

# Delineating Petroleum Contamination Using the MRBCA Process

Aaron Clare  
Environmental Specialist  
Tanks Remediation Unit



# Purpose

- What the Department needs to see in reports.
- Clarify 'grey-areas' in the guidance regarding delineation.
- Cut down on re-mobilizations, limit correspondence, and reduce the time to closure.

# Delineation Criteria

- Complete a Domestic Use of Groundwater Pathway determination.
- If the pathway is complete, the delineation criteria are generally the Default Target Levels (DTLs)

# Delineation Criteria

- If the pathway is incomplete, use Soil Type 1 Residential Risk-Based Target Levels (RBTLS)

# Delineation Criteria

- To delineate to Non-residential target levels, you will need to submit sufficient documentation.
- Examples:
  - RAFU checklist
  - Letter from property owner
  - Phone logs

# Other Residential Use Examples

- Nursing Homes
- Hospitals
- Manager-Occupied or extended-stay Hotels & Motels
- Prisons

# Where Children Are Present

- Daycare operations
- Schools
- Churches

# Delineating Offsite

- Attempts to gain access need to be documented.
- The Department can send letters to property owners to help gain access.

# Delineating Offsite

- You may have to go to the other side of the property.
- If no access can be gained at all, then the nearest data point will need to be used to evaluate the property.

# Preferential Pathways

- Utility corridors can act as preferential pathways for migration
- Potential permeation of water line and sanitary sewer.
- Need to know construction materials for water and sewer lines.

# Preferential Pathways

- May need to investigate utility corridor
  - Hand auger
  - Vapor monitoring
  - Sample water tap
- Will need a letter to the proper local authorities if utilities are impacted

# Delineating Under Roadways

- Need to know the extent of contamination under roadways
- May need to sample on the other side of the road.
- The Department will need to be copied on a letter to proper local authorities.

# Vertical Delineation

- Necessary at the Point of Release.
- Need two consecutive intervals of PID readings at or below background levels.
- Please be descriptive and include PID readings in boring logs.
- Need to find groundwater or bedrock.

Datum _____		GRAPHIC LOG	DRY UNIT WEIGHT SPT BLOW COUNT CORE RECOVERY	PID readings (ppm)	SAMPLES
DEPTH IN FEET	DESCRIPTION OF MATERIAL				
	Asphalt over subbase			0.0	GB1
	FILL: brown, silty CLAY			0.5	GB2
5	Olive, silty CLAY - CL			1.1	CS3
				5.2	
10	Olive-brown, silty CLAY - CL			7.6	CS4
				37.1	
15				52.5	CS5
				* 106	
20	Stiff, orangish-brown CLAY - CH			532	CS6
	<u>Boring terminated at 21 feet.</u>				
25					



DATE: GRAPHIC LOG FOR RESTORATION OF GOLF COURSE

# Vertical Delineation – Nested Wells

- May need nested monitoring wells for sites where the domestic use pathway is complete.
- Where subsurface conditions include clay aquitards or differences in strata.
- Consider situations where there may be a 'diving plume' in alluvial materials
- Fractured Bedrock
- Hydrologically connected aquifers

