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| Minnesota Pollution Control Agency (MPCA), 520 Lafayette Road North, St. Paul, MN 55155-4194 | Conceptual corrective actiondesign (CCAD) reportPetroleum Remediation ProgramGuidance document 7-02*Doc Type: Corrective Action Design* |

**Instructions:** Complete this report to recommend a final corrective action. See [Corrective action design and implementation](https://www.pca.state.mn.us/sites/default/files/c-prp7-01.pdf) for more information and requirements. Complete Section 1 if this report is not included as an appendix to [Investigation report](https://www.pca.state.mn.us/sites/default/files/c-prp4-06.docx) or [Monitoring report](https://www.pca.state.mn.us/sites/default/files/c-prp4-08.docx). All of these documents can be found on the Minnesota Pollution Control Agency’s (MPCA) website at <https://www.pca.state.mn.us/waste/cleanup-guidance>. Complete Section 2 for every corrective action. Complete Section 3 for a simple corrective action or Section 4 for a complex corrective action. Complete Section 5 if a remediation system or other in situ remediation technology is proposed. Do not revise or delete any text or questions from this report form. Items may be added if they are needed to support the corrective action design. If an item is not applicable, provide a brief explanation.

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| **MPCA Site ID:** | LS00      | **Date (mm/dd/yyyy):** |       |

**Responsible party information**

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| Individual or corporate name: |       |
| Mailing address: |       |
| City: |       | State: |       | Zip code: |       |
| Email: |       | Phone: |       |
| Alternative contact name (if any): |       | Phone: |       |

**Leak site information**

|  |  |  |  |
| --- | --- | --- | --- |
| Name: |       | Phone: |       |
| Leak site address: |       |
| City: |       | State: |       | Zip code: |       |
| County: |       |  |  |

**Environmental professional information**

*By signing this document, I/we acknowledge that we are submitting this document on behalf of and as agents of the responsible person or volunteer for this leak site. I/we acknowledge that if information in this document is inaccurate or incomplete, it will delay the completion of remediation and may harm the environment and may result in a reduction in Petrofund reimbursement. In addition, I/we acknowledge on behalf of the responsible person or volunteer for this leak site that if this document is determined to contain a false material statement, representation, or certification, or if it omits material information, the responsible person or volunteer may be found to be in violation of Minn. Stat. § 115.075 or Minn. R. 7000.0300 (Duty of Candor), and that the responsible person or volunteer may be liable for civil penalties.*

***By typing/signing my name below,*** *I certify the above statements to be true and correct, to the best of my knowledge, and that this information can be used for the purpose of processing this form.*

**Signatures**

|  |  |  |
| --- | --- | --- |
| **Report author(s)** |  | **Report reviewer(s)** |
| Signature: |       |  | Signature |       |
|  | *(This document has been electronically signed.)* |  |  | *(This document has been electronically signed.)* |
| Title: |       |  | Title: |       |
| Date (mm/dd/yyyy): |       |  | Date (mm/dd/yyyy): |       |
| Signature: |       |  | Signature |       |
|  | *(This document has been electronically signed.)* |  |  | *(This document has been electronically signed.)* |
| Title: |       |  | Title: |       |
| Date (mm/dd/yyyy): |       |  | Date (mm/dd/yyyy): |       |
| Name(s) of field technician(s): |       |

**Company information**:

|  |  |  |  |
| --- | --- | --- | --- |
| Name: |       | Phone: |       |
| Mailing address: |       |
| City: |       | State: |       | Zip code: |       |

**Project manager information**:

|  |  |
| --- | --- |
| Name: |       |
| Phone: |       | Email: |       |  |

## Section 1: Site conceptual model update

Include updated cumulative tables and figures from the [Investigation report](https://www.pca.state.mn.us/sites/default/files/c-prp4-06.docx) in Appendix A. Include documentation of additional site investigation, site monitoring, and interim corrective actions in Appendix B.

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| 1. | Describe any additional site investigation, site monitoring, and/or interim corrective actions completed since the last submitted report.      |
| 2. | Discuss the results of the additional site investigation, site monitoring, and/or interim corrective actions.       |
| 3. | Provide an updated and comprehensive site conceptual model.      |
| 4. | Provide recommendations for additional site investigation, site monitoring, and/or interim corrective actions to be completed prior to CAD approval, including their purpose and schedule for completion.      |

## Section 2: Final corrective action approach

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| 1. | If the CCAD is different than requested by the MPCA, identify the differences and explain why.      |
| 2. | Discuss the reason for the proposed corrective action.      |
| 3. | Discuss the corrective action goal relative to the corrective action reason.      |
| 4. | List the two or three most feasible corrective action alternatives. Discuss each alternative’s capabilities and limitations relative to achieving the corrective action goal, including major design assumptions, relative life-cycle costs, and implementation time frames. Provide life-cycle cost estimates for each alternative in Appendix C.      |
| 5. | Identify the selected corrective action alternative and discuss the rationale for selecting it, including discussion of the cost-effectiveness evaluation, if completed.      |
| 6. | Discuss the measurable corrective action objectives that will be used to demonstrate progress towards achieving the corrective action goal and completing the corrective action.      |

