

**MT DEQ Petroleum Tank Cleanup Section -- Release Closure Plan**

(7 Mar 2018)

for the Investigation, Cleanup, Monitoring & Closure of Petroleum Releases

**Part 1: Site Summary & Remedial Investigation (RI) Results**

reference: MT DEQ Remedial Investigation (RI) Guidance for Petroleum Releases

Consultant:			Date:		DEQ PM:	
Facility Name / Address:						
Facility ID:			Release:		WP ID:	
Site Information	Release Cause, Source(s) & Petroleum Types:					
	other releases onsite and nearby:					
	Site Use(s) -- Former, Current & Planned:					
	Surface Conditions & Access:					
	former Petroleum Tank Systems:					
	current Petroleum Tank Systems:					
	Other:					
Subsurface	Stratigraphic sequence - layers & thicknesses:					
	Stratigraphic Continuity - Lateral Variation(s):					
	Groundwater Depth & Flow Direction(s):					
	Aquifer(s) unconfined, confined, perched:					
	Receptor Depth/Location (basements, utilities):					
Other:						
Extent & Magnitude	Petroleum Types, Age & NAPL Mobility:					
	Surface Soil Impacts (0 to 2 ft bgs):					
	Vadose-Zone Soil Impacts:					
	Smear-Zone Soil Impacts:					
	Groundwater Impacts:					
	Surface Water Impacts:					
	Petroleum Vapor Impacts:					
Other:						
Reports	RI and Monitoring Reports & Dates:					
	Pilot Tests & Results:					
	Results from Cleanup(s):					
	Other:					
What currently prevents Release Closure?						
additional information required for PMZ Closure:						
Information & Data Gaps:						
Recommendations and comments:						

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**Part 2: Conceptual Site Model (CSM) - Evaluation of Exposure Pathways**

reference: MT DEQ Risked-Based Corrective Action (RBCA) Guidance for Petroleum Releases

Consultant: 0 Date: 1/0/1900 DEQ PM: 0

Facility Name: 0 **Complete Description for All Receptors**

Facility ID: 0 Release: 0 WP ID: 0 Describe why a Receptor is not threatened or impacted; and

**Petroleum Source(s)** **Affected Medium** **Exposure Medium / Point** **Exposure Route** **Receptor** Describe proposed Investigation, Cleanup, and/or Monitoring Methods for each threatened or impacted Receptor.

<b>Required: Complete Description of the Source(s) of Petroleum Release</b>	<b>Surface Soil (0 - 2 ft bgs)</b>	→	Soil	→	Ingestion Dermal	→	Resident and/or Worker
		→	Soil	→	Leaching	→	Groundwater
		→	Dust/Vapors	→	Inhalation	→	Resident and/or Worker
		→	Surface Erosion to Surface Water and Sediment	→	Ingestion Dermal	→	Recreator, Ecological Receptor <sup>1</sup>
	<b>Sub-Surface Soil (&gt; 2 ft bgs)</b>	→	Soil	→	Ingestion Dermal	→	Construction Worker <sup>2</sup>
		→	Soil	→	Leaching	→	Groundwater
		→	Indoor Air	→	Inhalation	→	Commercial or Residential Indoor Air
		→	Dust/Vapors	→	Inhalation	→	Construction Worker
		→	Buried Water Line	→	Ingestion Dermal	→	Resident and/or Worker
		→	Buried Utility Line	→	Inhalation of Indoor Air	→	Indoor Resident and/or Worker
	<b>Groundwater</b>	→	Groundwater	→	→	→	State water <sup>3</sup>
		→	Indoor Air <sup>4</sup>	→	Inhalation of Indoor Air	→	Resident and/or Worker
		→	Groundwater and Vapors	→	Ingestion Dermal Inhalation	→	Construction Worker <sup>2</sup>
		→	Drinking Water	→	Ingestion Dermal	→	Resident and/or Worker
		→	Surface Water and/or Sediment	→	Ingestion Dermal Inhalation	→	Recreator, Ecological Receptor
		→	Buried Water Line	→	Ingestion Dermal	→	Resident and/or Worker
		→	Buried Utility Line	→	Inhalation of Indoor Air	→	Indoor Resident and/or Worker

Data Gaps:

Recommendations:

**Footnotes:**

1. Ecological Receptors (e.g. plants and animals) can be added as a separate line associated with surface soil but it is not common for PTC sites.
2. Construction worker covers excavations conducted for building construction, utility installation and repair, as well as residents planting trees, etc.
3. Standard or RBSL exceedence are a complete pathway to a receptor, which is state water (or groundwater).
4. Indoor Air is the exposure medium for a potential or known vapor intrusion setting where a resident or an employee of a business may breathe petroleum vapor from the release.

