# INLAND ZONE HAZARD ANALYSIS FOR SUB-AREA CONTINGENCY PLANNING

The ACP **shall,** when implemented in conjunction with the National Contingency Plan, be adequate to remove a worst-case discharge, and to mitigate or prevent a substantial threat of such a discharge, from a vessel, offshore facility, or onshore facility operating in or near the area.

April 15, 2021

Kim Churchill, EPA

# RESPONSE PLANNING REQUIREMENTS

- A worst case discharge (WCD) for an area (or sub-area) must be identified and response strategies for the WCD must be discussed
  - Response strategies related to a WCD must be provided
  - General response strategies with special consideration given to potential worst-case discharges from a vessel, onshore facility, or offshore facility operating in or near the subarea
  - Identify and provide specific methods of preventing/mitigating impact to sensitive areas, habitat, and endangered species in the sub-area
- EPA must consider discharges from all facilities that could impact the **inland zone**
  - Vessels that are constructed or adapted to carry, or that carries, oil in bulk as cargo or cargo residue
  - Facilities that are capable of transferring oil in bulk to or from a vessel
  - Non-transportation related onshore and offshore facilities
  - Transportation of oil by motor vehicles and rolling stock (i.e., rail)
  - Onshore Oil Pipelines

# Q: SO HOW DO WE DO THIS?

## A: Conduct a hazard analysis

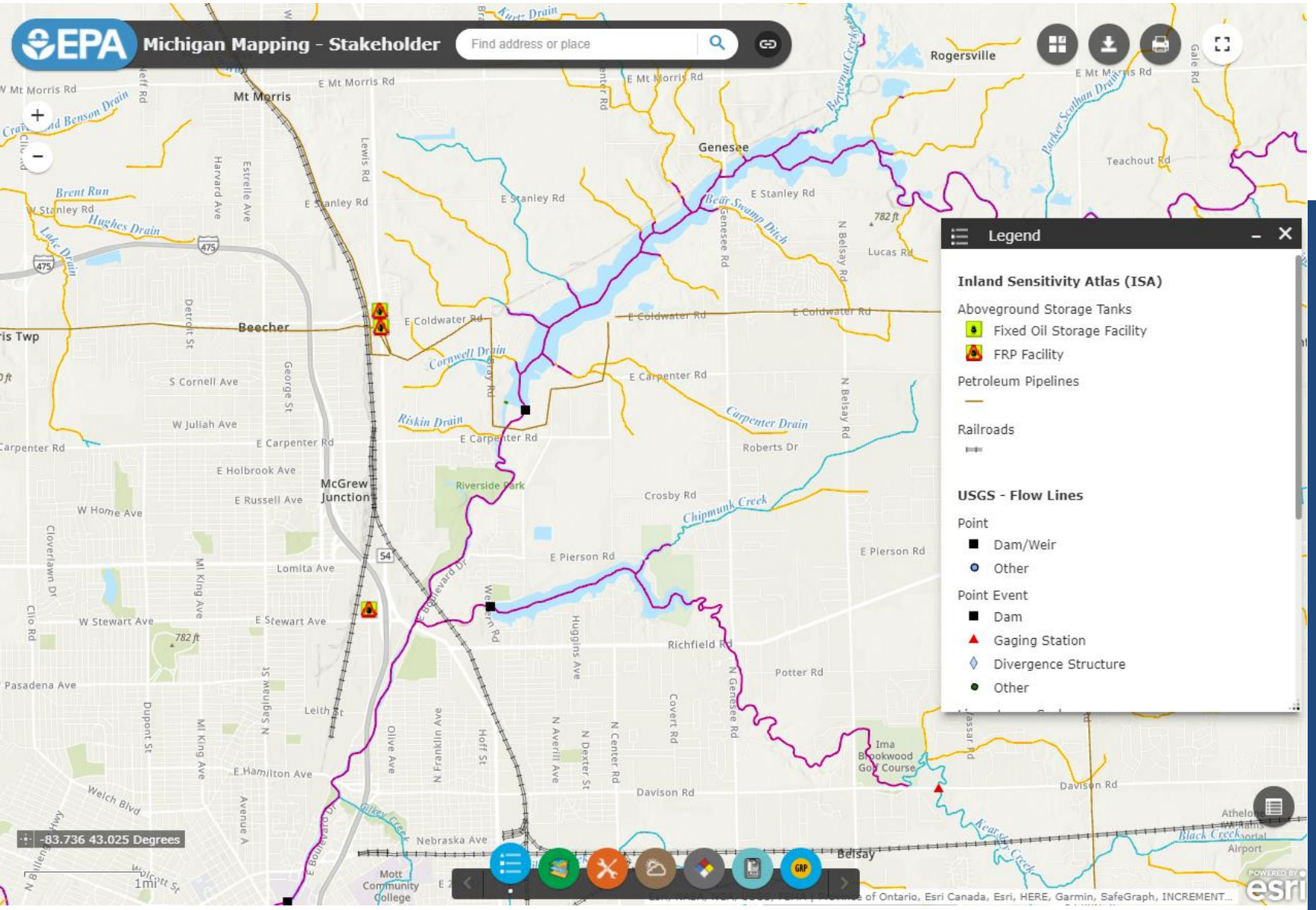
# HOW TO CONDUCT INLAND ZONE HAZARD ANALYSIS – **STEP 1: IDENTIFY SOURCES**

- Sources may include fixed facilities or transportation routes with high volumes of oil or hazardous materials in transit
  - Vessels that are constructed or adapted to carry, or that carries, oil in bulk as cargo or cargo residue
  - Facilities that are capable of transferring oil in bulk to or from a vessel
  - Non-transportation related onshore and offshore facilities
  - Transportation of oil by motor vehicles and rolling stock (i.e., rail)
  - Onshore Oil Pipelines
- Should also consider potential sources adjacent to the defined area, including coastal zone sources
- Should also consider facilities that may be vulnerable to impact by natural disasters
- Focus on sources that could impact waterway/waterbody/sensitive species or environments
- Document each source identified
  - List, narrative, or summary for each source category (i.e., FRP, Pipeline, Vessel, Over Water, Rail/Motor Vehicles)
  - Spreadsheets are good format for documenting information and for comparison purposes

# DATABASES FOR IDENTIFYING SOURCES

- EPA State Specific Mapping Projects – Facilities, Pipelines, and Railroads
  - EPA's State Specific Mapping Projects contain two versions for each state in Region 5; one for government officials and one for stakeholders/public
    - Stakeholder version excludes sensitive information
- PHMSA National Pipeline Mapping System (NPMS) – Pipelines and Breakout Tanks
  - The NPMS website contains two web map viewers designed to assist government officials and the general public with displaying and querying pipeline data.
    - Public viewer can only access data for one county at a time and the scale in which the user may zoom into NPMS data is restricted.
    - Federal government official users may view the entire dataset.
- NOAA Environmental Response Management Application (ERMA) – EPA FRP Facilites and Railroads
  - Large portions not available for Region 5, only Great Lakes area
- Potential impacts from vessels must also be considered, even in the inland zone
  - For many EPA sub-areas consideration will consist of a brief review to determine if applicable vessel traffic is present in or near the sub-area
    - Will mainly apply to sub-areas around the Great Lakes and major rivers such as Mississippi River and Ohio River
  - Will need to work with appropriate USCG contacts to identify vessel response plans in adjacent COTP zones

