



# Ground Water Technical Guidance

- Site Investigation
- Remedial Investigation
- Remedial Action Performance Monitoring

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# GW Guidance Topics

- When to Sample GW and Biasing SI Samples
- Background
- NAPL and Sources of GW Contamination
  - Identification
  - Delineation
- Unconsolidated Characterization and Contaminant Delineation
- Bedrock Characterization and Contaminant Delineation
- Performance Monitoring of Remedial Action





# GW Guidance Topics

Recommends tools to conduct more efficient remediation

- Working Conceptual Hydrostratigraphic Model
- Temporary wells – GW grab samples
- Field analytical methods
- Field screening devices such as MIP, LIF





# Purpose of GW Guidance

- **Present Rule**: Prescriptive
- **Proposed Rule**: Goal Oriented
- **Guidance**: Processes to Achieve Goals in the Rule
  - Provides more detail on how to conduct GW remediation
  - Provides flexibility and opportunities for LSRPs to use professional judgment





# Purpose of GW Guidance

## GW SI Existing Vs. Proposed

### Existing Tech Rule at 3.7

- **7:26E-3.7 Site investigation—ground water**
- (a) Except as provided in (b) below, the site investigation of each area of concern shall include at least one groundwater sample if any soil contaminant detected in the area of concern has a water solubility greater than 100 milligrams per liter at 20 degrees Celsius to 25 degrees Celsius as documented by a peer-reviewed reference; and
  - 1. All of the soil between the contaminant and the saturated zone is less than 15 percent silt and clay; or
  - 2. Any part of the area of concern at which the soil contamination was detected is located within 2,000 feet of a public supply well, as determined from a map of public supply wells which is available from the Department's Bureau of Revenue, Maps and Publications (609-777-1038), or through the Department's internet home page (<http://www.state.nj.us/dep/njgs>, then select "Digital Data"). A groundwater sample is not required if documentation acceptable to the Department is provided in the site investigation report (N.J.A.C. 7:26E-3.13) demonstrating that groundwater sampling was not necessary.





# Purpose of GW Guidance

## GW SI Existing Vs. Proposed

### Existing Tech Rule: 7:26E-3.7 Site investigation—ground water

- (b) Ground water sampling may not be necessary during a site investigation for a particular area of concern if the person responsible for conducting the remediation documents that ground water contamination from the discharge is unlikely based on the following criteria:
  - 1. The date and duration of the discharge is known;
  - 2. The identity and the volume of the contaminants are known;
  - 3. The date the remediation in response to the single discharge was completed;
  - 4. Post remediation soil sampling data establish that the remediation meets all applicable remediation standards in effect at the time of the remediation, regardless of when the Department is informed of the remediation; and
  - 5. Any other data or information that is relevant to the determination of the likelihood of ground water contamination. Ground Water Investigation Trigger





# Purpose of GW Guidance

Existing Vs. Proposed

And there's More.....  
In 4.4 (RI for Ground Water)







# Purpose of GW Guidance

## GW RI Existing Vs. Proposed

### Existing Tech Rule at 4.4

- **7:26E-4.4 Remedial investigation of ground water**
- (a) A remedial investigation of groundwater for an area of concern shall be conducted if:
  - 1. A ground water sample previously collected from that area of concern contains a contaminant above the applicable ground water remediation standard;
  - 2. A soil sample collected from that area of concern within two feet of the saturated zone or bedrock contains a contaminant above the applicable soil remediation standard;





# Purpose of GW Guidance

## GW RI Existing Vs. Proposed

### Existing Tech Rule: 7:26E-4.4 Remedial investigation of ground water

- 3. A soil sample collected in the area of concern anywhere in the soil column contains a contaminant above the applicable soil remediation standard and the contaminant is not going to be actively remediated or removed;
- 4. Any contaminant in an area of concern has a water solubility greater than 100 milligrams per liter at 20 degrees Celsius to 25 degrees Celsius as listed in a peer reviewed reference; and
  - i. All of the soil between the contaminant and the saturated zone is less than 15 percent silt and/or clay; or
  - ii. Any part of the area of concern at which the soil contamination was detected is located within 2,000 feet of a public supply well, as determined from a map of public supply wells which is available from the Department Bureau of Revenue, Maps and Publications (609-777-1038) or through the Department's Internet home page (<http://www.state.nj.us/dep/njgs>, then select "Digital Data"). A groundwater sample is not required if documentation acceptable to the Department is provided in the remedial investigation report (N.J.A.C. 7:26E-4.8) specifying why such sampling was not considered necessary.





# Purpose of GW Guidance

## GW RI Existing Vs. Proposed

### Existing Tech Rule: 7:26E-4.4 Remedial investigation of ground water

- (b) A ground water sample may not be necessary in a remedial investigation for a particular area of concern if the person responsible for conducting the remediation documents that ground water contamination from the discharge is unlikely based on the following criteria:
  - 1. The date and duration of the discharge is known;
  - 2. The identity and the volume of the contaminants are known;
  - 3. The date the remediation in response to the single discharge was completed;
  - 4. Post remediation soil sampling data establish that the remediation meets all applicable remediation standards at the time of the remedial action workplan approval or, in cases where the remedial action workplan did not require Department approval prior to initiation of the remedial action, in the approved remedial action report; and
  - 5. Any other data or information that is relevant to the determination of the likelihood of ground water contamination.





# Purpose of GW Guidance

## GW SI Existing Vs. Proposed

### Proposed Tech Rule:

7:26E-3.5 Site investigation - ground water

- (a) The person responsible for conducting the remediation who is subject to N.J.A.C. 7:26E-3.3(b) shall evaluate all potentially contaminated areas of concern to determine if ground water may have been or may be contaminated above any ground water remediation standard. If there is a potential that ground water has been or is contaminated by the area of concern, the person responsible for conducting the remediation shall conduct ground water sampling as follows:





## Purpose of GW Guidance

The Guidance works with the Proposed Tech Rule

- Proposed Tech Rule: If there is a potential that ground water has been contaminated – sample ground water
- Guidance: Outlines things to consider when determining if there is a potential that ground water has been contaminated





# Purpose of GW Guidance

## GW Investigation Requirement

**Guidance:** Considerations for When to Perform a GW Site Investigation

- Receptors may have been impacted
- Free or residual product is detected





# Purpose of GW Guidance

## GW Investigation Requirement

### **Guidance:** Considerations for When to Perform a GW SI

- Discharge is close to or beneath the water table
- Soil contamination is detected within two feet of the water table or bedrock





# Purpose of GW Guidance

## GW Investigation Requirement

**Guidance:** Considerations for when to perform a GW SI

- Contaminant and soil transport properties
  - Soil permeability
  - Soil organic carbon content
  - Contaminant  $K_d$
- Based on estimated age of discharge:
  - Has contaminant had time to migrate to the water table







# Thank you

Please hold your questions  
until before the break

