

Closure Plan Guidance

Outline for Closure Plan: (Should contain at a minimum the elements noted below)

Title Page (Facility, Name, Address, EPA I.D. No., Date, and Consultant Information)

Introduction (Purpose and Objective of Plan)

Closure Performance Standards *click citation for weblink* [40 CFR 264.111](#)

Describe how the facility will meet requirements for each type of unit on-site

The owner or operator must close the facility in a manner that:

- (a) Minimizes the need for further maintenance; and
- (b) Controls, minimizes, or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products to the ground or surface waters or to the atmosphere; and
- (c) Complies with the closure requirements of this part; including, but not limited to, the requirements of §§[264.178](#), [264.197](#), [264.228](#), [264.258](#), [264.280](#), [264.310](#), [264.351](#), [264.601](#) through [264.603](#), and [264.1102](#).

General HWM Facility Description, Location, and Background

Hazardous Waste Management Units HWMU's Undergoing Closure

Description, Location, and Background. (*Can make reference to info in permit*)

1. Figures, Maps, site plans, and photographs of the HWM facility site and HWMU's.
2. Hazardous Waste Codes Managed
3. Extent of HWMU Facility Operation and Maximum HWMU's Waste Inventory\Capacity. (Should include maximum inventory of waste, dimensions, descriptions of type of wastes; i.e solids, liquids, types of containers managed in area.)

Overview of Closure Procedures

Constituents of Concern (COC's) Analytical Test Methods

(Includes PQLs, MDLs for both water and soil sample mediums based upon the analytical laboratory chosen and SW-846, Methods.)

(*Can make reference to info in permit i.e. Waste Analysis Plan*)

[Crosswalk of Waste Codes and Corresponding Test Methods](#)

**(Please note that table does not give PQLs since this info is equipment/lab dependant and alternative test methods can be justified for certain waste codes. Also note that different labs might be able to test for different analytes)*

QA/QC Plan and Procedures. (Based upon the analytical laboratory chosen and SW-846, QA/QC requirements and test methods.)

For each HWMU describe in detail:

Decontamination or Disposal of HWMU's - Equipment, Structures, and Soils.

Temporary Decontamination Areas and Procedures.

1. Small Equipment.
2. Large Equipment.
3. Decontamination Washwaters, Rinsate, and Residues from Sampling.

Management, Characterization, and Disposal of Closure Generated Wastes.

1. Solid Wastes.
2. Liquid Wastes.
3. Other Miscellaneous Wastes/Management of PPE.

Loading, unloading, and/or mobilization information for each HWMU

Description of the dismantling of pipes, tanks, noting of any rental equipment such as roll-offs or portable tanks required to clean an area or special procedures required to clean a HWMU

Closure Sampling and Analyses Plan. (Includes all field sampling procedures, equipment, sample handling, preservation, shipping, and chain-of-custody procedures.)

1. Sampling of HWMU's and Areas Impacted by HWMU's
Describe all COC and Test methods required for closure
Describe the number of samples for each COC including and ????
QA/QC samples.

Soil Sampling

Must describe sampling locations rationale for each unit in the closure plan.

Provide diagrams of the possible location of samples using grids
Soils samples should also be biased toward locations where cracks have been repaired, beneath miscellaneous treatment units or tanks, immediately beneath any outlets from secondary containment areas, or outfalls. **(please note that a final drawing for future cracks or any new units in a particular area would required a new diagram before final closure could begin if facility is still active.)*

Generally, samples should be taken every 500ft² (i.e. 2500ft² container storage areas should contain at least 5 samples).

Please note; alternative methods can be approved for use see "Resources for Guidance on Closure Plans" and "State Information on RCRA Closure Plan Guidance" attached below for sampling model alternatives.

Rinsate Sampling

All secondary containment areas and equipment must be triple-rinsed.

Only the minimum amount of wash down water required should be used for the final rinsate sample. The final rinse and sample shall be conducted

using distilled water or tap water in an amount required by the laboratory for analysis of the sample. **Note the amount and types of QA/QC samples taken for each unit/area as appropriate.*

2. Background Sampling

**(If non impacted soil cannot be obtained for background, use data from "Geography of Soil Geochemistry of Missouri Agricultural Soils" by Ronald R. Tidball)*

3. Sampling Equipment Decontamination Procedures

4. Clean Closure Decontamination Standards:

For soils, all metals of concern shall be compared to background samples (as approved by the department) or the "Geochemical Survey of Missouri." All other constituents of concern in soils shall be below the undiluted practical quantitation limits (PQLs)/non-detect, with the detection limits being below the U.S. EPA Region III (EPA) Regional Screening Levels residential or protection of groundwater levels, whichever is lower. For rinse samples, all metals of concern shall be below the undiluted PQLs/non-detect, with the detection limits being below the EPA Region III values for tap water, if possible, or a background sample of the rinse water can be taken for comparisons to the metals of concern. All other constituents of concern rinse samples shall be below the undiluted PQLs/non-detect, with the detection limits being **below** the EPA Region III values for tap water, **if possible**. If all other constituents of concern are below the undiluted PQLs/non-detect but the detection limits are **above** the EPA Region III values for tap water these constituents will be reviewed by the department and deemed acceptable on a case by case basis.