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**Part 3: Evaluation of Cleanup Alternatives** reference: MT DEQ Remedial Alternatives Analysis (RAA) Guidance for Petroleum Releases

Consultant: 0 Date: 1/0/1900 DEQ PM: 0

Facility Name / Address: 0

Facility ID: 0 Release: 0 WP ID: 0

Administrative Rules of Montana 17.56.605(3) requires screening and selection of cleanup methods to develop a matrix evaluation of cleanup alternatives. A cleanup plan requires information on all alternatives and an explanation why any alternative was selected.

**Enter appropriate site-specific Cleanup Methods that are based on RI results & CSM**

No Action*	e.g. Excavation	e.g. Excavation & ORC	e.g. SVE & AS	fill-in as needed or leave blank	fill-in as needed or leave blank	fill-in as needed or leave blank
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<b>Evaluation Criteria</b>	Performance	Estimated Costs					
		Protective of Human Health & Environment (e. g. residences, utilities, water supply, future use)					
		Method-specific regulatory requirements (e. g. disposal of impacted soil & water, access agreements)					
		Method-specific feasibility requirements (e. g. pilot tests, treatability studies)					
		Contaminant-specific requirements (e. g. method achieves soil & GW RBSLs & DEQ-7 standards)					
		Location-specific requirements (e. g. potential historical, cultural, or ecological significance, or site near wetlands, floodplains, surface water, endangered species / migratory bird habitat)					
		Reliability -- Short Term					
		Reliability -- Long Term					
		Implementation Issues & Limitations					
		Safety Issues					
		Effects on Public Health and Environment (includes Receptors)					
		Other site-specific criteria & issues:					
		Advantages of Cleanup Method:					
		Disadvantages of Cleanup Method:					
		Est. Years to Complete Cleanup Method:					
	Cleanup Recommendations:						
	Information & Data Gaps:						
	Recommendations and comments:						

\* Note: Cleanup technologies may be removed or added as appropriate for each Release; however, the 'No Action' alternative must be evaluated for comparison at every Release.

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**Part 4: Compliance Monitoring** reference: MT DEQ Remedial Alternatives Analysis (RAA) Guidance for Petroleum Releases

Consultant: 0 Date: 1/0/1900 DEQ PM: 0

Facility Name / Address: 0

Facility ID: 0 Release: 0 WP ID: 0

**Compliance & Operation Monitoring Methods to Evaluate Effectiveness of each Cleanup Alternative Listed in Part 3**

Administrative Rules of Montana 17.56.605(6) requires the cleanup plan to include a plan and schedule for compliance monitoring to evaluate the effectiveness of cleanup activities.

No Action*	e.g. Excavation	e.g. Excavation & ORC	e.g. SVE & AS	fill-in as needed or leave blank	fill-in as needed or leave blank	fill-in as needed or leave blank
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<b>Evaluation of Cleanup</b>	Confirmation Sampling						
	Borings/ Monitoring Wells (MWs)						
	GW Monitoring (freq., wells, years)						
	System O/M (frequency & years)						
	Petroleum Vapor Monitoring (freq., locations, years)						
	Receptor Monitoring						
	Waste Management						
	Other site-specific monitoring:						
	Method(s) to Evaluate Interim Results and Optimize Cleanup:						
	Est. Years to Complete all Monitoring:						
Estimated costs for O/M & monitoring:							

<b>Closure</b>	Estimated Total Years to Closure:						
	Natural Attenuation Trends:						
	What currently prevents Closure?						
	Is this a PMZ Closure Candidate?						
	Other:						

Information & Data Gaps:

Recommendations and comments:

\* Note: Cleanup technologies may be removed or added as appropriate for each Release; however, the 'No Action' alternative must be evaluated for comparison at every Release.