## Section 3: Simple corrective action

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| 1. | Summarize and reference previously submitted data, analyses, and conclusions that support and form the basis for the proposed corrective action.      |
| 2. | Discuss implementation of the proposed corrective action to the extent adequate to support CAD approval, including activities, methods and procedures, permits, and implementation reporting. Propose a schedule for completing the corrective action.       |
| 3. | Identify any contaminated waste types, such as gases, liquids, or solids, and respective volumes that may be generated by corrective action implementation. Discuss how these wastes will be measured, handled, treated, discharged, and/or disposed of. Contaminated soil removed for treatment should be estimated as in-place cubic yards and supported by providing scaled maps and calculations.       |

## Section 4: Complex corrective action

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| 1. | Identify the technical lead responsible for overseeing the design, implementation, and reporting of the corrective action.      |
| 2. | Identify and briefly discuss any focused investigation work that is recommended before a pilot test work plan or detailed corrective action design report can be completed. Propose a schedule for submitting a [Focused investigation work plan](https://www.pca.state.mn.us/sites/default/files/c-prp7-03.docx).      |
| 3. | If no focused investigation is recommended, propose a schedule for submitting either a [Pilot test work plan](https://www.pca.state.mn.us/sites/default/files/c-prp7-05.docx), [Remediation system detailed corrective action design (SDCAD) report](https://www.pca.state.mn.us/sites/default/files/c-prp7-07a.docx), or [Excavation detailed corrective action design (EDCAD) report](https://www.pca.state.mn.us/sites/default/files/c-prp7-07b.docx).       |

## Section 5: Remediation system conceptual design

Provide a site map, and if necessary, cross sections showing the estimated horizontal and vertical extents of the target zone and the locations and screened intervals of proposed remediation and monitoring points in Section 6.

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| 1. | Describe the targeted contaminant phase(s), chemicals of concern and their behavior, and target-zone geometry and geology.      |
| 2. | Discuss the remediation strategy, including the relative timing and magnitude of subsurface physical, chemical, and biological processes that the proposed system will be designed to induce and control.      |
| 3. | Describe the location, construction, and screened interval of each proposed remediation and monitoring point in terms of the estimated capture zone or radius of influence.      |
| 4. | Discuss the major below- and above-ground equipment, such as wells, pumps, compressors, or treatment equipment, for the proposed system.      |
| 5. | Discuss the proposed system’s process flow.      |
| 6. | Identify the waste streams that will be generated during system operation. Discuss how the wastes will be handled and disposed of. Discuss any waste disposal limitations and conditions, such as permits, approvals, or compliance monitoring that the wastes may be subject to.      |
| 7. | Summarize the proposed system’s operation strategy from startup to shutdown and any recommended post-shutdown monitoring. Integrate the corrective action objectives from Section 2, Item 6, including remediation endpoints and proposed time frames to achieve them.      |
| 8. | Briefly describe the operation monitoring plan, including the type of and frequency that data will be collected and how they will be evaluated to determine progress in achieving the corrective action objectives.      |
| 9. | Describe the pilot test. Describe the types of data to be collected and the results needed to demonstrate technical and economic feasibility of the proposed technology relative to the remediation and operation strategies.      |

## Section 6: Figures

Attach new figures specific to this report in order of discussion in the text and list below. All figures must include a north arrow, scale, and legend as applicable. Approximate scales are not acceptable. Figures required in Appendix A should not be included in this section. **Double click checkboxes to select *Checked* and select *OK*.**

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| [ ]  | One or more site maps showing (as applicable):1. Structures
2. Boring and well locations (including any drinking water wells on site)
3. Suspected source(s) of light non-aqueous phase liquid (LNAPL)
4. Locations and depths of on-site buried utilities
5. All past and present petroleum storage tanks, piping, dispensers, and transfer areas
6. Horizontal extent of LNAPL
7. Horizontal extent of the target zone
8. Proposed remediation and monitoring points

Distinguish sequential elements of investigations by dates, symbols, etc. in the legend. |
| [ ]  | Cross sections depicting target-zone geometry, geology, and hydrogeology and preferential flow routes and barriers to flow |

## Section 7: Tables

Attach new tables specific to this report in order of discussion in the text and list below. Tables required in Appendix A should not be included in this section.

## Section 8: Appendices

Attach all required or applicable appendices in the following order. Indicate those appendices that are included in this report by marking the check box. All reproduced data must be legible. Attach additional appendices as needed and list below.

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| [ ]  | *Appendix A* | Cumulative and updated tables and figures from [Investigation report](https://www.pca.state.mn.us/sites/default/files/c-prp4-06.docx)*.*  |
| [ ]  | *Appendix B* | Additional site investigation, site monitoring, and interim corrective action methods and procedures and associated documentation (boring logs, sampling information forms, laboratory analytical reports, etc.). |
| [ ]  | *Appendix C* | Life-cycle cost estimates for each corrective action alternative. |