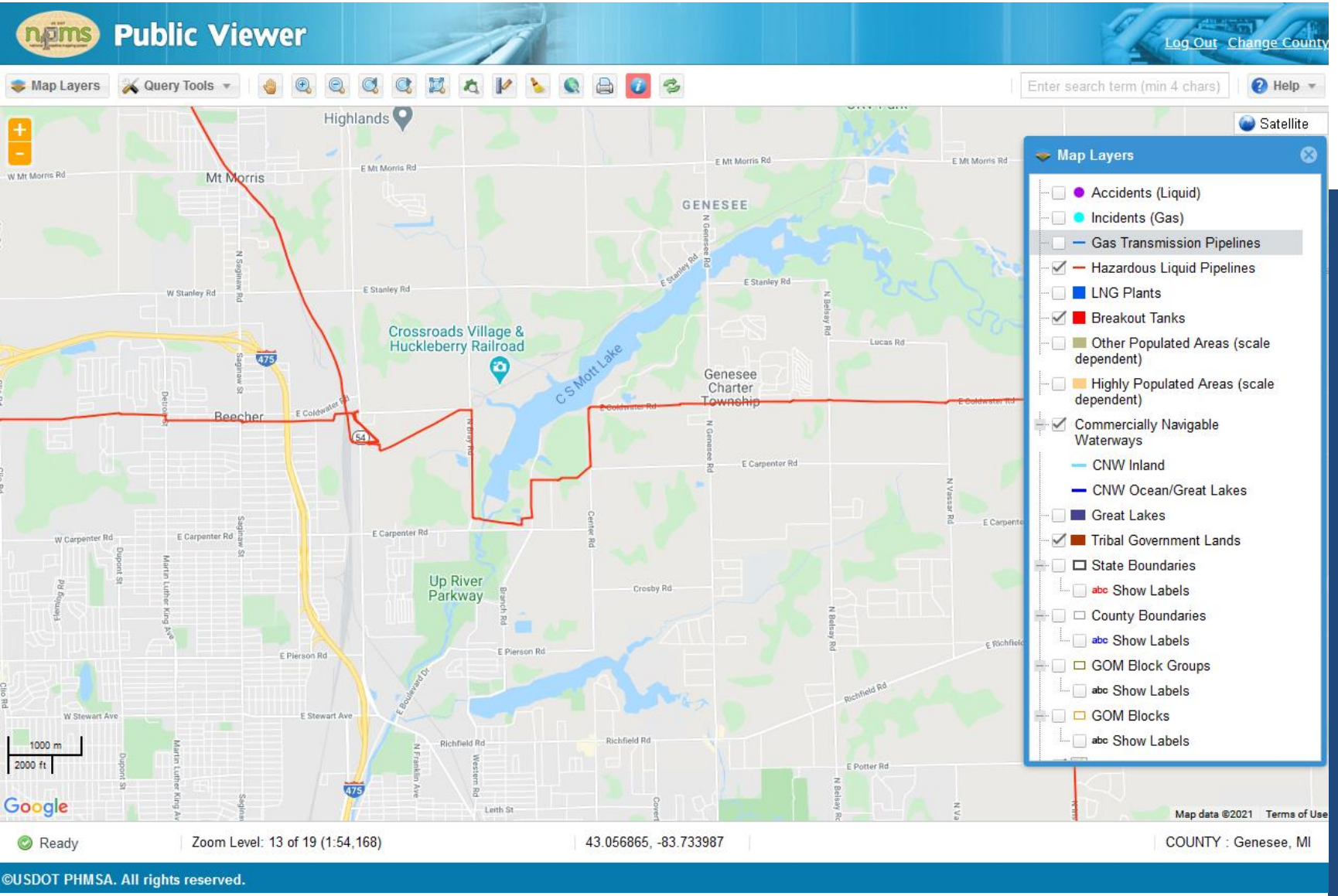
# EPA MICHIGAN MAPPING PROJECT




Stakeholder Version Shown Here (requires login)

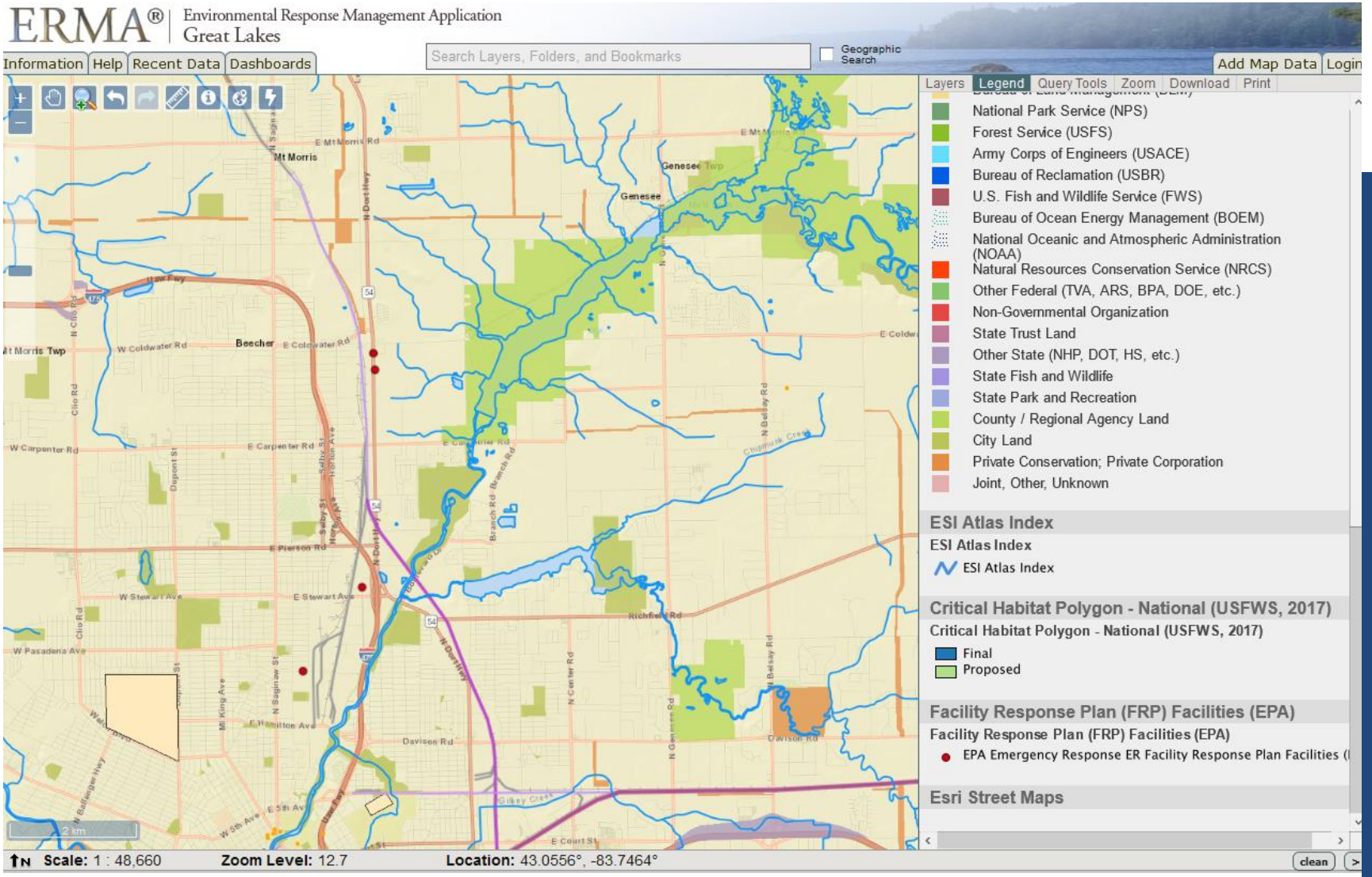
- Petroleum Pipelines
- Railroads
- Aboveground Storage Tanks (Oil)
- USGS Flow Lines

