FURTHER SITE INVESTIGATION (FSI) REPORT COVER SHEET & REPORT FORMAT

State Form 55441 (R / 7-26)
Indiana Department of Environmental Management
Petroleum Remediation Section

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
Office of Land Quality
Petroleum Remediation Section
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INSTRUCTIONS:

1. *This form is intended to assist with the organization of the Further Site Investigation (FSI). Additional information and guidance may be found in 40 Code of Federal Regulations (CFR) 280 Subpart F, Indiana Code 13-23-13, the Petroleum Remediation Program Guide (Waste-0082-NPD), and the Risk-based Closure Guide (R2, Waste-0046-R2). The Cover Sheet should be attached as cover to your FSI Report submittal; format instructions should not be included.*
2. *IDEM requests that a single, comprehensive, FSI Report be submitted within 365 days of the release discovery date. If delineation requires more than one mobilization and sampling event, investigation should continue until the nature and extent is determined and then the comprehensive FSI Report should be submitted.*
3. *If a section or appendix does not apply, enter "Not Applicable" and explain why. Do not leave any section blank.*

A. FACILITY INFORMATION

Facility Name:	Facility ID Number:	
	Incident Number(s):	
Street Address:		
City:	County:	ZIP Code:

B. SITE PRIORITY INFORMATION

1. a) Is Free Product present? b) If Free Product is present at the Site, has recovery information been submitted per 40 CFR 280.64?	☐ YES ☐ YES	☐ NO ☐ NO
2. Have vapors been identified in any confined spaces (basements, sewers, etc.)?	☐ YES	☐ NO
3. Has this investigation identified that a drinking water well has been affected because of this release? ** For definitions of Public Water Systems see 327 IAC 8-2.7-1 and 40 CFR 141.2*	☐ YES ☐ Community ☐ Non-Transient non-community ☐ Transient non-community ☐ Private	☐ NO
4. Are utilities impacted or likely to be acting as conduits for contaminant migration?	☐ YES	☐ NO
5. Is the site located within a Well Head Protection Area (WHPA)?	☐ YES	☐ NO
6. Estimated distance in feet (ft) and direction from point of release to the nearest:		

Private Well: ft.	Municipal Well: ft.	Surface Water: ft.
☐ North ☐ East ☐ South ☐ West	☐ North ☐ East ☐ South ☐ West	☐ North ☐ East ☐ South ☐ West

7. What is the depth to groundwater (below ground surface)?	ft.	
8. What is the predominant groundwater flow direction?	West	
9. Has the investigation defined the nature and extent of contamination in the soil: Vertically? Horizontally?	 ☐ YES ☐ YES	 ☐ NO ☐ NO
10. Has the investigation defined the nature and extent of contamination in the groundwater: Vertically? Horizontally?	 ☐ YES ☐ YES	 ☐ NO ☐ NO
11. Does contamination in the groundwater extend off-site?	☐ YES	☐ NO
12. Is there an existing Environmental Restrictive Covenant (ERC) on the property deed or off-site property(s)? If yes, list the parcel number(s) and associated restriction(s):	☐ YES	☐ NO
13. Is closure of the release(s) being requested at this time and if so, have the necessary evaluations required in **Section 6** of the format instructions been included in the FSI Report?	☐ YES	☐ NO

C. TANK(S) OWNER INFORMATION		
Tank Owner:		☐ Current ☐ Former (select one)
Street Address *(number and street)*:		
City:	State:	ZIP Code:
Contact Person:	Telephone Number:	
E-mail Address:		

D. TANK(S) OPERATOR INFORMATION		
Tank Operator:		
Street Address *(number and street)*:		
City:	State:	ZIP Code:
Contact Person:	Telephone Number:	
E-mail Address:		

E. CURRENT PROPERTY OWNER INFORMATION		
Property Owner:		
Street Address *(number and street)*:		
City:	State:	ZIP Code:
Contact Person:	Telephone Number:	
E-mail Address:		

