

US EPA ARCHIVE DOCUMENT

Appendix D

**Regulatory/Program Coverage and
Gaps Analysis**

Section D-1

Summary of State Regulations and Programs Covering Nonhazardous Industrial Waste Surface Impoundments¹

¹ The EPA's analysis of state waste regulations and programs in this appendix is based on publicly available information rather than a survey of state regulators. Therefore, the analysis may not have identified all state waste regulations and programs that address nonhazardous waste industrial surface impoundments. Readers should consult state regulatory agencies for more detailed and up-to-date information.

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Alabama

In Alabama, responsibility for regulating and permitting surface impoundments is consolidated in the state's water program under the Alabama Department of Environmental Management (ADEM). Surface impoundments for the management of nonhazardous waste are required to obtain a state NPDES permit and are subject to non-regulatory state guidelines as indicated in the chart below.

ADEM guidelines call for the permit applicant to submit a description of the proposed impoundment, signed by a Registered Engineer, that includes the following information:

- Proposed use of the impoundment, including a description of the liquids to be introduced into the impoundment
- Impoundment configuration and orientation
- Plot and plan drawings of the impoundment
- Proposed liner material and thickness
- Soil boring logs for the impoundment site or other information concerning the site geology.

Alabama Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	Yes (guidance only)	Not specified in state regulations.
Design Criteria (liner, leachate collection)	Yes (guidance only)	Not specified in state regulations.
Operating Criteria	Yes (guidance only)	Not specified in state regulations.
Monitoring	Yes (guidance only)	Not specified in state regulations.
Reporting and Recordkeeping	No	Not specified in state regulations.
Inspection and Enforcement	No	Not specified in state regulations.
Performance Standards and Corrective Action	Yes (guidance only)	Not specified in state regulations.
Closure/Postclosure Care	Yes (guidance only)	Not specified in state regulations.
Financial Assurance	No	Not specified in state regulations.

(continued)

Alabama Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the state's regulations or programs.

Sources:

Alabama Administrative Code (AAC).

Alabama Department of Environmental Management (ADEM) web page (<http://www.adem.state.al.us>).

ADEM. 2000. Closure Guidelines For Industrial Wastewater Impoundments. Water Division - Industrial Section. Revised 03/00.

ADEM. 2000. Construction Guidelines for Industrial Surface Impoundments, Water Division - Industrial Section. Revised 03/00.

Alaska

Alaska does not have any regulations or programs applicable to nonhazardous waste surface impoundments – there are not even state NPDES regulations that apply since Alaska is not an NPDES-authorized state.

Alaska Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	No	Not specified in state regulations.
Design Criteria (liner, leachate collection)	No	Not specified in state regulations.
Operating Criteria	No	Not specified in state regulations.
Monitoring	No	Not specified in state regulations.
Reporting and Recordkeeping	No	Not specified in state regulations.
Inspection and Enforcement	No	Not specified in state regulations.
Performance Standards and Corrective Action	No	Not specified in state regulations.
Closure/Postclosure Care	No	Not specified in state regulations.
Financial Assurance	No	Not specified in state regulations.
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the states regulation or program.

Sources:

Alaska Statutes and Alaska Administrative Code.

Arkansas

Arkansas requires a state NPDES permit for discharges to surface water, but does not further regulate surface impoundments, except for a few design and operating requirements for surface impoundments for confined animal feeding operations (CAFOs) and oil drilling activities. The requirements for the latter are included in the table below.

Arkansas Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	No	Not specified in state regulations.
Design Criteria (liner, leachate collection)	Yes	Regarding oil drilling activities, surface disposal of salt water and other liquid waste in earthen pits must be underlaid by tight soil such as heavy clay or hardpan, or lined with asphalt or other water-tight material and of sufficient size to assure adequate disposal of the volume of waste to be impounded therein. Where the soil under an underground pit is porous and closely underlaid by gravel or sand stratum, impounding of salt water or other liquid wastes therein will not be allowed.
Operating Criteria	Yes	Regarding oil drilling activities, surface impoundments must have minimum freeboard of at least 12 inches.
Monitoring	No	Not specified in state regulations.
Reporting and Recordkeeping	No	Not specified in state regulations.
Inspection and Enforcement	Yes	State regulations give the authority to inspect, but do not specify the frequency.
Performance Standards and Corrective Action	No	Not specified in state regulations.
Closure/Postclosure Care	No	Not specified in state regulations.
Financial Assurance	No	Not specified in state regulations.

