CHAPTER 26E

TECHNICAL REQUIREMENTS FOR SITE REMEDIATION

Authority

N.J.S.A. 13:1D–1 et seq., 13:1E–1 et seq., 13:1K–6 et seq., 58:10–23.11a et seq., 58:10A–1 et seq., 58:10A–21 et seq., and 58:10B–1 et seq.

Source and Effective Date

R.1997 d.124, effective February 18, 1997.
See: 28 N.J.R. 1098(a), 28 N.J.R. 2298(a), 29 N.J.R. 2278(b).

Executive Order No. 66(1978) Expiration Date

Chapter 26E, Technical Requirements for Site Remediation, expires on February 18, 2002.

Chapter Historical Note

Chapter 26E, Technical Requirements for Site Remediation, was adopted as R.1993 d.245, effective June 7, 1993 (operative July 1, 1993). See: 24 N.J.R. 1695(a), 25 N.J.R. 2281(b).

Pursuant to Executive Order No. 66(1978), Chapter 26E was readopted as R.1997 d.124, effective February 18, 1997. See: Source and Effective Date. As a part of R.1997 d.124, effective May, 19, 1997 (operative July 18, 1997), Subchapter 5, Remedial Alternative Analysis, was repealed and a new Subchapter 5, Remedial Action Selection, was adopted. See, also, section annotations.

Law Review and Journal Commentaries

ISRA: What You Need to Know. Richard J. Conway, Jr., 160 N.J.Law. 16 (Mag.) (April 1994).

CHAPTER TABLE OF CONTENTS

SUBCHAPTER 1. GENERAL INFORMATION

7:26E–1.1 Scope

(a) This chapter constitutes the minimum technical requirements to investigate and remediate contamination at any site.

(b) Any remediation performed pursuant to this chapter shall not relieve any person from:

1. Complying with more stringent requirements or provisions imposed by any other Federal, State or local applicable statutes or regulations; or

2. Obtaining any and all permits required by State, Federal or local statute or regulation, except as expressly provided herein.

(c) No provision of this chapter shall be construed to limit the Department's authority to require additional remediation based upon site-specific conditions in order to protect human health and the environment.

7:26E–1.2 Liberal construction

These rules, being necessary to promote the public health and welfare, shall be liberally construed in order to permit the Commissioner and the Department to effectuate the purposes of N.J.S.A. 13:1D–1 et seq., 13:1E–1 et seq., 13:1K–6 et seq., 58:10–23.11a et seq., 58:10A–1 et seq., and 58:10A–21 et seq.

7:26E–1.3 Applicability

(a) This chapter establishes the minimum technical requirements which form the basis of the Department's review of the remediation of any contaminated site in New Jersey, including, without limitation, those sites and activities subject to:

1. The Industrial Site Recovery Act (ISRA);

2. The New Jersey Underground Storage of Hazardous Substances Act (UST);

3. The Spill Compensation and Control Act;

4. The Solid Waste Management Act;

5. The Water Pollution Control Act;

6. The Resource Conservation and Recovery Act (RCRA);

7. The Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by Superfund Amendments and Reauthorization Act of 1986 (42 U.S.C. §§ 9601 et seq.) (CERCLA); and

8. The Hazardous Site Discharge Remediation Act.

(b) Any person seeking Department review of work undertaken pursuant to this chapter shall:

1. Execute an oversight document with the Department pursuant to N.J.A.C. 7:26C;

2. Comply with the requirements of N.J.A.C. 7:26B; or

3. Comply with the requirements of N.J.A.C. 7:14B.

(c) The requirements of this chapter are applicable as follows:

1. For any site at which a particular phase of remediation was commenced prior to July 1, 1993, the Department shall evaluate such work to determine whether the work is in substantial compliance with this chapter, as originally adopted effective June 7, 1993 (see 25 N.J.R. 2881(b)), and therefore acceptable to the Department.

2. Any work conducted after July 18, 1997 shall be in full compliance with this chapter, as readopted with amendments operative July 18, 1997 (see 29 N.J.R. 2278(b)), except that work conducted pursuant to workplans which were submitted to the Department prior to July 18, 1997 may be conducted pursuant to N.J.A.C. 7:26E as originally adopted, as long as work is conducted within six months of Department approval of the workplan.

(d) All applicable remediation standards and remedial actions that involve real property located in the Pinelands area shall be consistent with the provisions of the Pinelands Protection Act, N.J.S.A. 13:18A–1 et seq. and any rules promulgated pursuant thereto, and with section 502 of the National Parks and Recreation Act of 1978, 16 U.S.C. § 4711.

Amended by R.1997 d.124, effective May 19, 1997 (operative July 18, 1997).
See: 28 N.J.R. 1098(a), 28 N.J.R. 2298(a), 29 N.J.R. 2278(b).
In (a)1, substituted "Industrial Site Recovery Act (ISRA)" for "Environmental Cleanup and Responsibility Act (ECRA)"; added (a)6 through (a)8; subdivided (c), inserting the introductory paragraph; in (c)1, substituted "shall evaluate" for "may evaluate" and inserted reference to original adoption; added (c)2; and added (d).
Administrative correction.
See: 29 N.J.R. 2664(b).
In (c)2, in the second clause, changed "May 19, 1997" to "July 18, 1997".

7:26E–1.4 Notification

(a) The person responsible for conducting the remediation shall notify the following persons in writing:

1. The Department, prior to the initiation of any sampling activities at a contaminated site which is not already known to the Department pursuant to either a Department regulatory reporting requirement or Department oversight of the remediation;

2. The municipal clerk of each municipality in which the site is located, if the site is not RCRA or CERCLA subject, 45 calendar days prior to:

i. The submission of the remedial action selection report to the Department pursuant to N.J.A.C. 7:26E–5.2; or

ii. The finalization of the engineering design plans for the selected remedial action of sites being remediated where Department pre-approval of a remedial action workplan is not required or sought; and

3. The Department, and the municipal clerk of each municipality in which the site is located, 45 calendar days prior to the implementation of the remedial action when Department pre-approval of the remedial action workplan is not required unless written notification has otherwise been provided.

viii. Any other information or data the Department requests to thoroughly evaluate the petition.

2. The Department will evaluate the petition for a variance from the requirements of N.J.A.C. 7:26E–2 through 6 according to the same criteria as those listed in (c) above for approval of alternate methods.

3. Verbal variances may be granted pursuant to N.J.A.C. 7:26E–3.4(a)4.

(e) The person responsible for conducting the remediation shall have a continuing obligation to ensure that the Department receives all complete, accurate and relevant information regarding remediation at the site.

Amended by R.1997 d.124, effective May 19, 1997 (operative July 18, 1997).
See: 28 N.J.R. 1098(a), 28 N.J.R. 2298(a), 29 N.J.R. 2278(b).
In (b), deleted N.J.A.C. reference and substituted "ISRA" for "ECRA"; in (d), substituted "A variance petition may be submitted within" for " The Department will review a petition for a variance pursuant to" and added the last sentence; in (d)1, inserted N.J.A.C. reference; and added (d)3 and (e).

7:26E–1.7 Criteria for going beyond the minimum technical requirements

(a) The Department may require additional work beyond the minimum technical requirements set forth in this chapter for whenever necessary for the Department to ensure adequate protection of human health and the environment based upon a review of the following areas:

1. The number or magnitude of the discharge(s) being investigated;

2. The nature of the substances discharged;

3. A change in the certification or other authorization of the laboratory performing analyses previously submitted for the site in question or any other site;

4. The identification of additional exposure pathways not otherwise fully investigated pursuant to the minimum requirements;

5. The identification of additional receptors not otherwise fully investigated pursuant to the minimum requirements;

6. Distance to and sensitivity of receptors;

7. When the Department determines that additional data or information is needed to fully evaluate the site; and

8. Any other site-specific conditions the Department identifies which necessitate the need for additional work.

7:26E–1.8 Definitions

The following words and terms, when used in this chapter, shall have the following meanings unless context clearly indicates otherwise:

"Acid extractable organic compounds" means semivolatile compounds amenable to analysis by extraction of the sample with a pH acidic organic solvent. For the purposes of this chapter, analysis of acid extractable organic compounds means the analysis of a sample for either:

1. Those priority pollutants listed as acid compounds in Appendix B, Table II of N.J.A.C. 7:14A; or

2. Those target compound list compounds which are phenol and phenolic compounds under the listing of semivolatile compounds in the version of the EPA Contract Laboratory Program Statement of Work for Organic Analysis, Multi-Media, Multi-Concentration in effect as of the date on which the laboratory is performing the analysis.

"Active ground water remediation" means any form of ground water remediation which requires physical action to alter the nature of the impacted aquifer for the purposes of achieving applicable remediation standards. Active ground water remediation includes, but is not limited to, pumping that consistently depresses the water table over an areal extent, air sparging, and bioremediation involving the addition of nutrients and/or organisms below the water table.

"Applicable remediation standard" means the numeric or narrative standard to which contaminants must be remediated for soil, ground water or surface water, or other environmental media, to allow for a specified site use, as provided by the Department pursuant to rule, including without limitation the Ground Water Quality Standards, N.J.A.C. 7:9–6, the New Jersey State Surface Water Quality Standards, N.J.A.C. 7:9B, and the Federal Surface Water Quality Criteria, 40 C.F.R. Part 131, or site specific remediation standards as determined by the Department on a case by case basis.

"Area of concern" means any existing or former location where hazardous substances, hazardous wastes, or pollutants are or were known or suspected to have been discharged, generated, manufactured, refined, transported, stored, handled, treated, disposed, or where hazardous substances, hazardous wastes, or pollutants have or may have migrated, including, but not limited to, all current and former:

1. Bulk storage tanks and appurtenances, including, without limitation:

i. Tanks and silos;

ii. Rail cars;

iii. Piping, above and below ground pumping stations, sumps and pits; and

iv. Loading and unloading areas;

2. Storage and staging areas, including:

i. Storage pads and areas;

ii. Surface impoundments and lagoons;

iii. Dumpsters; and

iv. Chemical storage cabinets or closets;

3. Drainage systems and areas, including, without limitation:

i. Building floor drains and piping, sumps and pits, including trenches and piping from sinks that potentially receive process waste;

ii. Roof leaders (when process operations vent to roof);

iii. Drainage swales and culverts;

iv. Storm sewer collection systems;

v. Storm water detention ponds and fire ponds;

vi. Surface water bodies;

vii. Leach fields; and

viii. Dry wells and sumps;

4. Discharge and disposal areas, including, without limitation:

i. Areas of discharges pursuant to N.J.A.C. 7:1E;

ii. Waste piles as defined by N.J.A.C. 7:26;

iii. Waste water treatment, collection and disposal systems, including, without limitation, septic systems, seepage pits and dry wells;

iv. Landfills;

v. Landfarms;

vi. Sprayfields;

vii. Incinerators; and

viii. Historic fill material areas or any other fill material areas;

5. Other areas of concern, including, without limitation:

i. Electrical transformers and capacitors;

ii. Hazardous materials storage or handling areas;

iii. Waste treatment areas;

iv. Discolored areas or spill areas;

v. Open areas away from production operations;

vi. Areas with stressed vegetation;

vii. Other discharge areas;

viii. Underground piping including industrial process sewers;

ix. Compressor vent discharges;

x. Non contact cooling water discharges;

xi. Areas that may have received floodwater or stormwater runoff from potentially contaminated areas; and

xii. Any other area suspected of containing contaminants;

6. Ground water areas of concern, including, without limitation, present or past regulated activities under the New Jersey Pollutant Discharge Elimination System (NJPDES) Discharge to Ground Water regulations, N.J.A.C. 7:14A, including: seepage pits; dry wells; lagoons; and septic systems which received industrial waste; and

7. Surface water areas of concern, including, without limitation, all surface water areas and associated sediment which receive or may have received any point or non-point source discharge from the site.

