



Florida Department of Environmental Protection

Petroleum Restoration Program

Pathway To Closure

June 13, 2017





Pathway Map

- Communication with Owner
- The Basics of Closures
 - Chapter 62-780.680, F.A.C., RMO-I, RMO – II and RMO-III Closure Criteria
 - LSSI NFA
- Special Considerations for Closure
 - FDOT MOU Closures
 - MOUs For City/County Transportation Facilities
- Establishing Institutional Controls – The Process
- Example Sites



Communication

- Discuss Closure Options with Owner
 - When NFAC fits:
 - Low State Funding Cap
 - Low Score- LSSI
 - Close out CU sooner than later
 - Owner think active RA would disrupt business
 - Ports/Airports/Government Property:
 - Non-program MOA benefits



Terminology

- No Further Action With Controls (NFAC) aka.
 - RMO II or RMO III
 - Risk Based Closure
 - Closure With Conditions or Conditional Closure
- PRSR “purser” – Person Responsible for Site Rehabilitation
- NFA – No Further Action
- RMO – Risk Management Option
- SRCO – Site Rehabilitation Completion Order
- CSM – Conceptual Site Model



Risk-Based Closures

Achieve Safe Site Closure By **Eliminating/Reducing Risk:**

$$\text{Risk} = \text{Exposure} \times \text{Toxicity}$$

- **RMO I** - Reduce Risk By Reducing Contaminant Levels

- **RMO II and III** - Reduce Risk By Eliminating Exposure



Benefits of Using a NFAC

- Usually Results In Reduced Remediation Costs
- Allows Closure When Remediation Efforts Have Reached a Diminishing Return
- Allows Closure When Contamination is Difficult to Access
- Allows Owner To Avoid Site Disruption Caused By A Source Removal or Remediation System Installation



Source Removal





AS/SVE System





No Further Action with Controls

- Exposure To Contamination Is Restricted With:
 - Institutional Controls (e.g., A Restrictive Covenant) – Most Common – No Use of Ground Water
 - Engineering Controls If Needed (e.g., A Cap) – Most Common – Pavement Maintained Over An Area With Contaminated Soil
 - Impervious Cap If Soil Exceeds Leachability Values
 - Clean Fill Cap or Impervious Cap If Soil Exceeds Direct Exposure Values
 - Occasionally Used To Control Ground Water Plume



Applicable Rules

Section 62-780.680, F.A.C. – NFA & NFA w/Controls

- (1) - Risk Management Options Level I (RMO I)
- (2) – Risk Management Options Level II (RMO II)
- (3) – Risk Management Options Level III (RMO III)
- (4) – PRSR Submits NFA Proposal
- (5) - FDEP Sends Provisional Approval
- (5) – FDEP Provides PRSR w/ SRCO approving the NFA
- (6) – Rejection of NFA proposal
- (7) – Requirements for language in SRCOs (See PRP templates)
- (8) – Notices Sent
- (9) – Final Agency Action – DEP issues the Order



Closure Evaluation

- Free Product Levels
- Soil Concentrations For:
 - Direct Exposure
 - Leachability
- Ground Water Plume
- Consider Conceptual Site Model (CSM)
To Evaluate Risk
 - Migration and Exposure Potential



NFA Criteria For Free Product

- **62-780 -RMO I**
- Free Product Not Present and
- No fire or Explosion Hazard Exists or
- **62-780 - RMO II and III**
- Free Product Not Present and
- No fire or Explosion Hazard Exists or
- Removal Is Not Technological Feasible or Cost Effective
and
- Free Product Is Not Migrating and Does Not Pose risk to human health public safety or environment



NFA Criteria For Soil – RMO I

- Contaminant Concentrations Must Not Exceed:
 - The Background Concentrations
 - The Best Achievable Detection Limits
 - The Soil Cleanup Target Levels (SCTLs) Chapter 62-777, F.A.C. for Residential Direct Exposure and Leachability
 - The Average Soil Concentrations Calculated Using the 95% UCL approach are below Chapter 62-777, F.A.C. for Residential Direct Exposure and Leachability