# Delineating Upgradient

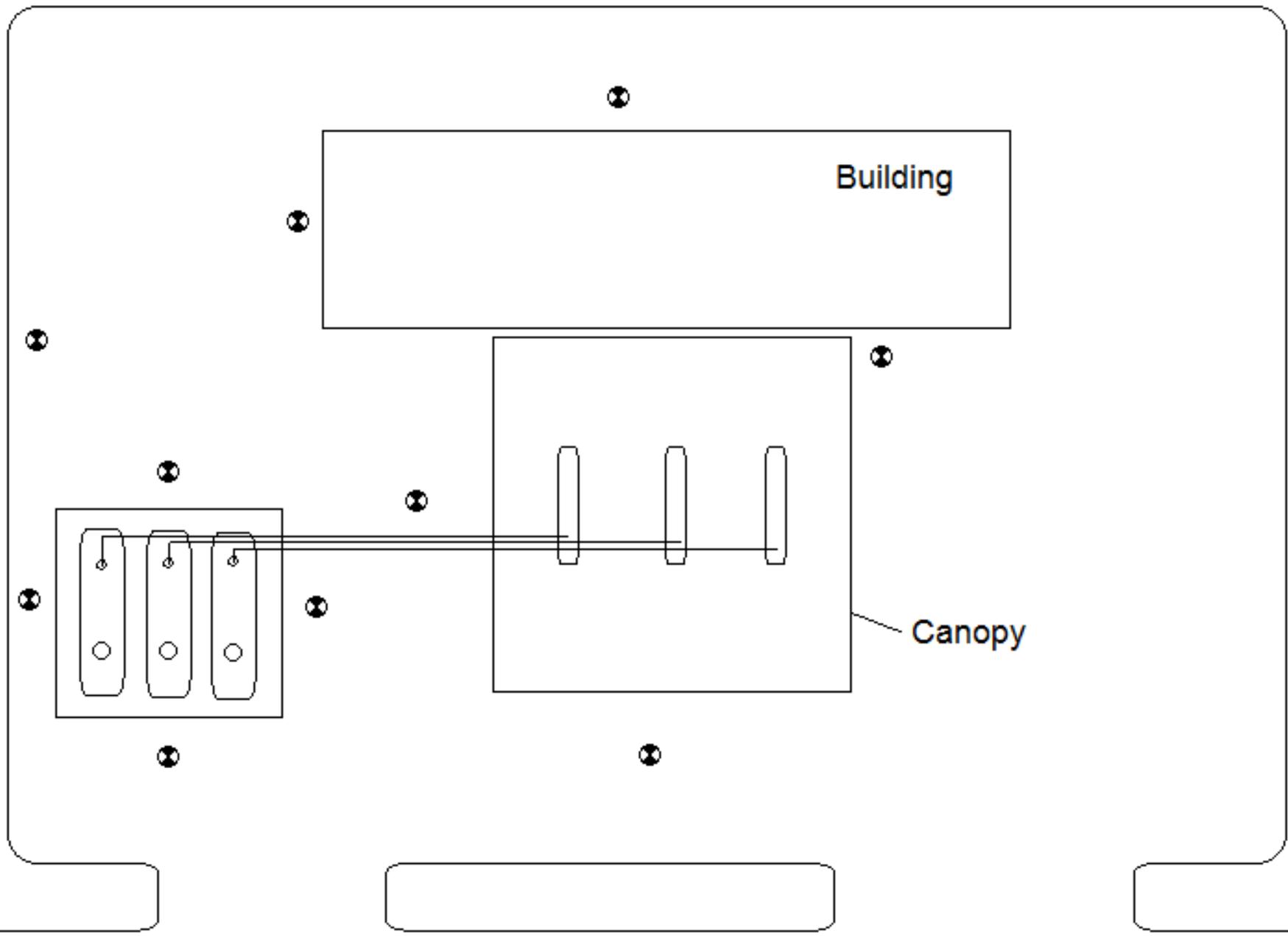
- It may be necessary to delineate in the apparent upgradient direction.
- Groundwater tables, and inferred direction of groundwater flow, can change.
- It may be necessary to have an upgradient well to show what background conditions are.

# LNAPL Delineation

- Is necessary to close sites where LNAPL has been present.
- Needs to be separated from the dissolved phase plume.
- Needs to be delineated vertically and horizontally.