(continued)

Arkansas Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the states regulation or program.

Source:

Arkansas Water Division Regulations No. 1, No. 5, and No. 6.

Arizona

In Arizona, responsibility for regulating and permitting surface impoundments is consolidated in the state's water pollution control division of the Arizona Department of Environmental Quality (ADEQ). Surface impoundments discharging to waters of the United States must obtain an NPDES permit from USEPA.

ADEQ requires an aquifer protection permit for the construction of a surface impoundment. The maximum duration of the permit extends through the end of the postclosure period. All permit applications must contain two copies of a location map; two copies of a site plan; two copies of facility design drawings; a characterization of discharge; a demonstration of Best Available Demonstrated Control Technologies (BDACT); demonstration of compliance with standards; demonstration of technical capability; demonstration of financial capability; past environmental performance; and evidence that the facility complies with applicable municipal or county zoning ordinance and regulations.

Arizona Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	No	Not specified in state regulations.
Design Criteria (liner, leachate collection)	No	Not specified in state regulations, but may be applied on a permit-specific basis.
Operating Criteria	No	Not specified in state regulations, but may be applied on a permit-specific basis.
Monitoring	Case-by-case	Groundwater: The state agency may require a hydrologic study on a case-by-case basis. Monitoring requirements are determined on a permit-specific basis.
Reporting and Recordkeeping	Yes	State regulations require a facility to maintain records for monitoring (10 years) and notification of any violations of permit conditions. Other reporting and recordkeeping requirements are determined on a permit-specific basis.
Inspection and Enforcement	Yes	State regulations give the authority to inspect, but do not specify the frequency.

(continued)

Arizona Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Performance Standards and Corrective Action	Yes	The Aquifer Protection permit establishes the point of compliance on a site-specific basis, not farther than the property line or 750 feet from the waste boundary. The Permit also establishes alert levels for appropriate constituents. A notification is required if alert levels are exceeded or if there is a reasonable expectation that state groundwater standards may be exceeded. A contingency plan is required detailing site-specific conditions for response actions. This may include verification sampling, additional monitoring, assessment of impacts, and/or corrective action.
Closure/Postclosure Care	Yes	Closure and postclosure plans are required by the state regulations. The specific requirements, including postclosure duration, are determined on a permit-specific basis.
Financial Assurance	Yes	For closure and postclosure, a bond, insurance, or trust fund is required.
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the states regulation or program.

Sources:

Arizona Administrative Code (ACC) Title 18-9-1.

Arizona Department of Environmental Quality(ADEQ) web page (<http://www.adeq.state.az.us/>).

California

California has consolidated all of its environmental agencies under the California EPA (Cal EPA); however, each board remains autonomous under the Cal EPA as do the Regional Boards. The California Integrated Waste Management Board (CIWMB) is responsible for regulating solid waste and solid waste management facilities, except surface impoundments. The State Water Resources Control Board (SWRCB) regulates and governs the design, operation, and maintenance of surface impoundments in the California Water Regulations. Regional Water Quality Control Boards implement the NPDES and state waste management programs.

California is authorized to implement the federal Clean Water Act (CWA) NPDES program. Any owner/operator of a surface impoundment subject to NPDES requirements must submit a federal NPDES permit application, which is channeled to the Regional board and receives approval from the SWRCB and USEPA Region. California has also developed a general NPDES permit. California has waste discharge requirements (WDRs) that regulates discharges of waste to land.

California Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	Yes	<p>New and existing surface impoundments must be a minimum distance of 5 feet above the highest anticipated elevation of underlying groundwater. All engineered structures constituting any portion of a surface impoundment must be capable of providing support and capable of withstanding hydraulic pressure gradients to prevent failure due to settlement, compression, or uplift and all effects of ground motion resulting from the maximum probable earthquake and provide adequate foundations or support for the waste management unit.</p> <p>New and existing Class II surface impoundments must comply with flooding, tidal wave, seismic design, and rapid geologic change (e.g., earthquake) requirements. New Class II units and expansions of existing Class II units must not be located within 200 feet of a Holocene fault.</p> <p>Materials used in containment structures must comply with specific permeability requirements.</p>