F. REPORT PREPARER INFORMATION		
Preparer Name and Company:		
Street Address *(number and street)*:		
City:	State:	ZIP Code:
Contact Person:	Telephone Number:	
E-mail Address:		

G. CERTIFICATION OF REPORT COMPLETION			
I, the undersigned qualified environmental professional (QEP), hereby attest to the best of my knowledge and belief that the statements in this document and all attachments are true, accurate, and completed per 13-23-13-1. I certify that the attached report was submitted to the IDEM Petroleum Remediation Section on the date listed below.			
Name (print)	**Position**	**Company**	**Date**

QEP Credential:

_____ (signature)

Per IC 13-23-13-1, a QEP must be a Registered Professional Engineer, a Licensed Professional Geologist, a Certified Hazardous Materials Manager, or a Professional Soil Scientist. All must be specifically certified in the State of Indiana.

Additional Signature (as appropriate or desired)

_____ (signature and date)

_____ (printed name and date)

REQUIRED FSI REPORT FORMAT INSTRUCTIONS

Please attach the above FSI Cover Sheet to your FSI Report submittal. The FSI Report should follow the general outline below.

EXECUTIVE SUMMARY

Provide a brief discussion and summary of the project.

1. BACKGROUND INFORMATION

Regional Location

Describe the regional location including but not necessarily limited to the following:

1. *Township, range, and section on a 7.5-minutes series United States Geological Survey (USGS) topographic map as **Figure 1**.*
2. *An appropriately scaled regional map of the site as **Figure 2.***

Site Location

Describe the site location. Include the following:

1. *A physical description of the site and a discussion of present and potential future land use of the subject property (i.e. industrial, commercial, or residential).*
2. *Identification of all adjacent properties in the four principal compass directions and include historical (if known) uses.*
3. *A scaled plan of the subject site and adjacent properties as **Figure 3**. The figure should also include site buildings or former buildings, locations of current and former underground storage tanks (USTs), aboveground storage tanks (ASTs), groundwater monitoring wells, utilities, storm drains, spill areas, etc.*

Release Details, Initial Response, Free Product Recovery and Initial Investigation

Based on the initial response and investigation for this release, the following information should be included:

1. *Date reported to the department.*
2. *Release incident number assigned by IDEM.*
3. *List of material(s) released and volume of product lost (provide an estimate if the exact volume is not known).*
4. *Identify the source and cause of the release.*
5. *Immediate actions taken to prevent further release, prevent migration, mitigate hazards, and investigate the potential of free product release.*
6. *Areas affected (i.e. backfill soils, native soils, groundwater, surface water, subsurface conduits) Include depth intervals as appropriate.*
7. *Health and environmental risks associated with the release incident (i.e., sensitive area, drinking water well impacted).*
8. *Rationale for any sampling, the types of media sampled, and laboratory methods used.*
9. *Summary tables and figures of results within **Appendix A.***
10. *If free product is or has been present:*
    a) *Company/contractor responsible for free product recovery/removal.*
    b) *Estimated quantity, type, and thickness of product observed or discovered.*
    c) *Methods used to recover free product.*
    d) *Discharge location from onsite or off-site recovery activities.*
    e) *Type of treatment applied to the discharge and the effluent quality.*
    f) *Steps to obtain any necessary permits for discharge.*
    g) *Final disposition of any free product recovered.*
    h) *Amount of free product removed to date.*

2. FSI OBJECTIVES AND RATIONALE

List the specific objectives of the FSI and describe the sampling locations, the media sampled, and the RRCs evaluated at each location. Rationale should then be provided justifying these choices.