# LNAPL Delineation

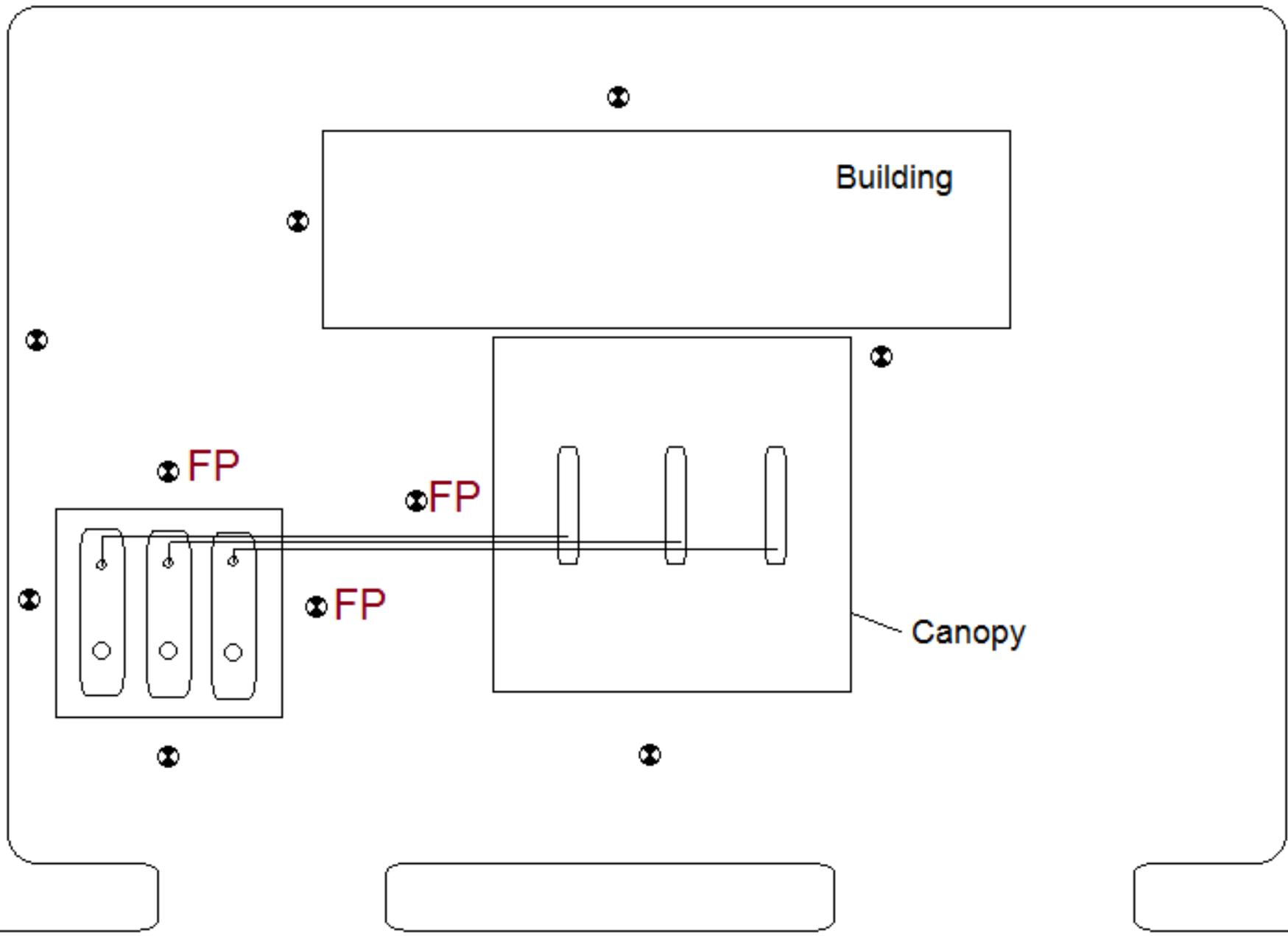
- Need to use appropriate 'step out' distances.
- Alternative methods - Laser Induced Fluorescence (LIF)