"Background ground water contamination" means concentrations of hazardous substances, hazardous waste and pollutants in ground water that originated from either natural sources (that is, non-man-made) or upgradient, offsite discharges (that is, man-made, non-site-related discharges). Background ground water contamination may include, but is not limited to, the same contaminants present both on the site and off the site at upgradient locations, or parent contaminants detected off the site at upgradient locations and daughter products of these parent contaminants detected on the site.

"Base neutral organic compound" means semivolatile compounds amenable to analysis by extraction of the sample with a pH neutral and a pH basic organic solvent. For the purposes of this chapter, analysis of base neutral organic compounds means the analysis of a sample for either:

1. Those priority pollutants listed as base neutral compounds in Appendix B, Table II of N.J.A.C. 7:14A; or

2. Those target compound list compounds identified as semivolatiles except phenol and phenolic compounds in the version of the EPA Contract Laboratory Program Statement of Work for Organic Analysis, Multi-Media, Multi-Concentration in effect as of the date on which the laboratory is performing the analysis.

"CERCLA" means the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by Superfund Amendments and Reauthorization Act of 1986 (42 U.S.C. 9601 et seq.).

"Commissioner" means the Commissioner of the Department of Environmental Protection or his or her authorized representative.

"Containment" or "containment activities" means actions to limit or prevent discharges or the spread of contamination.

"Contaminated site" means all portions of environmental media at a site and any location where contamination is emanating, or which has emanated, therefrom, that contain one or more contaminants at a concentration which fails to satisfy any applicable remediation standard.

"Contamination" or "contaminant" means any discharged hazardous substance as defined pursuant to N.J.S.A. 58:10–23.11b, hazardous waste as defined pursuant to N.J.S.A. 13:1E–38, or pollutant as defined pursuant to N.J.S.A. 58:10A–3.

"Contract laboratory program" or "CLP" means a program of chemical analytical services developed by the EPA to support CERCLA.

"Damages" means the amount of money the natural resources trustees, identified pursuant to 42 U.S.C. §§ 9601 et seq., have determined is necessary to restore, rehabilitate, replace or otherwise compensate for the injury to natural resources as a result of a discharge.

"Department" means the New Jersey Department of Environmental Protection.

"Department certified laboratory" means a laboratory that is currently certified pursuant to N.J.A.C. 7:18, the Regulations Governing Laboratory Certification and Standards of Performance, to perform laboratory analyses for a specific certification category and a specific parameter within the certification categories.

"Diligent inquiry" means:

1. Conducting a diligent search of all documents which are reasonably likely to contain information related to the object of the inquiry, which documents are in such person's possession, custody or control, or in the possession, custody or control of any other person from whom the person conducting the search has a legal right to obtain such documents; and

2. Making reasonable inquiries of current and former employees and agents whose duties include or included any responsibility for hazardous substances, hazardous wastes, or pollutants, and any other current and former employees or agents who may have knowledge or documents relevant to the inquiry.

"Discharge" means any intentional or unintentional action or omission resulting in the releasing, spilling, leaking, pumping, pouring, emitting, emptying or dumping of a hazardous substance, hazardous waste or pollutant into the waters or onto the lands of the State, or into waters outside the jurisdiction of the State when damage may result to the lands, waters, or natural resources within the jurisdiction of the State.

"Effective solubility" means the theoretical aqueous solubility of an organic constituent in ground water that is in chemical equilibrium with a separate phase mixed product (product containing several organic chemicals). The effective solubility of a particular organic chemical can be estimated by multiplying its mole fraction in the product mixture by its pure phase solubility.

"Engineering controls" means any physical mechanism to contain or stabilize contamination or ensure the effectiveness of a remedial action. Engineering controls may include, without limitation, caps, covers, dikes, trenches, leachate collection systems, signs, fences and access controls.

"Environmental medium" means any component such as soil, air, sediment, structures, ground water or surface water.

"Environmentally sensitive area" means all areas defined as such at N.J.A.C. 7:1E–1.8(a) and areas and/or resources that are protected or managed pursuant to the Pinelands Protection Act, P.L. 1979, c.111 (N.J.S.A. 13:18A–1 et seq.) and the Pinelands Comprehensive Management Plan.

"EPA" means the United States Environmental Protection Agency.

"Fill material" means non-indigenous material, used to replace soil in an area or raise the topographic elevation of the site.

"Free product" means a separate phase material, present in concentrations greater than a contaminant's residual saturation point. This definition applies to solids, liquids, and semi-solids. The presence of free product shall be determined pursuant to the methodologies described in N.J.A.C. 7:26E–2.1(a)11.

"Full laboratory data deliverables" means those deliverables identified as follows:

1. For non-EPA/Contract Laboratory Program analyses, the regulatory format data deliverables listed in the version of the Professional Laboratory Analytical Services contract issued by the New Jersey Department of Treasury, Division of Purchase and Property in effect as of the date on which the laboratory is performing the analysis; and

2. For EPA/Contract Laboratory Program analyses, the deliverables listed in the EPA Contract Laboratory Program "Statement of Work" documents in effect as of the date on which the laboratory is performing the analysis as modified by specific requirements listed in Appendix A, incorporated herein by reference.

"Ground water" means the portion of the water beneath the land surface that is within the zone of saturation where all pore spaces of the geologic formation are filled with water.

"Hazardous waste" means any solid waste as defined in the Solid Waste Regulations, N.J.A.C. 7:26–1.4, that is

further defined as a hazardous waste pursuant to the Hazardous Waste Regulations, N.J.A.C. 7:26–8.

"Highly permeable soils" means soils having less than 15 percent silts and/or clays. Soils may be classified in the field using a standard system texture analysis.

"Historic fill material" means non-indigenous material, deposited to raise the topographic elevation of the site, which was contaminated prior to emplacement, and is in no way connected with the operations at the location of emplacement and which includes, without limitation, construction debris, dredge spoils, incinerator residue, demolition debris, fly ash, or non-hazardous solid waste. Historic fill material does not include any material which is substantially chromate chemical production waste or any other chemical production waste or waste from processing of metal or mineral ores, residues, slag or tailings. In addition, historic fill material does not include a municipal solid waste landfill site.

"Immediate environmental concern" means a condition which poses an acute threat to human health or a direct threat to the drinking water of the State including, but not limited to:

1. Dermal contact, inhalation or ingestion of contaminated materials;

2. Potable water supplies contaminated above the applicable drinking water standard; and

3. Contaminants which are confirmed to exist in an occupied or confined space, producing a toxic or harmful gas resulting in a potential for an acute short-term human health exposure, or producing an oxygen deficient atmosphere, or resulting in demonstrated physical damage to essential underground services.

"Impermeable" means a layer of natural and/or man-made material of sufficient thickness, density and composition so as to have a maximum permeability for water of 10^{-7} cm/sec at the maximum anticipated hydrostatic pressure.

"Injury" means any adverse change or impact of a discharge on a natural resource or impairment of a natural resource service, whether direct or indirect, long term or short term, and includes the partial or complete destruction or loss of the natural resource.

"Institutional controls" means a mechanism used to limit human activities at or near a contaminated site, or to ensure the effectiveness of the remedial action over time, when contaminants remain at a site at levels above the numeric remediation standard which would allow for the unrestricted use of the property. Institutional controls may include, without limitation, structure, land, and natural resource use restrictions, well restriction areas, classification exception areas, deed notices, and declarations of environmental restrictions.

"Landfill" means a sanitary landfill as defined pursuant to N.J.S.A. 13:1E–1 et seq.

"Method detection limit" or "MDL" means the minimum concentration of a substance that can be measured and reported with a 99 percent confidence that the analyte concentration is greater than zero and is determined from the analysis of a sample in a given matrix containing the analyte.

"Mineral oil" means an oil of mineral origin, refined from crude oil, possessing electrical insulating properties.

"Natural background soil level" means the chemical concentration of a substance which is found in soil and which is not attributable to human activity.

"Natural ground water remediation" means any form of ground water remediation in which only degradation, retardation, and dispersion mechanisms are used to achieve applicable remediation standards. For active ground water remediations, this definition shall also apply to portions of plumes that are not captured by the active ground water remediation, but are expected to be naturally remediated after separation from the source plume.

"Natural resources" means all land, biota, fish, shellfish, and other wildlife, air, waters and other such resources.

"Non-permanent remedial action" means any remedial action that is not a permanent remedial action.

"Non-targeted compound" means a compound detected in a sample using a specific analytical method that is not a targeted compound, a surrogate compound, a system monitoring compound or an internal standard compound.

"Order of magnitude" means a factor of 10.

"Oversight document" means any document defined as an oversight document pursuant to N.J.A.C. 7:26C.

"Permanent remedial action" means a remedial action which allows for the unrestricted use of the entire site or area of concern including all land and natural resources without the need for engineering or institutional controls.

"Person" means any individual or entity, including without limitation, a public or private corporation, company, estate, association, society, firm, partnership, joint stock company, foreign individual, or entity, interstate agency or authority, the United States, and any of its political subdivisions, the State of New Jersey, or any of the political subdivisions of or found within the State of New Jersey, or any of the other meanings which apply to the common understanding of the term.

"Person responsible for conducting the remediation" includes any person who executes or is otherwise subject to an oversight document, and any person who is performing the remediation or has control over the person (for example, contractor or consultant) who is performing the remediation, including, without limitation, an owner or operator who is subject to either ISRA or UST.

"Pollutant" means any substance defined as such pursuant to the Water Pollution Control Act, N.J.S.A. 58:10A–1 et seq.

"Practical quantitation level" or "PQL" means the lowest quantitation level of a given analyte that can be reliably achieved among laboratories within the specified limits of precision and accuracy of a given analytical method during routine laboratory operating conditions.

