Administrative Rule #37
BEST MANAGEMENT PRACTICES FOR POLLUTION PREVENTION POLICY

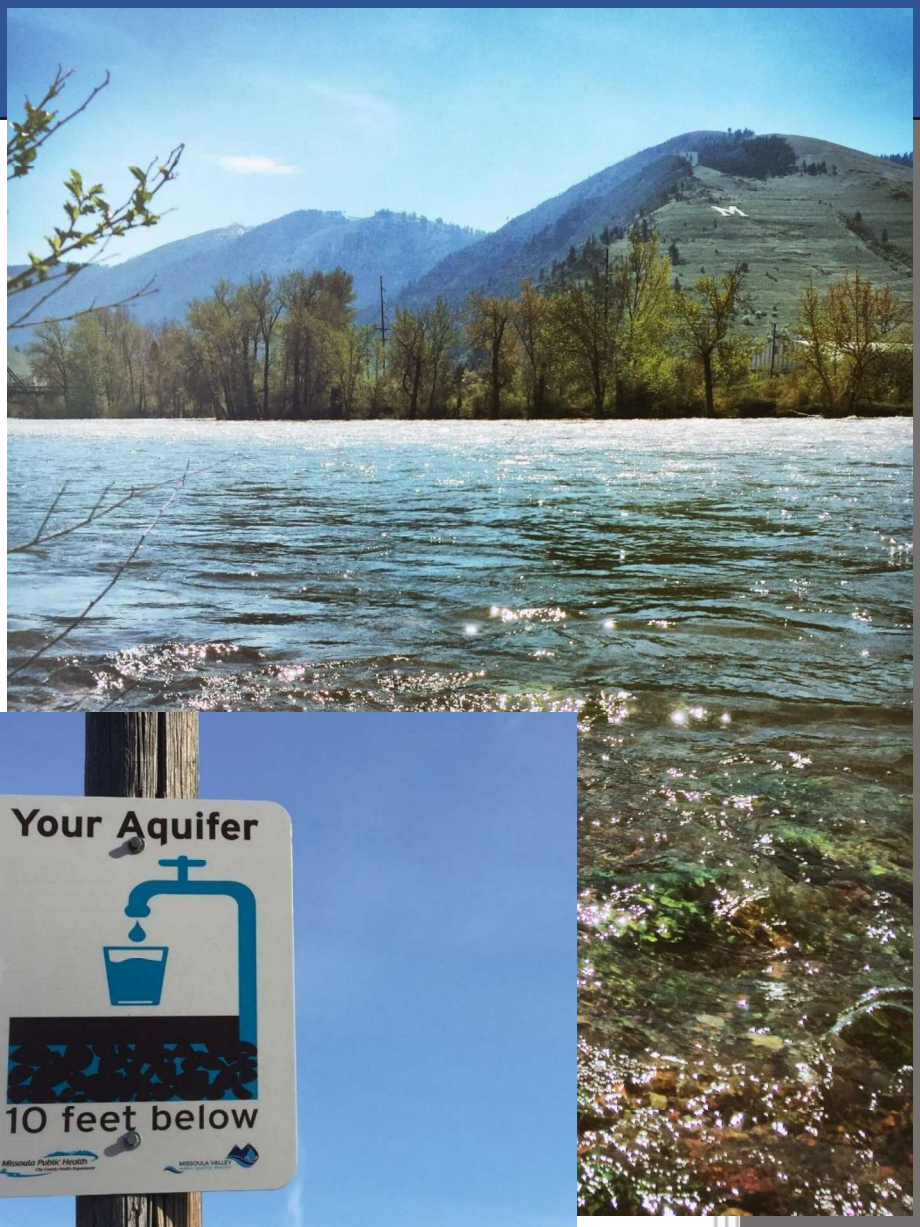
I hereby sign into effect Administrative Rule No. 37, Best Management Practices for Pollution Prevention, this 1st day September, 2022, pursuant to Ordinance 2232 which authorizes the Mayor to develop and approve administrative rules.



Gwen E. Jones, Acting Mayor
City of Missoula

Best Management Practices for Pollution Prevention

Administrative Rule 37



MISSOULA VALLEY
water quality district

Satisfies Missoula Valley Water Quality Ordinance Title 13.26

Effective Date September 1, 2022

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Part 1: Introduction

1.1. Background and Significance

The Missoula Valley aquifer is the primary source of drinking water for Missoula's residents. Because we all need and value clean water, we must protect our aquifer from contamination. This manual was developed under the authority of the Missoula Municipal Code, (Chapter 13.26.011) to assist businesses and facilities within the Aquifer Protection Area with operations that have the potential to contaminate groundwater and surface water. The methods described in this manual are commonly accepted as the best management practices (BMPs) that are protective of these water resources. BMPs can be processes performed by staff or structures designed to prevent the release of regulated substances into the environment. Examples of processes include sweeping a parking lot before pressure washing to reduce sediment load in the wash water or altering drilling air pressure to reduce water volume when developing a well. Secondary containment enclosures around waste oil tanks and oil-water separators that allow hydrocarbons to collect prior to discharge to a bioswale, are examples of structures.

1.2 How to use this manual

The Missoula Water Quality Code (Code) prohibits activities that may allow pollutants to contaminate our local water resources. In short, the BMP manual is a description of basic operational and equipment standards that help to *not* cause pollution. Instead of waiting until a complaint is received and pollution has occurred to communicate best management practices, minimally required BMPs that apply to certain activities, businesses, and components can be found in this manual. Oftentimes, a lack of BMPs at auto shops, gas stations, etc. results in chemical releases into the environment and stormwater systems. Stormwater systems can then collect and deliver pollutants to the nearest stream, wetland, or groundwater. Accordingly, sections 13.26.034(A) and (B) of the Code require the implementation of minimum BMPs by those who handle regulated substances or participate in activities that can lead to stormwater runoff and water contamination. The minimally required BMPs in this manual should be used in consultation with other federal, state, and local authorities to ensure compliance with applicable rules or codes (Fire, Building, OSHA, etc). For example, federal right-to-know laws may require that facilities handling regulated substances report to the Local Emergency Planning Committee (LEPC) every year.

While this manual does not cover every potential scenario for pollution prevention, it does address the most common situations we encounter. Those who perform activities not covered here are still required to prevent water pollution. With time and new application scenarios, occasionally a BMP may be found to be impracticable in the field, or a new BMP may be found to provide better protection for the resource. Alternative BMPs may be proposed and approved (see Appendix page 42) and this manual will be updated as needed. Contact the Missoula Valley Water Quality District to determine the most current BMP options for your activity or to suggest changes to this document. Terminology defined in the Code and used in this manual are included in the appendix for reference.



When rainwater enters the streets and alleys of Missoula, it can pick up pollutants and flow to nearby storm drains that discharge contaminated water directly to our local streams.

Part 2: Best Management Practices (BMPs)

2.1 BMPs by Business Type or Activity

2.1.1 Auto Maintenance

These BMPs apply to auto service shops, fleet vehicle maintenance, and trucking/construction vehicle maintenance shops.

Discussion of Risk: These businesses store oils, solvents, and engine coolants. When drums, buckets, and pans are left outside with open tops or without tight seals, stormwater can displace the fluids inside. Vehicle fluids can be released to the ground during the maintenance process or through leaks. Manual transfer of chemicals can lead to spills and overfills. Waste fluids that are stored and not shipped with a qualified hauler in a timely fashion increase the risk of release to the environment. Sludge from parts washers contains toxic heavy metals. Floor drains can lead to subsurface disposal wells or old septic systems.



Uncontained and leaking waste oil at a truck maintenance facility being displaced by stormwater to a nearby storm drain.

Minimum BMPs:

1. Containment:

- Label and provide secondary containment for all drums and tanks containing regulated substances at or above threshold quantities (see pages 26-30 for component requirements).
- Store portable containers (drums, buckets, etc.) of liquid or dry chemicals, waste fluids, solvents, etc. inside shop or other area protected from run-on and run-off precipitation (covered with a tarp on a pallet, under an eave with ground sloped to a swale, etc.)
- If stored outdoors, choose container storage locations where a spill would not flow to a storm conveyance, storm drain, surface waters, or ground water.
- Place tight-fitting lids on all containers when not in use.

2. Standard Operating Procedures:

- Inspect all incoming vehicles, parts, and equipment that are stored temporarily outside for leaks.
- Store vehicles needing repair in areas where leaking fluids will not reach the ground surface or stormwater conveyances. If stored outdoors, use drip pans or other catchment devices.
- If temporary work is being conducted outside, use a tarp, ground cloth, or drip pans beneath the vehicle or equipment to capture all spills and drips. The collected drips and spills must be disposed of, reused, or recycled properly.
- Use drip pans or containers under parts or vehicles that drip or that are likely to drip liquids, such as during dismantling of liquid-containing parts or removal or transfer of liquids.
- Empty oil and fuel filters before disposal. Drain engine blocks and gear/transmission cases thoroughly and store inside or in covered/contained outside areas. Collect all used fluids including hydraulic oils and coolants generated from repair and maintenance processes and recycle or dispose of properly.
- Empty used-oil drain pans routinely to a contained bulk storage via a process that doesn't drip or spill outside of containment.

- Periodically inspect secondary containment (if applicable) for stormwater accumulation and leaks. Repair broken or cracked containment structures.
- Periodically inspect containers of regulated materials and waste fluids not placed in containment for leaks and replace when not in good condition, leaking, or otherwise deteriorating.
- Keep absorbent materials in sufficient quantity to address potential spills and in an easily accessible location.
- Wipe up/absorb small spills and dispose of absorbent materials appropriately.

3. Wastewater/Stormwater:

- Floor drains that discharge to the ground are considered to be industrial or commercial injection wells and are not permitted. Contact the local Wastewater Treatment Plant (Missoula or Lolo) for pre-treatment requirements (e.g. oil-water separator) and approval for floor drain discharge to the public sanitary sewer system.
- Provide for proper disposal of waste oil and fuel. Never pour waste into a storm drain.
- For wastewater generated from vehicle washing see Vehicle Washing section (pg. 23).

Additional BMPs:

- Secondarily contain small volumes of auto fluids to prevent spills.
- Store cracked batteries in a covered, nonleaking secondary containment system.
- Local Fire Code may apply for storage of flammables indoors, near buildings, under roofs, etc.

WHAT ABOUT DIY AUTO MAINTENANCE?

When done improperly, working on a vehicle at home can pose risks to our water. Preventing water pollution is everyone's responsibility. To prevent contamination:



- While changing oil or doing other work on your vehicle, plan ahead, use absorbent materials (kitty-litter, cardboard, oil-dry, sweeping compound, etc.), and capture spills using properly-sized lidded leak-proof containers.

- Store containers of waste oil/fluid indoors or otherwise protected area (trunk of car, garage, etc.) until disposal.

- Containerized fluids (used oil, transmission fluid, coolant) can be properly disposed of through Republic Services and most auto repair and auto supply shops.

Always clean up drips and small spills immediately with absorbent materials. To clean up a spill, apply absorbent material to the spill area (kitty litter is fine), work the absorbent into the spill with a broom, sweep up kitty litter, and dispose of properly. Never wash a spill into a storm drain.

2.1.2 CARPET CLEANING

These BMPs apply to carpet cleaning and flood restoration businesses.

Discussion of Risk: Cleaning water may contain contaminants such as detergents, solvents, oils, sediment, and bacteria. This wastewater is typically collected in tanks during the cleaning process and is sometimes inappropriately discharged onto the ground or into storm sewers or dry wells. Missoula's storm drain system either discharges below ground (which drains to our drinking water supply) or it discharges to streams or rivers. Residential septic systems are not designed to receive regular discharges of carpet cleaning water. Disposal through septic systems may cause the septic system to fail prematurely.

Minimum BMPs:



Carpet cleaner illegally discharging wastewater to a swale. Photo credit: Panhandle Health District.

1. Wastewater:

- Dispose of water where the cleaning is being done. If the business or residence is connected to the municipal sewer system (check with building owner or call the Health Department to confirm), it is appropriate to dump down a mop sink or utility sink.
- Take to a car wash. Coordinate with the car wash owner/operator beforehand.
- The City of Missoula has a receiving station where tanks can be emptied. Contact the City of Missoula Wastewater Treatment Plant to make arrangements. If you live in or are doing work in Lolo, contact the Lolo Wastewater Treatment plant to arrange disposal.
- Do not put wash water into a drain connected to a septic system and never dump into a storm drain or apply onto the ground (including lawn, gravel or asphalt).

Additional BMPs:

- Secondarily contain cleaning solutions in the shop.
- Label equipment with a message similar to "No wastewater can be discharged to a storm drain, ditch, waterway, or ground surface".
- Recycle wash water. There are numerous products on the market that recycle wash water.