Building

Canopy

Street



Building

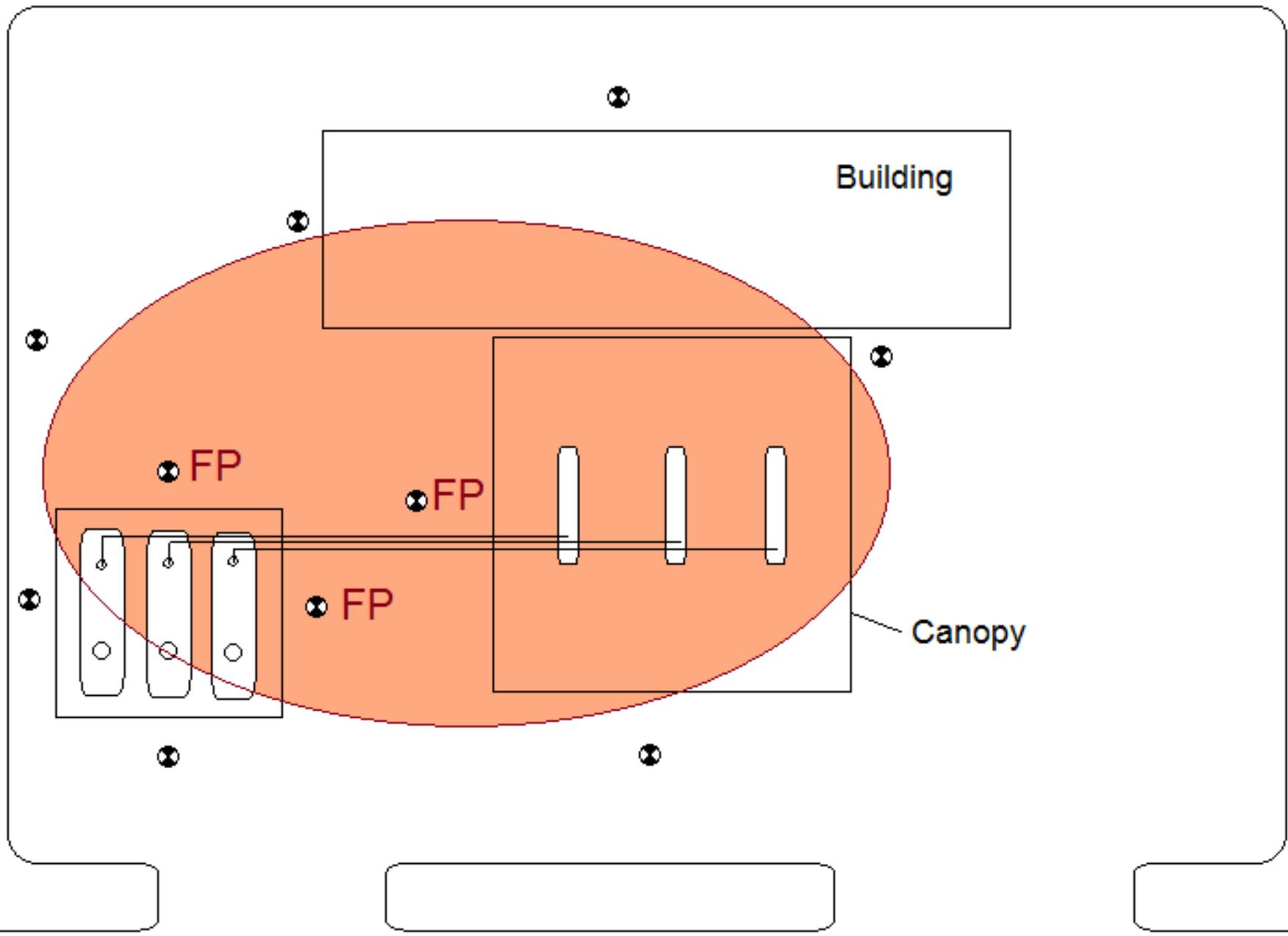
FP

FP

FP

Canopy

Street



Building

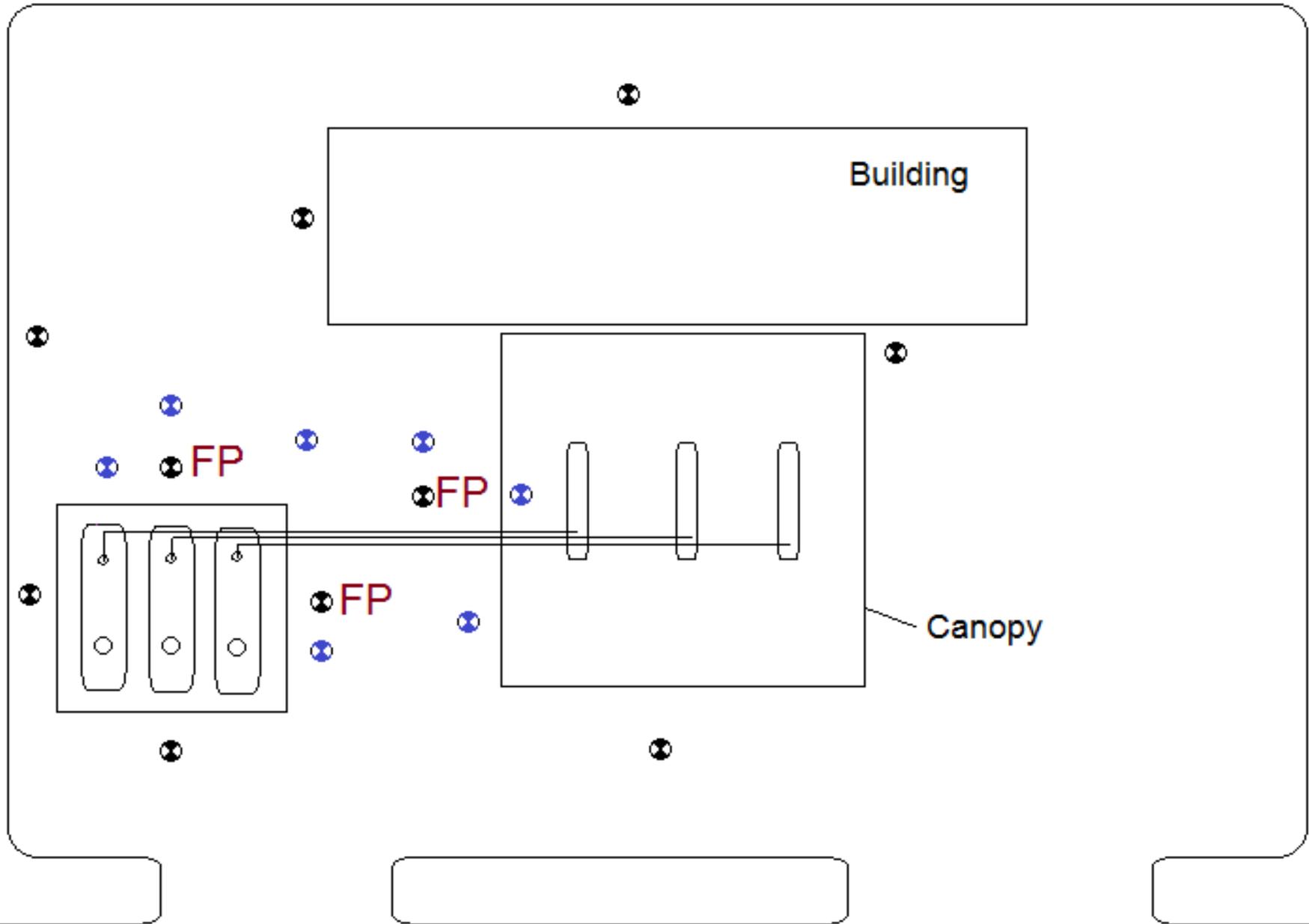