"Preliminary assessment" means the first phase in the process of identifying areas of concern pursuant to N.J.A.C. 7:26E–3.

"Priority pollutant plus 40" or "PP + 40" means the priority pollutant list of 126 compounds and elements developed by the EPA pursuant to Section 307(a)(1) of the Clean Water Act and 40 non-targeted organic compounds detected by gas chromatography/mass spectroscopy (GC/MS) analysis. For the purposes of this chapter, a PP + 40 scan means the analysis of a sample for all priority pollutants except asbestos and 2,3,7,8–tetra-chloro-dibenzo-p-dioxin, and up to 15 non-targeted volatile organic compounds and up to 25 non-targeted semivolatile organic compounds as analyzed using GC/MS analytical methods. Non-targeted compound criteria shall be used pursuant to the version of the EPA "Contract Laboratory Program Statement of Work for Organic Analysis, Multi-media, Multi-concentration" in effect as of the date which the laboratory is performing the analysis.

"Quality assurance" means the total integrated program for assuring the reliability of monitoring and measurement data which includes a system for integrating the quality planning, quality assessment and quality improvement efforts to meet data end-use requirements.

"Quality assurance project plan" means a document which presents in specific terms the policies, organization, objectives, functional activities and specific quality assurance/quality control activities designed to achieve the data quality goals or objectives of a specific project or operation.

"Quality control" means the routine application of procedures for attaining prescribed standards of performance in the monitoring and measurement process.

"Receptor" means any human or other ecological component which is or may be affected by a contaminant from a contaminated site.

"Reduced laboratory data deliverables" means, for both EPA/Contract Laboratory Program and non-EPA/Contract Laboratory Program analyses, the laboratory data deliverables listed in Appendix A, Sections III and IV.

"Region of the site" means the area on and adjacent to the site.

"Remedial action" means those actions taken at a contaminated site as may be required by the Department, including, without limitation, removal, treatment, containment, transportation, securing, or other engineering or institutional controls, whether of a permanent nature or otherwise, designed to ensure that any discharged contaminant is remediated in compliance with the applicable remediation standards pursuant to N.J.A.C. 7:26E–6.

"Remedial action costs" means all costs associated with the development and implementation of a remedial action including all direct and indirect capital costs, engineering costs, and annual operation, maintenance and monitoring costs. Such costs, when applicable, shall include, without limitation, costs for construction of all facilities and process equipment, labor, materials, construction equipment and services, natural resource damages, land purchase, land preparation/development, relocation expenses, systems start up and testing, facility operation, maintenance and repair, continuous effectiveness monitoring, periodic site condition reviews, and legal, administrative and capital costs associated with the placement of institutional controls on a property. Remedial action costs shall be expressed as net present worth of all such costs over time by discounting all future costs to the current calendar year. The discount rate to be used for all present worth analyses shall be the current rate as specified by the EPA at the time of remedial action selection and shall be applied before taxes and after inflation. The period of performance for present worth costing analyses shall not exceed 30 years.

"Remedial action selection" means the process of selecting the most appropriate remedy for a site or area of concern that will ensure protection of the public health, and safety and the environment, based upon careful consideration of a variety of factors, including, without limitation, future site use, surrounding land uses, remediation goals and objectives, cost, implementability, reliability and effectiveness.

"Remedial action selection report" means a report describing how a proposed non-CERCLA/non-RCRA remedial action was determined to be the most appropriate remedy pursuant to N.J.A.C. 7:26E–5.

"Remedial investigation" means actions to investigate contamination and the problems presented by a discharge. The requirements of a remedial investigation are set forth at N.J.A.C. 7:26E–4.

"Remedial phase" means a distinct component of the remediation process. Such components may include preliminary assessment, site investigation, remedial investigation, remedial alternative analysis, and remedial action.

"Remediation" or "remediate" means all necessary actions to investigate and cleanup any known, suspected, or threatened discharge of contaminants, including, as necessary, the preliminary assessment, site investigation, remedial investigation, remedial selection and remedial action.

"Residual product" means a separate phase material present in concentrations below a contaminant's residual saturation point, retained in soil or geologic matrix pore spaces or fractures by capillary forces. This definition applies to solids, liquids, and semi-solids. The presence of residual product shall be determined pursuant to the methodologies described in N.J.A.C. 7:26E–2.1(a)11.

"Residual saturation point" means the saturation point below which non-aqueous phase liquid becomes discontinuous and is immobilized by capillary forces, and fluid drainage will not occur.

"Restricted use standard" means a numeric remediation standard which, when achieved, restores the contaminated media to a condition suitable for only certain specified uses.

"Retardation" means any process that acts to inhibit the movement of a solute in ground water, such that the solute travels more slowly than the ground water itself.

"Semivolatile organic compounds" means compounds amenable to analysis by extraction of the sample with an organic solvent. For the purposes of this chapter, analysis of semivolatile organic compounds means the analysis of a sample for either:

1. Those priority pollutants listed as base neutral and acid compounds in Appendix B, Table II of N.J.A.C. 7:14A; or

2. Those target compound list compounds identified as semivolatiles in the version of the EPA Contract Laboratory Program Statement of Work for Organic Analysis, Multi-Media, Multi-Concentration in effect as of the date on which the laboratory is performing the analysis.

"Site investigation" means the collection and evaluation of data necessary to determine whether or not contaminants exist at the site which fail to satisfy the applicable remediation standard. The requirements of a site investigation are set forth at N.J.A.C. 7:26E–3.

"Soil" means the unconsolidated mineral and organic matter on the surface of the earth that has been subjected to and influenced by geologic and other environmental factors.

"Specific discharge event" means a discharge that meets the criteria in N.J.A.C. 7:26E–3.7(b).

"Spill Act" means the Spill Compensation and Control Act, N.J.S.A. 58:10–23.11a et seq.

"Surface water" means water defined as surface water pursuant to the Surface Water Quality Regulations, N.J.A.C. 7:9B.

"SWMA" means the Solid Waste Management Act, N.J.S.A. 13:1E–1 et seq.

"Tank" means a stationary device designed to contain an accumulation of hazardous substances, hazardous wastes, or pollutants which is constructed of non-earthen materials (for example, concrete, steel, plastic) that provide structural support.

"Target analyte list" or "TAL" means the list of inorganic compounds/elements designated for analysis as contained in the version of the EPA Contract Laboratory Program Statement of Work for Inorganics Analysis, Multi-Media, Multi-Concentration in effect as of the date on which the laboratory is performing the analysis. For the purpose of this chapter, a Target Analyte List scan means the analysis of a sample for Target Analyte List compounds/elements.

"Targeted compound" means a hazardous substance, hazardous waste, or pollutant for which a specific analytical method is designed to detect that potential contaminant both qualitatively and quantitatively.

"Target compound list plus 30" or "TCL + 30" means the list of organic compounds designated for analysis (TCL) as contained in the version of the EPA "Contract Laboratory Program Statement of Work for Organics Analysis, Multi-Media, Multi-Concentration" in effect as of the date on which the laboratory is performing the analysis, and up to 30 non-targeted organic compounds (plus 30) as detected by gas chromatography/mass spectroscopy (GC/MS) analysis. For the purposes of this chapter, a Target Compound List + 30 scan means the analysis of a sample for Target Compound List compounds and up to 10 non-targeted volatile organic compounds and up to 20 non-targeted semivolatile organic compounds using GC/MS analytical methods. Non-targeted compound criteria shall be pursuant to the version of the EPA "Contract Laboratory Program Statement of Work for Organics Analysis, Multi-Media, Multi-Concentration" in effect as of the date on which the laboratory is performing the analysis.

"Tentatively identified compound" or "TIC" means a non-targeted compound detected in a sample using a GC/MS analytical method which has been tentatively identified using a mass spectral library search. An estimated concentration of the TIC is also determined.

"Underground storage tank" means any one or combination of tanks, including appurtenant pipes, lines, fixtures, and other related equipment, used to contain an accumulation of hazardous substances, hazardous wastes or pollutants, the volume of which, including the volume of the appurtenant pipes, lines, fixtures and other related equipment, is 10 percent or more beneath the surface of the ground.

"Unknown compound" means a non-targeted compound which cannot be tentatively identified. Based on the analytical method used, the estimated concentration of the unknown compound may or may not be determined.

"Unrestricted use standard" means a numeric remediation standard that, when achieved, restores the contaminated media to a condition or quality suitable for any use. For a particular media, the unrestricted use standard is the lowest of any numeric standard including, without limitation, any residential use standard, any non-residential use standard and any applicable impact to ground water soil standard.

"UST" means the New Jersey Underground Storage of Hazardous Substances Act, N.J.S.A. 58:10A–21 et seq.

"Volatile organics" means organic compounds amenable to analysis by the purge and trap technique. For the purposes of this chapter, analysis of volatile organics means the analysis of a sample for either those priority pollutants listed as amenable for analysis using EPA method 624 or those target compounds identified as volatiles in the version of the EPA "Contract Laboratory Program Statement of Work for Organics Analysis, Multi-Media, Multi-Concentration" in effect as of the date on which the laboratory is performing the analysis.

"Waste oil" means a petroleum based or synthetic oil which, through use, storage or handling has become unsuitable for its original purpose due to the presence of impurities or loss of original properties.

"Waters" means the ocean and its estuaries to the seaward limit of the State's jurisdiction, all springs, streams and bodies of surface or ground water, whether natural or artificial, within the boundaries of this State.

"Wetland" means any freshwater or coastal wetland.

"WPCA" means the Water Pollution Control Act, N.J.S.A. 58:10A–1 et seq.

Amended by R.1997 d.124, effective May 19, 1997 (operative July 18, 1997).
See: 28 N.J.R. 1098(a), 28 N.J.R. 2298(a), 29 N.J.R. 2278(b).
Added "Active ground water remediation", "Background ground water contamination", "Contamination", "Damages", "Effective solubility", "Engineering controls", "Environmentally sensitive area", "Historic fill material", "Immediate environmental concern", "Injury", "Institutional controls", "Mineral oil", "Natural background soil level", "Natural ground water remediation", "Non-permanent remedial action", "Order of magnitude", "Permanent remedial action", "Region of the site", "Remedial action costs", "Remedial action selection", "Remedial action selection report", "Residual product", "Residual saturation point", "Restricted use standard", "Retardation", "Specific discharge event", "Unrestricted use standard" and "Waste oil"; amended "Applicable remediation standard", "Area of concern", "Commissioner", "Contaminated site", "Department", "Diligent inquiry", "Discharge", "Fill material", "Free product", "Person responsible for conducting the remediation", "Preliminary assessment", "Remedial action", "Remedial investigation", "Remediation", "Site investigation", "Surface water", "Tank", "Targeted compound", and "Underground storage tank"; and deleted "Contaminant", "ECRA", "Hazardous constituent", "Hazardous substance", "Innovative and emerging treatment technologies", "Permanent remedy", and "Remedial alternative analysis".