If clean closure cannot be achieved based on the criteria listed above then a revised closure plan will be submitted to the department for review and approval as required by [40 CFR 270.42](#). This information could include corrective action with a risk-based clean closure scenario with possible environmental covenant implications or landfill with post-closure permit.

Health and Safety Plan for Closure Activities

Closure Cost Estimate with Supporting Calculations

Financial Assurance for Closure

Schedule For Closure

Closure Plan Amendment - Contingent Closure and Post-Closure Plans

Certification of Closure by Owner/Operator and P.E.

Resources for Guidance on Closure Plans

**Underlined links in [blue](#) and [red](#) are active*

[40 CFR 264.110-120](#) “*Closure and Post-Closure*”

[40 CFR 264.142](#) “*Cost Estimate for Closure*”

[40 CFR 264.144](#) “*Cost Estimate for Post-Closure Care*”

All EPA documents can be found by typing in the EPA document number **without** the word “EPA,” dashes, or slashes using the [EPA National Service Center for Environmental Publications](#) page. For OSWER document numbers enter in the word OSWER **with** all characters following “OSWER” **without** dashes and slashes.

“Introduction to Closure\Post-Closure Guidance” (EPA/530-K-05-009)

“Final Guidance Manual: Cost Estimates for Closure and Post-Closure Care Plans” (OSWER9476.00-6)

“RCRA Guidance Manual for Subpart G Closure and Post Closure Care Standards and Subpart H Cost Estimating Requirements” (EPA/530-SW-87-010)

[Cost Estimating for RCRA Financial Assurance Presentation](#)

[RCRA Permit Training Reviewing the Permit Application \(Closure Plan Section\)](#)

Tidball, R. R., 1984, Geography of Soil Geochemistry of Missouri Agricultural Soils: U.S. Geological Survey Professional Paper 954 – H, I.

County-by-county averages September 30, 2008

USGS – National Geochemical Survey: <http://tin.er.usgs.gov/geochem/doc/averages/countydata.htm>

Other Guidance on sampling:

[Waste Sampling Draft Technical Guidance \(EPA530-D-02-002\)](#)

[EPA “Guidance on Data Quality Assessment” \(EPA QA/G9, July 2000\)](#)

[Methods for Evaluating the Attainment of Cleanup Standards, Volume 1: Soils and Solid Media \(PDF\)](#) (EPA 230/02-89-042, February 1989)

[Methods for Evaluating the Attainment of Cleanup Standards, Volume 2: Ground Water \(PDF\)](#) (EPA 230-R-92-14, July 1992)

[Statistical Methods for Evaluating the Attainment of Cleanup Standards, Volume 3: Reference-Based Standards for Soils and Solid Media \(PDF\)](#) (EPA 230-R-94-004, December 1992)

Visual Sampling Plan (VSP) Software <http://vsp.pnl.gov/index.stm>

State Information on RCRA Closure Plan Guidance

1. Alabama
<http://adem.alabama.gov/newsEvents/pubs/RCRAClosure.pdf>
2. Connecticut
http://www.ct.gov/dep/lib/dep/waste_management_and_disposal/remediation_waste/RCRA_Closure_Plan_Guidance.pdf
3. Delaware
<http://www.dnrec.state.de.us/DNREC2000/Divisions/AWM/hw/hw/pdf/closureguid.pdf>
4. Illinois
<http://www.epa.state.il.us/land/waste-mgmt/rcra/rcra-closureplans.pdf>
5. Indiana
<http://www.in.gov/idem/files/riscuserch2.pdf>
6. Louisiana
<http://www.deq.state.la.us/portal/LinkClick.aspx?fileticket=GxG1AOdD%2FJE%3D&tabid=25867>.
Ohio
<http://epa.ohio.gov/portals/32/pdf/2008CPRG.pdf>

Ohio Container Closure Guidance
<http://epa.ohio.gov/portals/32/pdf/2008CPRG.pdf>
8. Utah (Landfill Closure Guidance for Non-Haz but many elements are applicable)
http://www.hazardouswaste.utah.gov/SWBranch/SWSection/Adobe/SolidWaste/Closure_and_post-closure_care_termination.pdf
9. Virginia
<http://www.deq.state.va.us/export/sites/default/waste/pdf/guidance/dclgu.pdf>
10. Washington
<http://www.ecy.wa.gov/pubs/94111.pdf>
11. Wyoming Sample guidance
http://deq.state.wy.us/volremedi/downloads/Current%20Fact%20Sheets/FS_10.pdf
12. Vermont Closure Guidance
http://www.anr.state.vt.us/dec/wastediv/rcra/pubs/closure_guidance.pdf