

SECTION 12

ENVIRONMENTAL ENGINEERING

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SECTION 12

ENVIRONMENTAL ENGINEERING

12.1 INTRODUCTION

The presence of environmental contamination can impact project feasibility, cost, schedules, human health & safety and environmental quality. It is therefore important to identify the presence of contamination early during project development to avoid or minimize involvement and produce predictable schedules and budgets. Any testing for and management of contamination within the project site must be performed in accordance with current NJDEP Technical Requirements for Site Remediation regulations under N.J.A.C.7:26E, Administrative Requirements for the Remediation of Contaminated Sites under N.J.A.C. 7:26C, as well as the NJDEP's Field Sampling Procedures Manual.

This Section provides the Engineer with guidance for conducting environmental investigations during the design process to determine the presence/absence of contamination (Areas of Concern (AOCs)) as defined by N.J.A.C. 7:26E-1.8, and if contamination is present, to appropriately address AOCs in the construction contract documents. This Section focuses on the NJDEP remediation process (Preliminary Assessment, Site Investigation, Remedial Investigation, and Remedial Action). However, the project should also be evaluated for whether the contaminated media can be handled under the NJDEP's linear construction rules, pursuant to N.J.A.C. 7:26C-16.1 and the NJDEP Linear Construction Technical Guidance (January 2012). Thus, a project can fall within the following three categories regarding environmental contamination:

1. No known contamination;
2. Contaminated soil or groundwater has been identified, which can be handled under the linear construction rules; or
3. Contaminated soil or groundwater has been identified, but the linear construction rules do not apply. For example, linear construction would not apply at Turnpike facilities such as service areas and maintenance yards.

The extent of the environmental investigation to be undertaken is dependent upon the scope of the project. Projects that do not involve ground intrusive activities will require little, if any, environmental investigation.

12.2 COORDINATING SUBMISSION REQUIREMENTS AND ENVIRONMENTAL INVESTIGATIONS

12.2.1 General

The Phase Design Submission requirements pertaining to environmental matters are dependent on the results and availability of information produced by progressive stages of the environmental investigation. Initial environmental screening/Preliminary Assessment investigations can help prevent the Authority from impacting or purchasing sites with potential contamination. If acquisition or impact to contaminated property is unavoidable, the results of the environmental

investigations will be used to support the right-of-way acquisition process described in Section 8 of this Manual.

This Section provides the Engineer with a framework for undertaking due diligence and satisfying NJDEP requirements as well as integrating environmental issues into the Authority's design process. This is not intended to be a rigid procedure. The Engineer will develop a cost effective, flexible plan to address NJDEP requirements within the specific context of each project. The Engineer and/or the Environmental Subconsultant must determine the most appropriate approach (i.e., report combinations, combining field investigative requirements, etc.) to maximize the efficiency of project schedules and costs.

The remediation of contaminated sites must be initiated and completed under the oversight of a Licensed Site Remediation Professional (LSRP), who is responsible for the environmental investigation and remediation. An LSRP will be required for sites where the Authority is the party responsible for conducting remediation and for linear construction sites, where the Authority is performing construction on contaminated land for which a third party is responsible. It is incumbent upon the Engineer to be fully aware of NJDEP's LSRP Program and its potential implications for design submissions, construction schedules and construction requirements. The Engineer's LSRP must comply with the LSRP Program requirements as well as any other applicable NJDEP procedural/ guidance requirements. The LSRP-of-record will be involved during the initial discovery of contamination and must continue to be involved through the investigation, remediation, design, and construction phases to ensure that environmental remedial activities are properly addressed and completed.

Linear Construction

The NJDEP's linear construction rules apply to construction and development projects that create, maintain, or alter a roadway, railroad, or utility that:

1. Includes one or more contaminated properties; and
2. Will generate more than 200 cubic yards of contaminated soil for fill or disposal during the duration of the Linear Construction Project (LCP).

The entity conducting an LCP must not have caused a discharge of hazardous substances or be in any other way responsible for the contamination. The LCP rules do not require the entity to remediate contamination outside the limits of the excavation area within the LCP construction corridor. The NJDEP recommends that non-responsible parties that excavate less than 200 cubic yards of contaminated soil over the duration of the LCP to also follow the best management practices provided in the most current version of NJDEP's Site Remediation Program - *Linear Construction Technical Guidance*. Requirements of the LCP rules include:

- Notifying the NJDEP of the LCP and the name of the LSRP overseeing the project;
- Developing a contaminated materials management plan to provide a defined set of procedures to be employed when contaminated soil and groundwater are encountered during construction (see Section 216 of the Supplementary Specifications);
- Managing contaminated media in a manner that is protective of human health, safety, and the environment;
- Backfilling with material that meets the NJDEP clean fill rules; and

- Submitting a Final Linear Construction Report that summarizes the history of investigations and material management activities as they pertain to the construction project.