NFA Criteria For Soil - RMO I

- Levels Calculated Using Site Specific Soil Properties and Equations Found In Chapter 62-777, F.A.C., Figures 4,5,6, and 7 and Table VI.
- Fractionation Analysis of TRPH Levels Based On Site Specific Concentrations
- Determined Through the Direct Leachability Testing of Leachate From Synthetic Precipitation Leaching Procedure (SPLP) that Leachate Is below GW CTLs
- One Year of Ground Water Data May Be Used To Allow Soil Exceeding Leachability That Has Been Exposed To Elements For Two Years



RMO II NFA Criteria For Soil

- Direct Exposure
- May Use RMO I Criteria
- Alternative SCTLs May Be Established Which Are Above Residential Levels If One of the Following Is Provided:
 - An Engineering Control Is Used To Prevent Human Exposure or Leaching From The Soil
 - Minimum of Two Feet of Clean Soil or
 - A Cap to Prevent Exposure
 - A Land Use Restriction To Restricts Land Use To Commercial/Industrial, if Soil Levels do not exceed 62-777, Table II, F.A.C., Commercial Industrial Levels



RMO II NFA Criteria For Soil

- Leachability:
 - May Use RMO I Criteria
 - Alternative SCTLs May Be Established Which Are Above Leachability Levels If:
 - - An Engineering Control Is Used To Prevent Infiltration
 - - One year of Groundwater monitoring data and/or modeling indicates that contaminants will not leach above Groundwater CTLs or Alternative CTLs



Examples From 62-777, F.A.C., Table II

Chemical	Direct Exposure Residential (mg/kg)	Direct Exposure Commercial/ Industrial (mg/kg)	Leachability (mg/kg)
Benzene	1.2	1.7	.007
Benzo(a)pyrene	0.1	0.7	8
MTBE	4,400	24,000	.09
TRPH	460	2700	340
Trichloroethene (TCE)	6.4	9.3	.03



NFA Criteria for Ground Water

- RMO - I Groundwater Must Meet Chapter 62-777, F.A.C., Table I Criteria:
 - Groundwater or
 - Freshwater or Marine Surface Water
- RMO – II Groundwater(demo. by min. 1 yr. monitoring):
 - May Meet Low Yield/Poor Quality Criteria and Be On-Site or
 - Be On-Site and Controlled With an Engineering Control or
 - Stable or Shrinking, Contained on Property, limited to immediate vicinity of source, and Plume Less Than 1/4 Acre
- RMO – III Groundwater:
 - Plume Must Be Stable or Shrinking and Meet Appropriate CTLs at the Institutional Control Boundary



Engineering Controls For Ground Water

- Allowed For RMO II or III
- Permanent Containment That Prevents Ground Water Migration
 - Barrier Wall
 - Slurry Wall
- One Year Of Monitoring Data Is Required To Demonstrate Effectiveness
- Periodic Monitoring To Ensure Effectiveness



Engineering Control Maintenance

- All Engineering Controls Must Have An Engineering Control Maintenance Plan
- The Plan Should Include:
 - Maintenance Requirements
 - Inspection Frequency
 - Criteria For Determining When The Engineering Control Has Failed, e.g.,
 - Large Cracks
 - Areas of Erosion
 - Increase in Ground Water Concentrations



Engineering Control Maintenance Plans

- Reporting of Routine Inspection Results Is Not Required
- Any Failure of The Engineering Control Must Be Repaired Immediately
- Failure of an Engineering Control Designed To Prevent Migration of Ground Water Must Be Reported and Repaired Immediately