# PHMSA PIPELINE INFORMATION MANAGEMENT AND MAPPING APPLICATION




- Public Viewer Shown Here (no login)
  - Genesee County
- Hazardous Liquid Pipelines (Oil)
- Breakout Tanks (Oil)
  - PHMSA regulated only
- Can also identify “accidents” related to pipelines

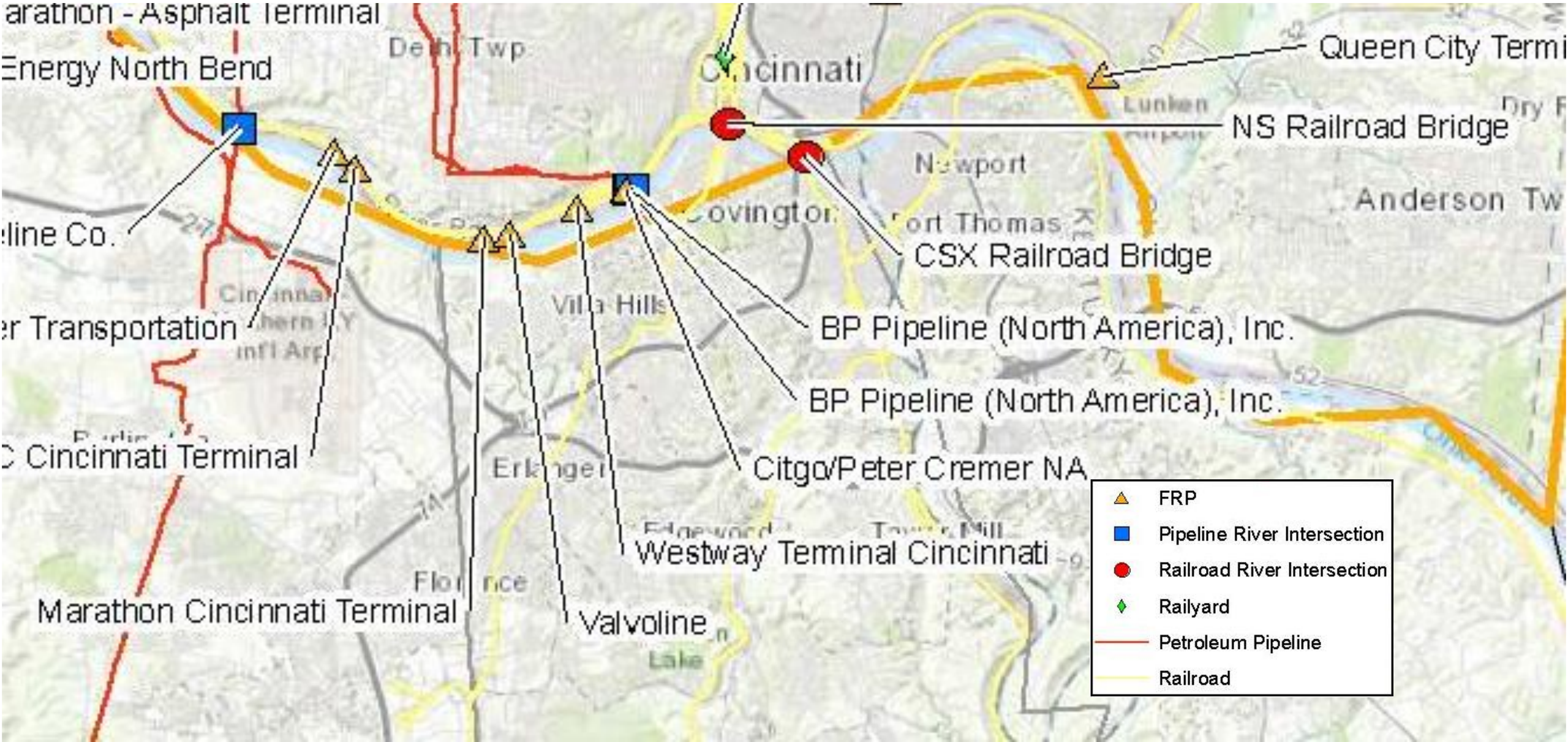
# NOAA ENVIRONMENTAL RESPONSE MANAGEMENT APPLICATION (ERMA)




Great Lakes Shown Here (no login)

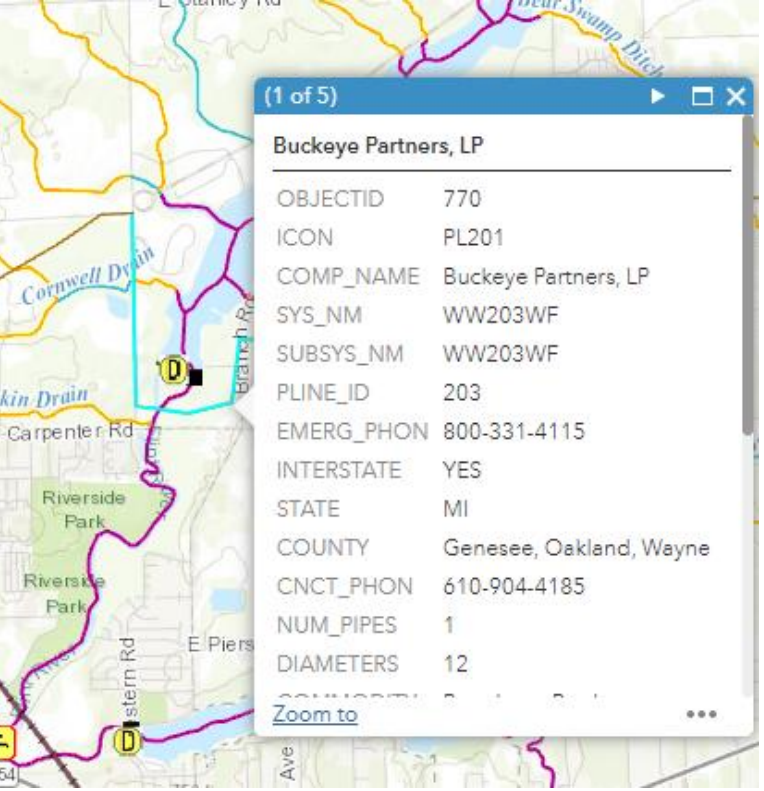
- EPA FRP Facilities
- Railroads
- Waterways/Water bodies

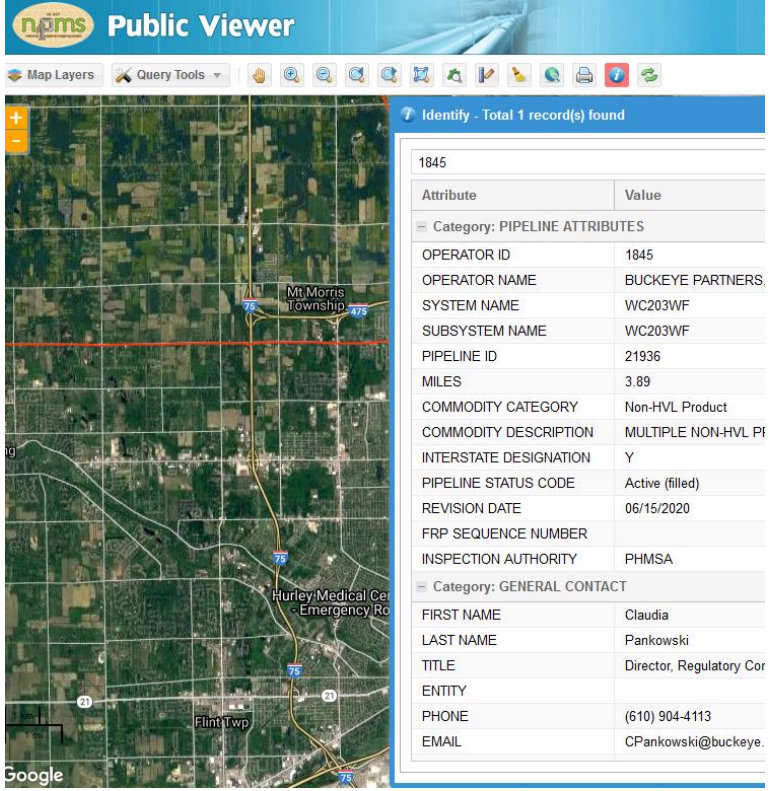
# EXAMPLE FIGURE: IDENTIFICATION OF POTENTIAL SOURCES