2.1.3 Chlorinated Water Handling, Hydrant and Water Line Flushing

These BMPs apply to persons that discharge chlorinated and dechlorinated water from swimming pools, spas, and other sources. Surface water discharges (through conveyances, irrigation ditches, or directly) may also require a Montana Pollutant Discharge Elimination System (MPDES) permit from DEQ.

Discussion of Risk:

Chlorine acts as a disinfectant primarily through the oxidizing action of hypochlorous acid. However, because of it's reactivity, chlorine is also very toxic to fish and aquatic life. Sediment transfer to storm systems and surface water can also be a risk whenever water is released at high pressure or volume to the ground.

Minimum BMPs

1. Water discharge:

- Planned discharges to conveyances connected to surface waters must be dechlorinated to below 0.01 mg/L (ppm). Per the Montana DEQ-issued General Permit for De-chlorination Water and Hydrostatic Testing, the daily effluent limit for Total Residual Chlorine (TRC) is 0.011 mg/L and the limit of detection for TRC is 0.1 mg/L. Accordingly, analytical results showing concentrations less than or equal to 0.1 mg/L TRC are considered to be in compliance with this BMP.
- Chlorinated water can be discharged to the ground surface without de-chlorination if not in direct contact with groundwater.
- Use appropriate sediment trapping techniques for chlorinated or dechlorinated discharges. Discharge to swales, use end-of-pipe energy dissipators, employ lower discharge rates, or use other applicable BMPs to prevent water discharge from transporting sediment into stormwater conveyances or surface waters.



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2.1.4 DRY-CLEANING

These BMPs apply to businesses that use perchloroethylene or other chlorinated solvents for laundry and dry-cleaning services.

Discussion of Risk: Chlorinated cleaning solvents are extremely toxic and mobile in the environment. Without strict containment, recovery, and waste disposal practices there is high risk for contamination of groundwater and surface water resources. There is a trend to replace the more hazardous chemicals, such as perchloroethylene, with safer aliphatic hydrocarbons and other alternatives.

Minimum BMPs:

1. Containment:

- Dry cleaning machines must be fully contained, typically over a steel drip pan that extends beyond the footprint of the entire machine. The pan must meet the full 110% capacity requirement.

2. Standard Operating Procedures:

- When obtaining new or replacement machines, obtain dry-to-dry machines equipped with integral Refrigerated Condensers or an equivalent.
- Lint and other wastes contaminated with dry cleaning solvent must be stored in covered, contained drums or buckets for pick-up by a hazardous waste hauler.

3. Wastewater:

- Treat wastewater from dry-cleaning machines and vacuum presses on-site using carbon absorption/evaporation technology or an equivalent technology, or properly dispose of the wastewater as a hazardous waste;
- Dispose of sludge as hazardous waste. All dry-cleaning operations must be connected to public sewer.



The use and improper disposal of perchloroethylene-containing degreasers from dry-cleaning and auto-body shops led to the discovery of drinking water contamination in Missoula in early 1990s.

2.1.5 Fueling and Petroleum Storage Facilities

These BMPs apply to any business engaged in the storage and/or dispensing of fuel for vehicles and machinery. These sites include those that are open to the public, private, temporary, or bulk storage facilities. The quantities of fuel stored at these facilities requires a Pollution Prevention Permit from the Missoula Valley Water Quality District. Provisions of the permit require identifying and addressing risks posed by fuel storage and dispensing, plans developed to prevent and respond to fuel releases, and management of stormwater.

Discussion of Risk: Fuel storage and transfer over the Missoula Valley Aquifer presents significant risk to the environment, groundwater and surface waters. A leak of only one drop per second can release about 400 gallons of fuel into the environment in one year. Some toxic components of fuel are highly mobile in the environment. A spill of 1 gallon of gasoline has the potential to contaminate 1 million gallons of groundwater. Large releases can occur during 'drive-offs' (a vehicle drives away with hoses still inserted into tanks) or during transfer of fuel from a fuel tanker to an underground storage tank (UST). Stormwater dry wells located nearby can deliver spilled fuel to the groundwater which is the sole source of Missoula's drinking water. Some storm drains are piped to outfalls in nearby surface waters (Rattlesnake Creek, Clark Fork River, etc.) and a spill can directly impact that water body.



Dry well located directly downgradient from tank fueling area. Another storm drain along the road curb is also downgradient and leads to an outfall on Rattlesnake Cr.

Minimum BMPs for Public Fueling Stations:

1. Containment:

- These sites are required to use underground storage tanks (USTs) and comply with all Montana Department of Environmental Quality (DEQ) UST requirements.

2. Vehicle Fueling Area:

- Design stormwater collection such that stormwater does not discharge directly to storm drains (dry wells or inlets piped to outfalls) from the vehicle fueling area.
- Provide fueling island(s) with a fueling pad (pg. 32). Drainage on the fueling pad must be directed to a containment vault or through an oil-water separator and into a properly maintained vegetated swale or retention pond. Design must prevent stormwater run-on and run-off on the fueling pad.
- Design stormwater collection system to allow containment vaults and oil-water separators to operate at full capacity during storm events (e.g. canopies, tank sizing, etc.).
- Install breakaway hoses and nozzles on fuel dispensers.
- Incorporate automatic pump shut-off thresholds to prevent fuel releases during drive-offs.

3. Tank Fueling Area:

- Design stormwater collection so that stormwater does not discharge directly to storm drains (dry wells or inlets piped to outfalls) from the tank fueling area.
- Drainage may be directed to a properly sized vegetated swale.
- When vegetated swales are not available, one option is to divert stormwater to a properly sized oil-water separator or catch chamber that is connected to a dry well. In this case, there must be at least 20 feet of separation from bottom of dry well to groundwater. See tank fueling area (pg. 35) and oil-water separators (pg. 33) for more design conditions.

4. Standard Operating Procedures/Maintenance:

- Keep sufficient absorbent materials (e.g. Oil-Dri, absorbent pads, absorbent booms, etc.) to address fuel spills on-site and in a location convenient for staff to access.
- When using granular absorbent to address small spills and overfills (Oil-Dri, kitty-litter, etc.), work the granules into the spill, allow spill to be absorbed, and then sweep them up and dispose of properly.
- Train staff and maintain protocols for responding to small and large spills.
- Provide an employee trained on how to respond to a release on site at all times during facility operation, or an automatic pump shutoff that is programmed so that no more than 50 gallons of gasoline or 250 gallons of diesel fuel are automatically dispensed.
- Self-inspect and maintain the oil-water separator in tank fueling area (if equipped). Evacuate fuel releases immediately to maintain spill capacity of the separator or chamber and disposed of properly.
- Self-inspect fueling pad to check for containment of stormwater brought onto the pad with vehicles or by wind. Also check for blockages to gutters and cove drains to allow unobstructed flow through the system. Periodically test for water tightness of all components, pipe perforations, and piping joints.

5. Wastewater/Stormwater:

- Follow all applicable drainage BMPs for oil-water separators, tank fueling areas, containment vaults, etc. Sites with a canopy and containment vault in the fueling pad must keep the vault evacuated and contents disposed of properly as described on page 27.

Training, leak detection, record keeping, and other BMP's associated with underground storage tanks are part of the UST program administered by DEQ and are beyond the scope of this manual.

Minimum BMPs for Private/Fleet Fueling:

These sites typically represent smaller versions of a public fueling station for trucking companies or fleet vehicles. Some facilities in this category use aboveground storage tanks (ASTs) for fuel storage.



Private fueling site with triple-walled tank, catch basin, and separator (left background). Photo credit: Panhandle Health District

1. Containment:

- Above ground storage tanks must meet minimum BMPs described in secondary containment (pg. 26) and AST sections (pg. 12).
- Sites with underground storage tanks are required to comply with all DEQ UST requirements.

2. Fueling Area

- Design stormwater collection such that stormwater does not discharge directly to storm drains from the vehicle fueling area, AST filling area, or tank fueling area (if applicable).
- Provide fueling island(s) with a fueling pad (pg. 32). Drainage on the fueling pad must be directed to a sealed vault or through an oil-water separator and into a properly maintained vegetated swale or retention pond. Design must prevent stormwater run-on and run-off.
- Design stormwater collection system to allow vaults and oil-water separators to operate at full capacity during storm events (e.g. canopies, tank sizing, etc.).
- Install breakaway hoses and nozzles on fuel dispensers.
- Incorporate automatic pump shut-off thresholds to prevent fuel releases during drive-offs.

3. Standard Operating Procedures/Maintenance:

- Keep sufficient absorbent materials (e.g. Oil-Dri, absorbent pads, absorbent booms, etc.) to address fuel spills on-site and in a location convenient for staff access.
- When using granular absorbent to address small spills and overfills (Oil-Dri, kitty-litter, etc.), work the granules into the spill, allow spill to be absorbed, and then sweep them up and dispose of properly.
- Train staff and maintain protocols for responding to small and large spills.
- If equipped with a fueling pad, self-inspect the pad to check for containment of stormwater brought onto the pad with vehicles or by wind. Also check for blockages to gutters and cove drains to allow unobstructed flow through the system. Periodically test for water tightness of all components, pipe perforations, and piping joints.
- If equipped with ASTs, periodically self-inspect integrity of hoses and AST.

4. Wastewater/Stormwater:

- Follow all applicable drainage BMPs for oil-water separators, tank fueling areas, containment vaults, etc. Sites with a canopy and containment vault in the fueling pad or secondary containment must keep the containment evacuated and contents disposed of properly as described on page 27.

Training, leak detection, record keeping, and other BMP's associated with underground storage tanks are part of the UST program administered by DEQ and are beyond the scope of this manual.

Minimum BMPs for Bulk Petroleum Storage:

These facilities are used for storage of petroleum products for marketing or wholesale distribution that typically have a total bulk storage capacity of 50,000 gallons or more.

1. Containment:

- Cathodically protect buried metal piping and the bottom of aboveground storage tanks in accordance with guidelines contained in American Petroleum Institute (API) 651;
- Install containment devices to prevent a surface release of fuel at the vehicle fueling area from discharging directly to a dry well, or surface waters.
- Secondarily contain tanks and above ground piping manifolds in facilities built or replaced after January 1, 2023.
- Install impermeable barriers or liners under bulk petroleum tanks installed or replaced after January 1, 2023.
- Install vapor monitoring devices at piping manifolds and valves to alert personnel of a release at bulk petroleum storage facilities built or replaced after January 1, 2023.

2. Standard Operating Procedures/Maintenance:

- Perform annual release response training exercises simulating the actions that will be taken during a release of fuel at the facility
- Train staff in the proper filling of aboveground storage tanks and ensure staff are present at the facility during tank filling operations, or,
    - Establish a monitoring system capable of detecting and alerting local emergency personnel of a release during tank filling operations. The monitoring system must include vapor monitors located at any valve and/or piping manifold that controls the flow of fuel to the tanks and from the tanks to the dispensers, overfill alarms on any aboveground fuel storage tanks, and be staffed during the tank-filling operations.
- Conduct annual integrity and leak testing of below grade metal fuel product piping to a pressure of one and a half times the operational pressure.

- Test the integrity of the shell and bottom of large capacity petroleum storage tanks (as defined in Ordinance 13.26.030) in accordance with standard schedules established by American Petroleum Institute (API) 653 5th edition. An inspection schedule and justification must be submitted to and approved by the District with a maximum inspection interval not to exceed 20 years.
- Designate and train a local responsible party in the use, maintenance, and inspection of the BMP components.

Critical SOPs for managing inventory and loading/off-loading are specific to the industry and beyond the scope of this BMP manual.

Minimum BMPs for Temporary Fueling Site:

This BMP applies to temporary fueling operations, typically two years or less, that are installed at construction sites, wood chipping operations, fire camps, or similar operations. Follow applicable BMPs for ASTs.



Temporary fueling site with liners under both storage and offload/onload lane (Note black inspection ports along lane). Photo credit: Panhandle Health District.

1. Containment:

- Install a poly liner under stationary tanker trailers and single walled tanks. The liner may be waived for double-walled tanks unless repeated coupling/uncoupling is occurring.
- Install a buried poly liner under the footprint of the vehicles that will be using the site.
- Inspection ports must be installed in a sump area of the liner. For other criteria on liner containment, see page 39.
- Store hoses and nozzles over containment at all times. For other AST BMPs, see page 13.

2. Standard Operating Procedures/Maintenance:

- Monitor the pad and main containment liners during precipitation events and do not allow to overflow with stormwater. If stormwater is not accumulating in a liner in a predictable manner based on current weather, liner is likely compromised and should be replaced.

3. Wastewater/Stormwater:

- Stormwater collected in the liners should be managed as described in stormwater section on page 27.

Minimum AST BMPs for Fuel:

Farms and businesses often choose to store petroleum products such as gasoline, diesel fuel, and biofuels in aboveground storage tanks (ASTs). Properly installed tanks can have advantages over underground storage such as easy visual inspection, more convenient leak detection and containment, and the ability to relocate tanks when business practices change. Poorly managed storage can lead to soil and water contamination, fire, high clean-up costs, and theft.