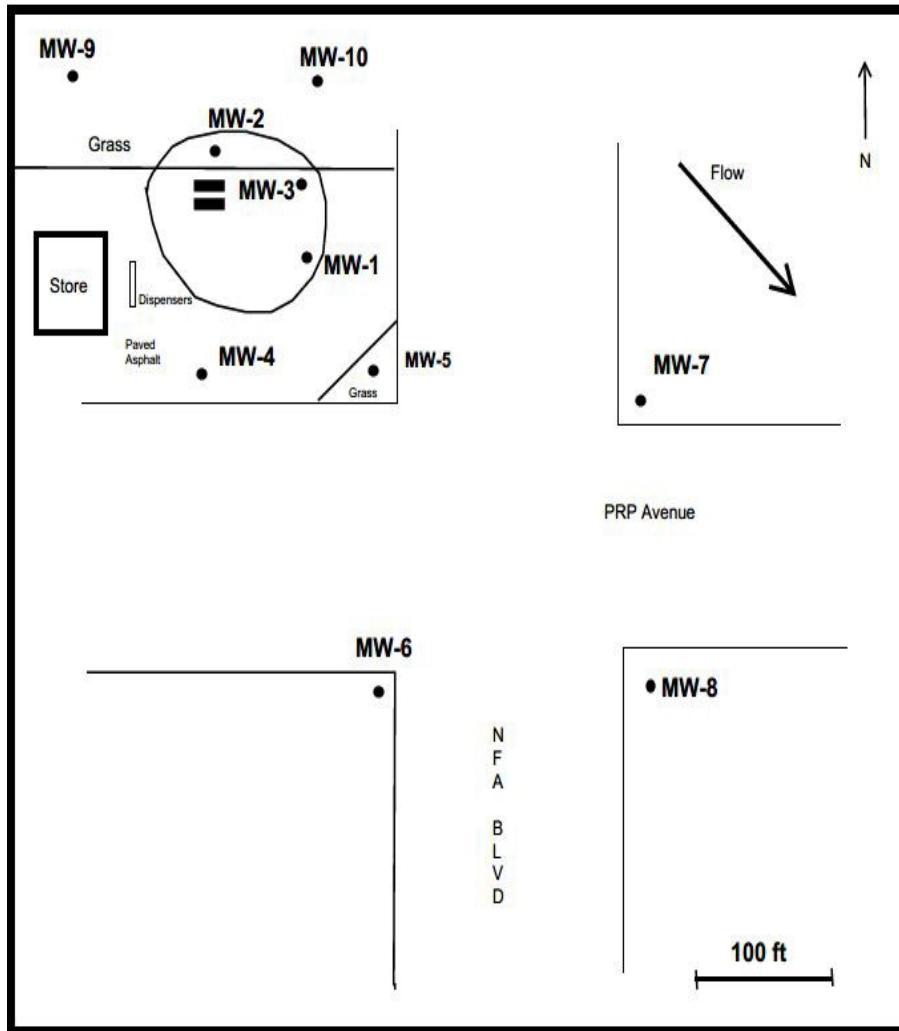


Technical Review

• Closure Sampling Requirements

	Groundwater Sampling	Soil Sampling
Site has had active remediation (other than a source removal)	at least four quarters of Sampling, last two quarters must be below CTLs	as needed based on initial site assessment
Sites that had an interim source removal	one sampling event if groundwater contamination WAS NOT present before source removal	only if results of site assessment and excavation sampling indicate soil impacts remain
	two sampling events if groundwater contamination WAS present before the source removal	only if results of site assessment and excavation sampling indicate soil impacts remain
Assessment only, or no active remediation within the last two years	two consecutive quarterly monitoring events below CTLs	as needed based on initial site assessment
	only one sampling event below CTLs if no previous lab-verified contamination was present	as needed based on initial site assessment
Parked site	only one sampling event below CTLs if last historic sampling event was below CTLs	as needed based on initial site assessment, or if only OVA data was previously collected

NFAC – SCENARIO # 1



Site Information:

- Closed gas station
- Site is partially paved
- GW & soil plumes are on-site
- Soil & GW data > CTLs
- Sites Score/eligibility – 80/PLIRP
- Depth to water – 8' -10' BLS

Lithology:

- 0' – 4' BLS: clayey sand
- 4' – 25' BLS: sandy clay

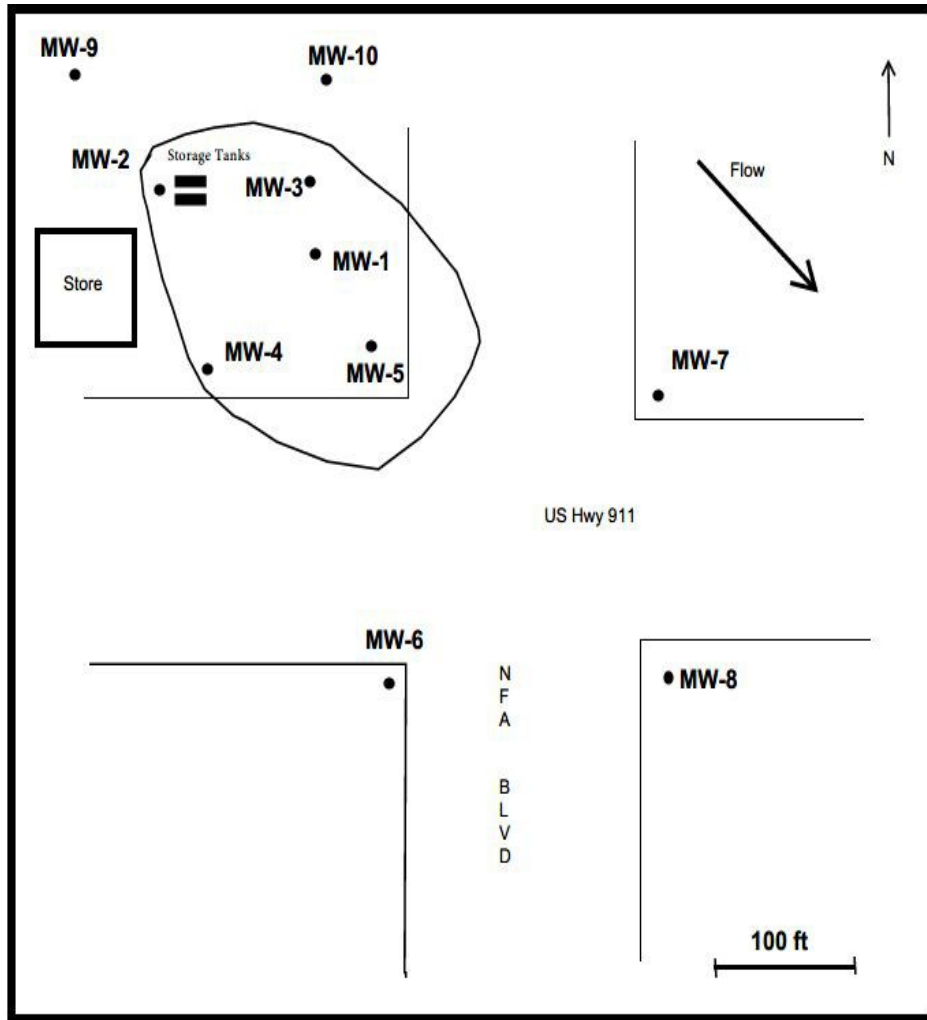
Soil Data:

- Soil near MW-2 & 3 exceeds leachability levels at 4' BLS
- SPLP results from that same area exceed CTLs
- All OVA Data < 500 PPM

Ground Water Data:

- MWs 6 -10 < GCTLs for 4 quarters
- MWs 1 -3 slightly > GCTLs for 4 quarters
- MW- 4 & 5 had 2 quarters slightly above NADCs, followed by 2 quarters with levels < GCTLs

NFAC – SCENARIO # 2



Site Information:

- Closed gas station
- GW plume off-site
- Site is totally paved
- Sites Score/eligibility – 30/PCPP
- Depth to water – 5' -6' BLS
- Funding cap is exhausted

Lithology:

- 0' – 4' BLS: silty sands
- 4' – 20' BLS: sandy clay

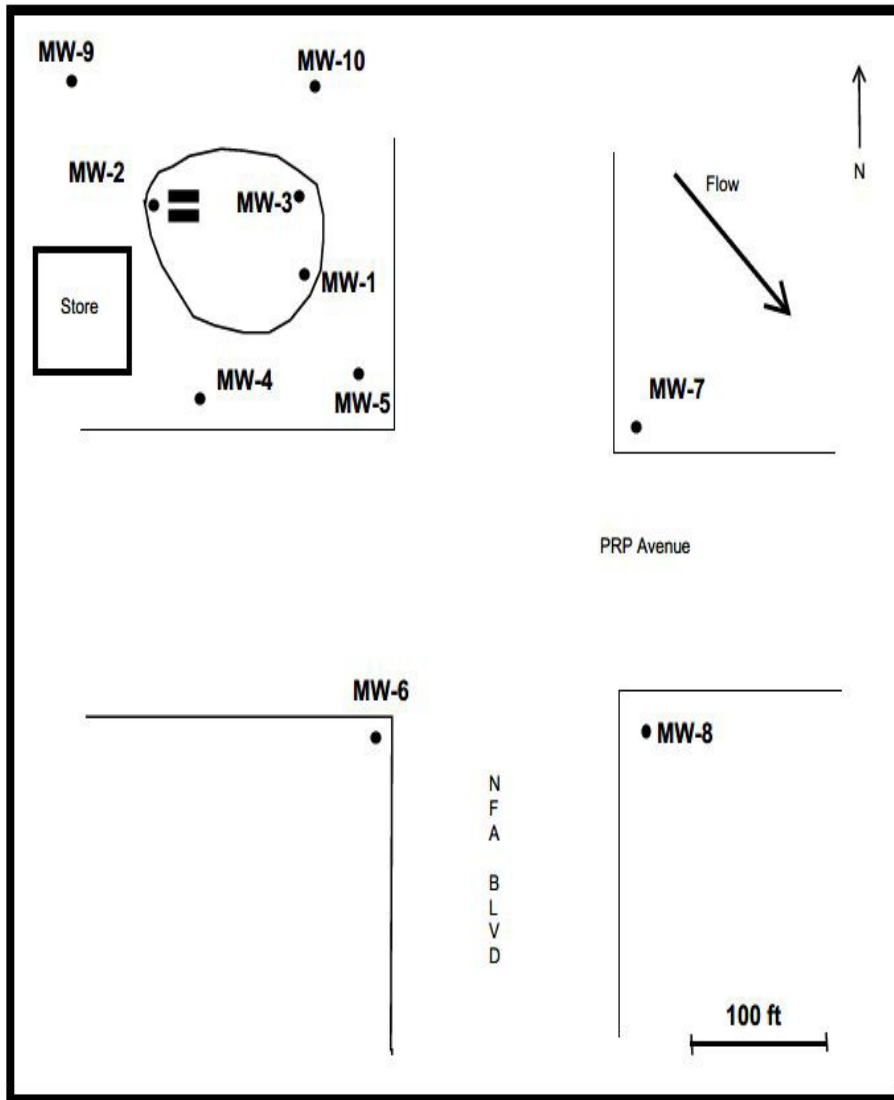
Soil Data:

- Soil data < SCTLs for residential direct exposure
- All OVA Data < 500 PPM

Ground Water Data:

- MWs 7 – 10 < GCTLs for 4 quarters
- MWs 1 -5 slightly > GCTLs for 4 quarters

NFAC – SCENARIO # 3



Site Information:

- Former gas station
- GW plume on-site
- Site is totally un-paved
- Sites Score/eligibility – 29/EDI
- Depth to Water – 8' -10' BLS

Lithology:

- 0' – 4' BLS: fine sand
- 4' – 25' BLS: sandy clay

Soil Data:

- Top 2' of soil < SCTLs
- All OVAs < 500 PPM

Ground Water Data:

- MWs 6 – 10 < GCTLs for 4 quarters
- MWs 1 -3 slightly > GCTLs for 4 quarters
- MW-4 & 5 had 2 quarters slightly above NADCs, the last 2 quarters were < NADCs



Summary

- Discuss Closure Criteria With Property Owner
- Evaluate:
 - Free Product Levels
 - Soil Contaminant Levels: Direct Exposure and Leachability
 - Ground Water Plume
- For an NFAC - Establish Institutional Controls and/or Engineering Controls to Prevent Exposure To and Migration of Contamination



