



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

State Form 55441(11-13)

329 IAC 9-5-6

Indiana Department of Environmental Management

Office of Land Quality

Leaking Underground Storage Tank Section

INDIANA DEPARTMENT OF
ENVIRONMENTAL MANAGEMENT

Attention: Leaking UST Section

Office of Land Quality

100 N. Senate Ave., MC 67-18, IGCN 1101
Indianapolis, IN 46204-2251

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 Rule 329 IAC 9-5-6, IAC 9-5-5.1 and Chapter 3 of the RISC User's Guide.
2. The Cover Sheet should be attached as cover to your FSI Report submittal. The directions for the required FSI format are not required to be attached.
3. Depending on the nature of the project, some of the following sections or appendices may not be applicable. If this is the case do not leave the section blank, or omit or reorder the appendices. Instead enter "Not Applicable" or other explanation to indicate that the section does not apply or that information is not available, and why.

A. FACILITY INFORMATION

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

B. SITE PRIORITY INFORMATION

1. a) Is Free Product present?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
b) If Free Product is present at the Site, has recovery information been submitted per 329 IAC 9-5-4.2 in the required format in Appendix D ?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
2. Have vapors been identified in any confined spaces (basements, sewers, etc.)?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
3. Has this investigation identified that a drinking water well has been affected as a result of this release? * For definitions of Public Water Systems please see 327 IAC 8-2-1		<input type="checkbox"/> YES <input type="checkbox"/> Community <input type="checkbox"/> Non-Transient non-community <input type="checkbox"/> Transient non-community <input type="checkbox"/> Private	<input type="checkbox"/> NO
4. Are utilities impacted or likely to be acting as conduits for contaminant migration?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
5. Is the site located within a Well Head Protection Area (WHPA)?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
6. Estimated distance (ft) and direction from point of release to the nearest:			
Private Well:	ft. <input type="checkbox"/> North <input type="checkbox"/> South <input type="checkbox"/> East <input type="checkbox"/> West	Municipal Well:	ft. <input type="checkbox"/> North <input type="checkbox"/> South <input type="checkbox"/> East <input type="checkbox"/> West
		Surface Water:	ft. <input type="checkbox"/> North <input type="checkbox"/> South <input type="checkbox"/> East <input type="checkbox"/> West
7. What is the depth to ground water in feet?		ft.	
8. What is the predominant ground water flow direction?			
9. Has the investigation defined contamination in the soil:		Vertically? <input type="checkbox"/> YES	<input type="checkbox"/> NO
		Horizontally? <input type="checkbox"/> YES	<input type="checkbox"/> NO
10. Has the investigation defined contamination in the ground water:		Vertically? <input type="checkbox"/> YES	<input type="checkbox"/> NO
		Horizontally? <input type="checkbox"/> YES	<input type="checkbox"/> NO
11. If defined, does contamination in the ground water extend off-site?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
12. If not defined, is contamination in the ground water likely to extend off-site?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
13. Is there an existing Environmental Restrictive Covenant (ERC) on the property deed?		<input type="checkbox"/> YES	<input type="checkbox"/> NO

C. TANK(S) OWNER INFORMATION

Owner Name:

Street Address:

City:

State:

ZIP Code:

Contact Person:

Telephone Number:

E-mail Address:

D. REPORT PREPARER INFORMATION

Company Name:

Street Address:

City:

State:

ZIP Code:

Contact Person:

Telephone Number:

E-mail Address:

E. CERTIFICATION OF REPORT COMPLETION

I the undersigned environmental professional, 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 329 IAC 9-5-5.1 and 329 IAC 9-5-6. I certify that the attached report was submitted to the IDEM Leaking Underground Storage Tank Section on the date listed below.

