responses operations, and for protection of public health;
 - d. Delineate work area;
 - e. Describe levels of protection to be worn by personnel in work area;
 - f. Establish procedures to control site access;
 - g. Describe decontamination procedures for personnel and equipment;
 - h. Establish site emergency procedures;
 - i. Address emergency medical care for injuries and toxicological problems;
 - j. Describe the requirements for an environmental surveillance program;
 - k. Specify any routine and special training required for responders; and
 - l. Establish procedures for protecting workers from weather-related problems.
2. The Site Health and Safety Plan shall be consistent

with:

- a. NIOSH Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (1985);
- b. EPA Order 1440.1 - Respiratory Protection;
- c. EPA Order 1440.3 - Health and Safety Requirements for Employees engaged in Field Activities;
- d. Approved Site Contingency Plan;
- e. EPA Standard Operating Safety Guide (OERR/ERT, 1984);
- f. OSHA regulations particularly in 29 CFR 1910 and 1926;
- g. State and local regulations; and
- h. Other EPA guidance as provided.

E. Community Relations Plan

The Permittee shall prepare a plan, for the dissemination of information to the public regarding investigation activities and results.

TASK III: SITE INVESTIGATION

The Permittee shall conduct those investigations which are necessary to: characterize the site (Environmental Setting); define the source (Source Characterization); define the degree and extent of contamination (Contamination Characterization); and identify actual or potential receptors.

Investigations should result in data of adequate technical quality to support the development and evaluation of the corrective measure alternative or alternatives during the Corrective Measures Study.

The site investigation activities shall when conducted follow the plans set forth in Task II. All sampling and analyses shall be conducted in accordance with the Data Collection Quality Assurance Plan. All sampling locations shall be documented in a log and identified on a detailed site map.

A. Environmental Setting

The Permittee shall collect information to supplement

and verify existing information on the environmental setting at and around the site. The Permittee shall characterize the following:

1. Hydrogeology

The Permittee shall conduct a program to evaluate hydrogeologic conditions at the site. This program shall provide the following information:

- a. A description of the regional and site specific geologic and hydrogeologic characteristics affecting groundwater flow beneath the site, including:
 - (1) Regional and site specific stratigraphy: description of strata including strike and dip, identification of stratigraphic contacts;
 - (2) Structural geology: description of local and regional structural features (e.g., folding, faulting, etc.);
 - (3) Depositional history;
 - (4) Regional and site specific groundwater flow patterns, sufficient to reflect seasonal changes in flow patterns; and
 - (5) Identification and characterization of areas and amounts of recharge and discharge, which could influence seasonal variations.
- b. An analysis of any topographic features that might influence the groundwater flow system (e.g., arroyos, ditches, faults).
- c. Based on field data, tests, and cores, a representative and accurate classification and description of the hydrogeologic units which may be part of the migration pathways at the site (i.e., the aquifers and any intervening saturated and unsaturated units), including:
 - (1) Hydraulic conductivity and porosity (total and effective);
 - (2) Lithology, grain size, sorting, degree of cementation;

- (3) An interpretation of hydraulic interconnections between saturated zones; and
 - (4) The attenuation capacity and mechanisms of the natural earth materials (e.g., ion exchange capacity, organic carbon content, mineral content etc.).
- d. Based on field studies and cores, dip and strike oriented structural geology and hydrogeologic cross sections showing the extent (depth, thickness, lateral extent) of hydrogeologic units which may be part of the migration pathways identifying:
 - (1) Zones of channeling in unconsolidated deposits;
 - (2) Zones of higher permeability or lower permeability that might direct and restrict the flow of contaminants; and
 - (3) Water-bearing zones above the first confining layer that may serve as a pathway for contaminant migration including perched zones of saturation.
- e. Based on data obtained from all groundwater monitoring wells, and piezometers installed upgradient and downgradient of the potential contaminant source, a representative description of water level or fluid pressure monitoring including:
 - (1) The flow system, including the vertical and horizontal components of flow;
 - (2) Any temporal changes in hydraulic gradients, for example, due to seasonal influences;
 - (3) Water level contour and/or potentiometric maps; and
 - (4) Hydrologic cross-sections showing vertical gradients.
- f. A description of man-made influences that may affect the hydrogeology of the site, identifying:

- (1) Active or inactive water supply or production wells within a one-mile radius of the site, including any available logs, construction details, schedules of pumping, and method of abandonment, if inactive; and
- (2) Man-made hydraulic structures (pipelines, french drains, ditches, unlined ponds, septic tanks, NPDES outfalls, retention areas etc.).