FP

FP

FP

Canopy

Street



Building

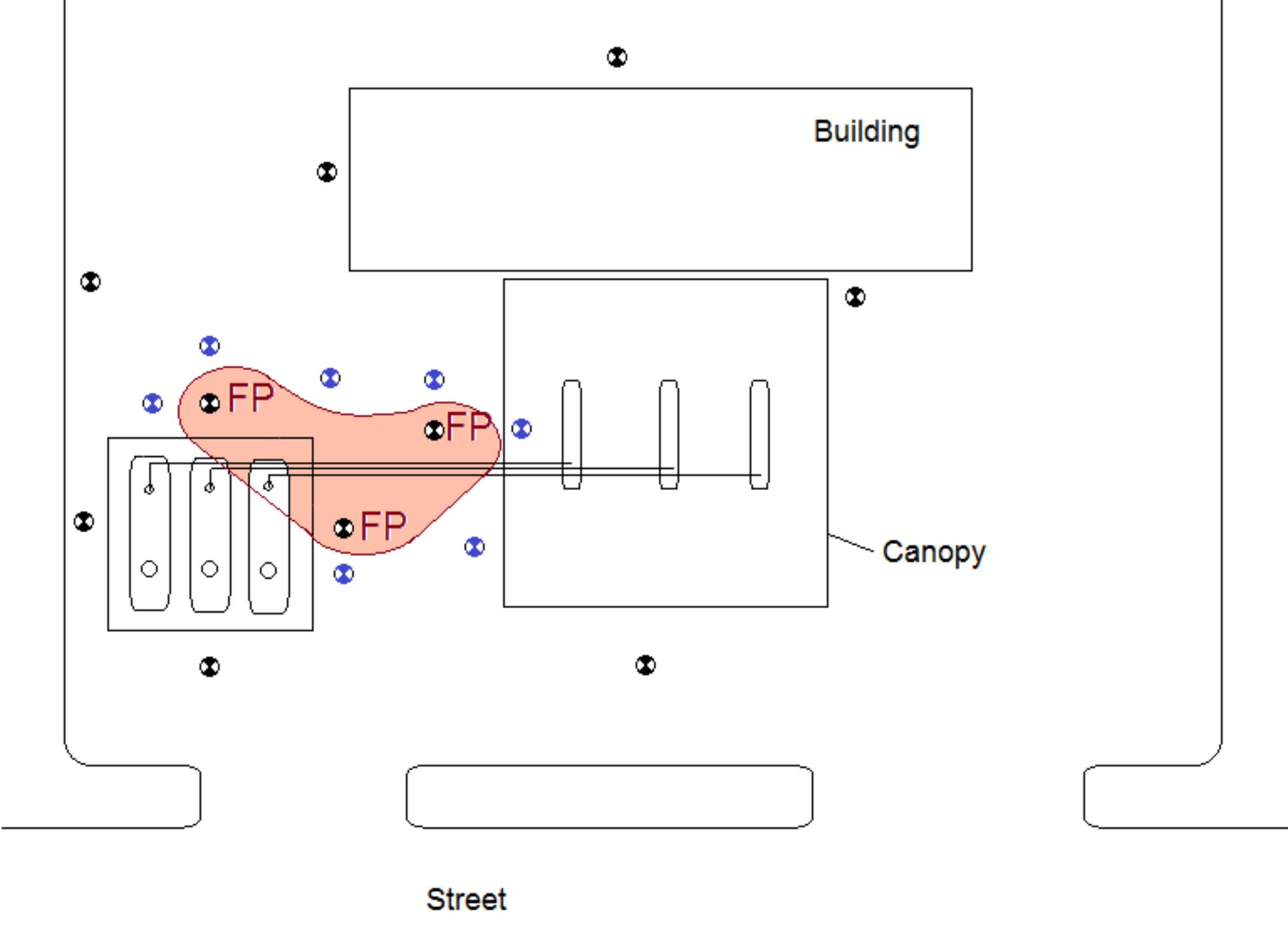
Canopy

Street

FP

FP

FP



# Conclusion

- Use the appropriate delineation criteria
- Document land use and access attempts
- Investigate impact to utilities and roadways
- Vertically delineate
- Better characterize LNAPL

# Questions?