- Questions



Florida Department of Environmental Protection

Low-Scored Site Initiative





Low-Scored Site Initiative

Voluntary option for closure

- Different type of closure for owners
 - Very Popular
 - Easy Button for some
- Some owners can get funding early
- If impacts are minor, some RPs will finish cleanup





LSSI Allows 2 Unique Things:

1. Unique “LSSI NFA” Closure
 - For Elig. & non-elig. sites
 - “Minimally Contaminated”
 - Entered into ICR
2. Funding to target closures
 - Allows ≤\$35K each in SA & limited RA funding.
 - For eligible sites only



LSSI Closure Requirements

- Score 29 or less
- No excessively contaminated soil
- Plume is shrinking or stable
- No adverse effects on surface water
- Plume confined to source property, or under transportation facility where DEP has agreement for IC
- Groundwater impacts not a threat to permitted potable well
- Top 2' soil below SCTLs



LSSI OUTCOMES

- SRCO
 - If “clean”
- LSSI NFA
 - If “minimally contaminated” below 2’
- Closure requirements not met
 - Parked, Back in line



Options if LSSI Closure Requirements are Not Met

- Use \leq \$35K LSSI Limited RA funding to make site eligible for LSSI NFA
- Pursue a RMO II or III



Conditional Closure Agreement

- Pursuant to Rule 62-772.401, if owner/participant agrees to a conditional closure, they may recommend an ATC
- This might not be appropriate for all sites
 - e.g. sites with a small, shallow potable well on-site
- CCA, forms, instructions available on website:
 - <https://www.floridadep.gov/waste/petroleum-restoration/content/petroleum-cleanup-programs>
- CCA SHOULD NOT BE CONFUSED WITH A 62-780 CLOSURE.



Questions Or Comments?





FDOT MOU Closers



Outline

- FDEP/FDOT Memorandum of Understanding (MOU)
- Non-FDOT (City/County Road) Closure Process