7:26E–1.9 Health and safety plan

Any person conducting remediation activities shall prepare a site-specific health and safety plan which shall be adhered to by all personnel involved in the remediation. The plan shall be in accordance with the most recently adopted and applicable general industry (29 CFR 1910) and construction (29 CFR 1926) standards of the Federal Occupational Safety and Health Administration (OSHA), U.S. Department of Labor, as well as any other Federal, State or local applicable statutes or regulations.

7:26E–1.10 Severability

If any section, subsection, provision, clause or portion of these regulations is adjudged invalid or unconstitutional by a court of competent jurisdiction, the remainder of these regulations shall not be affected thereby.

7:26E–1.11 Bias for action

As a first priority during remediation, contaminants in all media should be contained and/or stabilized to prevent contaminant exposure to receptors and to prevent further movements of contaminants through any pathway.

7:26E–1.12 Requirement for Department oversight of remediation

(a) The person responsible for conducting the remediation shall investigate and remediate contaminated sites with Department oversight as specified in N.J.A.C. 7:26C and, in addition, in the following circumstances:

1. Sites suspected or known to be contaminated with anthropogenic radionuclide contamination of any media; and

2. Sites with immediate environmental concern conditions.

New Rule, R.1997 d.124, effective May 19, 1997 (operative July 18, 1997).
See: 28 N.J.R. 1098(a), 28 N.J.R. 2298(a), 29 N.J.R. 2278(b).

SUBCHAPTER 2. QUALITY ASSURANCE FOR SAMPLING AND LABORATORY ANALYSIS

7:26E–2.1 Quality assurance requirements

(a) The person responsible for conducting the remediation shall ensure that the following quality assurance proce-

dures be followed for all sampling and laboratory analysis activities.

1. Laboratories performing analyses shall conform to the following:

i. For the analysis of any aqueous samples for a parameter or category of parameters for which laboratory certification exists pursuant to N.J.A.C. 7:18, the laboratory shall be certified for that specific parameter or category of parameters pursuant to N.J.A.C. 7:18;

ii. For the analysis of non-aqueous samples using specific analytical methods contained in the EPA Publication SW–846, "Test Methods for Evaluating Solid Waste", third edition, update IIB, January 1995, as amended and supplemented, for a parameter or category of parameters for which certification exists pursuant to N.J.A.C. 7:18, the laboratory shall be certified for that specific parameter or category of parameters pursuant to N.J.A.C. 7:18 or, at a minimum, have obtained temporary approval to analyze regulatory samples pursuant to N.J.A.C. 7:18–2.5(c);

iii. For the analysis of samples using USEPA Contract Laboratory Program (CLP) analytical methods for a parameter or category or parameters for which certification exists pursuant to N.J.A.C. 7:18, the laboratory shall be certified for that specific parameter or category of parameters pursuant to N.J.A.C. 7:18 or, at a minimum, have obtained temporary approval to analyze regulatory samples pursuant to N.J.A.C. 7:18–2.5(c); or

iv. For the analysis of aqueous and non-aqueous samples for parameters or categories of parameters not contained in (a)1i through iii above, the person responsible for conducting the remediation is also responsible for ensuring that the selected laboratory is capable of performing the analysis. At such time as N.J.A.C. 7:18 incorporates procedures for parameters or categories of parameters not contained in (a)1i through iii above, the procedures in N.J.A.C. 7:18 shall be followed.

2. The Department shall reject analytical data as follows:

i. For laboratories performing analyses pursuant to (a)1i above, decertification or suspension of a laboratory pursuant to N.J.A.C. 7:18 for any given parameter or category of parameters shall result in the rejection of all analytical data for that given parameter or category of parameters generated after the date of decertification or suspension.

ii. For laboratories performing analyses pursuant to (a)1ii above, decertification or suspension of a laboratory pursuant to N.J.A.C. 7:18 for any given parameter or category of parameters shall result in the rejection of all analytical data for that given parameter or category of parameters generated after the date of decertification or suspension.

iii. For laboratories performing analyses pursuant to (a)1iii above, decertification or suspension of a laboratory pursuant to N.J.A.C. 7:18 for any given parameter or category of parameters shall result in the rejection of all analytical data for that given parameter or category of parameters generated after the date of decertification or suspension.

3. Except as provided in (a) 5 below, analytical methods used shall have been published or approved by organizations with recognized expertise in the development of standardized analytical methods. These organizations include, without limitation:

i. The EPA;

ii. The American Society for Testing and Materials (ASTM);

iii. The American Public Health Association (APHA);

iv. The National Institute for Occupational Safety and Health (NIOSH);

v. The Association of Official Analytical Chemists (AOAC);

vi. The U.S. Army Toxic and Hazardous Materials Agency (USATHAMA);

vii. The American Water Works Association (AWWA);

viii. The Department;

ix. The United States Department of Defense;

x. The United States Department of Energy; and

xi. The United States Department of Interior.

4. Non-aqueous samples to be analyzed for volatile organics shall be sampled using a methanol extraction/preservation method acceptable to the Department (an example of an acceptable methanol extraction/ preservation method is described in the "New Jersey Department of Environmental Protection Methodology for the Field Extraction/Preservation of Soil Samples with Methanol for Volatile Organic Compounds" which is available through the Department's Office of Maps and Publications). Sample analysis shall be conducted using an acceptable analytical method pursuant to this subchapter, such as USEPA SW846 Methods 8240B or 8260A, 8010B, 8015A, 8020A or 8021A (USEPA Publication "Test Methods for Evaluating Solild Waste", third edition, update IIB, January 1995, as amended and supplemented) or the USEPA Contract Laboratory Program Statement of Work for Organic Analysis, Multi-Media, Multi-Concentration, Revision OLMO3.2, as amended and supplemented.

SUBCHAPTER 6. REMEDIAL ACTION

7:26E–6.1 Remedial action requirements

(a) The person responsible for conducting the remedial action shall notify the Department and the local governing body pursuant to N.J.A.C. 7:26E–1.4.

(b) Each remedial action shall:

1. Be approved by the Department prior to implementation, if a remedial action selection report is also required pursuant to N.J.A.C. 7:26E–5.2(a);

2. Comply with all applicable remediation standards in effect at the time the remedial action workplan is approved by the Department, provided, however, that if the applicable numeric remediation standards decrease by an order of magnitude or more prior to the issuance of a No Further Action Letter for the area of concern or the site, the person responsible for conducting the remediation shall be responsible for any additional necessary remediation to achieve the new remediation standards;

3. Comply with all applicable Federal, State, and local laws, regulations, and requirements;

4. Not in itself cause an uncontrolled or unpermitted discharge or transfer of contaminants from one media to another; and

5. Be reevaluated by the property owner every five years, or at a frequency determined by the Department, if a non-permanent remedy has been implemented. The reevaluation shall be submitted to the Department's Site Remediation Program in a report which indicates, at a minimum, the results of a physical inspection of any engineering controls including, without limitation, caps or fences, and the continued adequacy of all institutional controls.

(c) Single phase remediations, where the remedial action is conducted concurrently with sampling to delineate the contamination and to confirm contaminant removal, are acceptable.

(d) Free and/or residual product determined to be present pursuant to N.J.A.C. 7:26E–2.1(a)11 shall be treated or removed when practicable, or contained when treatment or removal are not practicable. Likewise, natural ground water remediation for dissolved phase contamination may be implemented if it is determined by the Department that active ground water remediation for the dissolved phase is impracticable or not cost-effective. Decisions regarding the practicability of a remedial decision shall be made by the Department on a case by case basis. Natural remediation of free and/or residual product will not be allowed.

(e) Institutional controls shall be required whenever a non-permanent remedy is used to remediate a site.

(f) The person responsible for conducting the remediation of historic fill material shall do so pursuant to N.J.A.C. 7:26E–6.2(c). Remedies for any other fill material, not meeting the definition of historic fill material, shall be selected pursuant to N.J.A.C. 7:26E–5.1.

(g) If ground water contamination above the applicable remediation standard is confirmed to have been caused by an onsite discharge and is not from natural or offsite sources, the Department shall determine the need to establish a Classification Exception Area for the impacted area of the aquifer pursuant to N.J.A.C. 7:9–6.6, the Ground Water Quality Standards, after evaluation of the information required at N.J.A.C. 7:26E–6.2(a)17. The Classification Exception Area is the area of the aquifer that is currently and is anticipated to be impacted above the applicable Ground Water Quality Standard pursuant to N.J.A.C. 7:9–6. The Classification Exception Area shall remain in effect until the person responsible for conducting the remediation documents that contaminant concentrations have decreased to the applicable ground water quality standard.

Amended by R.1997 d.124, effective May 19, 1997 (operative July 18, 1997).
See: 28 N.J.R. 1098(a), 28 N.J.R. 2298(a), 29 N.J.R. 2278(b).
In (a), inserted reference to notifying local governing body; in (b)1, substituted "if a remedial action selection report is also required pursuant to criteria in N.J.A.C. 7:26E–5.2(a)" for "unless the remedial action is a permanent remedy pursuant to N.J.A.C. 7:26E–5.1(c)"; in (b)2, added "in effect at the time ... new remediation standards"; rewrote (b)5; and added (d) through (g).

7:26E–6.2 Remedial action workplan

(a) If a remedial action workplan is required by the Department in an oversight document or pursuant to the ISRA or UST programs, or if the person responsible for conducting the remediation elects to obtain Department pre-approval for the workplan, the workplan shall be submitted in accordance with the schedule contained in that document, if applicable, and shall be presented in a format that corresponds directly to the outline of this section. The workplan shall include:

1. The remedial investigation report, pursuant to N.J.A.C. 7:26E–4.8, shall be presented as the first section of the remedial action workplan. If the remedial investigation report was previously submitted to the Department, either a summary of the report or a copy of the findings/recommendation section of the report may be submitted;

2. A sampling summary table for post remediation samples pursuant to N.J.A.C. 7:26E–4.2 (remedial investigation workplan).

3. A proposal to complete all requirements in N.J.A.C. 7:26E–6;

4. The identification of all applicable remediation standards;

5. A detailed description of the remedial action and the remedial technology to be conducted for each area of concern;

6. The identification of all areas where remedial action will be conducted on a scaled site map pursuant to N.J.A.C. 7:26E–4.8 (remedial investigation report). In addition, the map shall specify:

i. The location of remedial treatment units;

ii. The volume of each environmental medium to be remediated;

iii. The vertical and horizontal extent of area to be remediated;

iv. The location, depth and concentration of all contaminants in excess of the remediation standard; and

v. Sample locations, depths and parameters for all post-construction samples;

7. A quality assurance project plan including proposed sampling and analytical methods pursuant to N.J.A.C. 7:26E–2.2;

8. A list of all required permits;

9. If any construction activity is planned, the following items shall be provided in the workplan:

i. The location of any such construction facilities with additional details describing construction design;

ii. All applicable requirements and standards relating to construction for onsite remedial units including inspection and professional engineer certification.