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California Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Design Criteria (liner, leachate collection)	Yes	<p>New surface impoundments must comply with stringent liner requirements. Existing surface impoundments must be lined and fitted with subsurface barriers as needed and feasible. Synthetic liners are not required for surface impoundments, but if used must be inspected weekly. New surface impoundments must comply with stringent leachate collection and removal system requirements. Existing surface impoundments must be fitted with leachate collection and removal systems as feasible.</p>
Operating Criteria	Yes	<p>Specific mandatory precipitation and drainage control requirements exist for surface impoundments. Surface impoundments must have sufficient freeboard to accommodate seasonal precipitation, but in no case less than two feet and designed and constructed to prevent overtopping as a result of wind conditions likely to accompany such precipitation, except where potential overflows would be to exterior surface impoundments. In addition, no discharges from surface impoundments are allowed except as authorized by waste discharge requirements.</p> <p>Slope requirements, especially in drier areas of the state, are incorporated on a site-specific basis through WDRs.</p> <p>The General Storm Water Permit Application requires development and implementation of Storm Water Pollution Prevention Plans. These plans must contain over ten specific elements, such as practices to reduce pollutants, elimination of non-storm water discharges, and spill prevention and response procedures.</p>

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California Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Monitoring	Yes	<p>Groundwater: At a minimum, monitoring must occur quarterly. Regional boards must also establish a water quality protection standard containing a list of constituents of concern, concentration limits, and points of compliance. Monitoring must consist of a sufficient number of wells, installed at appropriate locations and depths to yield groundwater samples that indicate leakage from a waste management unit; represent the backgroundwater quality; and represent the quality of groundwater passing the points of compliance. Detailed, statistical procedures are provided to determine whether to initiate corrective action. Owners/operators of new units must collect monitoring data before wastes are managed and must collect background soil-pore liquid data from beneath the unit before construction occurs. The General Industrial Storm Water Permit also contains a four-tier, highly detailed monitoring strategy.</p> <p>Surface Water: Extensive surface water monitoring requirements exist that contain essentially the same components as the groundwater monitoring program.</p> <p>Waste Analysis Requirements: Owners/operators must report the types, quantities, and concentrations of wastes proposed to be managed at each waste unit. They must also provide an analysis of projected waste decomposition processes for each unit. The following information also is required on: (1) the physical characteristics of the waste management unit; (2) how the unit will affect surrounding ground and surface water; and (3) how these waters may affect the unit. Additional reporting requirements exist.</p>
Reporting and Recordkeeping	Yes	State regulations specify requirements for reporting and recordkeeping.
Inspection and Enforcement	Yes	State regulations give the authority to inspect, but do not specify the frequency.

(continued)

California Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Performance Standards and Corrective Action	Yes	<p>Contingency Plan: Dischargers must submit operation plans describing the waste management unit operation which shall include contingency plans for the failure or breakdown of waste handling facilities or containment systems, including notice of any such failure, or any detection of waste or leachate in monitoring facilities to the regional board, local governments, and water users downgradient of the surface impoundment (23 CCR Article 9 2596).</p> <p>Emergency Planning: Owners/operators must implement detection monitoring and evaluation monitoring programs and corrective action measures, as necessary, to comply with water quality protection standards and reporting requirements.</p> <p>Corrective Action: Regional boards will establish the water quality protection standards for corrective action. In conjunction with corrective action measures, owners/operators must establish and implement a water quality monitoring program to demonstrate the effectiveness of the corrective action program and must submit reports at least semiannually on the effectiveness of the program. If an owner/operator is involved in corrective action at the end of a waste management unit's compliance period, the compliance period must be extended so that the unit is in continuous compliance with its water quality protection standard for at least 3 consecutive years.</p>
Closure/Postclosure Care	Yes	<p>Mandatory Clean-Closure Attempt: Unless the discharger demonstrates, and the RWQCB finds, that it is infeasible to attempt clean-closure of the impoundment, then all residual wastes, including sludges, precipitates, settled solids, and liner materials contaminated by wastes, shall be completely removed from the impoundment and discharged to an approved Unit. Remaining containment features shall be inspected for contamination and, if not contaminated, can be dismantled. Any natural geologic materials beneath or adjacent to the closed impoundment that have been contaminated shall be removed for disposal at an appropriate Unit. For surface impoundments that are successfully clean-closed, as herein described, the RWQCB shall declare the Unit no longer subject to the SWRCB-promulgated requirements of this title. If, after reasonable attempts to remove such contaminated materials, the discharger demonstrates that removal of all remaining contamination is infeasible, the surface impoundment shall be closed as a landfill or land treatment unit.</p>
Financial Assurance	Yes	State regulations specify requirements for financial assurance.