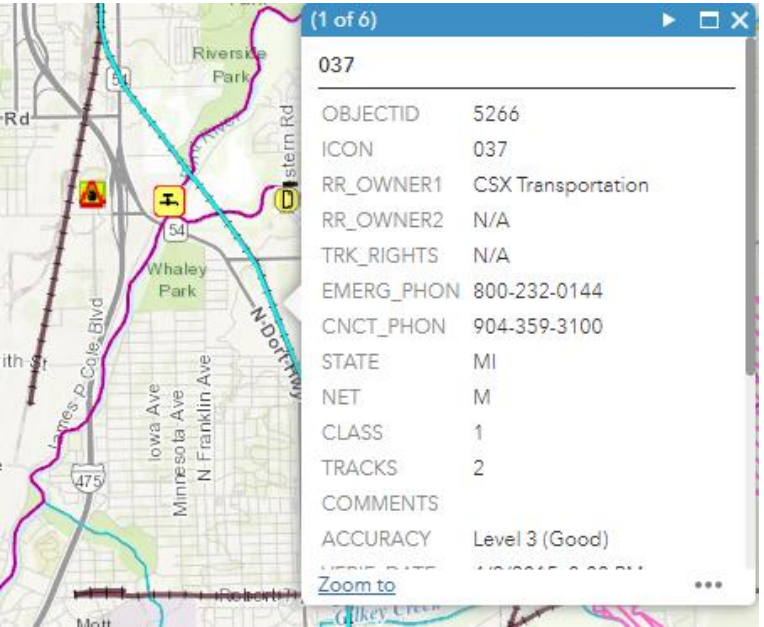
# HOW TO CONDUCT INLAND ZONE HAZARD ANALYSIS – **STEP 2: COMPILE INFORMATION ON SOURCES**

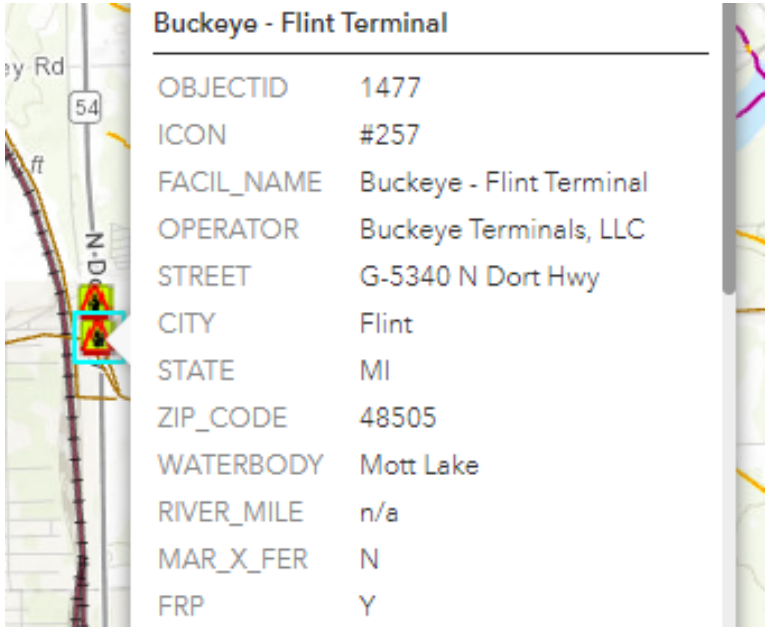
- For each potential source identified, document the following:
  - Location
  - Types and quantities of materials that may be released
    - Product type is crucial as response/recovery options and impacts vary based on the material
  - Distance to water, flow pathway, conduits, etc.
    - Need to consider overland flow, storm sewers, perennial creeks, surface flow, underground conduits/preferential pathways, etc.
  - Response capabilities of the owner/operator
    - Systems in place to detect leak/discharge, availability of response personnel and resources, access for responding
- Information can be found through EPA ISA Layers, EPA Databases, Facility Response Plans, PHMSA PIMMA, Information Requests, etc.
- Recommend utilizing spreadsheet for capturing pertinent information
  - Can summarize details included in SACP




# EPA STATE GOVERNMENT MAPPING PROJECTS
# PHMSA PIMMA VIEWER




- Compile and capture information in a central location such as an Excel Spreadsheet for easy access and documentation.
- Track relevant and needed information in columns.
- Can use tabs/worksheets to separate sources by type (Facility, Pipeline, Rail, Vessel, etc.)

Ohio River SACP FRP Information - FRP Facilities

| Rating | Source Name | Source Location | Operator Contact | Operator Contact Access Information | Nearest Water body | Flow Path | Planning Distance | Commodity | Total Volume (gal) | Worst Case Discharge (gal) | Special Considerations/ Hazards for Responders | Response Capabilities of Operator | Presence of Sensitive Receptors |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Mill Creek | 0.02 (to Mill Creek) 6.13 (to Ohio River) | | | | | | | |
| | | | | | Ohio River | 0.28 (to Ohio River) | | | | | | | |
| | | | | | Ohio River | 0.08 (to Ohio River) | | | | | | | |
| | | | | | Ohio River | 0.03 (to Ohio River) | | | | | | | |
| | | | | | Ohio River | 0.02 (to Ohio River) | | | | | | | |
| | | | | | Ohio River | 0.25 | | | | | | | |
| | | | | | Ohio River | 0.03 (to Ohio River) | | | | | | | |
| | | | | | Ohio River | 0.18 (to Ohio River) | | | | | | | |
| | | | | | Ohio River | 0.03 (to Ohio River) | | | | | | | |
| | | | | | Ohio River | 0.07 (to Ohio River) | | | | | | | |
| | | | | | Mill Creek | 1.25 (to Mill Creek) 7.50 (to Ohio River) | | | | | | | |
| | | | | | Mill Creek | 0.25 (to Mill Creek) 13 (to Ohio River) | | | | | | | |
| | | | | | Mill Creek | 0.18 (to Mill Creek) 6.5 (to Ohio River) | | | | | | | |
| | | | | | Adjacent To Mill Cr | 0.01 (to Mill Creek) 7 (to Ohio River) | | | | | | | |
| | | | | | Mill Creek | 0.01 (to Mill Creek) 7 (to Ohio River) | | | | | | | |
| | | | | | Mill Creek & Ohio R | 0.25 (to Mill Creek) 7 (to Ohio River) | | | | | | | |
| | | | | | Ohio River | 0.06 (to Ohio River) | | | | | | | |
| | | | | | Ohio River | 0.5 (to Ohio River) | | | | | | | |
| | | | | | Ohio River | 0.1 (to Ohio River) | | | | | | | |
| | | | | | Ohio River | 0.25 (to Mill Creek) 7 (to Ohio River) | | | | | | | |
| | | | | | Ohio River | 0.01 (to Ohio River) | | | | | | | |
| | | | | | Ohio River | 1.3 (to Ohio River) | | | | | | | |
| | | | | | Ohio River | 0.2 (to Ohio River) | | | | | | | |

Example spreadsheet to capture information on FRP facilities.