10. A description of soil and sediment erosion control and monitoring, and dust and odor control and monitoring procedures to be implemented during remedial activities, if applicable;

11. A health and safety plan pursuant to N.J.A.C. 7:26E–1.9;

12. A detailed description of site restoration plans to comply with N.J.A.C. 7:26E–6.4 (post-remediation action requirements);

13. A description of procedures for dismantling and removal of remedial structures and equipment from the site, if applicable;

14. A cost estimate of the remedial action pursuant to N.J.A.C. 7:26E–5.2;

15. If remedial actions will exceed three months in duration, refer to N.J.A.C. 7:26E–6.5 (remedial action schedule and progress reports) for specific schedule and progress report requirements. A schedule is not required if the remedial action will not exceed three months from the proposed start date; however, the proposed completion date of the remedial action shall be provided;

16. A draft declaration of environmental restrictions, or other similar document approved by the Department, and written approval from the owner of the property where the declaration of environmental restrictions will be placed, if the person responsible for conducting the remediation chooses to implement an institutional control at a site in lieu of remediating the site to meet an applicable unrestricted use remediation standard; and

17. If a Classification Exception Area is to be established because ground water contamination above the approved remediation standard is confirmed to have been caused by an onsite discharge and is not from natural or offsite sources, the person responsible for conducting the remediation shall submit the following information to the Department:

i. A description of the fate of the contaminant plume, detailing the horizontal and vertical distance and length of time the plume is expected to travel and persist before contaminant concentrations decrease to or below the applicable standards. The most mobile and persistent contaminants present above their respective ground water quality criteria shall be used when performing this evaluation;

ii. A proposed expiration date for the Classification Exception Area;

iii. A map of the proposed area of the Classification Exception Area, compatible with the Department's Geographic Information System (see N.J.A.C. 7:1 Appendix A), both as a paper hard copy and electronically by means of computer disk;

iv. A determination as to whether the Classification Exception Area extends through a ground water use area. A ground water use area shall be determined based upon both the well search conducted pursuant to N.J.A.C. 7:26E–4.4(h)3v and an evaluation of the current and potential ground water uses of the area using a 25–year planning horizon. The evaluation shall include, without limitation, municipal and water purveyor planning data pertaining to the existence of water lines, proposed future installation of water lines, and local and/or county ordinances restricting installation of potable wells. The aquifer will be considered a water use area if any domestic, irrigation, industrial, or public supply wells, or wells with water allocation permits already exist or there is a reasonable expectation they will be installed within the 25–year planning horizon and within the proposed boundaries of the Classification Exception Area; and

v. Documentation that the person responsible for conducting the remediation has notified the persons listed below of the intent to establish the Classification Exception Area. Notification shall be sent by certified mail, return receipt requested, and in accordance with N.J.A.C. 7:26E–1.4. The notifications shall describe the type and aerial extent of the groundwater contamination, the proposed remedial action and its projected duration, and the limitation on groundwater use that will be necessary based on the contamination present and the proposed remedial action. Appropriate persons to be notified are as follows:

(1) The local health departments and clerks of the governing bodies of each municipality in which the Classification Exception Area is located; and

(2) In a groundwater use area as determined pursuant to N.J.A.C. 7:26E–6.2(a)17iv, all owners of properties under which the contaminant plume may flow and on which wells either already exist or there is a reasonable expectation they will be installed.

(b) If contaminated soil will be reused at a site, an evaluation pursuant to N.J.A.C. 7:26E–6.4(d) shall be conducted and a soil reuse proposal shall be submitted to the Department as part of the remedial action workplan. The soil reuse proposal may also be submitted at any time during the remediation process, as appropriate. At a minimum, the soil reuse proposal shall include:

1. A description of the originating site or area of concern by the submission of a remedial investigation report or, as applicable, a remedial action report for the contaminated soil. If the reports were previously submitted to the Department, a summary of the report may be submitted;

2. A determination in accordance with N.J.A.C. 7:26–8.5 as to the waste classification of the soil, including any supporting data requested by the Department; and

3. A detailed description of the proposed reuse and conditions at the site of reuse including:

i. The location of the site including state, county, municipality, block and lot numbers;

ii. The volume of soil to be reused;

iii. Identification of the specific location on the site where the reuse will be conducted on a scaled maps pursuant to N.J.A.C. 7:26E–3.2(a)3i through iii;

iv. The depth to ground water on the receiving site, including the method of determination;

v. The receiving site use;

vi. A discussion of the performance, effectiveness and reliability of the proposed reuse and any potential negative impacts to human health, safety or the environmental as a result of the reuse; and

vii. All other applicable data and information required pursuant to (a)8 through 15.

(c) If historic fill material will not be treated or removed from the site, engineering and institutional controls shall be proposed in accordance with the Department's procedures in effect at the time of proposal, provided that the information is pursuant to N.J.A.C. 7:26E–4.8(c)14 and the following documentation is presented in the remedial action workplan:

1. A statement that all other areas of concern located in the historic fill material area have been addressed as separate areas of concern. Remedies for any such areas, not meeting the definition of historic fill material, shall be selected pursuant to N.J.A.C. 7:26E–5.1.

Amended by R.1997 d.124, effective May 19, 1997 (operative July 18, 1997).
See: 28 N.J.R. 1098(a), 28 N.J.R. 2298(a), 29 N.J.R. 2278(b).
In (a), substituted "ISRA" for "ECRA", inserted reference to electing to obtain Department pre-approval, and inserted ", if applicable," following "schedule contained in that document"; in (a)1, 2, and 6, amended N.J.A.C. references; in (a)1, inserted reference to copy of findings/recommendation section; in (a)2, inserted "for post remediation samples'; in (a)14, substituted "; however," for "and"; and added (a)16, (a)17, (b) and (c).

7:26E–6.3 Specific remedial action requirements

(a) As a first priority during remedial action, contaminants in all media shall be contained and/or stabilized to prevent contaminant exposure to receptors and to prevent further movement of contaminants through any pathway.

(b) The following requirements shall be followed for the closure of an underground storage tank:

1. The associated piping shall be drained and the tanks pumped out and cleaned thoroughly using the American Petroleum Institute's recommended Practice for the Abandonment or Removal of Used Underground Service Tanks, as amended and supplemented. Copies can be obtained from the American Petroleum Institute, 1220 L Street Northwest, Washington, DC 20005;

2. All of the openings in the tank shall be plugged except for one vent hole;

3. The soil around the tank shall be excavated and the tank shall be removed and secured;

4. After the tank is secured, it shall be examined for holes and the NJDEPE HOTLINE, (609) 292–7172, shall be called if any holes are found unless a discharge from the tank was previously reported to the Department;

5. The tank shall then be prepared for disposal by labeling the tank regarding its site of origin, ultimate destination site and the substance(s) that were stored in it during its use as a storage tank; and

6. The tank shall be removed from the site according to all applicable laws and regulations.

i. During tank removal, the following observations shall be made and documented:

(1) A description of tank condition (with photographic documentation);

(2) The excavation floor and sidewalls shall be examined for any physical evidence of soil contamination;

(A) When tanks that contained volatile organics, including No. 2 fuel oil, diesel fuel, gasoline, kerosene, jet fuel, waste oil, are removed, the excavation floor and sidewalls shall be field screened with

a properly calibrated flame ionization detector (FID), or photoionization detector (PID) along transects spaced no more than five feet apart.

(B) If the tank did not contain volatile organics (for example, No. 4, No. 6 fuel oil), the excavation shall be examined visually for evidence of a discharge.

(3) If there is no evidence of a discharge, soil samples for laboratory analysis shall be taken immediately after tank removal as follows:

(A) If there is no ground water in the excavation, center line soil samples are required at a frequency equal to the total length of the tank divided by five (minimum of one sample), provided that samples are spaced equidistantly and that the outermost samples obtained are no greater than 2.5 feet from each respective end of the tank. If the total length of a tank is not evenly divisible by five, one additional sample shall be obtained for any fraction remaining;

(B) If there is ground water in the excavation, soil samples shall be taken as follows:

(I) If potential contaminants have a specific gravity of one or less, independent of the number of tanks in the excavation, one sample shall be taken from the zero to six inch interval above the water table from each excavation sidewall for every 30 linear feet of sidewall (minimum of one sample per sidewall); except that, for no. 2 fuel oil or diesel oil tanks of 550 gallon capacity or less, one sample, biased to the suspected location of greatest contamination, shall be taken from one excavation sidewall at the zero to six inch interval above the water table;

(II) If potential contaminants have a specific gravity of more than one, samples shall be taken pursuant to (b)6i(3)(A) above; or

(III) If the tanks contained mixed substances such that some contaminants had a specific gravity of more than one and some contaminants had a specific gravity of less than one (for example no. 6 fuel, or waste oil potentially contaminated with chlorinated solvents), samples shall be taken below the water table pursuant to (b)6i(3)(A) above, and, independent of the number of tanks in the excavation, from the zero to six inch interval above the water table from each excavation sidewall for every 30 linear feet of sidewall (minimum of one sample per sidewall); and

(IV) Soil samples taken from below the water surface shall be taken using appropriate sediment sampling methods; and

(4) If there is evidence of a discharge and a soil remedial action will occur, refer to N.J.A.C. 7:26E–6.4. If there is evidence of a discharge, but there is insufficient soil to conduct a soil remedial action, (for example, tank is located in bedrock) or any portion of the tank is located within or immediately above the ground water table, a ground water sample shall be taken pursuant to N.J.A.C. 7:26E–3.7(c);

(5) If there is any evidence of ground water contamination, including without limitation, a sheen or odor, a ground water sample shall be collected pursuant to N.J.A.C. 7:26E–3.7; and

(6) A description of product type and quantity spilled from tank or tank system during excavation.

ii. The following requirements shall be followed for the abandonment in–place of a physically accessible underground storage tank. If contamination is detected above an applicable remediation standard and remedial action will occur, the tank system shall be removed to facilitate remedial action, if feasible. If it is not feasible to remove the tank system, a certification shall be submitted, signed and sealed by a licensed New Jersey professional engineer, stating why the removal is not feasible:

(1) The tank system and associated piping shall be drained and the system pumped out and cleaned thoroughly using American Petroleum Institute guidance applicable at the time of cleaning. Because vapors in the tank atmosphere will be displaced during the tank cleaning and abandonment operation, particular emphasis shall be placed on health and safety concerns;

(2) After the tank is cleaned, the tank shall be inspected and any areas of questionable integrity, including, without limitation, any cracks or corrosion, or evidence of discharge, shall be documented. Photographs may be submitted to document that the integrity of the system has been breached, if the evidence is clearly visible in the photograph;

(3) Upon completion of tank cleaning, soil sampling shall be conducted by completing borings through the bottom of the tank, along the center line, at a frequency equal to the total length of the tank divided by five (minimum of one sample), provided that the samples are spaced equidistantly and that the outermost samples obtained are no greater than 2.5 feet from each respective end of the tank. If the total length of a tank is not evenly divisible by five, one additional sample shall be obtained from any fraction remaining;

(3) Contaminant levels above the applicable remediation standard remain, but a decreasing trend of contaminant levels is demonstrated in, at a minimum, the area of concern monitoring well(s). The decreasing trend shall be demonstrated by applying the statistical Mann–Whitney U–Test to eight consecutive quarters of ground water sampling data. The test shall be applied to individual contaminants detected in each monitoring well pursuant to Appendix C; and

4. Ground water sample data shall not be averaged for the purpose of the Mann–Whitney U–Test.

5. Alternative non–parametric statistical tests may be proposed. The Department shall determine the acceptability of such tests on a case by case basis.