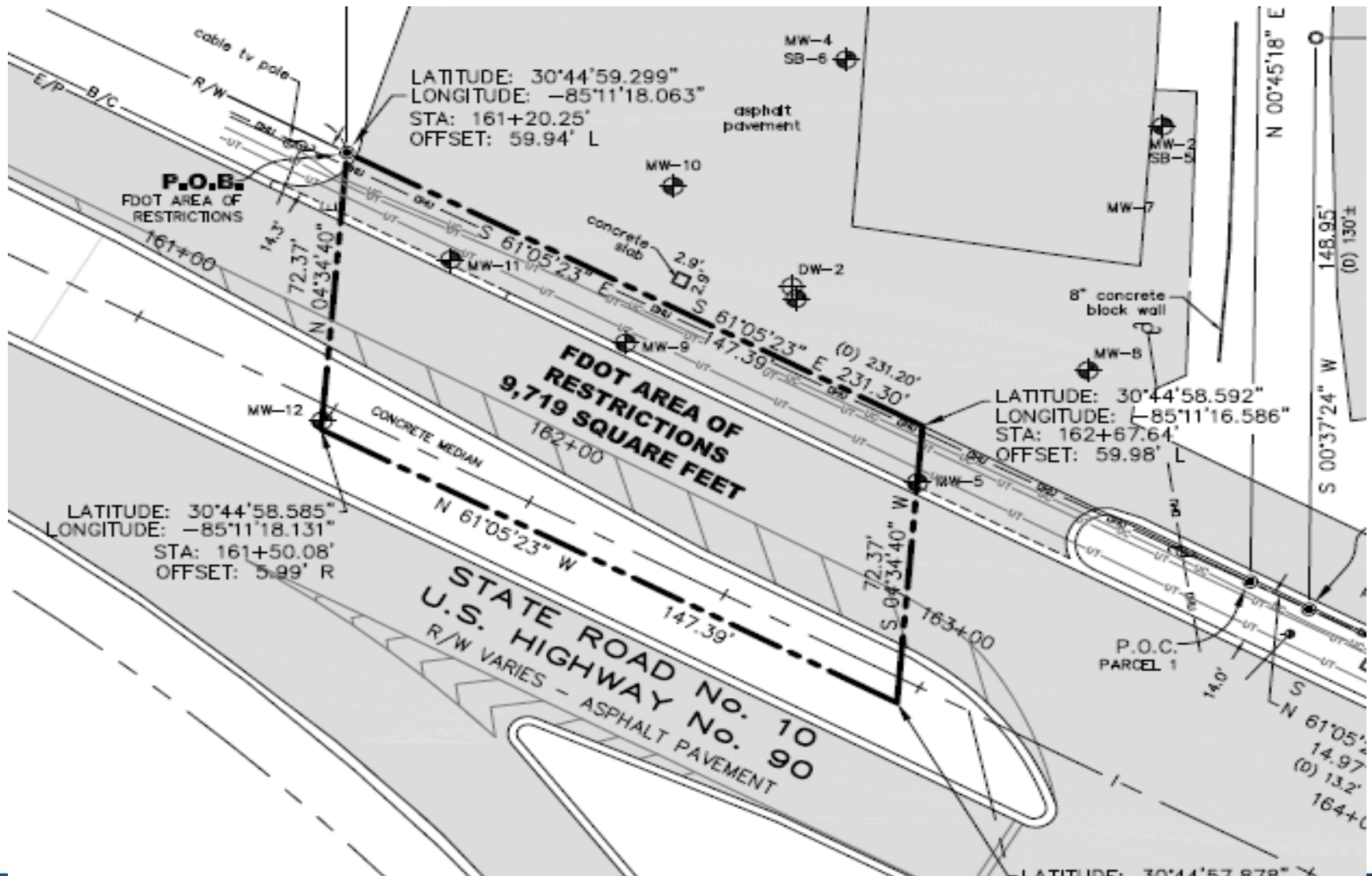


FDEP/FDOT MOU

- Allows Conditional Closures For Discharges With Contamination in The FDOT's Right of Way (ROW)
- **FDOT ROW Map Note Used As An Institutional Control**
- Takes Advantage of the inherent "Barriers To Exposure" Provided by the FDOT's Management of the ROW
 - Physical Barriers, i.e., road pavement, clean fill
 - Administrative Barriers, i.e., FDOT's permitting process that is designed to control all activities in the ROW
 - No Need for Recording of Restrictive Covenant