Certain information redacted for privacy/security purposes for this presentation.

23 FRP FACILITIES: UNDER REVIEW

**SACP Hazard Analysis - Pipeline River Intersections**

| Source Name | Source Location | Lat/Long | Operator Contact | Operator Contact Access Information | Flow Path | Dist. to Water (miles) | Commodity | Max Release Volume Between Shut- | Special Considerations/ Hazards for | Response Capabilities of Operator | Presence of Sensitive Receptors |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cincinnati, Hamilton County, Ohio | | | | Ohio River | Ohio River (0.0 miles) | Petroleum Product | | | | |
| | Kenton, Kentucky | | | | Ohio River | Ohio River (0.0 miles) | Petroleum Product | | | | |
| | Cincinnati, Hamilton County, Ohio | | | | Ohio River | Ohio River (0.0 miles) | Petroleum Product | | | | |
| | Kenton, Kentucky | | | | Ohio River | Ohio River (0.0 miles) | Petroleum Product | | | | |
| | Cincinnati, Hamilton County, Ohio | | | | Ohio River | Ohio River (0.0 miles) | Crude Oil | | | | |
| | Boone County, Kentucky | | | | Ohio River | Ohio River (0.0 miles) | Crude Oil | | | | |
| | North Bend, Hamilton County, Ohio | | | | Ohio River | Ohio River (0.0 miles) | Petroleum Product | | | | |
| | Boone County, Kentucky | | | | Ohio River | Ohio River (0.0 miles) | Petroleum Product | | | | |

Example spreadsheet to capture information on pipelines with river crossings.

Certain information redacted for privacy/security purposes for this presentation.

# 8 PIPELINE RIVER INTERSECTIONS UNDER REVIEW – INFORMATION REQUESTS

# EXAMPLE SUMMARY OF POTENTIAL SOURCES

- FRP Facilities
  - 18 in planning sub-area
  - Total storage capacities: 1,011,000 to over 41,000,000 gallons
  - WCD: 60,914 to 14,766,035 gallons
- Pipelines
  - WCD:  9,114 gallons
- Railroads
  - WCD:  31,110 gallons
- Vessels
  - None

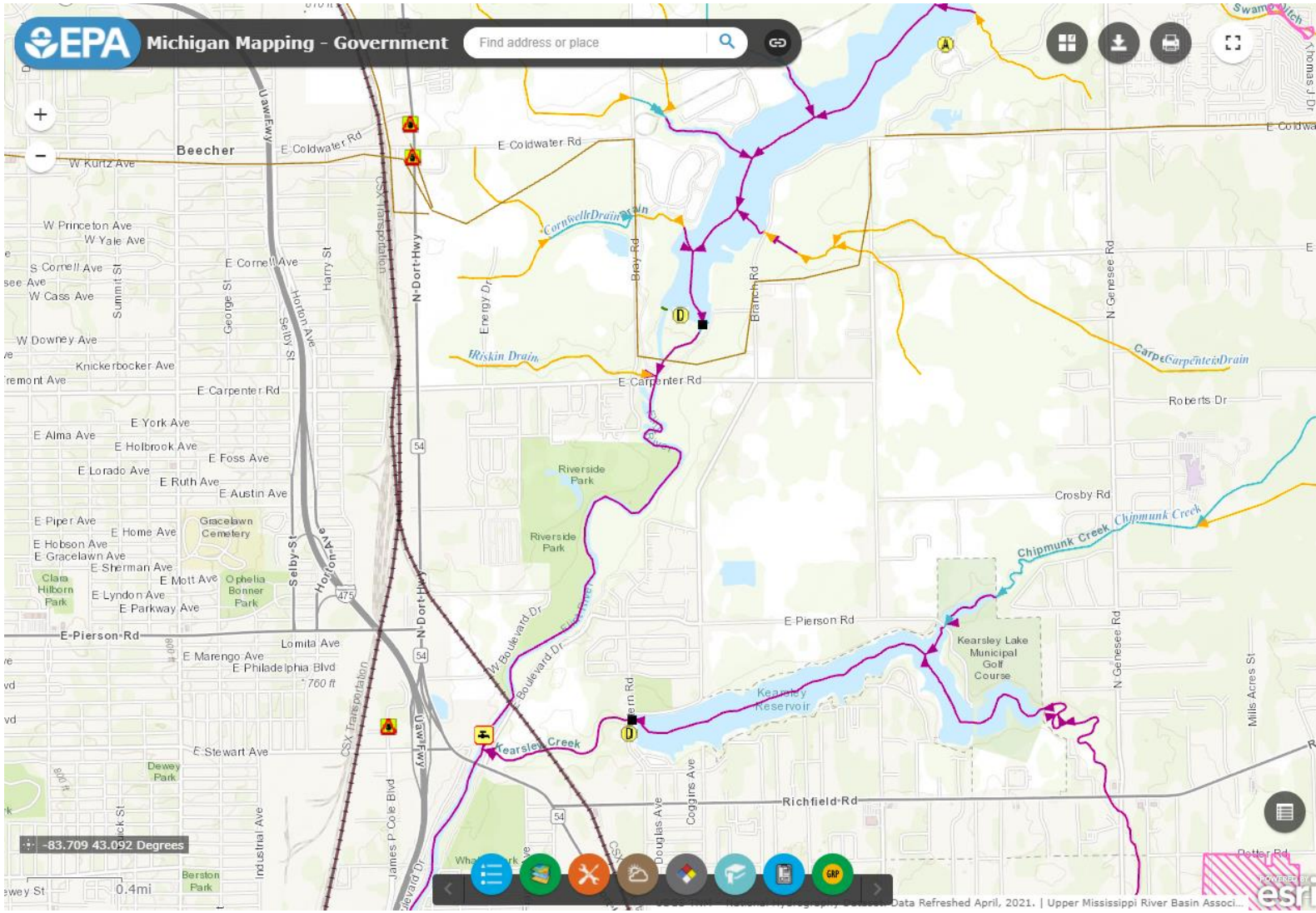
# HOW TO CONDUCT INLAND ZONE HAZARD ANALYSIS – **STEP 3: REVIEW POTENTIAL IMPACTS**

- Identify features and areas that are sensitive for environmental, cultural or economic reasons
  - The common theme for identifying a sensitive area is that it has attributes that must be considered by responders in developing response strategies and tactics.
- Specific attributes
  - Drinking water supply intakes
  - Endangered species or habitat
  - Downstream vulnerabilities
- Other information relevant to the area:
  - Surrounding environment
  - Special access protocols,
  - Special consideration for responders, including hazards
  - Seasonal variations to be considered in developing response strategies and tactics
  - Recommendations on protective measures that may be employed
  - Description of any proscribed tactics

# EXAMPLE: SCREENSHOT MICHIGAN MAPPING PROJECT

Inland Sensitivity Atlas Layers turned on for review – following layers shown on this screenshot:

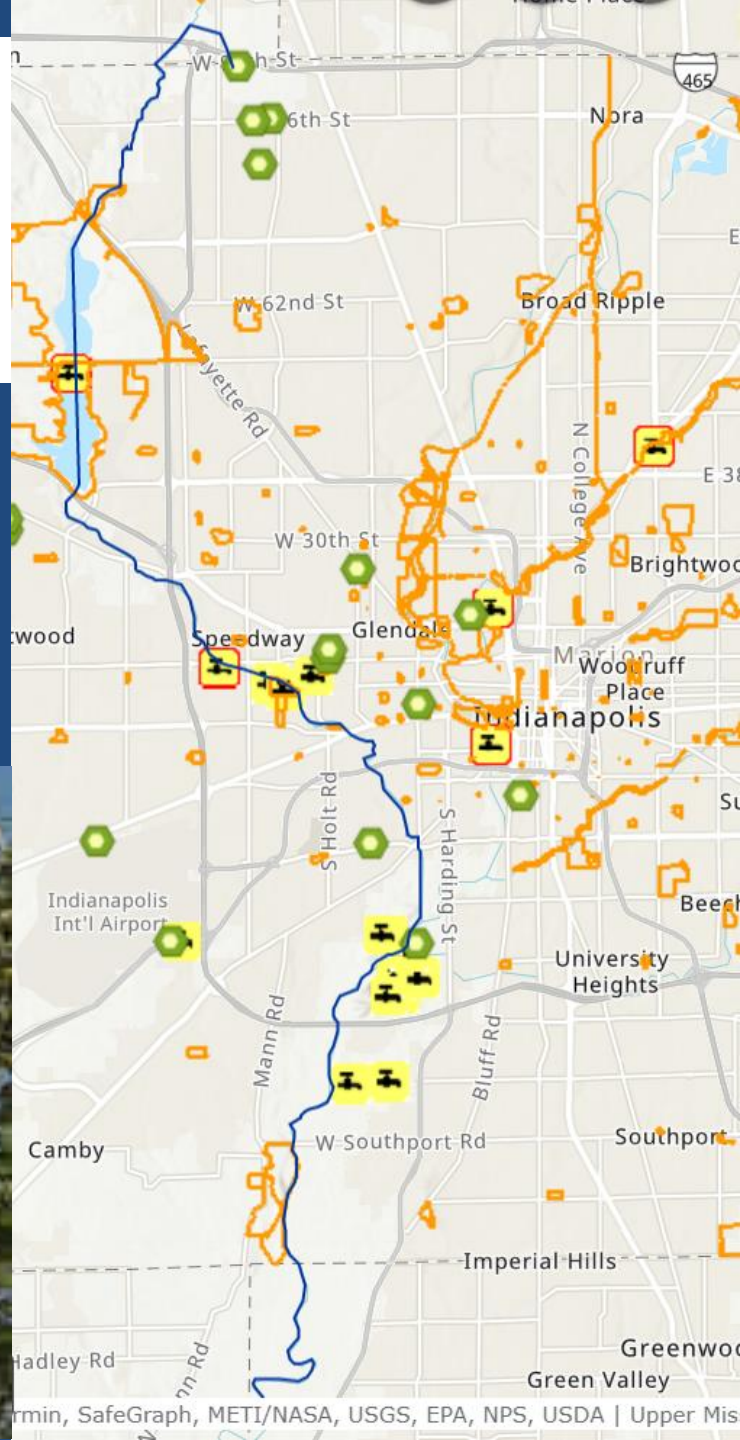
- Potential Sources
  - Aboveground Storage Tanks (Oil)
  - Oil Pipelines
  - Railroads
- USGS Flowlines and Type
- Drinking water intake
  - Emergency water supply
- Dams
  - Special consideration/hazards for responders
- Specially Designated Areas