3. SITE SPECIFIC INVESTIGATION

Assessment of Potentially Susceptible Areas

Assess the potential susceptibility of the area including the following:

1. *Indicate if the subject site exists within a WHPA, a geologically susceptible area, or an ecologically susceptible area.*
2. *Indicate if other sensitive areas such as residences or schools are located in the immediate vicinity of the site.*

Release Related Chemicals (RRCs)

List all RRCs for the subject release based on historical usage and storage of regulated substances in regulated USTs at the subject site. It may be necessary to reduce or expand the list of RRCs as additional site information is acquired.

Sampling & Rationale

Describe the sampling locations, the media sampled, and the RRCs evaluated at each location. A rationale should then be provided justifying these choices.

Soil Sampling

Provide a general overview of the soil sampling event including the following:

1. *Which samples were selected for laboratory analysis and why.*
2. *The method by which the borings were installed and samples were collected (i.e., hand auger, hollow-stem auger, direct-push, split-spoon, etc.), the depths at which the samples were collected, and what analysis was performed.*
3. *Observations and field screening readings collected during sampling activities regarding the subsurface soil should be included on a soil boring log. Include the soil boring logs in **Appendix B**.*
4. *Soil sample locations and estimated extent of the plume should be presented on **Figure 4**.*
5. *Identify cross sections on a site map as **Figure 5a.** Geologic cross sections (depicting the soil lithology, approximate location of the water table, screened intervals, utilities, and the horizontal and vertical extent of contamination) should be included as **Figures 5b and 5c**.*

Groundwater Sampling

Provide a general overview of the groundwater sampling event including the following:

1. *Groundwater monitoring well construction diagrams in **Appendix B** and well screen elevation data in **Table 1.***
2. *The method used to measure depth to water in each well (and depth to free product, if applicable). Describe the method used for well purging (i.e.:, well pump, bailer, pump) and the volume purged.*
3. *How the groundwater samples were collected from each well and describe the sample containers into which they were transferred.*
4. *Identify duplicate samples or any samples submitted for matrix spike/matrix spike duplicate (MS/MSD) analysis.*
5. *State whether samples for metals analysis were filtered or unfiltered. If filtered, state the reason why and the size (in microns) of the filter used. When lead sampling is required, PRS recommends collecting both filtered and unfiltered samples. The laboratory should be instructed by the person submitting the samples that if the unfiltered sample results exceed current Published Levels, the filtered sample should then be analyzed.*
6. *Describe all decontamination procedures if non-dedicated sampling equipment is used. Describe how decontamination and purge water is managed.*
7. *Depth to groundwater measurements should be included in **Table 1**.*
8. *Groundwater sample locations and estimated extent of contamination on **Figure 6**.*

Vapor Sampling

Per current guidance, an evaluation of potential vapor intrusion based on specific criteria and scenarios should be included. If the evaluation determines that vapor (i.e., soil gas, conduit vapor, vapor intrusion) sampling is warranted, a general overview of the sampling event should include the following:

1. *Discuss the equipment utilized and how samples were collected. If samples are collected below ground surface, include the soil boring logs in **Appendix B**.*
2. *If applicable, discuss the necessity of a Background Indoor Air Assessment and provide a copy of any checklist or findings in **Appendix C**.*
3. *Observations and field screening readings collected during sampling activities regarding the subsurface soil should be included on a soil boring log. Include the soil boring logs in **Appendix B**.*
4. *Vapor sample locations on **Figure 7**.*

Groundwater Elevation Calculation

*Indicate the method used to determine the elevation of the groundwater monitoring wells and describe how groundwater elevations were calculated. All monitoring wells should be surveyed to a one-hundredth (0.01) foot accuracy to a common benchmark. Groundwater elevations and a depiction of groundwater flow should be presented in a groundwater contour map and included as **Figure 8**. Well screen depths and groundwater elevations should be included in **Table 1**. Indicate the survey benchmark in **Table 1**.*