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California Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	Yes	State regulations specify requirements for air emissions from surface impoundments.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the states regulation or program.

Source:

California Code of Regulations (CCR).

Colorado

In Colorado, responsibility for regulating and permitting surface impoundments is consolidated in the Hazardous Materials and Waste Management Division of the Colorado Department of Public Health and the Environment (CDPHE).

Colorado's industrial waste regulations specify a set of standards and criteria for waste impoundments as indicated in the table below. Industrial wastes disposed of on the property of the generator are not required to obtain a permit (known as the "Certification of Designation") but must still abide by the regulations. In addition, impoundments that discharge to surface water or groundwater must obtain a State NPDES discharge permit.

Colorado Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	No	Not specified in state regulations.
Design Criteria (liner, leachate collection)	Yes	State solid waste regulations require that impoundments constructed after October 9, 1993 must have an engineering design report and, for certain groundwater classes, a liner and leachate collection system is required. Groundwater monitoring, however, may be required for impoundments permitted prior to this date if seepage and impairment of groundwater is probable. State regulations also specify that impoundments meet embankment design requirements. (Volume 6 CCR 1007-2 Part 1B-9)
Operating Criteria	Yes	State solid waste regulations specify that impoundments must meet standards for measurement of depth and have operational inspections. For impoundments constructed after October 9, 1993, an operations report and a minimum of 2 feet of freeboard is required. (Volume 6 CCR 1007-2 Part 1B-9)
Monitoring	Yes	The state NPDES regulations require groundwater monitoring. The solid waste regulations further specify that groundwater monitoring is required of indicator parameters of upgradient and downgradient wells on an annual or quarterly basis (depending on groundwater classification) for impoundments constructed after October 9, 1993. (Volume 6 CCR 1007-2 Part 1B-9)
Reporting and Recordkeeping	Yes	For impoundments constructed after October 9, 1993, the state NPDES regulations require monthly summary records be maintained until closure.
Inspection and Enforcement	Yes	State regulations give the authority to inspect, but do not specify the frequency.

(continued)

Colorado Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Performance Standards and Corrective Action	Yes	State NPDES regulations require a contingency plan for impoundments constructed after October 9, 1993 in certain groundwater classes dictating conditions for corrective action
Closure/Postclosure Care	Yes	State solid waste regulations require closure and postclosure plans. The Plans include a final cover sufficient to ensure compliance with state groundwater standards. Regulations specify that the postclosure period be a minimum of 30 years (duration subject to modification a case-by-case basis), and include maintenance and monitoring. An additional requirement for surface impoundments includes characterization of residual sediments for hazardous characteristics for impoundments constructed after October 9, 1993.
Financial Assurance	Yes	For closure, postclosure, and corrective action, state solid waste regulations require a trust fund, letter of credit, surety bond, insurance, financial test, corporate guarantee certificate of deposit, or combination. The financial assurance requirements are applicable to those impoundments operating after October 9, 1997 (if they dispose less than 20 tons per day) or April 9, 1997 (if they dispose greater than 20 tons per day).
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	Yes	State regulations require the operator of a facility employing evaporative treatment to calculate and record on a quarterly basis: the total volume of wastes and precipitation added to each impoundment; the total PAN evaporation during the quarter at the Weather Service or other station specified, multiplied by the appropriate "Lake Evaporation Coefficient," then multiplied by the average surface area of each impoundment during the quarter, to give the maximum possible volume of evaporate loss; and the total change in volume of wastes stored in each impoundment by two methods: (1) volume on first day of quarter subtracted from the volume on the last day of the quarter (from depth readings); and (2) maximum evaporative loss subtracted from the total added. Seepage shall be neglected in this calculation.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the states regulation or program.

Sources:

Colorado Code of Regulations (CCR) – 6 CCR 1007-2 Part 1; 5 CCR 1002-61.

Colorado Department of Public Health and the Environment (CDPHE) web page (<http://www.cdphe.state.co.us>).

Connecticut

Connecticut's Waste Engineering and Enforcement Division indicates that nonhazardous surface impoundments may be regulated under the State Remediation Standards, depending on the amount and type of constituents in the ground near the surface impoundments. In addition, surface impoundments may be regulated under the state's NPDES program if they discharge to surface waters. Connecticut is authorized to administer the federal NPDES program under its Surface Water Discharge Permit Program. Connecticut also has a Groundwater Discharge Permit Program that regulates discharges to groundwater from any source, including but not limited to large septic systems, agricultural waste management systems, and all waste landfills.