Historic Fill

The Engineer must be aware of the potential presence of historic fill (as defined in accordance with N.J.A.C. 7:26E 1.8) on project sites. Quadrangle maps showing documented historic fill areas are available at <http://www.state.nj.us/dep/njgs/geodata/dgs04-7.htm>. Associated NJDEP requirements and health & safety issues must be addressed during design phases. The initial environmental screening/Preliminary Assessment will provide preliminary information regarding the presence of on-site historic fill. Additionally, geotechnical investigations can provide valuable data for the presence of in-situ historic fill.

The NJDEP presumes that historic fill is contaminated and is potentially present on existing/proposed NJTA Right of Ways. If encountered, the Engineer can assume the historic fill is contaminated, or collect and analyze soil samples for metals and polynuclear aromatic hydrocarbons (PAHs) to determine if the historic fill is not contaminated. All historic fill sampling/requirements must be undertaken in accordance with the NJDEP's Historic Fill Material Technical Guidance, N.J.A.C. 7:26E Technical Requirements for Site Remediation, and the NJDEP's Field Sampling Procedures Manual. If the presence of contaminated historic fill material is confirmed by analytical results, the Engineer may subsequently be required to design engineering/institutional controls during the design phases to be implemented during construction, unless the project is handled under the linear construction rules (see Section 12.2.2).

12.2.2 Contaminated Soil Reuse During Construction

Linear construction projects allow for contaminated soil to be reused as backfill material within the construction corridor. Other construction projects that do not meet the NJDEP criteria for linear construction have the option to leave the soil contamination in place with the establishment of institutional controls (i.e., deed notice) and possibly engineering controls (i.e., capping), or to include characterization and disposal of contaminated soil at a licensed disposal/recycling facility. The LSRP will establish the institutional controls.

Excavated contaminated soil can be reused on site as backfill material, preferably in the same parcel from which it was excavated, except when it contains free and/or residual petroleum product. Excavated soils will be inspected by the Engineer for visual evidence of free and/or residual product for instances where soil will be reused as backfill material on site. Soil containing free and/or residual product must be disposed at an off-site licensed disposal/recycling facility.

12.2.3 Environmental Screening/ Limited Preliminary Assessment (PA)

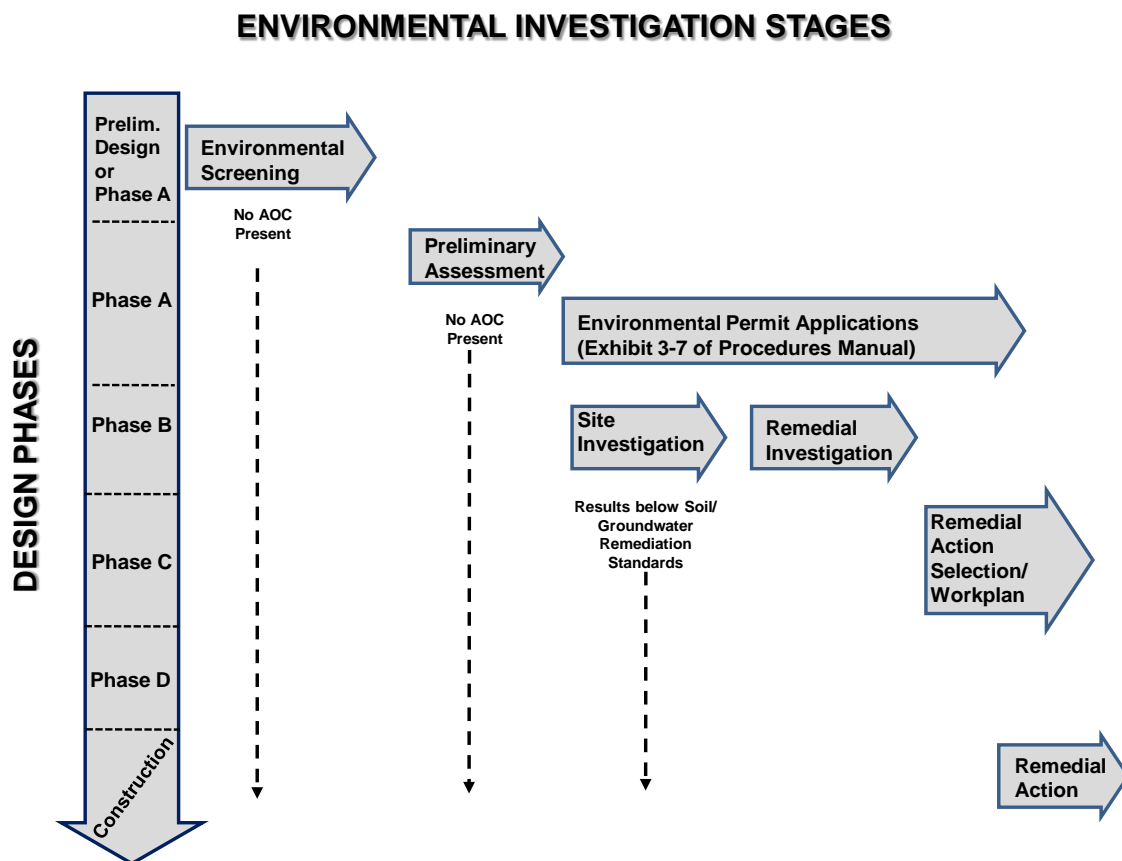
An Environmental Screening/Limited Preliminary Assessment must be conducted to support the design. For major projects, the environmental screening is to be performed during preliminary engineering. For projects that do not include a preliminary engineering phase, the environmental screening is to be performed during Phase A of the design process. The environmental