Name	Position	Company	Date
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Environmental Professional Credentials

_____ (signature and date)

Please note, per 329 IAC 9, this document must be signed by 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 Signatures (as appropriate or desired)

_____ (signature and date)

_____ (printed name and date)

_____ (signature and date)

_____ (printed name and date)

REQUIRED FSI REPORT FORMAT

Please attach the FSI Cover Sheet to your Further Site Investigation (FSI) Report submittal. The FSI should follow the outline and section headings one (1) through seven (7) provided below.

EXECUTIVE SUMMARY

Provide a brief discussion and summary of the project.

1. BACKGROUND INFORMATION

Regional Location

Describe the regional location. Include the following:

1. Provide township, range, and section on a 7.5-minute series United States Geological Survey (USGS) topographic map as **Figure 1**.
2. An appropriately scaled regional map of the site should be provided as **Figure 2**.

Site Location

Describe the site location. Include the following:

1. Provide 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. Identify 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 should be provided as **Figure 3**. The figure should also include site buildings or former buildings, location of current and former USTs, ground water monitoring wells, underground utilities, storm drains, spill areas, etc.

Overview of Previous Site Environmental Investigations & Spill History

Briefly list in chronological order, all previous investigation efforts (i.e. UST Closure Reports, Phase II Investigations, Limited Subsurface Investigations, Initial Site Investigations) at the site or sampling area and provide the following:

1. Report name and date
2. Name of the party/parties that conducted the sampling and prepared the report
3. Rationale for the sampling
4. The types of media sampled (i.e. soil, sediment, ground water)
5. Laboratory methods that were used; and a discussion of what is known about data quality and usability

Include summary tables and figures of results in **Appendix A**.

2. FSI RATIONALE

Objectives of the Further Site Investigation

List the specific objectives of this FSI. Include the following:

1. Include the original number of borings/wells planned
2. Discuss the purpose of the borings
3. Discuss the rationale for selecting the sampling and/or boring locations chosen
4. Describe all parties involved in directing the scope of the FSI.

Chemicals of Concern

This list should be an expanded or reduced version of the list presented in the ISC as **Table 1** in the format provided below. Discuss chemicals that have been added or removed from this list since the submission of the ISC and describe why:

Chemicals of Concern	Analytical Method Used	
	Soil	Ground Water

3. SITE SPECIFIC INVESTIGATION

Soil Sampling Event

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

1. Indicate which samples were selected for laboratory analysis and why.
2. Discuss the method by which the borings were installed and samples were collected (i.e., hand auger, hollow-stem auger, direct-push, split-spoon, etc.), indicate the depths at which the samples were collected, and specify what analysis was performed.
3. Field screening readings should be included on the soil boring logs included in **Appendix B**.
4. All observations made during sampling activities regarding the subsurface soil should be included (along with field screening readings) on a soil boring log. Please include the soil boring logs in **Appendix B**.
5. If ground water monitoring wells were installed, well construction diagrams should also be included in **Appendix B**. Likewise, if monitoring wells were installed, well screen elevation data should be included in **Table 3**.
6. Soil sample locations should be presented on **Figure 4**.
7. Identify cross sections on a site map as **Figure 5a**. Geologic cross sections (depicting the soil lithology as well as the approximate location of the water table, screened intervals, utilities and vertical extent of contamination) should be included as **Figures 5b and 5c**.

Ground Water Sampling Event

Provide a general overview of the ground water sampling event include the following:

1. Method used to measure depth to water in each well (also depth to free product if applicable) and describe the method used for well purging (i.e., dedicated well pump, bailer, pump) and include the volume purged.
2. How the ground water samples were collected from each well and describe the sample containers into which they were transferred.
3. Identify any duplicate samples or any samples that will be submitted for MS/MSD analysis.
4. 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.
5. Describe all decontamination procedures if non-dedicated sampling equipment is used. Describe how decontamination and purge water is managed.
6. Depth-to-ground water measurements should be included in **Table 3**.
7. Ground water sample locations should be presented on **Figure 6**.