The Permittee shall document the procedures and references used in making the above determinations.

2. Soils

The Permittee shall conduct a program to characterize the soil and rock units above the water table in the vicinity of the contaminant release(s). Such characterization shall include but not be limited to, the following information:

- a. USCS soil classification;
- b. Surface soil distribution;
- c. Soil profile, including ASTM classification of soils;
- d. Directional relative permeability;
- e. Bulk density;
- f. Cation exchange capacity (CEC);
- g. Soil pH;
- h. Particle size distribution;
- i. Moisture content;
- j. Infiltration (field test);
- k. Storage capacity;
- l. Mineral content;
- m. Soil organic content;
- n. Evapotranspiration;

- o. Vertical flow rate;
- p. Soil sorptive capacity;
- q. Porosity;
- r. Hydraulic conductivity (saturated and unsaturated); and
- s. Transects of soil stratigraphy.

The Permittee shall document the procedures and references used in making the above determinations.

3. Surface Water and Sediment

The Permittee shall conduct a program to characterize the surface water bodies in the vicinity of the site. Such characterization shall include, but not be limited to, the following activities and information:

- a. A description of the temporal and permanent surface water bodies for a radius of at least one mile from site, including:
 - (1) For streams, ditches, drains, arroyos, and channels: location, elevation, flow, velocity, depth, width, seasonal fluctuations, and flooding tendencies (i.e., 100 year event);
 - (3) For impoundments: location, elevation, surface area, depth, volume, freeboard, and chemical analyses, and purpose of impoundment;
 - (4) Drainage patterns;
 - (5) Evapotranspiration rates; and
 - (6) Interaction between surface water bodies and groundwater.
- b. Description of the runoff/drainage channels and runoff/drainage sediments of the natural (i.e., background) and contaminated surface water (if any) and sediments. This includes pH and specific contaminant concentrations.
- c. Description of sediment characteristics including:

- (1) Deposition area;
- (2) Thickness profile; and
- (3) Physical and chemical parameters (e.g., grain size, density, organic carbon content, ion exchange capacity, pH, etc.)

The Permittee shall document the procedures and references used in making the above determinations.

4. Air

In order to determine the existing impact, if any, or the impact, if any, during the CMS and CMI on the surrounding environment of such contaminants as may be emanating from the site by air, the following data shall be collected:

- a. The Permittee shall provide information characterizing the climate in the vicinity of the site. Such information shall include, but not be limited to: A description of the following parameters:
 - (1) Annual and monthly rainfall averages;
 - (2) Monthly temperature averages and extremes;
 - (3) Wind speed and direction;
 - (4) Relative humidity/dew point;
 - (5) Atmospheric pressure;
 - (6) Evaporation data;
 - (7) Development of inversions; and
 - (8) Climate extremes that have been known to occur in the vicinity of the site, including frequency of occurrence.
- b. A description of topographic and man-made features which affect air flow and emission patterns, including:
 - (1) Ridges, hills or mountain areas;
 - (2) Wind breaks; and

(3) Buildings.

The Permittee shall document the procedures and references used in making the above determinations.