These ASTs are mounted on level impermeable ground with barriers to prevent vehicle collisions. Photo credit: Purdue Extension.

1. Design and Containment:

- Label and secondarily contain tanks or use double-walled tanks.
- Store hoses within secondary containment or off the ground for double walled tanks.
- Use tanks designed/rated for outdoor use.

2. Location/Siting:

- Locate tanks at least 100 ft from wells, surface water, and irrigation ditches.
- Place tanks on level impermeable material (concrete pad) to retain spills. Pavement or a concrete pad should be designed to hold the weight of a full fuel tank and resist shifting and frost-heaving.
- Raise and support tank to prevent ground contact for easy inspection and corrosion prevention. Tank supports should be manufactured to hold their weight when full (wood or hollow concrete blocks are not appropriate).
- Provide barriers to prevent vehicle collisions.

3. Standard Operating Procedures/Maintenance:

- Keep sufficient absorbent materials (e.g. Oil-Dri, absorbent pads, absorbent booms, etc.) to address fuel spills on-site and in a location convenient for staff access.
- When using granular absorbent to address small spills and overfills (Oil-Dri, kitty-litter, etc.), work the granules into the spill, allow spill to be absorbed, and then sweep them up and dispose of properly.
- Train staff and maintain protocols for responding to small and large spills
- Periodically self-inspect integrity of dispenser hoses and AST.



Inappropriately mounted tanks. Notice leaning tank in photo on left. Neither set up has secondary containment, gravel/soil can accept spills and make clean up difficult and soil or water contamination likely. Hoses are left on ground making degradation and releases more likely. No protection from vehicles (barriers) are provided. In photo on right one tank is gasoline and one is diesel but both tanks are labeled with 1203 (gasoline) placard. Photo credit: Purdue Extension (Left photo).

Additional BMPs

OSHA, local Fire Code and other agency requirements (see ARM 17.57.105) related to flammables storage may apply:

- Minimum placement distance standards from buildings, power lines, and ignition sources
- Minimum distances between tanks
- Specific labeling and signage requirements
- Venting, leak detection on double walled tanks, liquid level gauge, and overfill protection
- Fire guarding, explosion proof wiring and/or fittings, and grounding for tanks containing flammables
- Performing tank inspections and maintaining inspection logs
- Displaying the depth of fuel conversion from inches to gallons on the tank

2.1.6 LIVESTOCK AND ANIMAL WASTE

These BMPs apply to owners of horses, cows, hogs, chickens, dog kennels, etc. to prevent manure run-off into stormwater conveyances and surface waters. These BMPs are not meant to address Concentrated Animal Feeding Operations covered under the Montana DEQ General Permit MTG01000.

Discussion of Risks:
Manure contains bacteria, nitrogen, phosphorous and other pollutants. Nutrients in surface water can lead to algal blooms, fish die-offs, and impair other beneficial uses. Groundwater contamination with manure and nutrients can lead to human health illness.

Minimum BMPs:

There are several ways to reduce animal waste problems and control run-off from livestock housing areas.

1. Standard Operating Procedures:

- Never deposit animal waste in a river, stream, irrigation ditch, dry well, or stormwater conveyance
- Clean up after your livestock. Remove manure frequently (also required by MMC 6.07.1010 and 6.07.430).
- Minimize overcrowding. Keep the number of animals proportional to the size of the confinement area so manure does not become unmanageable and accumulate.
- Relocate livestock to an area that is not sloped to drain to a stormwater conveyance or waterway.
- Provide vegetated buffers between confinement areas and the road.
- Divert water to swales or other areas where it will not enter a waterway.
- When walking or riding animals, remove waste promptly from any stormwater conveyance.

Additional BMPs

- The "On-site Guide for Livestock Operators", a collaboration of the Montana Association of Conservation Districts, USDA-NRCS, MTDEQ, and the Montana State University Extension contains additional information for reducing risk of livestock operations to surface and groundwater: https://store.msuextension.org/publications/AgandNaturalResources/EB0213.pdf



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2.1.7 PRESSURE WASHING

These requirements and BMPs apply to contractors who provide pressure washing services.

Discussion of risks:
Pressure washing surfaces can produce wastewater that can deliver contaminants into the storm system. Hot water, soaps, grease from restaurant dumpster areas, sediment from alleys, driveways, and sidewalks, and auto fluids from parking lots can be carried to storm drains which then flow into nearby surface waters like Rattlesnake Cr., the Clark Fork River, or the Bitterroot River, or into storm dry wells to groundwater.

Minimum BMPs:

1. Standard Operating Procedures:

- Operations will vary depending on the surface being washed (see Table 1 on pg. 16).
- Equipment (storm drain covers, absorbents, sediment filters, oil-booms) should be available and in working condition to allow for surfaces to be properly cleaned and drains to be sealed when applicable.

2. Wastewater:

- Discharge to sanitary sewer is the best practice for wash water.
- Pressure washing operations that use hot water, soaps, detergents, or cleaning agents must be conducted on solid surfaces and collected and discharged to sanitary sewer. Be sure to consult the City of Missoula Waste Water Treatment Plant prior to planning any sanitary discharge.
- As outlined on pg. 16, depending on the activity, method used, and the type of surface that is being cleaned, wash water can go to a storm drain, a vegetated area, or the sanitary sewer.



Pressure Washing. Attribution-ShareAlike 2.0 Generic (CC BY-SA 2.0) Image credit: www.housepressurecleaning.com

Table 1. Minimum Pressure Washing BMPs. Processes below assume no hot water, soap, detergents, or chemicals are used.

Type of Surface	Potential Pollutants	Cleaning Method and BMPs	Proper Disposal[1]
Sidewalks, walkways, flat roofs, pool decks	Sediment, debris, bird feces, mold, moss	1. Sweep loose dirt and debris. 2. Use absorbents to clean up any spills before washing. 3. Protect storm drains (filters required, absorbent devices as needed). 4. After washing, remove drain filter and absorbents.	Wash water: storm drain Debris: regular trash
Parking lots, parking garages, driveways, drive-throughs[1]	Sediment, auto fluids (engine oil, transmission fluid, antifreeze), debris	1. Sweep loose dirt and debris. 2. Use absorbents to clean up any spills before washing. 3. Protect storm drains (filters and oil-absorbent devices required) 4. After washing, remove drain filter and absorbents.	Wash water: storm drain or vegetated area[2] Debris: regular trash
Restaurant alleys/dumpster areas	Food grease	1. Sweep loose dirt and debris. 2. Block storm drains with covers. 3. Wash with hot water/soap as needed. 4. After washing, collect water with pump or vacuum.	Wash water: sanitary sewer connected to a grease interceptor Debris: regular trash
Buildings/Houses – unpainted or painted[3] with paint job in good condition	Sediment, debris, mold, moss	1. Place drop cloth below building to catch any paint chips. 2. Use absorbents to clean up any oil spots/spills before washing. 3. Protect storm drains (filters required, absorbent devices as needed). 4. After washing, remove debris caught in storm protection equipment.	Wash water: If contains paint residue: sanitary sewer. If no paint residue, may enter storm drain or vegetated area. Debris: regular trash

[1]If surfaces are heavily contaminated with engine oil or other hazardous chemical, these disposal guidelines do not apply. Contact the MVWQD for disposal guidance.
[2] Vegetated area must be large enough to prevent flooding of the area.
[3] These BMPs are not designed to address paint removal. If lead-based paint is suspected, contractors must be certified and adhere to the EPA Renovation, Repair, and Painting Rule. Contact the Region 8 EPA office for more information (https://www.epa.gov/mt/forms/contact-us-about-epa-montana).

2.1.8 RESTAURANTS AND FOOD SERVICE

These BMPs apply to the outdoor storage of grease and cooking oils at food service establishments. Separate requirements may apply from the applicable Wastewater Treatment Plant for sanitary sewer grease disposal.

Discussion of Risk: Grease is a contaminant that can enter stormwater and our local rivers and streams when improperly managed. Never wash the grease storage area or food service equipment (utensils, floor mats, or receptacles) into the alley, streets, or parking lots, or into a storm drain.



Cones were unable to prevent vehicle collisions and release of used cooking oil from these drums

Minimum BMPs

1. Standard Operating Procedures/Maintenance:

- If stored in outdoor containers for recycling, prevent drips and overflow when transferring and emptying containers.
- Clean up spills promptly. Old grease can be loosened with a stiff brush. Spread absorbent material (e.g. cat litter) over the area to be cleaned to absorb the grease. Sweep up the absorbent and throw it away.
- Pressure washing may be used if operator follows appropriate pressure washing BMPs (pgs. 15-16) and collects and disposes of water properly.

Additional BMPs

- Label storage containers.
- Provide a canopy to prevent precipitation from entering storage area.
- Routinely inspect storage area.
- Train employees on spill prevention and response.
- Keep sufficient absorbent materials available.

2.1.9 ROAD MAINTENANCE

These BMPs apply to businesses or entities that provide road maintenance services including asphalt application and repair work, concrete application and repair work, de-icing, dust suppression, and street sweeping.

Discussion of Risk: Perceptions of risk for groundwater contamination in this industry are often skewed by the fact that asphalt/sealer, concrete, deicing fluids, sand/gravel, etc. are put on the ground in the normal course of their use and construction. However, there are proven risks from repeated release of these chemicals that should not be overlooked. Continual spills and leaks of asphalt and sealer during tank and truck filling can result in water-soluble asphalt product entering the soil, dry wells, and potentially groundwater. Concrete is a mixture of cement, water, and aggregate material. Portland cement is made by heating a mixture of limestone and clay containing oxides of calcium, aluminum, silicon and other metals in a kiln and then pulverizing the resulting clinker. The fine aggregate particles are usually sand. After concrete is poured at a construction site, the chutes of ready mixed concrete trucks, hoppers of concrete pump trucks, wheelbarrows, and tools must be washed out to remove the remaining concrete before it hardens. Concrete washout water is a caustic slurry (pH near 12) containing toxic metals that can harm water resources. Deicers contain salts ($MgCl_2$, NaCl, etc.) that when spilled or misapplied can lead to groundwater and surface water contamination. Street sweepings can contain metals, fuel and petroleum products, animal waste, glass, litter, etc. and these chemicals could impact water resources.

Minimum Road Maintenance (asphalt and concrete) BMPs:

1. Containment:

- Secondary containment is required for certain quantities (listed in MMC 13.26.034) of regulated substances and must follow applicable BMPs on pages 26-30.

2. Standard Operating Procedures/Maintenance:

- Do not spray out asphalt/sealer hoses onto a bare ground surface.
- Schedule painting, striping, marking, asphalt paving, concrete replacement and concrete cutting activities for dry weather. Do not conduct these activities during or immediately after a rainfall.
- Protect nearby storm drain inlets from maintenance work (e.g. preparing the surface for an asphalt cap, chip sealing, concrete breaking or saw cutting). Place appropriate covers, rock wattles, straw bales, sand bags, filter fabric, etc. (some examples on pg. 40) around or over inlets to protect them from entry of wastes, dusts, overspray or slurry.
- When saw cutting concrete, use the minimum amount of water. Let the waste slurry dry and then sweep or vacuum it up before leaving the location. Alternately, a wet vacuum may be used to pick up the wet slurry immediately after cutting is complete.
- Collect concrete washout in a lined pit, tank, or other container.



Filtering concrete washout water for reuse. Photo credit EPA.

3. Wastewater/Stormwater:

- Dispose of wastewater from asphalt tank wash-out and the cleaning of spray application to the local Wastewater Treatment Plant.
- Allow concrete washout water to evaporate or filter/treat water prior to reuse or disposal to the local Wastewater Treatment Plant.
- Dispose of or recycle concrete solids (they can be reused as fill or in new concrete mix) remaining after filtering or settling.
- Sweep up wastes and dispose of the wastes appropriately. Do not sweep or hose down wastes into storm drains.



Improper maintenance of asphalt tank and insufficient SOPs for preventing ground contamination

Additional BMPs

- Secondary containment for asphalt emulsions is recommended.
- Maintain training programs and checklists for loading/off-loading, cleaning apparatus and rinsing job truck tanks, as well as spill response protocol.
- When working on bridges, transport paint and liquid materials to and from the job site in containers with secure lids and tied down to the transport vehicle.

Minimum Deicing BMPs

These deicing BMPs apply to storage and application processes for deicers applied on Missoula city and county roads. Approval and testing requirements for deicers are required and these details are covered in the Missoula Valley Water Quality Code.

1. Containment:

- Deicers stored at or above Threshold Quantities must meet applicable secondary containment requirements detailed on pages 26-30.
- Remove stormwater from outdoor containment to maintain required containment volume. (Containment systems for ice/dust control salts are often designed and operated so that stormwater in the system can be re-used in application mix).