Amended by R.1997 d.124, effective May 19, 1997 (operative July 18, 1997).
See: 28 N.J.R. 1098(a), 28 N.J.R. 2298(a), 29 N.J.R. 2278(b).
In (b), substituted "closure" for "removal", added (b)6i(3)(A) and (B); rewrote (b)6i(4); inserted new (b)6i(5); recodified former (b)6i(5) as (b)6i(6); rewrote (b)ii; and added (b)6iii through v, (c), (d) and (e).

7:26E–6.4 Post–remedial action requirements

(a) The following sampling shall document the effectiveness of the remedial action:

1. All sampling shall be conducted pursuant to N.J.A.C. 7:26E–3.3 through 3.12 and 4.1 through 4.7.

2. For soils, if excavation is conducted, the minimum post remediation sampling frequency shall be:

i. For excavations less than 20 feet in perimeter, at least one bottom sample and one sidewall sample biased in the direction of surface runoff.

ii. For excavations 20 to 300 feet in perimeter:

(1) For surface spills, one sample from the top of each sidewall for every 30 linear feet of sidewall and one sample from the excavation bottom for every 900 square feet of bottom area.

(2) For subsurface spills, one sample from the bottom of each sidewall for every 30 linear feet of sidewall and one sample from the excavation bottom for every 900 square feet of bottom area.

iii. For larger excavations, sampling frequency may be reduced if documentation acceptable to the Department is provided in the remedial action report (N.J.A.C. 7:26E–6.6) specifying why the sample frequency was considered adequate.

iv. For volatile organics bottom samples taken within 24 hours of excavation, samples shall be taken from the zero to six inch interval at the excavation floor. Samples taken after 24 hours shall be taken at six to 12 inches. For excavations open longer than two weeks, volatile organics sample depth for bottom samples shall be in accordance with N.J.A.C. 7:26E–3.6(a)4 (site investigation requirements).

v. Each excavation within a larger excavation shall be considered a separate excavation and shall comply with (a)2i through iv above.

vi. For tanks, if contaminated soil is removed, post remediation soil samples for laboratory analysis shall be taken immediately after contaminated soil removal pursuant to N.J.A.C. 7:26E–6.3(b)6i(3). If the excavation is enlarged horizontally beyond the immediate tank removal area, additional soil samples shall be taken pursuant to (a)2i through iv above.

3. For soils, if in situ remediation is conducted, the minimum post-remediation sampling frequency shall be one sample per 900 square feet of contaminated area. Where the contaminated zone exceeds two feet in depth, one additional sample per 900 square feet of contaminated area shall be taken for each two feet of depth.

4. Post–remediation sample locations and depth shall be biased towards the areas and depths of highest contamination identified during previous sampling episodes unless field indicators such as field instrument measurements or visual contamination identified during the remedial action indicate that other locations and depths may be more heavily contaminated. In all cases, post–remediation samples shall be biased toward locations and depths of the highest expected contamination.

5. If the extent of contamination above the applicable unrestricted use remediation standard was estimated during the remedial investigation, the extent of contamination above the applicable unrestricted use remediation standard shall be confirmed using laboratory analysis prior to the completion of a remedial action or the execution of a Declaration of Environmental Restriction, or other similar document approved by the Department.

6. If a Classification Exception Area was established as part of the remedial action in a ground water use area, the person responsible for conducting the remediation shall collect two rounds of ground water samples from all monitoring wells that exhibited contamination above respective Ground Water Quality Standards within 120 calendar days after the established expiration of the Classification Exception Area to confirm the effectiveness of the remediation. The time between sampling events shall account for seasonal fluctuations in the ground water table. The ground water sampling results shall be submitted to the Department for review, along with recommendations regarding any additional actions required. The Classification Exception Area will remain in place until sampling results confirm that the contaminant concentrations have decreased to or below the applicable ground water quality standard.

(b) All areas subject to remediation shall be restored, to the extent practicable, to pre–remediation conditions with

respect to topography, hydrology and vegetation, unless alternate restoration is approved by the Department pursuant to N.J.A.C. 7:26E 1.6(d).

1. Sites located adjacent to or in wetlands or in or near other environmentally sensitive areas, may have further requirements under N.J.A.C. 7:7E (Coastal Zone Management) or N.J.A.C. 7:7A (Wetlands Act).

2. Fill material used to restore a site after the remediation has been completed shall be similar in physical properties to the material removed unless otherwise approved in advance by the Department. Fill used for new building foundations or other construction in remediated areas are exempt from this requirement.

i. If the excavated material is native soil, the fill shall be of equal or less permeability than the soil removed.

ii. If the excavated material is not native soil, the fill material shall be of equal or less permeability than the native soil in or adjacent to the area of concern or, at a minimum, have a permeability equal to or less than that of loam.

iii. Fill shall be uncontaminated pursuant to any applicable remediation standard and free of extraneous debris or solid waste.

iv. Documentation of the quality of the fill shall be provided by a certification stating that it is virgin material from a commercial or noncommercial source or decontaminated recycled soil.

v. Uncontaminated soil from the site pursuant to any applicable remediation standard may be returned to excavations or may be used elsewhere on the site.

vi. The bills of lading shall be provided to the Department to document the source(s) of fill. The documentation shall include:

(1) The name of the affiant and relationship to the source of the fill;

(2) The location where the fill was obtained, including the street, town, lot and block, county, and state, and a brief history of the site which is the source of the fill; and

3. A statement that to the best of the affiant's knowledge and belief the fill being provided is not contaminated pursuant to any applicable remediation standards and a description of the steps taken to confirm such.

(c) After completion of remediation all monitoring and extraction wells shall be sealed in accordance with N.J.A.C. 7:9–9 unless otherwise approved by the Department.

(d) If contaminated soils will be reused at a site, a soil reuse evaluation proposal shall be conducted and submitted to the Department prior to the reuse of contaminated soils and shall satisfy the following sampling requirements:

1. The contaminated soil intended for reuse shall be fully characterized and delineated pursuant to the site investigation, N.J.A.C. 7:26E–3, and remedial investigation, N.J.A.C. 7:26E–4, or, if the soil has not been fully characterized and delineated, the soil shall be sampled in accordance with all applicable requirements at N.J.A.C. 7:26E–1, 2, 3.4, and 3.6, at the following frequencies:

i. Field screening methods, if available pursuant to N.J.A.C. 7:26E–2.1(b), shall be used to determine sample locations. Each 20 cubic yards of soil shall be screened with borings or test pits throughout the depth of the soil pile, at two foot intervals. Two samples shall be collected for laboratory analysis for the first 100 cubic yards of excavated material and one sample for each additional 100 cubic yards; or

ii. If contamination is not detectable by field screening methods, samples shall be collected for laboratory analysis from mid–depth in the pile at a frequency of one sample per 20 cubic yards for the first 100 cubic yards of soil and one sample for each additional 100 cubic yards; and

iii. For quantities of soil greater than 1,000 cubic yards, a lower sampling frequency may be acceptable, subject to prior Departmental approval pursuant to N.J.A.C. 7:26E–1.6(d);

2. When soils are excavated to access underground storage tank systems or other subsurface structures and there is no evidence of a discharge pursuant to N.J.A.C. 7:26E–6.3(b), soil analysis of the excavated soil is not required prior to reuse. The results of post–remedial sampling required pursuant to N.J.A.C. 7:26E–6.3 shall be evaluated prior to reuse of the soils to confirm that no discharge occurred at the underground storage tank system; and

3. Excavated soil from drill cuttings or test pit excavations, may be returned to the original location provided that:

i. The activity was performed in accordance with the Subsurface and Percolating Waters Act, N.J.S.A. 58:4A–4.1;

ii. Neither free nor residual product is present, as determined pursuant to N.J.A.C. 7:26E–2.1(a)11;

iii. The contamination present shall be addressed as part of the remediation of the area of concern; and

iv. The replacement of the soil shall not pose any additional threat to public health, safety or the environment.

Amended by R.1997 d.124, effective May 19, 1997 (operative July 18, 1997).
See: 28 N.J.R. 1098(a), 28 N.J.R. 2298(a), 29 N.J.R. 2278(b).

In (a)1 and (a)2iv, amended N.J.A.C. references; in (a)2vi, substituted N.J.A.C. reference for specific sampling guidelines; deleted (a)4, relating to sampling frequencies for building interiors; recodified former (a)5 as (a)4; inserted new (a)5; added (a)6; in (b), inserted N.J.A.C. reference; in (b)1, substituted "environmentally sensitive areas" for "critical habitat areas as defined in N.J.A.C. 7:26D–5"; and added (d).