B. Source Characterization

The Permittee shall collect analytic data to completely characterize the wastes or product, and the areas where wastes or products have been placed, collected, or removed, stored, disposed at the site. This data must include: type; quantity; physical form; disposition (containment or nature of deposits; and site characteristics affecting release (e.g., site security, and engineered barriers). This shall include quantification of the following specific characteristics:

1. Unit/Disposal Area characteristics:
 - a. Location of unit/disposal area;
 - b. Type of unit/disposal area;
 - c. Design features;
 - d. Operating practices (past and present);
 - e. Period of operation;
 - f. Age of unit/disposal area;
 - g. General physical conditions; and
 - h. Method used to close the unit/disposal area.
2. Waste Characteristics:
 - a. Type of waste placed in the unit;
 - (1) Hazardous classification (e.g., flammable, reactive, corrosive, oxidizing or reducing agent);
 - (2) Quantity; and
 - (3) Chemical composition.
 - b. Physical and chemical characteristics;
 - (1) Physical form (solid, liquid, gas);
 - (2) Physical description (e.g., powder, oily

sludge);

- (3) Temperature;
- (4) pH;
- (5) General chemical class (e.g., acid, base, solvent);
- (6) Molecular weight;
- (7) Density;
- (8) Flash point;
- (9) Viscosity;
- (10) Solubility in water;
- (11) Cohesiveness of the waste; and
- (12) Vapor pressure.

c. Migration and dispersal characteristics of the waste;

- (1) Sorption;
- (2) Biodegradability, bioconcentration, biotransformation;
- (3) Photodegradation rates;
- (4) Hydrolysis rates; and
- (5) Chemical transformations.

The Permittee shall document the procedures and references used in making the above determinations.

C. Contamination Characterization

The Permittee shall collect analytical data on groundwater, soil, air, surface water (if any), runoff/drainage sediment, and subsurface gas contamination in the vicinity of the site. This data shall be sufficient to define the vertical and horizontal extent, origin, direction, and rate of migration of contaminant plumes. The data shall include time and location of sampling, media sampled, concentrations detected, conditions during sampling, and the identity of the individuals performing the sampling and analysis.

The Permittee shall address the following types of contamination at the site:

1. Groundwater Contamination

The Permittee shall conduct a Groundwater Investigation to characterize any plumes of contamination at the site,

This investigation shall at a minimum provide the following information:

- a. A description of the horizontal and vertical extent of any immiscible or dissolved plume(s) originating from the site. Extent is defined as any levels above the practical quantitation limit;
- b. The horizontal and vertical direction of contaminant movement;
- c. The velocity of contaminant movement;
- d. The horizontal and vertical concentration profiles of Appendix IX constituents in the plume(s);
- e. An evaluation of factors influencing the plume movement (e.g., solubility in water, vapor pressure, viscosity, density, Henry's Law constant, octanol-water partition coefficient, organic carbon partition coefficient, biodegradability); and
- f. An extrapolation of future contaminant movement,

The Permittee shall document the procedures and references used in making the above determinations (e.g., well design, well construction, geophysics, modeling, etc.).

2. Soil and Soil Gas Contamination

The Permittee shall conduct an investigation to characterize the contamination of the vadose zone in the vicinity of the site. The investigation shall at a minimum include the following information:

- a. A description of the vertical and horizontal extent of contamination. Description may be

based on soil-gas analysis in conjunction with a soil sampling program. The soil-gas analysis, if chosen, should include:

- (1) A description of the horizontal and vertical extent of subsurface gas migration;
 - (2) The chemical composition of the gases being emitted;
 - (3) The rate, amount, and density of the gases being emitted; and
 - (4) Horizontal and vertical concentration profiles of the subsurface gases emitted.
- b. A description of contaminant and soil chemical properties within the contaminant source area and plume. This includes contaminant solubility, speciation, adsorption, leachability, exchange capacity, biodegradability, hydrolysis, photolysis, oxidation and other factors that might affect contaminant migration and transformation.
- c. Specific contaminant concentrations.
- d. The velocity and direction of contaminant movement.
- e. An extrapolation of future contaminant movement.

The Permittee shall document the procedures and references used in making the above determinations.

3. Surface Water and Sediment Contamination

The Permittee shall conduct a surface water investigation to characterize any contamination in surface water bodies (if any) and surface water runoff identified under Task III.B.3. as being susceptible to releases from the site.