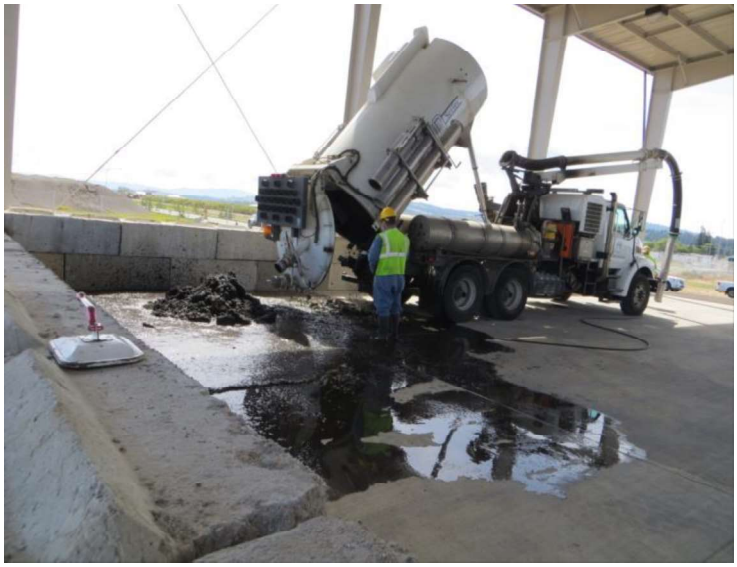
2. Standard Operating Procedures:

- Apply deicers in such a manner and at such a rate that pure product (liquid or solid) remains on the roadway.
- Apply deicers using trucks equipped with ground-speed controllers.
- When applying deicers for anti-icing purposes prior to or during a storm event, apply at a rate not to exceed 30 gallons per lane mile.
- Whenever snow accumulations on the road are equal to or greater than 2 inches, apply deicers after snow plowing to improve the effectiveness of a deicer and to reduce the amount applied.
- Keep daily records for locations and amounts of deicer applied.
- Maintain records for yearly volumes of deicer applied.
- Report any application of a non-approved deicer or a spill of deicer in an amount greater than 100 gallons or 1,000 pounds (solid) to the District within 24 hours of application or release.

Minimum Street Sweeping BMPs:

1. Containment:

- The entire sweeping storage area should be more than 100 feet from, and at a lower elevation than, any water body, creek, river, ditch, or storm drain inlet.
- Store waste on a paved surface sloped to drain to the water-holding basin.
- Provide berms to minimize run-on and run-off of stormwater.
- Protect the drying debris from wind re-entrainment (this can be done with operational protocols to not allow piles to accumulate and to remove quickly once dry).
- Waste does not need to be covered but tarping prior to rain event will reduce storage dry times.



Dewatered materials drain into adjacent settling pool. Water from pool then passes through an oil/water separator, followed by a sand filter bed, and then to a bio-infiltration pond. Photo credit: City of Spokane Decant Facility

2. Disposal

- Once dewatered, sweepings and catch basin sediment should be profiled for metals, VOC's, and extractable petroleum hydrocarbons prior to disposal at landfill.
- If screened, the grit can be re-used for road sanding or pothole fill without testing. These sweepings should be stored in an area that prevents precipitation from washing sediment into storm systems or surface water.
- Street sweepings are considered a Group II waste by MTDEQ and cannot be used as clean fill without appropriate testing.

3. Standard Operating Procedures/Maintenance

- Inspect and maintain any temporary debris storage areas. If debris is stored in containment or under cover, repair any cracks or splits that might allow debris to escape back into the environment.

2.1.10 TRADE CONTRACTORS

These BMPs apply to painting contractors, drywall installers, and other trades that use or generate materials with the potential to contaminate water sources during onsite construction and remodeling activities of buildings and houses.

Discussion of Risks: These activities are most likely to present risk to groundwater and surface waters through the generation and improper disposal of waste fluids.

Minimum BMPs:



Storm drains are not to be used for disposal of paint-brush/tool rinse water, dry-wall mud, tile-saw waste, or any other construction-related waste.

1. Containment:

- Label and secondarily contain volumes of regulated substances at threshold levels or more as described on pages 26-30.
- Store portable containers (drums, buckets, etc.) of liquid or dry chemicals, waste fluids, solvents, etc. inside shop or other area protected from run-on and run-off precipitation (covered with a tarp on a pallet, under an eave with ground sloped to a swale, etc.)
- Place tight-fitting lids on all containers when not in use.
- If stored outdoors, choose container locations where a spill would not flow to a storm conveyance, storm drain, surface waters, or groundwater.

2. Standard Operating Procedures:

- Never dump paints, thinners, solvents, drywall mud, tile-cutting saw water, paintbrush/roller wash water, or any other construction-related activity waste onto the ground, stormwater conveyance, or into a storm drain.
- Do not conduct spraying, blasting, or sanding activities over open water without method to prevent paint and debris from entering water. Do not transfer or load paint over water.
- Utilize an enclosed cleaning device or other process that does not involve spraying on the ground when cleaning paint spray guns.
- Wipe up/absorb small spills and dispose of absorbent materials appropriately.

3. Wastewater

- Do not pour any type of paint (water or oil-based) or paint solids into sinks. This wastewater leads either to a septic system or a wastewater treatment plant.
- For small projects, clean paint brushes and tools covered with water-based paints in sinks connected to a Wastewater Treatment Plant. Filter out solids prior to disposal. When rinsing brushes in portable containers, let the solids settle and then filter or slowly dump the clean water down the drain or into a vegetated swale. Discard the remaining solids in the trash. Alternatively, allow the water to evaporate and discard the remaining solids. For projects that may generate large volumes of rinse water, contact the local Wastewater Treatment Plant.
- When cleaning brushes or tools covered in non-water-based paints (oil) or finishes, collect used solvents for recycling or proper disposal as hazardous waste.

- Leftover latex and water-based paint that cannot be reused can be dried (allow water to evaporate, add absorbents to the container) and disposed of in the trash.
- Leftover oil-based paints and thinners that cannot be re-used or recycled must be disposed of in a hazardous waste facility.

Additional BMPs

- Prior to cleaning brushes and rollers, remove as much paint as possible by squeezing and dry brushing onto cardboard or newspaper to work out remaining paint.
- Containment of other products such as solvents that are in containers of 5 gallons or less is encouraged especially if there is a frequent transfer of product into and out of the container.
- Local Fire Code may apply for storage of flammables indoors, near buildings, under roofs, etc.

2.1.11 VEHICLE WASHING

These BMPs apply to commercial establishments which routinely wash vehicles (e.g., car washes and facilities with wash bays), clean and degrease mechanical parts (including mobile steam cleaning operations), or rinse equipment (e.g. landscaping). Fleet and truck washing can be associated with virtually any of the business classes and other BMPs in this manual.

Discussion of Risk: During a car wash, dirty water containing soap and detergents, residue from exhaust gas, motor oils, paint, gasoline, sediment, and other debris washes off the cars and flows to nearby storm drains. Water that flows into dry wells flows though soil and into the Missoula Valley Aquifer. Car wash water that flows past the parking lot and into the road can enter storm drains that flow directly to our local rivers.

Minimum BMPs:

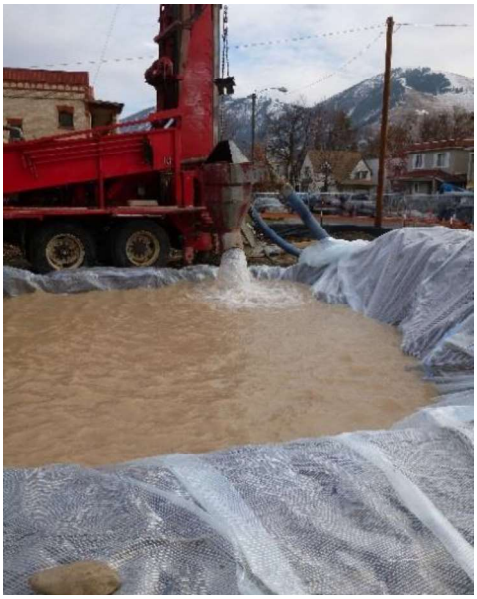
1. Wastewater/Stormwater:

- If a permanent facility, connect to public sewer and use an appropriate pretreatment system (e.g., an oil-water separator) as required by the Missoula and Lolo Wastewater Treatment Plants.
- Water generated from rinsing landscaping equipment typically contains grass and debris that requires filtration/separation prior to entry into the sanitary sewer. Consult the Wastewater Treatment Plant prior to planning any sanitary discharge. Landscaping equipment can also be rinsed over a vegetated/grassy area or where the rinse water drains to a vegetated/grassy area to allow for infiltration.
- Wash water from mobile steam machines should be disposed of through a sanitary sewer or licensed waste hauler. Use an appropriate pretreatment system (e.g., an oil-water separator) as required by the Missoula and Lolo Wastewater Treatment Plants. Consult the Wastewater Treatment Plant prior to planning any sanitary discharge.
- When public sanitary sewer is unavailable, collect and dispose of the wastewater in a lined lagoon.
    - The lagoon must be fenced to prevent access by the public and animals.
    - The system must be designed by a civil engineer licensed in Montana and the design must be approved by the Department prior to use.
    - The wastewater must be pre-treated through an oil/water separator prior to discharge to the lagoon.
    - The lagoon must be lined with an impermeable liner and must be capable of containing and treating the entire volume of wastewater produced at the facility.
    - The design life of the system must be specified by the engineer.
    - The system will not be allowed to operate beyond the design life specified by the Engineer, unless and until its performance is evaluated by a civil engineer and certified by the engineer as meeting the original performance criteria.
    - The lagoon and oil/water separator must be regularly maintained, which includes removal and proper disposal of all sediments, oils, and/ or sludge which accumulates in the system.
    - Records of any maintenance performed, as well as waste disposal manifests must be kept and be accessible to regulatory officials.
- Recycle wash water. There are numerous products on the market to recycle wash water.

Uncontaminated water generated from rinsing (no detergents) vehicles on display at vehicle dealerships is considered an allowable non-stormwater discharge and may be disposed of through on-site dry wells, swales or otherwise infiltrated onsite.

2.1.12 Well Development/Utility Excavation

The construction of irrigation, water supply, geothermal, and other wells may produce large volumes of water during the drilling process. Utility work involving horizontal drilling can also produce drilling mud waste and sediment-laden water. BMPs will depend upon the quantity of water generated, soil types, proximity to stormwater inlets or surface water, time of year, terrain, etc.



Sediment basin during well development. The rate of filling of this basin exceeded sedimentation. Filtration was necessary prior to discharge to the stormwater system.

Discussion of Risk: The water produced from the well-drilling activity is often laden with rock cuttings, silts, clays, etc. referred to as suspended solids. The suspended solids can be substantially increased if drilling water is allowed to flow overland and erode the ground surface. The transport of suspended solids is considered a pollution source and may adversely impact surface water, wetlands, stormwater basins, etc. Sediment leaving the site can blanket the stream bottom and smother fish eggs, macroinvertebrates, and aquatic plants. The influx of turbid water may also lead to an increase in water temperature and decrease in dissolved oxygen which further stresses the aquatic community.

Minimum BMPs for sediment reduction:

1. Standard Operating Procedures/Maintenance:

- Adjust drilling processes to reduce sediment load to development water including using lowered drilling rig air pressure, drill phasing, and reducing drill bit size.
- Trap sediment laden water with a Geotech fabric lined trench, tanks or basin. This allows time for sediment to settle out before discharge.
- Utilize sediment filtration bags to remove fine sediment from the drill rig or settling pond as water flows through.
- Limit pressure of uncontaminated development water when discharging to a piped stormwater system to avoid scouring the pipes and displacing sediment.

2. Wastewater/Stormwater:

- Uncontaminated pumped groundwater may enter stormwater systems.
- Contaminated groundwater (with sediment or other contaminants) may require a MPDES permit prior to discharge to groundwater or surface water.
- Disposal of untreated well development water or drill slurries may be discharged to sanitary sewer with permission from the applicable Wastewater Treatment Plant.

2.1.13 Other Businesses

There are a number of businesses that handle fuels, oil-based paints, solvents, and other chemicals at levels below those requiring a pollution prevention permit or secondary containment or perform activities that generate waste (e.g. auto-body shops, small engine repair shops, full service equipment rental shops, recreational vehicle/boat maintenance, art studios, landscapers, etc.).

Discussion of Risks: Medium to small businesses in this class have been known to have difficulty getting waste hauler contracts due to economic inefficiencies for the hauler. Equipment/vehicle washing wastewater which carries oil, fuel, pesticide, and cleaning agents is often illegally discharged to the ground surface. Oil-water separators that serve wash pads frequently become overwhelmed with dirt and oil. Solvent, solvent wastes, and other low-volume chemicals can be highly toxic and mobile in the environment. Spills on shop floors or during transport can carry contaminants to the ground surface or nearby dry wells.