7:26E–6.5 Remedial action schedule and progress reports

(a) If the remedial action activities at a site are being performed pursuant to N.J.A.C. 7:26C or the ISRA or UST programs, and require more than three months for completion, a schedule for completion of the remedial action by task and final completion schedule is required in addition to progress reports at a frequency which shall be specified by the Department in the oversight document or by the ISRA or UST program. The remedial action schedule shall contain the following elements:

1. Schedules shall utilize monthly timeframes, when possible, for the initiation or completion of tasks;

2. The remedial action workplan shall not list specific dates as these will be contingent upon Department approval of the remedial action workplan;

3. After remedial action workplan approval is obtained, the schedule shall be revised to identify the projected month/year for each task;

4. All tasks for all areas of concern shall be identified in the schedule;

5. Contractor bidding/review/acceptance process timeframe shall be included in the schedule;

6. The schedule shall consider timeframes for permit applications (municipal, NJDEP, etc.) and final permit approvals. A critical path schedule shall be included when any permits are involved because certain tasks cannot proceed without permit approval;

7. When projecting dates for submission of reports to the Department, the schedule shall consider review time of not only the person preparing the report but all other persons who are deemed necessary to finalize the report;

8. The schedule shall identify all anticipated report submittals (month/year) to the Department including, without limitation, progress reports, ground water monitoring reports, post-remediation data reports for individual areas of concern, construction design reports and final remedial action reports. Laboratory analysis time shall be accounted for in projecting report submittal dates;

9. The schedule shall allow for Department review time of submitted reports;

10. The schedule shall include time for obtaining waste classification from the Department for disposal or treatment of waste material generated during remediation;

11. The schedule shall include a timeframe for site restoration (backfill, regrade, pave, etc.) and Department final inspection; and

12. The schedule shall include projected date for full compliance with the Department program overseeing the remediation.

(b) A progress report shall include, at a minimum, the following information:

1. Specification/reporting of all remedial actions accomplished during the reporting period;

2. Proposal of any deviations from and/or modifications to the approved remedial action workplan. All modifications shall be approved by the Department prior to enactment;

3. Reporting of problems or delays in the implementation of the remedial action workplan. Proposed corrections shall be presented with changes to the approved project schedule and shall be approved by the Department. A revised schedule shall be submitted as part of the progress report. The status of all permit applications shall be included in this schedule;

4. Identification of the remedial actions for the next reporting period;

5. Presentation annually of the actual costs of remediation incurred to date;

6. If required in an oversight document pursuant to N.J.A.C. 7:26C or by ISRA or UST, the following shall be provided:

i. Tabulation of all sample results received during this period pursuant to N.J.A.C. 7:26E–3.13(c)3 and submission of a report summarizing the data and presenting conclusions; and

ii. Tabulation of waste classification and/or characterization samples collected including the physical state of the material (solid, liquid, sludge), the volume of material, number of samples collected, analyses performed and results;

7. A listing of all types and quantities of waste generated by the remedial action during the reporting period and to date. Include the name of the disposal facilities, and transporters' dates of disposal, and if appropriate, the manifest numbers of each waste load; and

8. Any additional support documentation that is available (e.g. photographs) shall be submitted.

(c) If the Department determines in writing that oversight of some of the remedial activities will occur pursuant to Federal, State or local permits, then the requirements of this subchapter may be waived for those activities. The Department may request a summary of permitted activities.

Amended by R.1997 d.124, effective May 19, 1997 (operative July 18, 1997).
See: 28 N.J.R. 1098(a), 28 N.J.R. 2298(a), 29 N.J.R. 2278(b).
In (a) and (b)6, substituted "ISRA" for "ECRA"; in (a)6, substituted "NJDEP" for "NJDEPE"; and in (b)6i, substituted N.J.A.C. reference for specified items to be included in tabulation.

7:26E–6.6 Remedial action report

(a) Any remedial action report submitted to the Department for approval shall present and discuss all data and information collected in compliance with N.J.A.C. 7:26E–6.3 (specific remedial action requirements) and N.J.A.C. 7:26E–6.4 (specific post-remedial action requirements), if applicable. The report shall be presented in a format that corresponds directly to the outline of this section.

(b) Any remedial action report submitted to the Department for approval shall include the following:

1. All information contained in the remedial investigation report pursuant to N.J.A.C. 7:26E–4.8 or a summary of the report;

2. The remedial investigation report section entitled "Findings/Recommendations," shall be renamed "Findings/Remedial Action Report" and shall include a description of how each area of concern was addressed;

(c) The Findings/Remedial Action report section shall state for each area of concern either "no remediation was conducted for this area of concern" or "remedial actions were completed for this area of concern". Where remedial actions were completed, the following shall be included:

1. A summary by area of concern of all remedial actions completed;

2. A list of the remediation standards applied to the remedial actions;

3. Tables and figures pursuant to N.J.A.C. 7:26E–4.8 (remedial investigation report) containing all pre– and post–remedial data keyed appropriately so that completion of the remedial action is documented. The figures shall clearly indicate the volume of contaminated soil or sediment which was remediated:

4. A detailed description of site restoration activities pursuant to N.J.A.C. 7:26E–6.4 (Post-Remedial Action Requirements);

5. A detailed description of source and quality of fill pursuant to N.J.A.C. 7:26E–6.4;

6. A detailed report of actual costs pursuant to N.J.A.C. 7:26E–5.2;

7. "As-built" diagrams for any permanent structures including, without limitation, caps, slurry walls, treatment units, or other remedial structures which will remain in place after completion of the remedial action;

8. Fully executed manifests documenting any offsite transport of waste material; and

9. A filed copy of Department approved use restrictions.

(d) For active ground water remedial actions, the remedial action report shall also include:

1. Figures representative of flow conditions immediately preceding initiation of the remedial action and flow conditions representative of pumping conditions; and

2. Graphs depicting changes in contaminant concentration over time for all contaminated non–pumping monitoring wells and all downgradient delineation monitoring wells.

Amended by R.1997 d.124, effective May 19, 1997 (operative July 18, 1997).
See: 28 N.J.R. 1098(a), 28 N.J.R. 2298(a), 29 N.J.R. 2278(b).
In (b)1 and (c)3, amended N.J.A.C. references; in (c)3, substituted "contaminated soil or sediment" for "contaminated media"; and added (d).

SUBCHAPTER 7. PERMIT IDENTIFICATION AND APPLICATION SCHEDULE

7:26E–7.1 Permit identification

(a) Any person conducting a remedial action shall identify all relevant Federal, State and local permits or permit modifications or certifications needed to implement the selected remedial action including but not limited to:

1. Soil Erosion and Sediment Control Plan Certification for Land Disturbance Control (N.J.A.C. 2:90);

2. Permit to Construct/Install/Alter Air Quality Control Apparatus/Equipment (N.J.A.C. 7:27–8);

3. Certificate to Operate Air Quality Control Apparatus/Equipment (N.J.A.C. 7:27–8);

4. Coastal Area Facility Review Act (CAFRA) Permit (N.J.S.A. 13:19–1 et seq.);

5. Waterfront Development/Upland Waterfront Permit (N.J.S.A. 12:5–3);

6. Wetlands Permit (N.J.S.A. 13:9A–1 et seq.);

7. Freshwater Wetlands/Open Water Fill Permit (N.J.S.A. 13:98–1 et seq.);

8. Stream Encroachment Permit (Construction Within a Flood Plain) (N.J.S.A. 58:16A–50 et seq.; N.J.A.C. 7:8–3.15);

9. State Water Quality Certificate (N.J.S.A. 58:10A–1 to 13; 33 U.S.C. 1251, § 401);

10. Dewatering Permit and/or Water Diversion Permit (N.J.S.A. 23:5–29);

11. U.S. Army Corps of Engineers Dredge and Fill Permit;

E. Spike Sample Results Summary——A summary of the spike sample analysis shall be submitted. The following information shall be reported: ID number of the sample chosen for spiking, sample matrix, the concentration of each spiked target analyte, the results of the unspiked sample analysis, the results of the spiked sample analysis, the percent recovery for each spiked analyte and the QC limit for percent recovery for each spiked analyte.

F. Duplicate Sample Results Summary——A summary of the duplicate sample analysis shall be submitted. The following information shall be reported: ID number of the original sample and the duplicate samples, sample matrix, results of the original sample analysis, results of the duplicate sample analysis, the relative percent difference of each target analyte for the original duplicate sample analyses and the QC limit for relative percent difference for each target analyte.

G. Laboratory Control Sample Results Summary—— When specified by the analytical method, the results of the laboratory control (quality control) sample shall be submitted. The following information shall be reported: control sample matrix, list of all target analytes, the true concentration for each analyte in the control sample, the reported concentration for each target analyte in the control sample, the percent recovery for each target analyte and the QC limit for percent recovery for each target analyte.

H. Serial Dilution Summary——If required by the analytical method, a summary of the serial dilution results shall be submitted. The following information shall be reported: ID number of the original sample and the serial dilution samples, sample matrix, results of the original sample analysis, results of the serial dilution sample analysis, the percent difference of each target analyte compared to the original analytes' results and the QC limit for percent difference for each target analyte.

5. **General Chemistry Requirements**

A. Analytical Results Summary——An analytical results form shall be submitted for each sample. Each form shall contain the following information: sample identification number (laboratory and/or field ID), sample matrix, date sample received, date sample analyzed, sample moisture content, dilution factor (if any), list of target analytes and detected analyte concentrations and method detection limits.

B. Blank Results Summary——A blank results form shall be submitted for all method blank samples associated with all field and QC samples. Each form shall contain the following information: list of all target analytes, matrix of the method blank, concentration units of the method blank, reported concentration of all target analytes found in all method blanks.

C. Spike Sample Results Summary——A summary of the spike sample analysis shall be submitted. The following information shall be reported: ID number of the sample chosen for spiking, sample matrix, the concentration of each spiked target analyte, the results of the unspiked sample analysis, the results of the spiked sample analysis, the percent recovery for each spiked analyte and the QC limit for percent recovery for each spiked analyte.

D. Duplicate Sample Results Summary——A summary of the duplicate sample analysis shall be submitted. The following information shall be reported: ID number of the original sample and the duplicate samples, sample matrix, results of the original sample analysis, results of the duplicate sample analysis, the relative percent difference of each target analyte for the original duplicate sample analyses and the QC limit for relative percent difference for each target analyte.

6. **Petroleum Hydrocarbon Requirements**

A. Analytical Results Summary—An analytical results form shall be submitted for each sample. Each form shall contain the information contained in Section 2A above. In addition, the identification of the GC instrument employed and the volume of extract injected shall be included.

B. Method Blank Summary—An analytical results form shall be submitted for all method blanks as well as a listing of all field and QC samples associated with each method blank. Each form shall contain the information in Section 6A above.

C. Standards Summary—A summary form containing GC standards information for all associated samples shall be submitted for all analyses. This summary shall contain the following information: instrument ID number, GC column used, date and time of standard(s) analysis, volume injected, listing of all associated field, QC and method blank samples, identity of each analyte in the hydrocarbon standard and/or the identity of petroleum product standard(s), retention times of each analyte in the hydrocarbon standard (when applicable), retention times of the surrogates and internal standard (when applicable), retention times of pristane and phytane (when applicable), retention time windows for each surrogate (when applicable), response factors/relative response factors used for quantitative determinations, response factors/relative response factors of surrogates, and percent relative standard deviations/percent differences of the surrogates.

