Remedial Action Report Presentation and Documentation

Dominik Hudyka
Bureau of Inspection & Review
ECCC

These topics were discussed at the ECCC meetings and will be part of the FAQs.
N.J.A.C. 7:26E-5.7 - Remedial Action Report Requirements

7:26E-5.7(b): The person responsible for conducting the remediation shall present and discuss in the remedial action report all of the information identified or collected pursuant to N.J.A.C. 7:26E-5.1 through 5.6, along with all of the following:
N.J.A.C. 7:26E-5.7 - Remedial Action Report Requirements

Main Requirements:
1. Updated Receptor Evaluation
2. Summary of findings and recommendations for each AOC
3. Discussion of remedial actions for each AOC and their effectiveness
4. Submission of remedial action permit application(s), if applicable
AOC Summary

• Summarize investigation and findings of **all** AOCs, regardless of if they required a remedial action
• For AOCs not requiring a remedial action, reference which remedial phase the AOC investigation was completed

### 3.1 AOC-1: Aboveground Storage Tank (AST)

During SI activities, polycyclic aromatic hydrocarbons (PAHs) and metals were detected in soil within this AOC at concentrations above the NIDEP default Impact to Groundwater Soil Screening Levels (IGWSSLs). In addition, lead was detected at a concentration above its Residential Direct Contact Soil Remediation Standard (RDCSRS). Since the AST was presumed to contain heating oil, analysis of total extractable petroleum hydrocarbons (EPH), naphthalene and 2-methylnaphthalene was performed; however, these concentrations were below applicable soil remediation standards (SRSs). The PAHs and metals detected above standard are attributable to historic fill, and were addressed under AOC-9. Therefore, no further action is necessary for AOC-1.
AOC Summary

• Remedial actions should be summarized for applicable AOCs
RAR & Appendices - Historical Investigations & Remediations

What to include:

• All necessary information that the LSRP utilized when implementing and evaluating the effectiveness of a remedial action
• This may include data, tables, figures, appendices, and/or attachments provided in previous reports, as necessary

What not to include:

• If an RIR was recently submitted, only a summary of the investigation/remediation is necessary within the RAR
• It is not necessary to attach the complete RIR report as an appendix if it was submitted after 2018
RAR & Appendices - Historical Investigations & Remediations

Why?
• Historical reports may not be readily available to reviewers
  • May not be in NJEMS
  • We must go through OPRA
• Missing information pertinent to a remedial action will cause a reviewer to issue an NTD or request information from the LSRP
  • Increases overall review time
  • Delays permit approval and RAO issuance
  • Sections of historic reports not referenced in RAR may cause reviewer to look at an entire previous report and find additional issues
RAR & Appendices - Historical Investigations & Remediations - Example

Well data from the RI was utilized to delineate the extent of a groundwater plume. The following should be provided:

- Tables showing historic data
- Figures showing locations of the previous permanent/temporary wells in relation to the current monitoring well network and plume
- Additional pertinent historic information such as field sampling logs, boring logs, well logs, construction details, lab reports, etc., included as appendices
RARs with RAP Applications

Information and data should be consistent across the RAR, RAP Application, and Deed Notices

• Examples:
  • Block/Lot of the restricted area is different on the RAP Application from the Deed Notice
  • RAR details the cap to be asphalt but the Deed Notice has it as soil
Professional Judgment & Lines of Evidence When Varying/Deviating from Rules/Guidance

Documentation of professional judgment for variances and deviations should be in their own section within the RAR, clearly identified in the Table of Contents.

### 4.2 Variances from the Technical Requirements

The work presented in this RAR was conducted in accordance with the requirements outlined in the NDEP TRSR, the FSPM, and applicable technical guidance documents. No variances (or deviations) were required.
Professional Judgment & Lines of Evidence When Varying/Deviating from Rules/Guidance

For RAPs:

- Use Section K to reference the location in the RAR that supports the variance/deviation for questions in Section G of the RAP Application.
- Provide a brief summary of the variance/deviation and professional judgment including lines of evidence in Section K of the RAP application.
- The RAR should include much more detail than what’s in the RAP Application.

**SECTION K. OTHER INFORMATION PROVIDED**

List any other pertinent information to support the Initial Soil RAP Application.

Deviation from the Technical Guidance on the Capping of Sites Undergoing Remediation, Version 1.0, July 14, 2014 (Capping Technical Guidance), Section 3.2.1. Vegetative / Landscape Caps; "Vegetative caps are generally 2 feet thick but can vary based on site specific conditions."

The deviation statement applies to the cap installed for AOC 54/AOC 61 historic fill. As described in Section 2.7, the AOC 54/AOC 61 historic fill was capped with six inches of topsoil following the placement of a geotextile demarcation fabric. A seed mixture of fescue, ryegrass, and bluegrass was sown.