Minimum BMPs:

1. Containment:

- Label and secondarily contain volumes of regulated substances at threshold levels or more as described on pages 26-30.
- Store portable containers (drums, buckets, etc.) of liquid or dry chemicals, waste fluids, solvents, etc. inside shop or other area protected from run-on and run-off precipitation (covered with a tarp on a pallet, under an eave with ground sloped to a swale, etc.)
- Place tight-fitting lids on all containers when not in use.
- If stored outdoors, choose container storage locations where a spill would not flow to a storm conveyance, storm drain, surface waters, or ground water.

2. Standard Operating Procedures:

- Inspect all incoming vehicles, parts, and equipment that are stored temporarily outside for leaks, use drip pans, provide absorbent materials, clean up spills promptly, provide for proper disposal of waste oil, fuel, and hazardous waste, and do not pour/convey wash water, liquid waste, or other pollutants into stormwater systems, dry wells, or onto the ground.
- Transfer waste fluids to closed containers, drums, or tanks promptly and do leave in open buckets or pans outdoors.
- Collect antifreeze from RV/boat plumbing for waste disposal when flushing is necessary.
- Periodically inspect containers of regulated materials and waste fluids not placed in containment for leaks and replace when not in good condition, leaking, or otherwise deteriorating.
- Launder or dispose of rags properly.

3. Wastewater/Stormwater:

- All wastewater from vehicle/equipment washing must go to an approved wastewater disposal system (as described on pg 23).

Additional BMPs

- Secondary containment of other products such as solvents that are in containers of 5 gallons or less is encouraged especially if there is a frequent transfer of product into and out of the container.
- Local Fire Code may apply for storage of flammables indoors, near buildings, under roofs, etc.

2.2 BMP Components

2.2.1 Secondary Containment

Secondary containment systems provide an essential line of defense in the event of a failure of the primary containment, such as a bulk storage tote, portable containers, and piping. Proper secondary containment construction, sizing, siting, and maintenance are essential to preventing releases that could endanger our groundwater and surface water.

Minimum BMPs for all Secondary Containment systems:

- Construct secondary containment to be non-reactive and resistant to the materials contained.
- Design to prevent infiltration of contained substance into the ground in the event of a release from the primary storage container and associated piping and manifolds.
- Locate containment in an area that isolates the contained substance from soils, industrial or commercial injection wells, floor drains, or any other potential surface and groundwater entry point.
- Design to contain at least 110% of the volume of the largest container, or 10% of the aggregate volume of all containers, whichever is greater.
- If located out-of-doors, incorporate overhead protection or other BMPs to prevent overtopping of contained substance from the containment structure due to precipitation accumulation.

Construction: Materials used in the construction of secondary containment must be chemically compatible with the product being stored. Containers shall be constructed of materials of sufficient thickness and composition so as not to be weakened as a result of contact with accumulated stormwater or discharged product.

Siting and Capacity: Maintaining effective secondary containment outdoors is a challenge when uncovered. Water and debris can enter the area and allow a spill to crest the secondary containment berm. Water can also freeze which then reduces the volume of the secondary containment and can compromise/destabilize the berm. To reduce or eliminate the introduction of precipitation into a secondary containment system, design engineering and procedures should be in place to maintain capacity of the secondary containment (e.g. roof/canopy, draining, pumping, increased sizing and inspection schedule, etc). Roofing may not be effective if the footprint is small and the site is subject to wind. Runoff from the roof should not add to collected water in designated spill containment areas such as a fueling pad. Protecting the containment structure from collision by vehicles or vandalism are other considerations for outdoor storage.

When chemicals are stored indoors, the building may serve as the secondary containment if doorways/openings contain a berm/lip to prevent liquid from escaping, incompatible chemicals do not share the same containment area, and the total cubic volume meets the 110% capacity requirements of the Code. For storage of smaller volumes some buildings can still meet the secondary containment requirements if the floor does not slope to drain to a bay door or other opening.

Operation and Maintenance: Secondary containment systems require regular service and maintenance. To ensure the system continues to function as designed, it is important to regularly inspect and test the containment structure, manage the accumulation of spills, leaks, and stormwater and to pro-actively train employees in these systems.

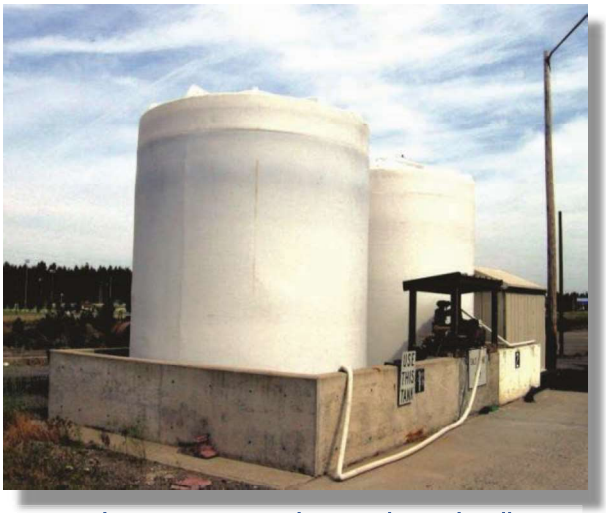
- Leaking Product and Accumulated Spills: Containment systems should be kept relatively free from releases. Accumulated product should be re-used if possible. In no case should any accumulation compromise the containment capacity. If the capacity is being compromised, the accumulation should be evacuated to buckets or drums and stored in containment pending shipment and disposal. Often it is convenient and practical to have your hazardous waste hauler evacuate your containment systems when they come to collect other waste streams and containers.

- Containment Integrity & Hydrostatic Testing : Hydrostatic testing of containment systems is necessary under certain circumstances. First, systems fabricated onsite without engineering design should be hydrostatically tested prior to use. This simply involves filling the containment to the required capacity with water and observing for leaks and change in the water level. Other systems that use liners or underground vaults also need occasional hydrostatic testing. The time of observation should be at least 24 hours for systems ≤ 600 gallons and 48 hours for larger systems. Contaminated water must be disposed of by a licensed s waste hauler approved for that particular waste type. Uncontaminated water may be disposed of onsite through stormwater management facilities, an approved wastewater treatment system connection or recycled.

- Stormwater Collected in Secondary Containment Systems : When stormwater is collected in containment systems, it must be evaluated for contaminants prior to on-site disposal. Visual evaluation may be sufficient for products that cause a sheen on the stormwater. Other contaminants such as inorganic ions can be measured with do-it-yourself colorimetric kits (like testing for chlorine in a pool). Otherwise, a sample may need to be submitted to a laboratory. When contaminants are present in a concentration greater than Montana state water quality standards (DEQ-7), water must be managed as wastewater or hazardous waste, as appropriate. This contaminated water may not be disposed of to the surface or subsurface of the ground

2.2.1.1 Concrete Box, Curb, Or Recessed Slab

Description: An open box, basin, or recessed floor typically designed to contain large volumes of critical materials. Using recessed floors or stem-walls, this design concept can provide broad area containment for an entire room or building footprint.



Concrete box containment. Photo credit: Panhandle Health District

Design Criteria & Features: These components typically require an engineered design to consider specific criteria such as topographic grades, compressive strength, permeability, and other quality control measures for the concrete work. Other criteria include:

- Walls and curbs should be part of a mono-pour with the slab, or floor, whenever possible. If a cold joint is used instead, then chemical-resistant water stops must be used in the joint.
- Epoxies or other industrial sealants must be used when chemical resistance or additional sealing is needed.
- Drain outlets should be clearly marked with valve status obvious and consistent with a handle or flag direction.
- Containment vaults may be required to facilitate monitoring and recovery of chemical or stormwater.

Operation & Maintenance: Since many of these applications are outdoors, stormwater management considerations should be made. Diligent maintenance of cracks with appropriate chemical resistant caulk and grout prevents leaks and helps keep cracks from getting worse. Grinding and cleaning of the crack surface prior to sealing is critical. Self-leveling polyurethane caulks work best in horizontal applications. Drain valves should be kept closed and checked on a regular basis through a posted/recorded self-inspection process.

2.2.1.2 Double Walled Tank

Description: A tank within a tank, the inner tank being separated from the outer by a space, or interstice, that provides at least 110% containment for the inner tank.

Design Criteria & Features: The interstitial space must be easily monitored, preferably with a visible float gauge or electronic gauge. Dip sticking is acceptable on smaller tanks (≤600 gallons). If the tank is double walled such that a breach of the internal layer is protected by the outer wall, the tank is in compliance. Keep in mind that double-walled tanks do not protect surrounding soil from overtopping, spills during filling or emptying, or from an outside breach. Therefore, a secondary containment area outside of an above ground double-walled tank is a better practice.

Operation & Maintenance: The interstitial space must be monitored as part of a regular self-inspection process. Associated piping joints, valves, and nozzles should be kept tight and weep-free.

2.2.1.3 Fabricated Steel Trough

Description: A welded steel box or pan into which drums or smaller tanks (usually < 600 gallons) are placed. For larger areas, an alternative design using angle-iron bolted and glued or gasketed to a concrete floor may be used.



Steel containment for motor oils. Photo credit: Panhandle Health District

Design Criteria & Features: The gauge of the steel must be sufficient to withstand the activities and abuse that the box or pan will receive. Prior to use, the welds, glue, or gasket must be tested by filling the containment with water and checking for leaks. An inspector may request to witness the test. Depending on the size and number of containers being stored, the walls on a box type of containment may need to be quite high in order to satisfy the 110% (or 10% aggregate) containment criterion. This should be considered carefully prior to construction especially if it will be necessary to move containers into and out of the containment. Glue or gaskets used in a bolted angle-iron application must be chemically compatible with the critical material stored.

Operation & Maintenance: These containment devices may need to be evacuated or pumped out periodically. If the facility is not equipped to perform pumping and cleaning of the containment, your hazardous waste hauler should be able to perform that service for you.

2.2.1.4 Piping, Coupling, & Valve Containment

Description: A trench, chase, pan, or second pipe wall designed to collect and contain release from pipes, couplings, or valves. Containment should be provided for these components whenever they are located outside of a main containment area or in the ground. (Does not apply to fuel piping compliant with UST rules regarding monitoring and cathodic protection.)

Design Criteria & Features: Whenever possible, piping and onload/off-load couplings should be located over the containment device used for containing the bulk material being conveyed. These applications are usually very site specific. General criteria are as follows:



Fabricated catch tray. Photo credit: Panhandle Health District

- Trenches, chases, pans and open second walls (non-pressurized double walls) should drain back to a main containment or a containment vault (this will increase the amount of stormwater collected, if exposed).
- The method used should account for and contain any feasible pressurized fluid trajectory.
- Closed second pipe walls (pressurized interstitial space) should be provided with a gauge, alarm, or other means of detecting a release.

Operation & Maintenance: Operation and maintenance will depend on the specific method used but may include visual inspection of races and vaults, checking leak detection devices, and repairing cracks. Releases should be put back into production or disposed of in accordance with law.

2.2.1.5 Prefabricated Containment

Description: Typically, a polyethylene, rectangular, shallow box covered with a grate on which drums sit. These devices are often referred to as a containment pallet. They are available in any number of sizes and volumes, usually with fork-lift access. Some have optional polyethylene covers to allow placement outside. Containment pallets are also available for tote containers.

Design Criteria & Features: These devices are not always designed to meet the 110% containment volume criterion. Most containment pallets have fork-lift entry slots for ease of relocation. Ramps can be purchased or constructed to allow access for wheeled drum trucks. Check the manufacturer's specifications on compatibility between the containment material and the chemical you are storing.



Prefabricated drum containment. Photo credit: Panhandle Health District

Operation and Maintenance: These containment devices need to be evacuated or pumped out periodically when product transfer in or out of the drums is common. If the facility is not equipped to perform pumping and cleaning of the containment, your hazardous waste hauler should be able to perform that service for you. Some devices offer integral drain plugs which simplify evacuation, but plugs are often known to leak or be left open inadvertently. Replace containment devices that have been damaged.

2.2.1.6 Temporary Systems

Description: Typically comprised of a prefabricated collapsible unit, or a geomembrane, these systems are usually approved only for construction projects or other temporary uses.

Design Criteria & Features: Prefabricated system application must meet the intended use as specified by the manufacturer. Geomembrane systems should meet all criteria described in the Membrane Liner component on page 39.

Operation and Maintenance: Establish protocols for handling spills and stormwater. Inspect systems regularly for damage and product or stormwater accumulation. Collapsible, drive-on containment systems will need immediate response protocol for a release within the containment.



Example of temporary storage. Photo credit: Panhandle Health District

2.2.2 Drainage and Treatment Systems

2.2.2.1 Storm Drains vs. Sanitary Sewers

Storm drains and sanitary sewers have two distinct functions. It is important to understand the difference:



Storm Drains are intended to collect and transport runoff from rainfall. Storm drain systems do not remove pollutants from water before it is discharged into ground water, rivers and streams. These are typically the drains found in streets and parking lots. Dry wells (also referred to as dry-sumps, stormwater injection wells, Class V wells, or storm sumps) are the most common, and deliver stormwater into a ~8' deep hole in the ground lined with concrete and composed of a gravel bottom. Some storm drains have identical looking inlets but are piped to an outfall which discharges into a water body like a river or stream.