D. Surrogate Compound Recovery Results Summary—If required by the analytical method, a summary form shall be submitted which contains the following information for all field samples, method blanks, and QC samples: sample identification number, sample matrix, surrogate compound names, concentration of surrogate compounds used, surrogate compound recoveries and QC limits for each surrogate compound.

E. Matrix Spike Results Summary—If required by the analytical method, a summary form shall be submitted which contains the following information: ID number of the sample chosen for spiking, sample matrix, the concentration of each spiked analyte/petroleum product, the results of the unspiked sample analysis, the results of the spiked sample analysis, the percent recovery for each spiked analyte/petroleum product and the QC limit for percent recovery for each spiked analyte/petroleum product.

F. Quality Control Check Standard—If required by the analytical method, a summary form shall be submitted which contains the following information: ID number of the sample, concentration of each spiked analyte/petroleum product, the results of the spiked sample analysis, the percent recovery for each spiked analyte/petroleum product, and the QC limit for percent recovery for each spiked analyte/petroleum product.

G. Duplicate Sample Results Summary—A summary of the duplicate sample results shall be submitted which contains the following: ID numbers of the original sample and the duplicate sample, sample matrix, results of the original sample analysis, results of the duplicate sample analysis, the relative percent difference calculated from the original and duplicate sample results and the QC limit for the relative percent difference (when applicable).

H. Quantitation Reports—Instrument quantitation reports shall be submitted for all field samples, QC samples, method blanks and standards.

I. Chromatograms—Chromatograms for all field samples, QC samples, method blanks and standards shall be submitted. All surrogate, internal standard (when applicable), pristane and phytane peaks on the chromatogram shall be identified along with the retention time for each peak.

[1] A negative proof is a mass spectrum offered as evidence to support an analyst's decision to negate the presence of a contaminant which has been qualitatively identified and reported by the instrument's data system.

[2] Method blanks for nonaqueous samples shall consist of performing the entire analytical procedure without any actual sample being present. The appropriate amount of sodium sulfate as specified in the current Statements of Work for Organics would be substituted as the "sample" for the semivolatile and pesticide/aroclor fractions.

Amended by R.1997 d.124, effective May 19, 1997 (operative July 18, 1997).
See: 28 N.J.R. 1098(a), 28 N.J.R. 2298(a), 29 N.J.R. 2278(b).
Rewrote IV6.

APPENDIX B

Well Search Format

Preparer

Name of Site

Case Number

Street Address

Township

County

USGS Quadrangle

Latitude

Longitude

Instructions:

1. All sources of well records/information shall be clearly documented.

2. List all wells and State well permit numbers, including active, inactive and abandoned, within ½ mile of the site boundary. Include all wells, active, inactive and abandoned at the site.

3. Locate all listed wells on a site locus map.

4. Sources that shall be used:

a. Well records search of the Bureau of Water Allocation. There is no cost if this search is performed by the individual. Appointments shall be made to examine well records by contacting the Bureau of Water Allocation at (609) 292–2957. Upon written request, the Bureau will provide the well search for a fee.

b. Contact local or county Health Department or equivalent.

5. Submit any available analyses from wells as an attachment.

6. Complete chart on back.

	Well Owner	Address	Total Depth	Length of Casing	Static Water Elev.	Use Code	Source of Information
1.							
2.							
3.							
4.							
5.							
6.							

USE CODES
A =
B = Boring

C =
D = Domestic
E = Recovery/Decontamination Pollution Control/Leachate with Pump Capacity
F = Fire
G = Irrigation
H = Heat Pump/Geothermal
I = Industrial
J = Injection/Waste Discharge
K =
L = Livestock
M = Monitoring
N = Public Non-community
O = Oil/Gas Exploration
P = Public Supply
Q = Recharge
S = Sealed
T = Test
U = Non-public
V = Gas Vent
W = Dewatering
X = Cancelled
Y = Cathodic Protection
Z = Piezometer

NEW REPLACEMENT WELL CODES
1 = Domestic
2 = Public Community
3 = Public Non–Community
4 = Industrial
5 = Irrigation
6 = Monitoring
7 = Piezometer
8 = Heat Pump/Geothermal
9 = Recovery
0 = Gas Vent

APPENDIX C

Mann–Whitney U–Test*

The random variable to be analyzed shall be the concentrations of the individual contaminants of concern in each individual monitoring well. The statistic to be evaluated is the Mann–Whitney "U". The test shall be a Mann–Whitney U–test with the size of the test equal to 0.1. The hypotheses (H) to be tested are:

H_0: $\hat{\theta}_1 \hat{\theta}_2$ (null hypothesis)

H_1: $\hat{\theta}_1 > \hat{\theta}_2$ (alternate hypothesis)

where $\hat{\theta}_2$ represents the stochastic size of the population of each individual contaminant during the most recent 12 month period of sampling and $\hat{\theta}_1$ represents the stochastic size of the population of each individual contaminant during the previous 12 month period. The test is applied to each contaminant in each individual monitoring well. In other words, if benzene and trichloroethene are the contaminants of concern, and there are four monitoring wells involved in the sampling program, then a total of eight Mann-Whitney tests are to be performed (benzene in each of the four monitoring wells and trichloroethene in each of the four monitoring wells).

The U statistic shall be evaluated as follows:

1. The test is applied to eight consecutive quarters of analytical data for each individual contaminant in each individual monitoring well.

2. For each quarter of data, annotate the concentration of the specific contaminant in the specific monitoring well with either a "b" for the most recent four quarters or an "a" for the four quarters from the previous 12 month period.

3. Vertically arrange the eight contaminant concentrations, with notations, in order of increasing value: the lowest value on the top, and the greatest value on the bottom.

4. For each individual "a" concentration, count the number of "b" concentrations that occur below that "a" concentration in the column.

5. Add the four values (zero or some positive number) obtained for Step 4 to calculate the "U" value.

6. All values of non–detectable (ND) or values detected below the limits of quantitation are to be ranked as "zero." It is required that appropriate detection levels/quantitation limits be achieved.

7. If two or more concentrations are identical, then two vertical columns are necessary. In the first column, rank tying "b" concentrations first, and in the second column rank tying "a" concentrations first. Calculate an interim "U" for each column ("Ua" and "Ub"). The average of these interim values is the actual "U". This is shown in Example 2, below.

The hypotheses shall be tested as follows:

1. If "U" is three or less, the null hypothesis is rejected, and it is concluded, with at least 90 percent confidence, that the concentration for the individual contaminant has decreased with time at the specific monitoring well.

2. If "U" is greater than three, the null hypothesis is accepted, and it cannot be concluded, with 90 percent or greater confidence, that the concentration for the individual contaminant has decreased with time at the specific monitoring well.

* Adapted from Mann, H. B. and Whitney, D.R., 1947, On a test of whether one of two random variables is stochastically larger than the other., Ann. Math. Statist., 18, pp. 52–54.

EXAMPLE 1: All data points are numerically unique

1. Individual contaminant: TCE
   Individual monitoring well: MW-1
2. Monitoring quarters:

			$\hat{\theta}_1$				$\hat{\theta}_2$		
Sampling Round:	1	2	3	4		5	6	7	8
Sampling Result: (ppb) (concentration)	506a	1021a	612a	265a		543b	261b	77b	379b

3. 77b
   261b
   265a
   379b
   506a
   543b
   612a
   1021a
4. 265a=2, 506a=1, 612a=0, 1021a=0
5. 2+1+0+0=3, U=3

Conclusion: "U" is three, therefore the null hypothesis is rejected, and it is concluded, with 90 percent or greater confidence, that the first sampling set ($\hat{\theta}_1$) is greater than the second sampling set ($\hat{\theta}_2$), and therefore that the concentration for the specific contaminant in the specific monitoring well has decreased over the period of the ground water monitoring program.

EXAMPLE 2: two or more numerically identical data points

1. Individual contaminant: TCE
   Individual monitoring well: MW-1
2. Monitoring quarters:

			$\hat{\theta}_1$				$\hat{\theta}_2$		
Sampling Round:	1	2	3	4		5	6	7	8
Sampling Result: (ppb) (concentration)	28a	Nda	61a	Nda		63b	Ndb	77b	79b

3. a] Ndb
   Nda
   Nda
   28a
   61a
   63b
   77b
   79b

   b] Nda
   Nda
   Ndb
   28a
   61a
   63b
   77b
   79b
4. a] Nda=3, Nda=3, 28a=3, 61a=3

   b] Nda=4, Nda=4, 28a=3, 61a=3
5. a] 3+3+3+3=12 Ua=12 ==> U=13.0
   b] 4+4+3+3=14 Ub=14

Conclusion: "U" is 13, therefore we accept the null hypothesis, and we cannot conclude, with 90 percent or greater confidence, that the first sampling set ($\hat{\theta}_1$) is greater than the second sampling set ($\hat{\theta}_2$), and we cannot conclude that the concentration for that specific contaminant has decreased with time.

New Rule, R.1997 d.124, effective May 19, 1997 (operative July 18, 1997).
See: 28 N.J.R. 1098(a), 28 N.J.R. 2298(a), 29 N.J.R. 2278(b).

APPENDIX D

Historic Fill Database
Summary Table

	Minimum (ppm)[1]	Maximum (ppm)[1]	Avg (ppm)[1]	Number of Samples	Number > URU CDCSCC[2]	% > URU CDCSCC[2]	Number > RU CDCSCC[2]	% > RU CDCSCC[2]
B(a)A[3]	0.03	160.0	1.37	441	126	29	33	7
B(a)P[3]	0.02	120.0	1.89	431	146	34	146	34
B(b)F[3]	0.02	110.0	1.91	426	118	28	39	9
B(k)F[3]	0.02	93.0	1.79	412	101	25	26	6
I(1)P[3]	0.02	67.0	1.41	397	70	18	18	5
D(a)A[3]	0.01	25.0	1.24	286	78	27	78	27
Arsenic	0.05	1098	13.2	369	35	9	35	9
Be[3]	0.01	79.7	1.23	213	21	10	21	10
Cadmium	0.02	510	11.1	236	147	62	5	2
Lead	0.28	10700	574	538	259	48	119	22
Zinc	2.45	10900	575	197	80	4	8	4

1. ppm = parts per million
2. URU = Unrestricted Use, RU = Restricted Use, CDCSCC = Current Direct Contact Soil Cleanup Criteria
3. B(a)A = Benzo(a)anthracene, B(a)P = Benzo(a)pyrene, B(b)F = Benzo(b)fluorene, B(k)F = benxo(k)fluoranthene, I(1)P = Indeno(1,2,3–cd)pyrene, D(a)A = Dibenzo(a,h)anthracene, Be = Beryllium

New Rule, R.1997 d.124, effective May 19, 1997 (operative July 18, 1997).
See: 28 N.J.R. 1098(a), 28 N.J.R. 2298(a), 29 N.J.R. 2278(b).