See Section 4.5 of the Remedial Action Report for more information.
RAR Presentation: Common Issues

• RAR Format: Tables, Figures, & Appendices

• Remedial Action Permit: Referencing section of RAR that supports the variances/deviations and using Section K

• Documentation supporting Professional Judgment and Lines of Evidence
Common Deficiencies Associated with Tables

Historic Ground Water Data Tables not in an easy-to-read format. Should present a summary of all the ground water sampling results by monitoring well (and temporary well point) in tabular format, including all historical/current ground water sampling data for contaminants of concern

- Ground water elevation (depth to water) data should be included
- Sampling Method
- Free product/sheen observations should be noted
- Indication of remedial actions should be noted (injections)
Common Deficiencies associated with Tables

Additional Tables not always included in RAR

• Monitoring Well Construction Details tables should be presented with ground water data tables

• Pre/Post-Injection Monitoring Results should be presented as stand-alone tables that include results or additional parameters that require monitoring based on the Permit-By-Rule (PBR) Approval

• Tables for Vapor Intrusion investigation results should be included (even if no additional data was collected since the Remedial Investigation (RI))
Historic Ground Water Data Table Example

- Clearly shows historic data for all current and former on-site wells with relevant contaminants of concern
- Reviewer can easily see concentrations of contaminants over time
# Historic Ground Water Data

## Table Example

<table>
<thead>
<tr>
<th>Well ID</th>
<th>Date</th>
<th>Top of Casing Elevation (feet)</th>
<th>Depth to Water (feet)</th>
<th>LPH Thickness (feet)</th>
<th>Cured Groundwater/Elevation (feet)</th>
<th>Benze</th>
<th>Toluene</th>
<th>Ethylene / Benzene</th>
<th>Total Xylenes</th>
<th>MTBE</th>
<th>TBA</th>
<th>CE-1,2-DCE</th>
<th>PCE</th>
<th>TCE</th>
<th>Total TICs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>GWQS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>VTGWSSL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MIW-22</td>
<td>1/10/2016</td>
<td>15.83</td>
<td>4.80</td>
<td>ND</td>
<td>11.83</td>
<td>-0.24</td>
<td>-0.16</td>
<td>-0.27</td>
<td>-0.21</td>
<td>70</td>
<td>100</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>500</td>
</tr>
<tr>
<td>MIW-22</td>
<td>8/30/2016</td>
<td>15.83</td>
<td>2.70</td>
<td>ND</td>
<td>12.13</td>
<td>-0.24</td>
<td>-0.16</td>
<td>-0.27</td>
<td>-0.32</td>
<td>70</td>
<td>100</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>500</td>
</tr>
<tr>
<td>MIW-22</td>
<td>11/15/2016</td>
<td>15.83</td>
<td>5.20</td>
<td>ND</td>
<td>10.64</td>
<td>-0.14</td>
<td>-0.23</td>
<td>0.16</td>
<td>0.40</td>
<td>70</td>
<td>100</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>500</td>
</tr>
<tr>
<td>MIW-22</td>
<td>3/15/2017</td>
<td>15.83</td>
<td>2.67</td>
<td>ND</td>
<td>13.16</td>
<td>-0.14</td>
<td>-0.23</td>
<td>-0.21</td>
<td>0.39</td>
<td>70</td>
<td>100</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>500</td>
</tr>
<tr>
<td>MIW-22</td>
<td>4/14/2017</td>
<td>15.83</td>
<td>2.67</td>
<td>ND</td>
<td>14.93</td>
<td>-0.17</td>
<td>-0.25</td>
<td>-0.22</td>
<td>-0.25</td>
<td>70</td>
<td>100</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>500</td>
</tr>
<tr>
<td>MIW-22</td>
<td>6/26/2017</td>
<td>15.83</td>
<td>0.90</td>
<td>ND</td>
<td>11.78</td>
<td>-0.17</td>
<td>-0.25</td>
<td>-0.22</td>
<td>-0.25</td>
<td>70</td>
<td>100</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>500</td>
</tr>
<tr>
<td>MIW-22</td>
<td>10/24/2017</td>
<td>15.83</td>
<td>4.05</td>
<td>ND</td>
<td>12.25</td>
<td>-0.17</td>
<td>-0.25</td>
<td>-0.22</td>
<td>-0.25</td>
<td>70</td>
<td>100</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>500</td>
</tr>
<tr>
<td>MIW-22</td>
<td>1/5/2018</td>
<td>15.83</td>
<td>3.80</td>
<td>ND</td>
<td>13.83</td>
<td>-0.17</td>
<td>-0.25</td>
<td>-0.22</td>
<td>-0.25</td>
<td>70</td>
<td>100</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>500</td>
</tr>
<tr>
<td>MIW-22</td>
<td>4/20/2018</td>
<td>15.83</td>
<td>3.80</td>
<td>ND</td>
<td>14.83</td>
<td>-0.17</td>
<td>-0.25</td>
<td>-0.22</td>
<td>-0.25</td>
<td>70</td>
<td>100</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>500</td>
</tr>
</tbody>
</table>

**Notes:**

- All concentrations listed are in micrograms per liter, μg/L.
- GWQS - NIDEP Class II A Ground Water Quality Standards.
- MDL - Maximum Detection Limit.
- CE-1,2-DCE - Coefficient 1,2-Dichloroethene.
- PCE - Tetrachloroethene.
- TCE - Trichloroethene.
Common Deficiencies Associated with Figures

Common Deficiencies associated with RAR Figures:

• Area of Concern (AOC) Map(s) not included
• AOCs where prior remedial actions occurred not identified
• Figures associated with Vapor Intrusion Investigations not included
AOC Map Example

Additional Features to be Considered:
• CEA Boundary with GW flow direction
• Source Removal Area
• Injection Points
• Temporary Well Point Locations
• Underground Utilities
Helpful Hints

• Write the RAR with the assumption that the reviewer has no prior knowledge of the site and its conditions
  • Provide clear information in a logical progression

• When using professional judgment, provide clear, scientific lines of evidence
  • Reference sections in the report which may have additional information

• Variances and deviations should have their own section and should be referenced in Section K of the RAP Application
Helpful Hints

• Provide figures with chemical boxes to assist reviewers in understanding site conditions

• Document missing data, poor quality figures (e.g., due to photocopying), etc. if unavailable to the LSRP
  • Likely that a reviewer will issue an NTD or reach out to the LSRP for missing information/better quality figures otherwise
Questions?