Sanitary Sewers collect wastewater from indoor plumbing such as toilets, sinks, washing machines, and other drains and take it to a wastewater treatment plant. The treatment plant removes pollutants from wastewater before it is discharged to the river.

2.2.2.2 Containment Vault

Description: Containment vaults are watertight structures designed for spill containment. They are typically used at facilities where spills are not permitted to enter an oil-water separator for discharge to the wastewater treatment plant or where a connection to sanitary sewer is unavailable.

Design Criteria & Features:

- Vaults must be sized appropriately for the expected spill volumes.
- Containment vaults must be installed with an audible/visual alarm set at 75% capacity. Clean and test the alarms, floats and sensors at the time of pumping.
- Containment vaults located under a facility must be vented and have a water seal using a sanitary T to prevent vapors from entering the building.

Operation & Maintenance:

- Containment vaults must be inspected and maintained regularly to remain effective.
- At a minimum, perform annual hydrostatic testing of vault to ensure all seams are sealed and no leaks are present.
- Wastes must be hauled by a qualified hazardous waste hauler to an approved destination. Keep all receipts/records onsite for no less than 3 years.

2.2.2.3 *Fueling Pad*

Description: A concrete pad onto which vehicles park while refueling. The pad is sloped to one or more trench drains or catch basins. Trench drains and catch basins discharge to a containment vault or to an oil-water separator which then discharges to a properly maintained, irrigated vegetated swale or retention pond.



Fueling pad with elevated perimeter to exclude run-on of stormwater. Photo credit: Panhandle Health District

Design Criteria & Features: Fueling pads and canopies at fueling facilities must be designed in accordance with City of Missoula design standards and prevent stormwater run-on and run-off. Additionally:

- Covered fueling pads (canopies) minimize transport of petroleum products to stormwater. If a canopy is used, canopy roof drains must bypass the pad and any containment vaults or oil-water separators.
- Fueling hoses cannot extend past the canopy if a drive-off could allow fuel to exit the fueling pad and enter nearby storm drains.
- Fueling pads must incorporate trench drains or other drainage system to deliver fuel spills to containment vaults or oil-water separators. Proper grades are critical to ensure flows reach catch basins and separators.
- Containment vaults must be sized appropriately to contain potential spills. A 500-gallon minimum capacity applies to fueling islands.
- Grades, rolled curbs, or other drainage diversions must be used to exclude stormwater from outside the footprint of the pad.
- Catch basins and rolled curbs should be part of a mono-pour with the pad. If a cold joint is used, fuel resistant water stops must be used in the joint. Expansion cracks should be filled with a self-leveling polyurethane caulk.
- Outlets of catch basins should be significantly above the bottom of the basin to allow for sludge accumulation. A screen, inverted elbow, or 'T' should be placed on the outlet to minimize floating debris entering the separator. The gasket or grout seal around the outlet must be watertight.

Operation & Maintenance: Once the pad is constructed, its grade should be tested by pouring water in representative locations of the pad to verify that all flows go to collection. Maintain cracks with appropriate chemical-resistant caulk or grout as necessary to maintain the integrity of the containment. Self-leveling polyurethane caulks work best in horizontal crack sealing applications. Clean trench drains and catch basins frequently to keep them clear of sediment and debris. Sludge from catch basins should be handled as per the oil-water separator section in this manual (pg. 33).

2.2.2.4 Oil-Water Separator

Description: Oil-water separators are designed to remove and contain floatable contaminants such as oil, gasoline, and grease from a wastewater or stormwater stream. As the waste stream passes slowly through the separator, these lighter contaminants can float to the surface and become contained by the 'T' outlets and absorbent pillows. Most often separators are used in fuel island applications for pretreatment prior to swale discharge or pretreatment of floor-drain wastes prior to discharge to public sanitary sewer.

Design Criteria & Features:

- There are two basic types of oil-water separators, conventional and coalescing plate interceptors (CPIs). Conventional separators typically feature a two-chambered 1,000-gallon tank with inlet and outlet 'T's'. This design relies upon gravity, the physical characteristics of oil and sediments, and proper sizing and other design parameters to ensure effective pollutant removal. CPI separators contain closely-spaced plates to increase the removal efficiency of oils and grease. All separators must have watertight joints. Refer to the City of Missoula standard drawings for additional detail.
- The separation of oil from water is most effective under conditions of tranquil flow and sufficient retention times. Design the separator to minimize flow rate through the separator to avoid resuspension of oil, scouring and resuspension of sediment, and overwhelming the unit's ability to treat the water.
- Oil-water separators are not effective for treating stormwater at high flows. On sites where stormwater may enter the separator, use of other stormwater BMPs in series can decrease flows and improve efficiency. For example, in some situations a bypass manhole with baffle and trash rack can prevent larger storm events from overwhelming the separator (diagram on pg. 36)

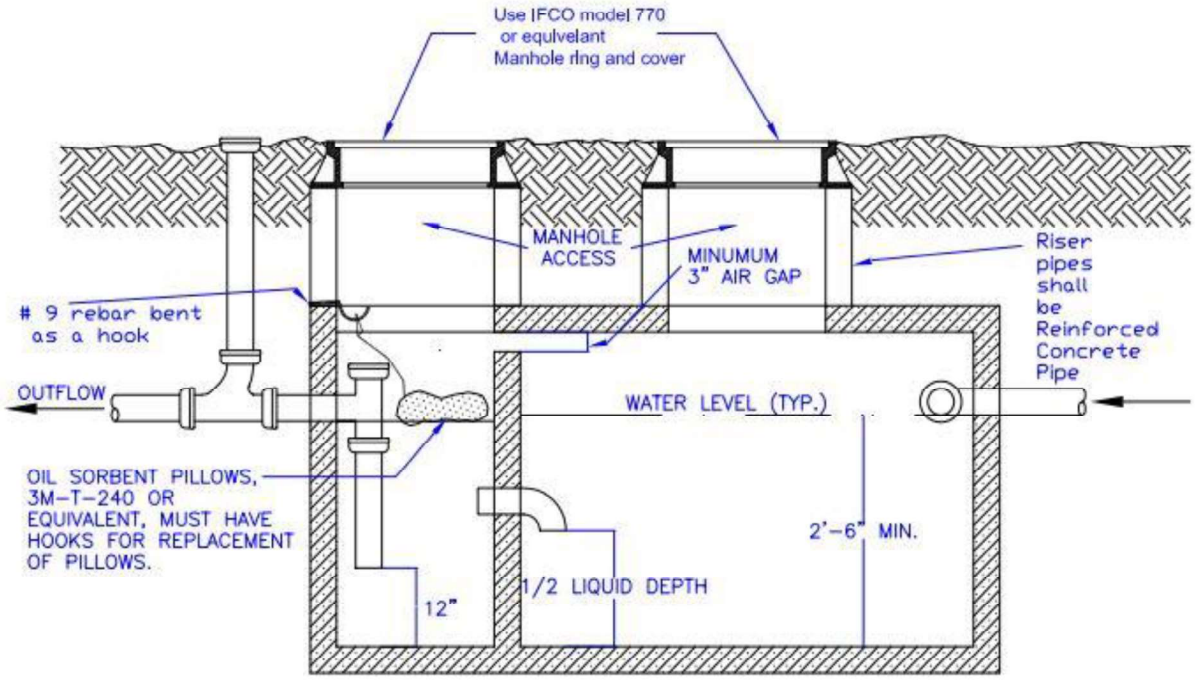


Diagram of a conventional oil-water separator

Operation & Maintenance:

- Oil-water separators must be inspected and maintained regularly to remain effective. Inspect the tank at a minimum of once every 3 months (quarterly). Keep all inspection, maintenance, and hauling receipts/records onsite for no less than 3 years.
- Absorbent pillows placed inside chambers reduce contaminated levels of hydrocarbons in water. These should be replaced as needed when saturated.
- Inspect the unit frequently to assess the oil and sludge layers. Determine the oil/water interface using a gauge stick and water finding paste. The separator should be pumped when ¼ inch or more of material (oil, fuel) can be detected on top of the water and/or when sludge accumulation is 25% of the total volume. Sludge depth can be determined by using a measuring stick and marking when contact is made with top layer of sludge and again when stick reaches the bottom of the tank. An oil level sensor can be used in place of manual detection.
- Any standing water removed should be replaced with clean water to prevent oil carry-over through the outlet.
- Wastes must be hauled by a qualified hazardous waste hauler to an approved destination. Petroleum products can adhere to suspended solids and sediment, but some sludges may not qualify as hazardous waste. Toxicity characteristic leaching procedure (TCLP) analysis, paint filter test, or total petroleum hydrocarbon (TPH) testing may be required prior to disposal at a solid waste management facility.
- The destination of discharges from oil-water separators are dependent on the business type, application, quantity and type of waste received. See applicable business type section for approved discharge information.

2.2.2.5 On/Offload Pad

Description: A concrete pad sloped to a drain that passes material spilled during bulk transfer into a containment area; usually a concrete box type containment or an approved containment vault.

Design Criteria & Features: This component typically requires an engineered design to consider critical site-specific criteria such as topographic grades, compressive strength, permeability, and other quality control measures for the concrete work. Other criteria include:

- Catch basins and curbs should be part of a mono-pour with the slab, or floor, whenever possible.
- If a cold joint is used instead, then chemical resistant water stops must be used in the joint.
- The footprint of the pad should accommodate any feasible fluid release trajectory.
- Epoxies or other industrial sealants must be used when chemical resistance or additional sealing is needed.
- Grades on the pad must be accurate to channel all spilled product to containment. Grades outside the pad footprint must preclude any surface stormwater from flowing onto the pad.
- A receiving containment area must be designed to accommodate the excess stormwater from this pad and still provide the containment volume required for the material stored; For design purposes, assume at least one week's accumulation during peak seasonal precipitation.

Operation & Maintenance: Since this application is typically outside, stormwater management considerations should be made. Most concrete work is subject to cracking over time. Diligent maintenance of cracks with appropriate chemical resistant caulk and grout is necessary in order to maintain the integrity of the containment. Cleaning and preparation of the crack surface prior to sealing is critical. Self-leveling polyurethane caulks work best in horizontal applications. Catch basins and drains should be checked/cleaned on a regular basis through a posted/recorded self-inspection process.

2.2.2.6 Tank Fueling Area

Description: The area surrounding petroleum underground storage tank filling ports is subject to releases of petroleum products during tank fueling. Protecting water resources down-gradient of these areas can be challenging due to existing grading, lack of vegetated swale options, and the presence of stormwater flows. Dry wells should not be located directly down-gradient of the tank ports.

Design Criteria & Features:



This tank fueling area is graded to drain to a vegetated swale that incorporates a curb cut and beehive grate.

- Drainage may be designed to direct stormwater and releases from tank fueling areas to vegetated swales.
- Spills may be directed to oil-water separators or catch chambers that discharge to vegetated swales or dry wells.
- If discharging to a dry well from the separator or catch chamber, a minimum separation of 20' must exist between bottom of dry well and groundwater.
- Oil-water separators and catch chambers are not effective for treating stormwater at high flows. Design the separator or catch chamber to minimize the flow rate to avoid resuspension of oil, scouring and resuspension of sediment, and overwhelming the unit's ability to treat the water and retain contaminants.
- Sizing an oil-water separator based on flow rate should be done using the Rational Method: $Q = CiA$ (Q = flow rate in CFS, C = rational coefficient, i = rainfall intensity (in/hr), and A = area in acres). Intensity should be based on the 2-year 5-minute storm.
- On sites where stormwater may enter the separator, use of other stormwater BMPs in series can decrease flows and improve efficiency. For example, in some situations a bypass manhole with baffle and trash rack can prevent larger storm events from overwhelming the separator.

Operation & Maintenance:

- The tank fueling area release BMPs (swales, oil-water separators, etc.) must be inspected and maintained regularly to ensure effective function.