Quality Assurance

*All lab analytical information, data sheets, chain-of-custody forms and documentation of minimum data documentation requirements (MDDRs) should be included in **Appendix D** and follow IDEM's "Investigation of Underground Storage Tank Releases" Quality Assurance Program Plan (QAPrP) (B-001-OLQ-PET-UST-24-Q-R5). Failure to submit this documentation may delay your ability to receive site characterization approval. A copy of the QAPrP can be found at https://www.in.gov/idem/tanks/files/tech_guidance_investigation_ust_releases_2024.pdf.*

4. RESULTS & CONCLUSIONS

Analytical Results

*Provide a narrative describing the analytical results for each media (soil, groundwater, vapor), including the results of the quality control samples (i.e., MS/MSD, duplicates, trip blanks, etc.). Analytical results for each media should be compared against current R2 Published Levels and presented on separate tables and figures. A copy of the laboratory certificates of analysis and chain of custody form(s) should be included as **Appendix D.***

Miscellaneous Sampling Data & Results

*Provide an overview of any additional sampling activities that occurred at the site and were not addressed in the previous sections. Discuss the method by which the samples were collected and all observations made during sampling activities. Analytical data and data summary tables should be included in **Appendix E**.*

Risk Evaluation

*Based on the information currently known about this release, a Conceptual Site Model (CSM) should be developed and provided in **Appendix F**. Identify and evaluate all potential exposure pathways associated with the subject release(s) and impacted media, including the following:*

1. *Dermal.*
2. *Ingestion.*
3. *Inhalation.*

Conclusions

*Provide a professional conclusion regarding the activities conducted for the subject release(s) to date. The comprehensive FSI Report should define the full nature and extent of contamination and should state the remediation objective(s) for the affected media and RRCs, and include the evaluations as required by **Section 6** below as appropriate. If the nature and extent of contamination has not been defined, IDEM requests notification of the extenuating circumstance prior to submittal of the FSI Report. An explanation and identification of which data gaps exist will be needed and complete **Section 5**.*

5. FSI Work Plan (if applicable)

Further Site Investigation Work Plan

*If extenuating circumstances have prevented determination of the full nature and extent of contamination within the 365-day deadline, explain and provide recommendations for any additional site activities required in a FSI work plan. Separately, IDEM requests notification of the extenuating circumstance prior to the 365-day deadline. The FSI work plan should be a brief document provided as **Appendix G** and include:*

1. *A description of how samples will be collected.*
2. *The number of and rationale for samples that will be collected.*
3. *The RRCs to be analyzed.*
4. *Methods for analysis.*
5. *The number and location of soil borings or monitoring wells proposed (depicted on a map).*
6. *An estimated timeline to complete the work along with the identification of any potential obstacles which may delay or prevent complete site characterization.*
7. *Other activities to address the information/data gaps identified in **Section 4**.*

6. SITE EVALUATIONS

Per IC 13-23-13-1, evaluations of the following must be submitted to IDEM prior to IDEM's request for execution of a restrictive covenant, or a determination of closure or no further action status is made. These evaluations should be included as ***Appendix H****.*

Closure Options

Based on the remediation objectives identified in ***Section 4*** *and if contamination will remain onsite or at an offsite property, closure options must be evaluated in pursuit of achieving no further action status.*

1. *Unconditional.*
2. *Unconditional with Lines of Evidence.*
3. *Conditional with Institutional Controls. Potential deed restrictions must be included.*

Evaluation of Potential Remedial Activities

Provide an evaluation of remedies given preliminary consideration at this site based on the remediation objective(s) identified in ***Section 4****. The evaluation must consider onsite and offsite properties, as applicable, and include the following:*

1. *A discussion of the applicability and potential effectiveness of the proposed remedy(ies).*
2. *The treatability of the RRCs at the site given the contaminant and site conditions.*
3. *A brief description of any pilot tests anticipated to support potential remedy decisions at the site, if applicable.*
4. *Estimated cost of the potential remedy(ies).*
5. *Estimated timeframe to achieve no further action via the potential remedy(ies).*