# EXAMPLE: REVIEW POTENTIAL IMPACTS

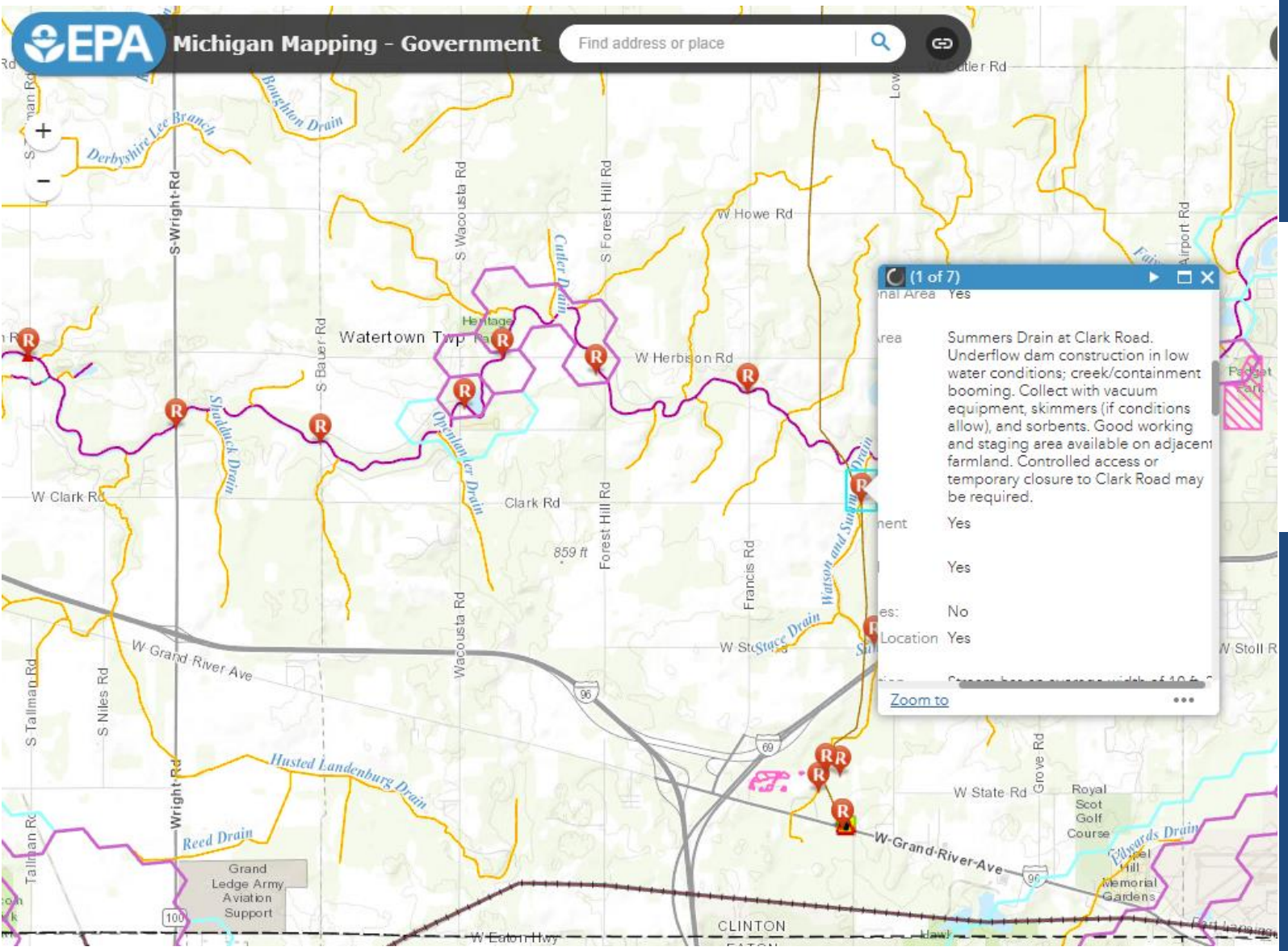
*Eagle Creek Reservoir*

*Amos Butler Blue Heron Sanctuary*



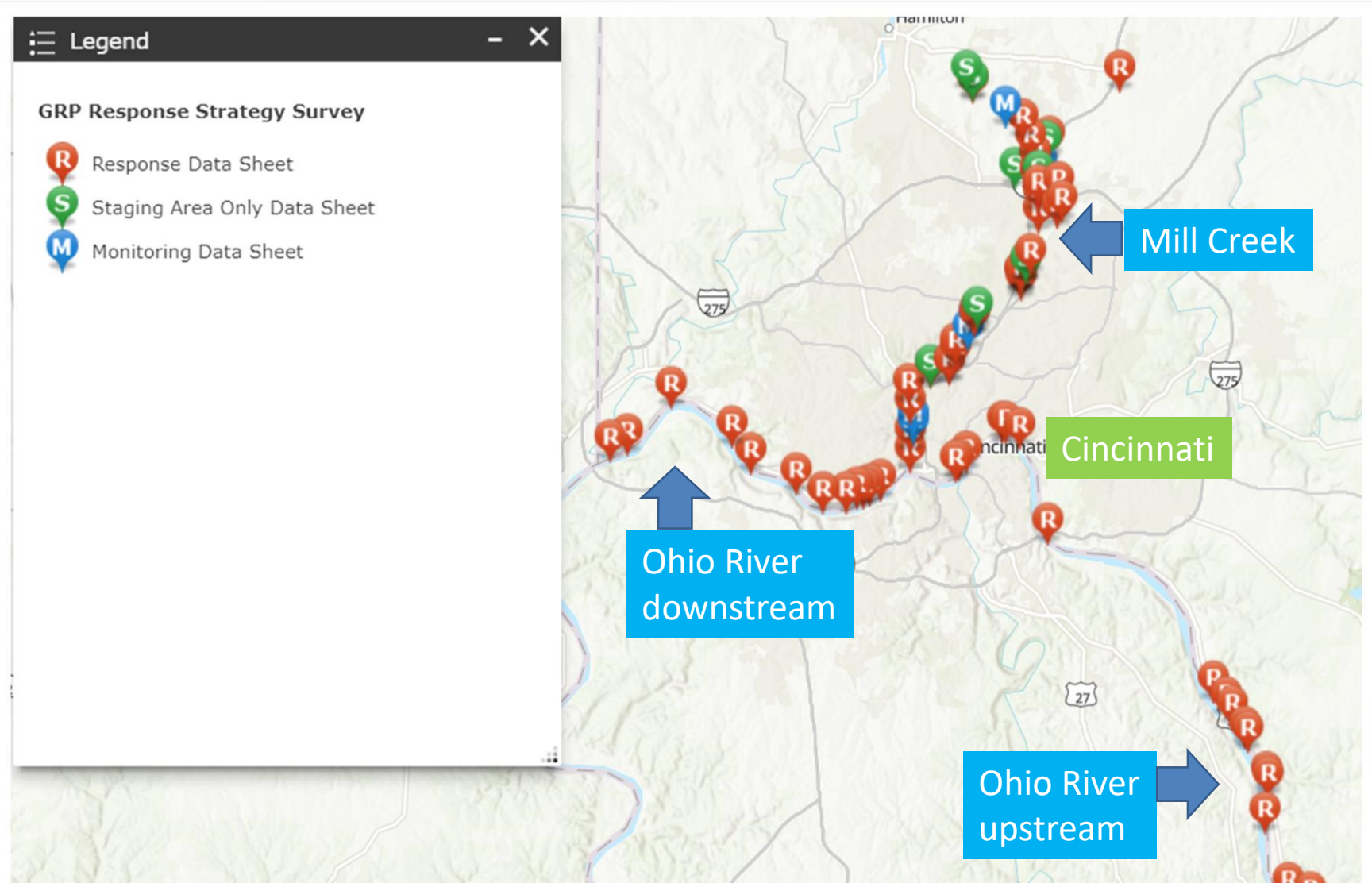
# HOW TO CONDUCT INLAND ZONE HAZARD ANALYSIS – **STEP 4: DETERMINE IF RESPONSE STRATEGIES/LOCATIONS HAVE BEEN DEVELOPED**

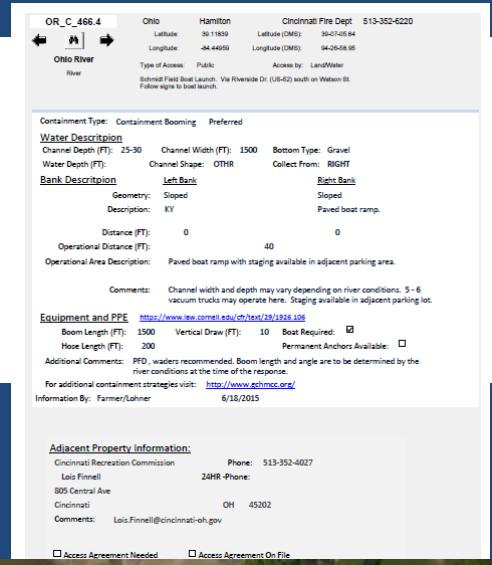
- Determine if any geographic response strategies (GRS), geographic response plans (GRPs), control points, etc. have been identified for potential sources
  - Location specific
- Determine if specific tactics have been developed for potential sources
  - Location specific
- It is important to note during the hazard analysis if there are pre-determined or pre-designated response strategies, tactics, locations etc.
  - This information is an important part of a hazard analysis and can help identify preparedness levels for a response