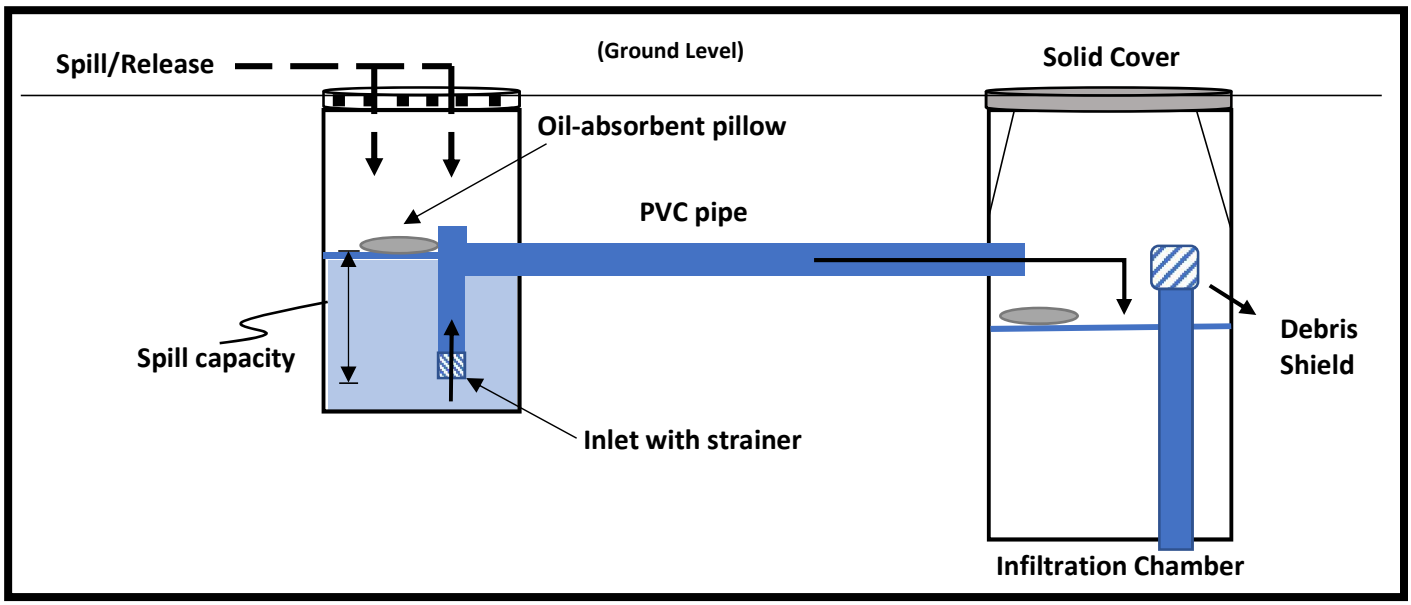
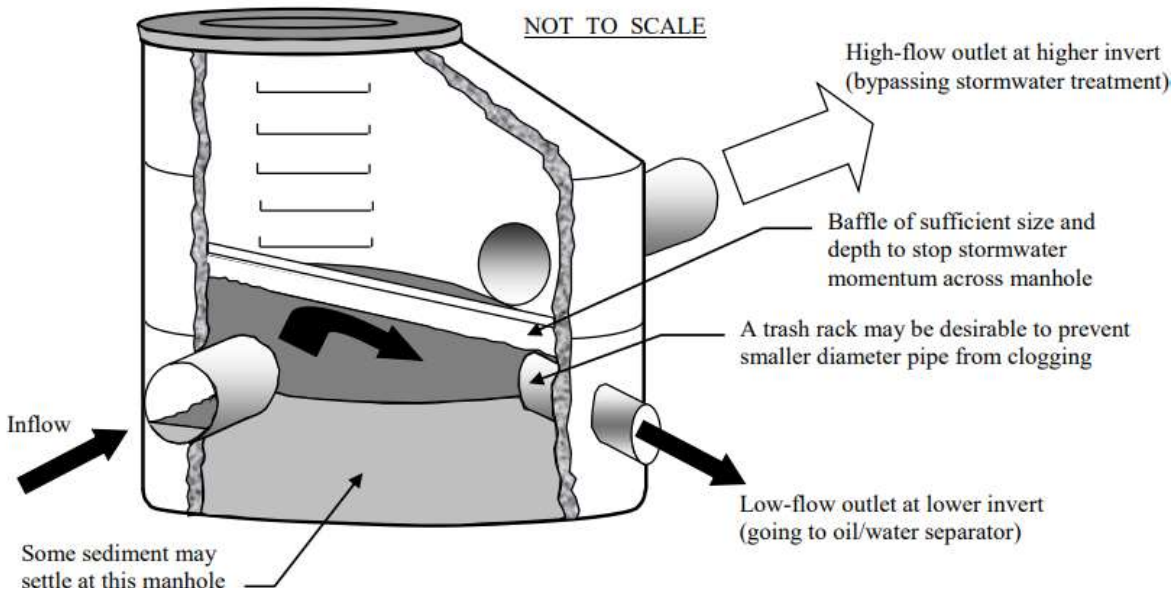


Diagram of a potential drainage system for a tank fueling area. An oil-water separator or appropriately sized concrete catch chamber connected to an infiltration chamber or dry well allows for increased retention time in chamber and settling of solids. Stormwater and fuel releases contained in chamber pass through oil-absorbent prior to entering infiltration chamber or dry well.



A stormwater bypass manhole with baffle. This BMP allows for stormwater from high-flow events to bypass the oil-water separator. Maintenance of this type of BMP is required to ensure effective function of the system (sludge removal, oil removed, clogs removed, etc.). Diagram credit: City of Knoxville BMP Manual.

2.2.2.7 Vegetated Filtration - Swales and other Low Impact Development systems

Description: A vegetated swale is a broad, shallow vegetative-lined area, depression, or channel designed to collect and treat contaminants in stormwater runoff through sedimentation, infiltration, and filtration. There are many subtypes of this BMP that differ in ability to filter or retain stormwater (biofiltration swales, infiltration basins, bioretention basins, etc.). For example, infiltration basins use the natural filtering ability of soils to remove pollutants in stormwater runoff. Stormwater runoff is retained in the basin with the only means of emptying being through evapotranspiration and infiltration. Infiltration basins have high pollutant removal efficiencies and can help recharge groundwater.

Design Criteria & Features: Flow-based treatment systems should be sized to address site-specific runoff treatment flow rates. Final stormwater treatment and disposal components, such as swales, are discussed in the Montana Post-Construction Stormwater BMP Design Guidance Manual.



Parking lot bio swale design. "Conservation Design Forum Project: Fountain View Recreation Center, Carol Stream, IL" by Center for Neighborhood Technology is licensed with CC BY-SA 2.0. To view a copy of this license, visit *https://creativecommons.org/licenses/by-sa/2.0/*

2.2.3 Equipment

2.2.3.1 Absorbents

Description: Floor-dry, kitty-litter, oil-absorbent pads, work well to absorb liquid hydrocarbons from surfaces. Kitty litter can be swept up with a stiff bristled broom prior to disposal. Absorbent pads can be lifted after oils have soaked into the fabric. Absorbents saturated with hydrocarbons must be disposed of properly.

2.2.3.2 Booms Or Oil-Socks

Description: Oil-socks and booms can be placed around storm drains and conveyances to selectively absorb hydrocarbons. They can also be effective at preventing debris from entering the storm drain. Oil-socks or booms saturated with hydrocarbons must be disposed of properly.



Oil-absorbent pads used on fuel spill in Missoula.



Spill kit containing absorbent pads and booms. Photo credit: awarehousefull.com



Example of granular/dry absorbent. Photo credit: Oildri.com

2.2.3.3 Membrane Liner

Description: A flexible polymeric geomembrane usually fabricated from polyethylene (HDPE or LDPE) or polyvinyl chloride (PVC). Typically lain in an excavated depression or the edges are placed over earthen berms or eco blocks to create a basin. Due to their shortcomings, liners are typically used to contain less hazardous materials. They are useful for covering extremely large areas, as containment under buildings, or as temporary containment.



Technician seaming a 'boot' in a liner perforation. Photo credit: Panhandle Health District

Design Criteria & Features:
Minimum accepted thickness for a geomembrane liner used for containment is 30 mils for PVC liners and 60 mils for HDPE liners, or must have engineered installation criteria that warrantee a minimum 10 year life for the particular application. Liners must be placed on a carefully prepared base material that will protect it from damage when weight is applied. Grades of the base should include a containment vault area that facilitates monitoring and recovery of stormwater or released chemical. Grades should be set to minimize standing fluid when the vault is empty.

Perforations and seams must be booted and sealed.
Covering a liner with a geotextile, sand, gravel, or soil may prolong its life (check with the manufacturer).
When covered with sand/gravel or soil, an inspection port must be inserted into the vault. The port must accommodate a suction hose for the evacuation of stormwater or released material. Prior to use, the rim elevation must be clearly marked in the inspection vault by filling the liner with water until a static level is reached.

Operation & Maintenance: Liners have limited lifespan, particularly if exposed to air and sun. Leaks may result from poor installation controls, physical wear & tear, and chemical degradation over time. The manufacturer should declare a useful or warranted life span in the specifications for the liner. If the liner has exceeded that lifespan, then it should be replaced or hydrostatically tested on an annual basis. Self-inspections should note if and how much stormwater is collected. A hydrostatic test should also be performed If stormwater is not accumulating as it should.

2.2.3.4 Oil-Stop Valve (OSV)

Description: This device consists of a passive float valve configuration where the float is more dense than oil/fuel but less dense than water. This allows water to pass through the system, but the float valve sinks and closes in the presence of a given amount of oil/fuel. This component is considered a necessary part of a BMP system for bulk fuel containment where stormwater is allowed to flow through the containment.

Design Criteria & Features: The full level of the tank or pit containing an OSV must be below the main containment level. Discharge from this device must pass through an oil-water separator and on to a vegetated swale.

Operation & Maintenance: Oil or fuel must be evacuated from the pit periodically and disposed of as hazardous waste.

2.2.3.5 Sediment Filters

Description: Sediment filter socks (e.g. bio-bags, rock socks) may be placed upgradient and around storm drains as a protective barrier against debris and sediment. A "Dandy Sack" placed under the storm drain grate can also filter out large sediment. To remove silt and sand use 200 mesh screen or smaller.



Dandy Sack placed within storm drain.



Filter sock for catching sediment.
Photo credit: newpig.com



A good candidate drain for an oil-absorbent sock.

2.2.3.6 Stormdrain Covers And Protection

Description: These devices are placed on top of a storm drain and create a seal to prevent water from entering. Because storm drains are in low lying areas, water will pool at the seal location. For sites with relatively smooth surfaces, manufactured berms may be placed around a storm drain to allow water to pool as well. Pooled water can then be collected with a sump-pump or shop vac.



Storm drain cover



Adhesive spill berm. Photo credit: newpig.com

APPENDIX

AGENCY CONTACTS

Missoula Valley Water Quality District
301 W Alder
Missoula MT 59802
406-258-4890
www.missoulacounty.us/wqd

Montana Department of Environmental Quality (DEQ)
Water Protection Bureau – MPDES permitting, groundwater discharge, non-point source pollution, TMDLs, technical assistance etc.
www.deq.nt.gov/Water
406 444-5546

City of Missoula Wastewater Treatment Plant
406-552-6600

City of Lolo Water and Sewer District
405-273-2733

City of Missoula Building Department – Building permits, standard design drawings, SWPPP compliance, etc.
552-6630

Missoula County Public Works – Building permits and stormwater infrastructure in Missoula County
406-258-3701

City of Missoula Stormwater Utility – Can help locate and identify types of storm drains near your facility
406-552-6364

Hazardous Waste/Oily Waste Haulers and Recycling
Tri State Waste Recyclers – 406-274-4080
Emerald Services – 406-543-7911
Safety Kleen – 509-928-8353
Nash Enterprises – 406-721-1773

ALTERNATIVE BEST MANAGEMENT PRACTICES (BMP) REQUEST

THIS FORM is to be used to request the use of an alternative BMP to one or more of the minimum BMP requirements or for a major modification to one of the required BMPs as stated in the MVWQD BMP Manual. It can be used by those who already have BMPs on their site that may differ from the requirements, or in cases where implementation of one or more of the required BMPs is not the best or preferred solution.

AFTER RECEIVING THIS REQUEST, the Department will: (1) Review the request; (2) Notify the applicant the request was received and when a decision will be made; and (3) Notify the applicant in writing of approval or denial, and an explanation of the decision.

INSTRUCTIONS:

1. Answer each question on this form as briefly as possible while still conveying relevant information.
2. Additional pages can be used if necessary.
3. Return this request to: Missoula Valley Water Quality District
   301 W Alder
   Missoula MT 59802

TO BE COMPLETED BY APPLICANT:

Applicant's name:_____ Date: _____

Owner name: _____

Facility name:_____

Facility address:_____

_____

Email:_____

Phone number: _____

1. Type of business/facility (brief description)
2. Specific activity or component under consideration for BMP:
3. What the Manual requires:
4. Why this will not work at facility:
5. Proposed Alternative (feel free to attach additional information):

DEFINED TERMS

Aboveground Storage Tank (AST) - A tank that is used to contain an accumulation of a Regulated Substance, and the volume of which is more than 90% above the surface of the ground.

Allowable Non-Stormwater Discharge - Any one of the water-generating activities listed in Missoula Municipal Code 13.27.200 (B).

What are examples of allowable non-stormwater discharges?