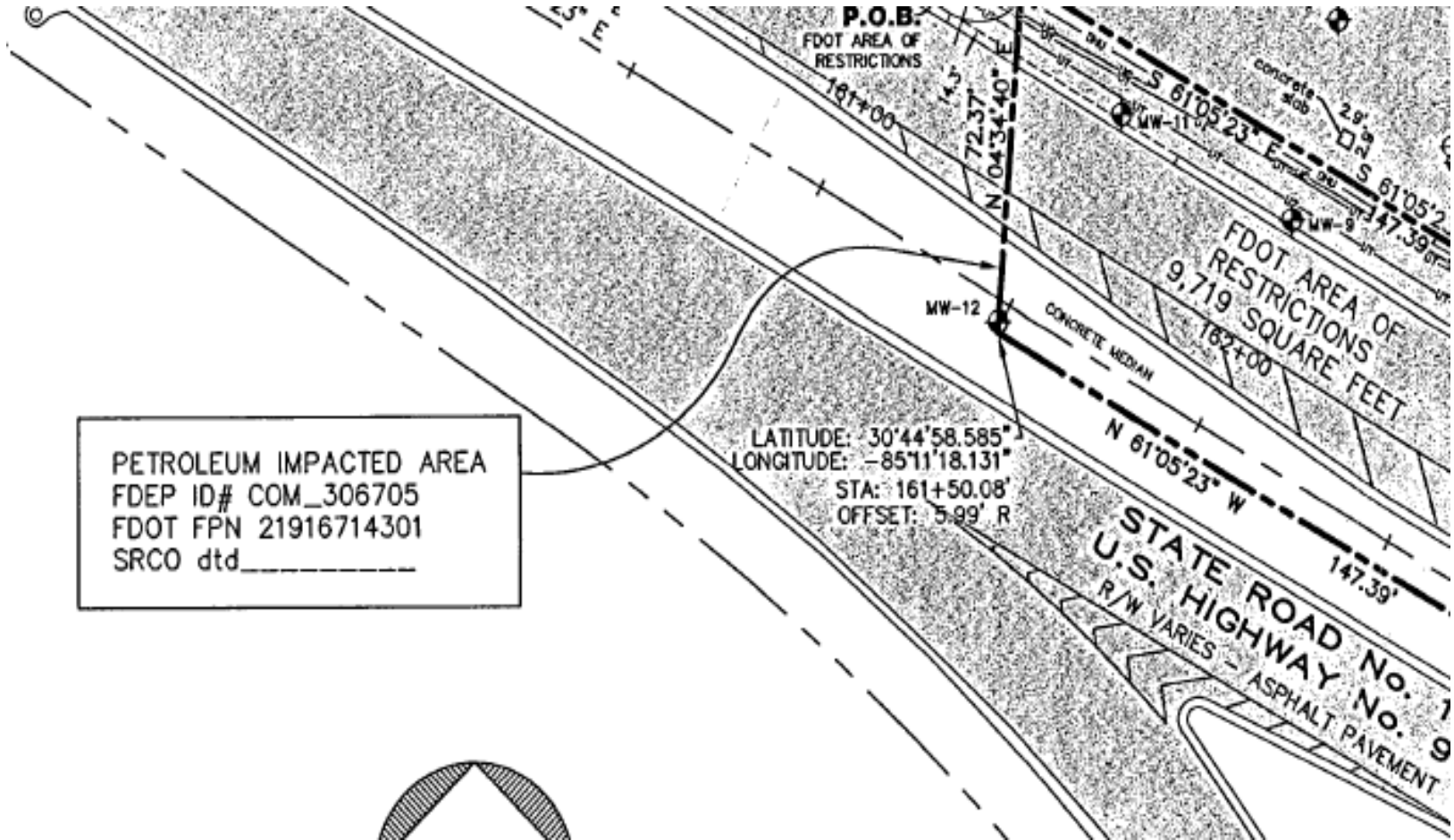


FDOT ROW Map





ROW Map Note





Key Things To Remember

- The Site Must Have An Approved Assessment
- A FDOT MOU Closure May Be Used to Close Discharges Where The Source Property Is Adjacent to FDOT ROW
- Verify That It Is A FDOT ROW
- The Source Property must qualify for closure by:
 - Meeting RMO-I Criteria, or,
 - RMO-II Establishment of Institutional Control (IC) or Engineering Control (EC) for Groundwater and Soil
- Closures Using the FDOT MOU Are considered RMO III Closures Since the Contamination Is Off-Site



FDOT MOU Closure Process

Steps for FDOT/FDEP MOU Closure Located in Institutional Controls Procedure Guidance.

Attachment 32: Procedure For Use Of FDEP And FDOT MOU



Non-FDOT ROW Closures

- Allows Closures Where Contamination has Migrated From Source Property to Transportation Facilities under Responsibility of City or County Governments
- Guidance On Non-FDOT ROW ICs Guidance Has Been Drafted
- MOU w/ Local Government Developed on a Case By Case Basis



Non-FDOT ROW Closures

- Information Needed:
- Map or Diagram showing Extent of Plume
- Notice sent to Local Government Regarding Contamination on the Transportation Facility
- Information about the Status of the Contamination
- A legal Description of the source property and diagram of the non-source property (transportation facility).



Chapter 62-780, F.A.C. Updates



Top Ten Amendments to 62-780

1. Increase the number of options for risk based closures, including using non-recorded controls.
2. Emphasis on using the conceptual site model to support site assessment and closure.
3. Inclusion of Incremental Sampling Methodology (ISM) for soil sampling.
4. Replacement of apportionment with dose additivity.
5. Separation of emergency response and interim source removal into two rules.



Top Ten Amendments to 62-780

6. Expands use of field screening instruments with proper correlation to lab samples.
7. Use ISM or discrete 95% UCL to evaluate leachability.
8. Added flexibility to frequency of monitoring and reporting.
9. Provisions to potentially leave free product in place under conditional closures.
10. Expanded use of the organoleptic exemption to more sites.



Any Final Questions?