screening is intended to identify AOCs within the project site (e.g., Superfund sites or other contaminated land). At a minimum it should include:

- Review of Federal and State environmental databases (i.e. Environmental Data Report)
- NJDEP Environmental Information Inventory reviews
- NJDEP GIS database searches and NJDEP file reviews
- Review of historic land use information consisting of:
 - aerial photographs
 - city directories
 - Sanborn Fire Insurance Maps (earliest available)
- Review of local municipal files (i.e. health department, tax assessor's office, construction department, etc.)
- Agency Coordination (i.e. NJDEP, USEPA, etc.) and Open Public Record Act Request
- Review of existing As-Builts and environmental reports
- Site reconnaissance and assessment of risks associated with excavation or other construction related surface/subsurface activities.

Unless directed otherwise by the Authority, soil sampling is not to be undertaken at this phase. The results of the Environmental Screening/Limited Preliminary Assessment must be provided to the Authority in the form of a draft Environmental Screening Report.

Exhibit 12-1

Notes

1. AOC - Area of Concern.
2. Field activities and/or reporting requirements may be combined where appropriate.
3. The Engineer is strongly encouraged to use this diagram in conjunction with the full text of the regulation as published in the New Jersey Administrative Code (N.J.A.C.) 7:26E. The diagram is not a suitable substitute for referring to the regulation directly and interpretations of regulations made on the basis of this diagram are the sole responsibility of the Engineer.
4. It is the Engineer's responsibility to determine whether there have been any changes in applicability of this regulation since the date of publication.

Results of the environmental screening investigation shall be documented in the Environmental Screening Report, which includes the following:

- Introduction
- Project description
- Summation/Review of resources utilized
- AOCs identified and justification
- Constraints on surface/subsurface activities
- Conclusions/Sampling recommendations
- Engineer's recommendation for additional investigative action
- Appendix of all resources utilized

The results/findings of the Environmental Screening Report process shall also be reflected in the E.O. 215 Document prepared for the project, if applicable.

12.3 ENVIRONMENTAL INVESTIGATIONS SUPPORTING DESIGN SUBMISSIONS

Depending on the results (identification of AOCs) of the Environmental Screening conducted during Preliminary Design or Phase A, the Authority may be deemed as the responsible party for environmental issues. For sites in which the Authority is the responsible party, the Engineer's LSRP will conduct an appropriate Preliminary Assessment (PA); Site Investigation (SI) and/ or Remedial Investigation (RI) in consultation with the Authority. Should an AOC be identified during the Environmental Screening, the Engineer's LSRP must conduct a PA and submit the report to the Authority. Findings outlined in the PA report will determine whether an SI/RI investigation is required.

The results of investigations described below will be used to support design submissions, as appropriate. The Authority will review and comment on environmental submittals (i.e. sampling plans, reports, etc.) associated with SI/RI investigations and if acceptable, authorize environmental investigations to proceed. All documents must be reviewed and approved by the Authority before submittal to the NJDEP.

12.3.1 Preliminary Assessment

If necessary, the Engineer's LSRP will complete a PA in accordance with N.J.A.C. 7:26E-3.1 and 3.2.