# EXAMPLE: SCREENSHOT OF RESPONSE STRATEGIES IN MICHIGAN MAPPING PROJECT

# OHIO MAPPING PROJECT: 80 PRE-DETERMINED RECOVERY LOCATIONS

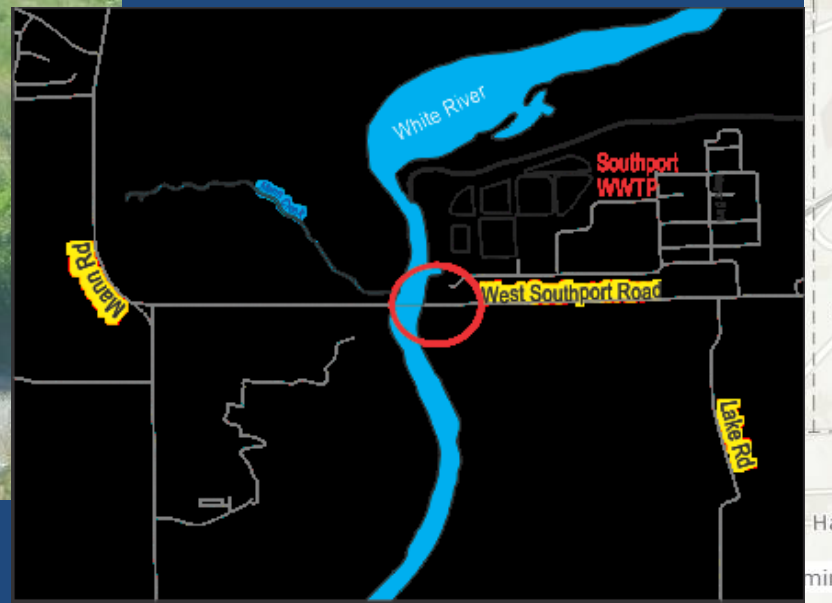


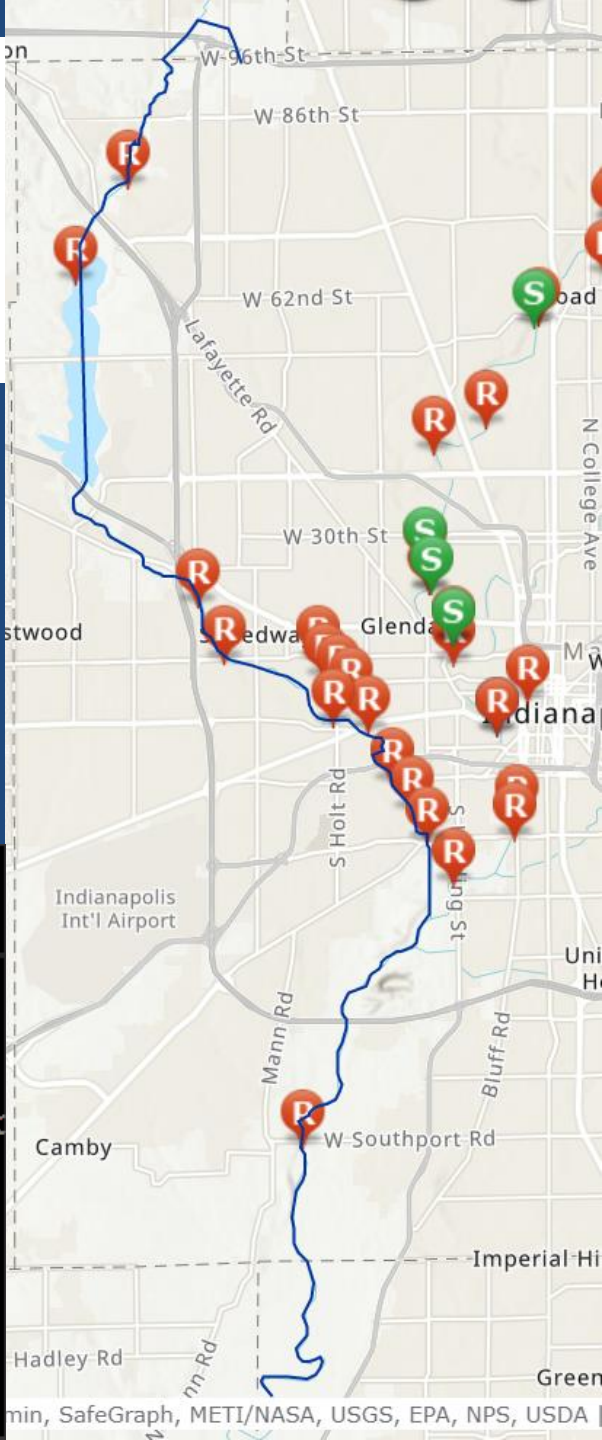


OR_C_466.4 Ohio Hamilton Cincinnati Fire Dept 513-352-6220
Ohio River
Containment Type: Containment Booming Preferred
Water Descritpion
Channel Depth (FT): 25-30 Channel Width (FT): 1500 Bottom Type: Gravel
Water Depth (FT): Channel Shape: OTHR Collect From: RIGHT
Bank Descritpion Left Bank Right Bank
Geometry: Sloped Sloped
Description: KY Paved boat ramp.
Distance (FT): 0 0
Operational Distance (FT): 40
Operational Area Description: Paved boat ramp with staging available in adjacent parking area.
Comments: Channel width and depth may vary depending on river conditions. 5 - 6 vacuum trucks may operate here. Staging available in adjacent parking lot.
Equipment and PPE
Boom Length (FT): 1500 Vertical Draw (FT): 10 Boat Required:
Hose Length (FT): 200 Permanent Anchors Available:
Additional Comments: PFD , waders recommended. Boom length and angle are to be determined by the river conditions at the time of the response.
For additional containment strategies visit: http://www.gchmcc.org/
Information By: Farmer/Lohner 6/18/2015
Adjacent Property Information:
Cincinnati Recreation Commission Phone: 513-352-4027
Lois Finnell 24HR -Phone:
805 Central Ave
Cincinnati OH 45202
Comments: Lois.Finnell@cincinnati-oh.gov
Access Agreement Needed Access Agreement On File

Boom length and angle are to be determined by the river conditions at the time of the response.

OR_C_466.4
RIVER VIEW

# GEOGRAPHIC RESPONSE STRATEGIES – WHITE RIVER – INDIANA MAPPING PROJECT



# HOW TO CONDUCT INLAND ZONE HAZARD ANALYSIS – **STEP 5: RANK BASED ON POTENTIAL IMPACTS AND HAZARDS**

- After information is compiled, potential sources and impacts should be reviewed for response strategy development
  - Since response strategies identified for a given area (or sub-area) must be adequate to remove a WCD, it is import to review and compare the identified sources and information related to the potential sources
- Can develop a cut-off system where you do not need to analysis each source/WCD
  - For example, if potential sources A and B are otherwise identical, but A is within a defined sensitive area and B is not, the hazard analysis "ranking" may address A and leave B below the threshold
  - Assign "risk" based on a formula, such as:  Risk = Severity x Probability x Impact
- Should also solicit input/feedback from sub-area committee/stakeholders to ensure all appropriate potential sources and impacts have been identified/considered
  - Can be in the form of meetings, conference calls, survey forms, etc.

| Facility | Location | County | WCD Amount (gallons) | WCD Oil Type | Facility Capacity (gallons) | Planning Distance | Vulnerability Analysis |
|---|---|---|---|---|---|---|---|
| | Indianapolis | Marion | 7,350,000 | Asphalt | 18,924,573 | Example spreadsheet to capture/rank information on WCD sources.<br><br>Certain information redacted for privacy/security purposes for this presentation. | Drinking Water Intakes: 0<br>Noted Sensitive Areas: None |
| | Clermont | Hendricks | 3,187,380 | Jet A | 8,277,532 | | Drinking Water Intakes: 1<br>Noted Sensitive Areas: Amos Butler Heron Sanctuary |
| | Clermont | Marion | 3,422,412 | Diesel | 17,498,885 | | Drinking Water Intakes: 1<br>Noted Sensitive Areas: None |
| | Indianapolis | Marion | 4,673,676 | Jet A | 41,734,190 | | Drinking Water Intakes: 2<br>Noted Sensitive Areas: Eagle Creek Reservoir & Ornithology Center, Amos Butler Heron Sanctuary |
| | Indianapolis | Marion | 2,000,000 | Vegetable oil | 4,005,935 | | Drinking Water Intakes: 0<br>Noted Sensitive Areas: None |
| | Westfield | Hamilton | 4,033,218 | Gasoline | 22,569,560 | | Drinking Water Intakes: 1<br>Noted Sensitive Areas: Eagle Creek Reservoir & Ornithology Center, Scott Starling Nature Preserve |

# CALCULATE RISK USING THE FOLLOWING FORMULA: SEVERITY (S) X PROBABILITY (P) X IMPACT (I) = RISK

**Severity**: Severity is an event's potential consequences measured in terms of degree of **damage**, **injury**, or **impact** on an area. Should something go wrong, the results are likely to occur in one of the following areas:

- a. Injury or Death
- b. Equipment Damage
- c. Response Capabilities and Location
- d. Environmental Impacts

**Severity** is measured on a scale of 1 – 5:
1. None or slight, 2. Minimal, 3. Significant, 4. Major, 5. Catastrophic

**Impact**: Impact is the overall **time**, **volume**, **proximity** to sensitive areas, and **ability** to respond/recover the product. Measured on a scale of 1 – 4:

1. None, 2. Below average, 2. Average, 3. Above Average, 4. Great

**Probability**: Probability is the **likelihood** that the potential consequences will occur. Measured on a scale of 1 – 4:

1. Unlikely, even in adverse weather
2. Average chance, even in adverse weather
3. Above Average chance, in normal or adverse weather
4. Likely to happen, in normal or adverse weather

| Values | Degree of Risk |
|---|---|
| 80 – 100 | Very High |
| 60 – 79 | High |
| 40 – 59 | Substantial |
| 20 – 39 | Possible |
| 1 – 19 | Slight |

# QUESTIONS?

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