The investigation shall include, but not be limited to, the following information:

- a. A description of the horizontal and vertical extent of any immiscible or dissolved plume(s) originating from the site, and the extent of contamination in underlying sediments;

- b. The horizontal and vertical direction of contaminant movement;
- c. The contaminant velocity;
- d. An evaluation of the physical, biological, and chemical factors influencing contaminant movement.
- e. An extrapolation of future contaminant movement; and
- f. A description of the chemistry of the contaminated surface waters(if any) and surface water runoff sediments. This includes determining the pH and specific Appendix IX parameter concentrations, etc.;

The Permittee shall document the procedures and references used in making the above determinations.

4. Air Contamination

- a. The Permittee shall conduct an investigation to characterize the particulate and gaseous contaminants released into the atmosphere. These characterizations will consist of comprehensive screening of Appendix IX constituents. This investigation shall provide the following information:
 - (1) ambient air quality at the site;
 - (2) a description of the horizontal and vertical direction and velocity of contaminant movement;
 - (3) the rate and amount of release;
 - (4) the source of the release; and
 - (5) the chemical and physical composition of the contaminant(s) released, including horizontal and vertical concentration profiles.

After air quality is characterized, Permittee shall submit an air monitoring plan to be used during the CMS and CMI which shall list identified constituents, proposed detection limits for each constituent, and proposed

allowable concentrations for each constituent for EID approval.

The Permittee shall document the procedures and references used in making the above determinations.

D. Potential Receptors

The Permittee shall collect available data describing the human populations and environmental systems that are susceptible to contaminant exposure from the site. Data on observable effects in ecosystems (e.g., stressed vegetation) may also be obtained. The following characteristics shall be identified:

1. Local uses and possible future uses of groundwater:
 - a. Type of use (e.g., drinking water source: municipal or residential, agricultural, domestic/non-potable, and industrial); and
 - b. Location and names of groundwater users and past users since 1970, within a five-mile radius down-gradient and one half mile radius up-gradient, including wells and discharge areas.
2. Local uses and possible future uses of surface waters receiving drainage from the site within 1.5-miles down stream of the site:
 - a. Domestic and municipal (e.g. potable and lawn/gardening watering);
 - b. Recreational (e.g. swimming, fishing);
 - c. Agricultural;
 - d. Industrial; and
 - e. Environmental (e.g. fish and wildlife propagation).
3. Human use of or access to the site and adjacent lands, including but not limited to:
 - a. Recreation;
 - b. Hunting;
 - c. Residential;

- d. Commercial;
 - e. Zoning; and
 - f. Relationship between population locations and prevailing wind direction.
- 4. A description of the biota in surface water bodies on, adjacent to, or affected by the site.
 - 5. A description of the ecology overlying and adjacent to the site.
 - 6. A demographic profile of the people who use or have access to the site and adjacent land, including, but not limited to: age; sex; and sensitive subgroups.
 - 7. A description of any endangered or threatened species near the site.

The Permittee shall document the procedures and references used in making the above determinations.

TASK IV: INVESTIGATIVE ANALYSIS

The Permittee shall prepare an analysis and summary of all site investigations and their results. The objective of this task shall be to ensure that the investigation data are sufficient in quality (e.g., quality assurance procedures have been followed) and quantity to describe the nature and extent of contamination, potential threat to human health and/or the environment, and to support the Corrective Measures Study.

A. Data Analysis

The Permittee shall analyze all site investigation data outlined in Task III and prepare a report on the type and extent of contamination at the site including sources and migration pathways. The report shall describe the extent of contamination (qualitative/quantitative) in relation to the background levels indicative for the area.

B. Protection Standards

1. Groundwater Protection Standards

For all regulated units, the Permittee shall provide information to support EID's selection/development of Groundwater Protection Standards for all of the Appendix IX constituents found in the groundwater

during the Site Investigation (Task III). EID may select groundwater protection standards below the MCL or a health based risk level if the additive effect of multiple constituents at these levels would not be protective.

a. The Groundwater Protection Standards shall consist of:

- (1) for any constituents listed in Table 1 of this RSI, the respective value given in that table (MCL);
- (2) for any constituent not listed in Table 1, a health based risk action level based on EPA guidance in Table 2 of this RSI;
- (3) if the concentration of a metal constituent is below the levels listed in Table 1, then the Groundwater Protection Standard will be the background level for that constituent in the groundwater; or
- (4) an Alternate Concentration Limit (ACL) approved by EID.