Ground Water Elevation Calculation

Indicate the method used to determine the elevation of the ground water monitoring wells (if present) and describe how ground water elevations were calculated. All monitoring wells should be surveyed to a one-hundredth (0.01) foot accuracy to a common benchmark. Ground water elevations and a depiction of ground water flow should be presented in a ground water contour map and included as **Figure 7**. Ground water surface elevations should be included in **Table 3**. Please also indicate the survey benchmark in **Table 3**

4. SAMPLING

Section 4 including all lab analytical information, data sheets, chain-of-custody forms, documentation of MDDRs and full QA/QC should be included in **Appendix C**. NOTE: Per IDEMs "Investigation of Underground Storage Tank Release" Quality Assurance Program Plan (QAPP)(B-001-OLQ-R-XX-09-Q-RO) full QA/QC documentation is required for those samples used to define the final nature and extent of contamination. Failure to submit this documentation may delay your ability to receive site characterization approval. A copy of the QAPP can currently be found at http://www.in.gov/idem/files/Investigation_UST_Releases_QAPP.pdf

5. RESULTS & CONCLUSIONS

Soil Analytical Results

Provide a brief narrative describing the soil analytical results including the results of the quality control samples (i.e., MS/MSD, duplicates, trip blanks, etc.) The soil analytical results should be compared against the appropriate screening levels and presented in **Table 2**.

1. Analytical results should be compared against residential screening levels. Soil analytical results are also required to be presented on a site map as **Figure 4**.
2. Map(s) displaying the lateral extent of individual COCs (ie. Benzene, Napthalenes, Trimethylbenzenes, or any other COCs driving investigation and clean-up) should be included as **Figure 6 a, b, c, etc.**
3. A hard copy of the laboratory certificates of analysis and chain of custody form(s) should be included as **Appendix C**.

Ground Water Analytical Results

Provide a brief overview of the ground water analytical results including the results of the quality control samples (i.e., MS/MSD, duplicates, trip, blanks, etc.) The ground water analytical results should be compared against the appropriate screening levels and presented in **Table 4**.

1. Analytical results should be compared against residential screening levels.
2. Analytical results are also required to be presented on a site map as **Figure 8**.
3. Map(s) displaying the lateral extent of individual COCs (ie. Benzene, Napthalenes, Trimethylbenzenes, or any other COCs driving investigation and clean-up) should be included as **Figures 9 a, b, c etc.**
4. A hard copy of the laboratory certificates of analysis and chain of custody form(s) should be included as **Appendix C**.

Miscellaneous Sampling Data & Results

Provide a general overview of any additional sampling activities that occurred at the site and were not addressed in the previous sections. Examples may include surface water sampling, soil vapor studies, etc. 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 D**.

Potential Exposure Pathways

Identify and evaluate all potential exposure pathways associated with the subject release(s) including the following:

1. Direct contact
2. Ground water ingestion
3. Vapor intrusion

Conclusions

Provide a professional conclusion regarding the activities conducted for the subject release(s) to date. Indicate if the full nature and extent of contamination has been defined or if additional investigation is required. Identify any information/data gaps that exist with regard to the subject release(s).

6. RECOMMENDATIONS

Further Site Investigation Work Plan

If extenuating circumstances have prevented determination of the full nature and extent of contamination within the 365-day deadline please explain and provide recommendations for any additional site activities required in a FSI work plan. Provide the FSI Work Plan in **Appendix E**. The FSI work plan should be a brief but stand alone document and should include:

1. A description of how samples will be collected
2. The number of and rationale for samples that will be collected
3. The COCs 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 5

* If contaminant delineation is complete, potential remedial options should be proposed in Section 7.

7. EVALUATION OF POTENTIAL REMEDIES

Summary of Remedies Given Preliminary Consideration

Provide a summary of remedies given preliminary consideration at this site. The summary should include the following:

1. A discussion of the applicability of the proposed remedy
2. The treatability of the contaminants at the site given the contaminant and site conditions
3. The potential effectiveness of each remedy

Proposed Pilot Tests

Include a detailed description of any pilot tests necessary to complete a Corrective Action Plan for the site.