Any one of the following water-generating activities (with conditions): Irrigation water; irrigation ditch return flows; landscape irrigation; permitted diverted stream flows; rising groundwater; rising natural floodwaters; uncontaminated groundwater infiltration to separate storm sewers; uncontaminated pumped groundwater; discharges from potable water sources; foundation drains; air-conditioning condensation; springs; water from crawl space or basement pumps; footing drains; lawn watering, residential car washing; residential dechlorinated swimming pool and hot tub discharges; residential street washing; charity or other non-commercial car washes, flows from riparian habitats and wetlands; uncontaminated water from irrigation system meter pits; flows from emergency firefighting activities; fire hydrant flushing; water line flushing; and residential gardening or landscaping activities, municipally owned dechlorinated swimming pool discharges, municipal water tank draining, and water from street washing (including sidewalks and medians) that is conducted by City staff or under contract with the City.

Aquifer - A water-bearing, subsurface formation capable of yielding sufficient quantities of water for beneficial use.

Aquifer Protection Area - The areas within the City of Missoula and within five miles outside the Missoula city limits which are within the boundaries of the Missoula Valley Water Quality District.

Best Management Practices (BMPs) – Control measures taken to mitigate potential contamination of soil, groundwater and surface water and described in detail in the Department's Best Management Practices for Pollution Prevention Manual. For businesses or activities for which local BMPs do not yet exist, national, regional, or appliable industry standard BMPs apply.

Board - The Missoula Valley Water Quality District Board.

Bulk Petroleum Storage - A facility used for storage of petroleum products for marketing or wholesale distribution that has a total bulk storage capacity of 50,000 gallons or more.

Carbon Absorption/Evaporation Technology: A treatment technology which removes chlorinated solvents from a water-solvent mixture.

Chemical Manufacturing Facility - A facility having a North American Industry Classification Code (NAICS Code) between 325180 and 325998 which handles Regulated Substances in an amount equal to or greater than threshold quantities.

Chlorinated Solvent – An organic solvent containing chlorine atoms within its molecular structure.

Class II Landfill - An area of land or an excavation, as defined in Montana Administrative Rules A.R.M. 17.50.504, where group II or group III wastes are placed for permanent disposal, and that is not a land application unit, surface impoundment, injection well, or waste pile. Group II and III wastes are defined in Montana Administrative Rules, A.R.M. 17.50.503.

Class III Landfill - An area of land or an excavation, as defined in Montana Administrative Rules A.R.M. 17.50.504, where group III wastes are placed for permanent disposal, and that is not a land application unit, surface impoundment, injection well, or waste pile. Group III wastes are defined in Montana Administrative Rules, A.R.M. 17.50.503.

Closure Permit - A permit issued by the Department in accordance with section 13.26.060 of this code when a facility is permanently closed or has been abandoned for one year.

Community Water System - Any public water supply system, as defined in A.R.M. 17.36.101, which serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents.

Component - Any constituent part of a unit or any group of constituent parts of a unit which are assembled to perform a specific function.

Containment Vault – A sealed tank that is limited to accepting and containing accidental spills. A tank that receives wastewater from a fixture is not a containment vault.

Contamination - The presence of any substance (chemical, radiological, or biological) or any condition (temperature, pH, taste, color, odor, turbidity) in soil or water which may create or threaten to create a hazard to human health or the environment, or impair the usefulness of the soil or water.

Deicer - A chemical substance used to melt ice or snow deposited on roads or other surfaces.

Department – The Missoula City-County Health Department

District - The Missoula Valley Water Quality District

Dry Cleaning Establishment - Any facility that uses a transfer machine, dry-to-dry vented unit, or dry-to-dry closed loop unit that uses chlorinated solvents to clean textiles.

Dry Well - A USEPA-designated Class V stormwater injection well: a bored, drilled, or driven shaft or dug hole whose depth is greater than the opening width at the widest point, for the subsurface infiltration of stormwater.

Dry-to-Dry machine: A machine that washes and dries textiles without transferring them.

EPA - United States Environmental Protection Agency.

Facility - An area that includes the real property, building or buildings, and appurtenant structures, or any subset of the proceeding elements, used by a person.

Fleet - More than 5 vehicles or locomotives.

Fueling Facility - A facility that dispenses petroleum products for commercial sale, public use, or for fleet vehicle operation, excluding bulk petroleum storage facilities and farm and residential tanks of 1100 gallons or less capacity used for storing motor fuel for non-commercial purposes.

Fueling Pad – A concrete pad on which vehicles are refueled.

Future Wellhead Reservation Area - The surface area overlying a portion of the Missoula Valley Aquifer which, because of aquifer recharge, groundwater flow and potential sources of contamination, should be protected against contamination to assure high quality groundwater for future drinking water source development. This area includes all land within township 13N, range 19W, sections 27 and 34, all land south of the Clark Fork River within township 13N, range 19W, section 22, and all land within the northwest and northeast quarter sections of township 13N, range 19W, section 34 of Montana Meridian, Missoula County, Missoula, Montana.

Groundwater - Water that fills the interconnected spaces of material below the water table (upper limit of saturation), or water which is held in the unsaturated zone by capillary action.

Handle - To use, generate, process, produce, package, treat, store, emit, discharge or dispose of a Regulated Substance, excluding (a) handling during continuous non-stop transit, (b) transit via pipeline, and (c) handling of parcels and packages by the United States Postal Service, motor freight companies, and private delivery services.

Hazardous Waste - A hazardous waste as defined pursuant to section 1004(5) of the Resource Conservation and Recovery Act of 1976, 42 U.S.C. 6903(5), as amended, including a substance listed or identified in 40 CFR 261.

Hazardous Waste Management Facility - All contiguous land, and structures, other appurtenances, and improvements on the land used for treating, storing, or disposing of a hazardous waste, as defined in A.R.M 17.31.301 as a Major

Hazardous Waste Management Facility. A Hazardous Waste Management Facility may consist of several treatment, storage, or disposal operational units.

Independent Certified Laboratory: A laboratory outside the control of the person requesting approval from the Department that is certified by the EPA or other appropriate certifying agency to complete testing.

Industrial or Commercial Injection Well - A well or septic system that receives industrial or commercial wastes from a public or private facility, excluding wells or septic systems used solely for stormwater discharge, sanitary waste discharge and/or discharge or extraction of non-contact heating and cooling system water.

Large Capacity Petroleum Storage Tanks - A tank greater than 50 feet tall or having diameter greater than 30 feet used for storage of petroleum products.

Missoula Valley Aquifer - The aquifer underlying the Missoula Valley which supplies the area with water.

New - Constructed, installed or brought into operation after the original effective date of this code (Ord.2906, 1994).

Noncomplying Activity - An activity involving the handling of a Regulated Substance in an amount equal to or greater than its threshold quantity within a Future Wellhead Reservation Area.

Non-transient Non-community water system - Any public water supply system as defined in A.R.M. 17.38.202 that is not a community water system and that regularly serves at least 25 of the same persons over six months per year.

Perchloroethylene (C_2CL_4) - A colorless liquid used as a dry-cleaning fluid; general degreaser of metals; solvent for waxes, fats, oils, and gums; constituent of printing inks and paint removers. Synonyms include: Tetrachloroethylene, Tetrachloroethene, PCE, PERC.

Person - Any person, individual, public or private corporation, firm, association, joint venture, partnership, municipality, governmental agency, political subdivision, public officer or any other entity whatsoever or any combination of such, jointly or severally.

Piping Manifold - The area(s) of a piping system fitted with apertures for making multiple connections.

Pollution Prevention Permit - A permit required of a person who owns, operates or controls a facility that handles any Regulated Substance in an amount equal to or greater than four times its threshold quantity. Pollution Prevention Permits are issued by the District in accordance with section 13.26.050 of this code.

Primary Container - A container which comes into immediate contact with a Regulated Substance.

Public Sewage Disposal System - A system, as defined in §75-6-102 MCA, for collection, transportation, treatment or disposal of sewage that is designed to serve or serves 15 or more families or 25 or more persons daily for a period of at least 60 days out of the calendar year.

Public Water Supply System - A system, as defined in §75-6-102 MCA, for the provision of water for human consumption from any community well, water hauler for cisterns, water bottling plant, water dispenser, or other water supply that is designed to serve or serves 15 or more families or 25 or more persons daily or has at least 10 service connections at least 60 days out of the calendar year.

Refrigerator Condenser: A vapor recovery system into which a chlorinated solvent vapor stream is routed and condensed to segregate the chlorinated solvent.

Regulated Substance - Any liquid substance, semi-liquid substance, or soluble solid on the most current Superfund Amendments and Reauthorization Act (SARA), Title III List of Lists published by the Office of Pollution Prevention and Toxic Substances, U.S. Environmental Protection Agency, Washington D.C., any petroleum product, any hazardous waste, or any other substance identified in this code.

Release - Any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing of a Regulated Substance into the soil, groundwater or surface water (including the past release of a regulated substance), but excluding:

1. Releases contained in a secondary containment area or the indoor workplace, provided the release does not exit the indoor workplace.
2. The use of pesticides as defined in §80-8-102(30) MCA when they are applied in accordance with approved federal and state labels, and any discharge permitted by a local, state, or federal agency.

Replacement - replacement or replace shall mean:

1. Replacing, repairing, upgrading or improving a facility at a cost which equals or exceeds 50% of the value of the facility at the time of such act.
2. Replacing a component or more than 50% of a component of a facility.
3. Reoccupation of a facility, reuse of a component at a facility, or restarting an activity which has been out of service or not practiced for a period of one year.

Secondary Containment – Containment to and external from the primary container adequate to prevent the release of Regulated Substances to native soil, surface water, or groundwater.

Soluble Solid - A solid that exists in a powder form and has a particle size less than 100 microns, is handled in solution or molten form, or meets the criteria for a National Fire Protection Association (NFPA) rating of 2, 3, or 4 for reactivity.

Stormwater - As defined in 13.27.030

Tank - Stationary device designed to contain an accumulation of substances and constructed of non-earthen materials (e.g. concrete, steel, plastic) that provide structural support.

Tank Fueling Area - The area surrounding underground storage tanks subject to releases of petroleum products during tank fueling, including the area surrounding the tanker truck during fueling.

Threshold Quantity - Quantities of Regulated Substances (excluding products in vehicle fuel tanks, aerosol spray cans, products used for research at educational institution laboratories, and substances sold for retail in a container equal to or less than 5 gallons capacity) handled at a facility at any one time, regardless of location, number of containers, or method of storage.

1. For those Regulated Substances specifically listed in the Superfund Amendments and Reauthorization Act (SARA) Title III List of Lists and for those Regulated Substances which are listed hazardous waste defined pursuant to 40 CFR Part 261, as amended, the threshold quantity shall be the reportable quantity published in the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 40 CFR 302, Table 302.4 or the Superfund Amendments and Reauthorization Act (SARA) Section 355, Appendix A.

2. For those Regulated Substances that are characteristic hazardous wastes defined pursuant to 40 CFR Part 261, as amended, the threshold quantity shall be based on the substance contained in the waste with the lowest threshold quantity.

3. For those Regulated Substances not listed in the Superfund Amendments and Reauthorization Act Title III List of Lists, and for those Regulated Substances that are not a hazardous waste, the following quantities of qualifying substances at a facility at any one time shall constitute a Threshold Quantity:

    a. Gasoline - 250 pounds or 25 gallons
    b. Diesel/Jet Fuel/Kerosene - 500 pounds or 50 gallons
    c. Used Motor Oil/Hydraulic Oil/Transmission Fluid - 1000 pounds or 100 gallons.
    d. Unused Motor Oil/Hydraulic Oil/Transmission Fluid - 2,000 pounds or 200 gallons
    e. Deicer – 1000 gallons or 10,000 pounds

4. For those substances that are mixtures of one or more regulated substance, the threshold quantity shall be based on the amount of the substance contained in the mixture with the lowest threshold quantity. If the proportions of regulated substances in the mixture are unable to be determined, the threshold quantity of the component in the mixture with the lowest threshold quantity will apply to the entire quantity (volume or weight) of the mixture.

Transfer Dry Cleaning Machine: A machine unable to both wash and dry garments, which emits chlorinated solvent to the atmosphere during transfer.

Underground Storage Tank (UST) - Any one or combination of tanks as defined in MCA 75-11-503.

Used Oil - Oil that has been refined from crude oil, or any synthetic oil, that has been used and as a result of such use is contaminated by physical or chemical impurities.

Vegetated Swale - A vegetative-lined infiltration cell designed and constructed to collect and treat contaminants in stormwater runoff.

Vehicle Fueling Area - The area surrounding a fuel island or dispenser(s) subject to releases of petroleum products during vehicle fueling, including a 3-foot release collection buffer zone extending beyond the lanes of traffic next to the fuel islands or dispenser(s).

Well - A structure, pit or hole sunk into the earth to reach a resource supply such as water.

Wellhead - The physical structure or device at the land surface surrounding a well, from or through which groundwater flows or is pumped from an aquifer.