Table 1 must be revised periodically to reflect the most current EPA MCLs. Table 2 must be revised periodically to reflect the most current EPA guidance for determining clean-up levels.

b. Information to support EID's subsequent selection of an ACL shall be developed by the Permittee in accordance with USEPA guidance. For any proposed ACLs, the Permittee shall include a justification based upon the criteria set forth in 40 CFR §264.94(b).

c. Within ninety (90) days of receipt of any proposed ACLs, EID will notify the Permittee in writing of approval, disapproval or modifications of the proposed ACL. EID will specify in writing the reason(s) for any disapproval or modification.

d. Within sixty (60) days of receipt of EID's notification, the Permittee shall amend and submit revisions to EID.

2. Other Relevant Protection Standards

The Permittee shall identify all relevant and applicable standards for the protection of human health and the environment (e.g. National Ambient Air Quality Standards, Federally-approved State water quality standards, etc.). If standards differ, the most stringent standards shall apply.

TASK V: LABORATORY AND BENCH-SCALE STUDIES

Based on the Current Conditions Report and ongoing investigation, the Permittee shall conduct laboratory or bench-scale studies, or technological review studies, to determine the applicability of a corrective measure technology or technologies to the site conditions. The Permittee shall analyze the technologies, based on literature review, vendor contacts, and past experience to determine the testing requirements.

The Permittee shall develop a testing plan identifying the type(s) and goal(s) of the study(ies), the level of effort needed, and the procedures to be used for data management and interpretation.

Upon completion of testing, the Permittee shall evaluate the testing results to assess the technology or technologies with respect to the site-specific questions identified in the test plan.

The Permittee shall prepare a report summarizing the testing program or technology review and the results, both positive and negative, and submit it to EID for review and EID approval concurrently with the Final RSI Report.

TASK VI: REPORTS

A. Preliminary and Workplan

The Permittee shall submit to EID for EID approval the Preliminary Report (Task I) when it submits the RCRA Site Investigation Workplan (Task II).

B. Progress

The Permittee shall at a minimum provide EID with signed, progress reports every month containing:

1. A description and estimate of the percentage of the RSI completed;
2. Summaries of all findings to date;
3. Summaries of all changes made in the RSI during the reporting period;

4. Summaries of all contacts with representatives of the local community, public interest groups or State government during the reporting period.
5. Summaries of all problems or potential problems encountered during the reporting period.
6. Actions being taken to rectify problems;
7. Changes in key personnel during the reporting period;
8. Projected work for the next reporting period; and
9. Copies of daily reports, inspection reports, laboratory/monitoring data, etc.

C. Draft and Final

Upon EID approval of the RSI Workplan, the Permittee shall initiate the RSI. Upon conclusion of the RSI, the RSI Report shall be developed in draft form for EID review. The Report shall be developed in final format and shall address to EID's satisfaction each of EID's comments received on the Draft RSI Report. Task V shall be submitted as a separate report when the Final RSI Report is submitted. Five copies of all reports shall be submitted. Revised Draft RSI Reports will be due within 30 days after receipt of EID comments on the previous draft. If EID determines that the Draft or Final RSI Report is grossly deficient, the Permittee will be so notified and deemed to be out of compliance with the Permit.

Site Submission Summary

A summary of the information reporting requirements contained in the RCRA Site Investigation Scope of Work is presented below:

<u>Site Submission</u>	<u>Due Date</u>
Description of Current Situation (Task I)	30 Days *
RSI Workplan (Task II)	60 days *
Draft RSI Report	60 days after

Site Submission

Due Date

(Tasks III and IV)	RSI Workplan Approval
Final RSI Report (Tasks III and IV)	30 days after EID comment on Draft RSI Report
Laboratory and Bench-Scale Studies (Task V)	Concurrent with Final RSI Report
Progress Reports on Interim Measures and Tasks I through V	Every month

* Dates are calculated from the effective date of this Permit modification.