12.3.2 Site Investigation

If the PA identifies AOCs that require further investigation, the Engineer's LSRP will conduct an SI in accordance with N.J.A.C. 7:26E-3.3 through 3.13. The Engineer's LSRP will submit a sampling plan to the Authority for review and comment. Soil/groundwater sampling will not be initiated until authorization is given by the Authority to proceed.

If the results of soil/groundwater sampling indicate that contamination is present, the NJDEP shall be notified.

An SI Report (SIR) will be submitted to the Authority for review and comment prior to NJDEP submission. The Engineer will reflect information contained in the SIR in the Design Submission if applicable.

12.3.3 Remedial Investigation (RI)

If necessary, the Engineer's LSRP will conduct an RI in accordance with N.J.A.C. 7:26E-4.1 through 4.9. The remedial investigation shall not be initiated until authorization is given by the Authority to proceed.

An RI Report (RIR) will be submitted to the Authority for review and comment prior to NJDEP submission. The Engineer will reflect information contained in the RIR in the Design Submission if applicable.

12.4 ENVIRONMENTAL INVESTIGATIONS SUPPORTING DESIGN PHASE C and PHASE D

If necessary and depending upon the results of the remedial investigation and RIR, the Engineer's LSRP will prepare an appropriate Remedial Action Selection (RAS) and/or Remedial Action Workplan (RAW) in consultation with the Authority.

The Engineer shall use the results of the environmental investigation(s) to incorporate the appropriate environmental documentation into the contract documents in order for the contractor to understand and implement any environmental-related efforts during construction. The contract documents shall cite that the contractor is responsible for preparing a site-specific health and safety plan (HASP) as necessary based on the results of the environmental investigation and implementing the HASP during construction. Refer to Supplementary Specifications Section 104.14 "Construction Safety" regarding HASP requirements.

12.4.1 Remedial Action Selection (RAS)

If necessary, the Engineer's LSRP will coordinate with the Authority to develop the most appropriate RAS based on an analysis of remedial alternatives applicable to the contaminant and the geologic setting. The RAS process will include a written document outlining potential remedial options and recommendations for review and evaluation by the Authority prior to completion of a RAW, if applicable.

12.4.2 Remedial Action Workplan (RAW)

If necessary, the Engineer's LSRP will prepare a RAW in accordance with N.J.A.C. 7:26E-5.5. The RAW schedule of activities and reporting requirements will be integrated into and coordinated with the Critical Path Method Progress Schedule for Construction Activities.

12.5 REMEDIAL ACTION

Depending on the circumstances of a particular project and the specifics of any remedial action determined to be necessary, it may be appropriate to undertake the remedial action in advance of the construction of the project in the form of a separate remedial action contract. The Engineer should discuss the possibility of an advance remedial action contract with the Authority where feasible and appropriate. Otherwise, the remedial action requirements may need to be incorporated into the construction contract documents for the project.

If the Design Consultant is functioning as the LSRP during environmental investigations and design efforts, it may be appropriate for the Design Consultant/LSRP to continue functioning in that role during construction. If such a continuation of LSRP services is considered appropriate and/or beneficial to the Authority, the Design Consultant shall so notify the Authority's Project Manager of this recommendation.

12.5.1 Remedial Action Report (RAR)

If necessary, the Engineer's LSRP will prepare a RAR to document the remedial actions in accordance with N.J.A.C. 7:26E-5.7. When the LSRP has deemed the site or AOC to be remediated, the LSRP can issue a response action outcome (RAO) to the Authority.

12.5.2 Final Linear Construction Report

If the remediation is handled under a linear construction program, the Engineer's LSRP will prepare a Final Linear Construction Report (rather than an RAR) in accordance with the "Linear Construction Technical Guidance" (January 2012) to document the remedial actions. The LSRP does not issue an RAO for linear construction projects.

12.6 CONTAMINATED SOILS

Linear construction projects allow for contaminated soil to be reused as backfill material within the construction corridor. Other projects that do not meet the NJDEP criteria for linear construction have the option to leave the contaminated soil in place with the establishment of institutional controls (i.e. deed notice), or to characterize and dispose of the contaminated soil at a licensed disposal/recycling facility (see Specifications Subsections 216.08, 216.09 and 216.10). The LSRP determines the appropriate institutional controls.

A Contaminated Material Management Plan is required by the NJDEP for linear construction projects. It is also prudent to require that contractors prepare Contaminated Material Management Plans for non-linear construction projects anticipated to involve the handling of contaminated materials.