Connecticut Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	No	Not specified in state regulations.
Design Criteria (liner, leachate collection)	No	Not specified in state regulations.
Operating Criteria	Yes	The commissioner may require any applicant or permittee for a NPDES permit, as part of the detailed design of any treatment facilities and/or spill prevention and control systems required, to develop an operation and maintenance manual which shall fully describe the operation and maintenance of the systems, including but not limited to the following aspects: <ol style="list-style-type: none"> (1) A plan for operational monitoring and inspection (2) Instrument calibration frequency (3) Inventory of necessary chemicals, equipment and spare parts (4) A plan for preventive maintenance (5) Operating instructions (6) Housekeeping (7) Security measures.
Monitoring	Yes	State regulations specify that any permittee of the NPDES permit has requirements for monitoring of discharges.
Reporting and Recordkeeping	Yes	All monitoring reports shall be submitted to the director in accordance with the requirements and the terms and conditions of the NPDES permit.
Inspection and Enforcement	Yes	State regulations give the authority to inspect, but do not specify the frequency.
Performance Standards and Corrective Action	No	Not specified in state regulations.

(continued)

Connecticut Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Closure/Postclosure Care	No	Not specified in state regulations.
Financial Assurance	No	Not specified in state regulations.
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the states regulation or program.

Source:

Connecticut General Statutes (CGS)

Delaware

The Division of Water Resources of the Delaware Department of Natural Resources and Environmental Control has authority over surface impoundments in the state. Because Delaware regulates surface impoundments in conjunction with other programs, it does not classify surface impoundments or waste types; however, permits are required. Surface impoundments must be covered by a state operating permit (required for the construction and/or operation of facilities handling liquid waste), and a state NPDES permit for discharges into surface or groundwater. For facilities that discharge, the NPDES permit and state operating permit are consolidated into one permit.

Delaware Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	No	Not specified in state regulations.
Design Criteria (liner, leachate collection)	Yes (guidance only)	Not specified in state regulations, but included in the Recommended Standards for Sewage Treatment Works (Ten States Standards).
Operating Criteria	Yes (guidance only)	Not specified in state regulations, but included in the Recommended Standards for Sewage Treatment Works (Ten States Standards).
Monitoring	Case-by-case	The monitoring requirements specified by the Department in the State operating permit may include groundwater monitoring. [WPCR § 5.01(g)(8)]
Reporting and Recordkeeping	No	Not specified in state regulations.
Inspection and Enforcement	Yes	State regulations give the authority to inspect but do not specify the frequency.
Performance Standards and Corrective Action	No	Not specified in state regulations.
Closure/Postclosure Care	No	Not specified in state regulations.
Financial Assurance	No	Not specified in state regulations.

(continued)

Delaware Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	Yes	A permit is required for surface impoundments that emit more than 25 tons/year of volatile organic compounds (VOCs). Owners or operators of a regulated source must perform testing to demonstrate that the source is in compliance with State standards, and maintain records of the testing for a minimum of 5 years.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the states regulation or program.

Sources:

Delaware Code of Regulations Governing Water Pollution (WPCR).

Air Pollution (APCR) Regulation No. 24-50.

Florida

The Florida Department of Environmental Protection requires groundwater permits and state NPDES permits (for discharges to surface water only) for surface impoundments used to manage nonhazardous waste. Surface impoundments that manage leachate are regulated separately under the solid waste management facilities regulations. Otherwise, surface impoundments are excluded from the solid waste management facilities regulations.

Florida Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	No	Not specified in state regulations.
Design Criteria (liner, leachate collection)	No	Not specified in state regulations.
Operating Criteria	No	Not specified in state regulations.
Monitoring	Yes	State regulations require groundwater monitoring for certain classes of groundwater, with at least 1 upgradient, 1 intermediate, and 1 compliance well. The constituents are not specified in the regulations.
Reporting and Recordkeeping	Yes	State regulations require quarterly groundwater monitoring reports be maintained.
Inspection and Enforcement	Yes	State regulations give the authority to inspect, but do not specify the frequency.
Performance Standards and Corrective Action	Yes	State regulations require corrective action if groundwater exceeds state standards outside ZOD and include secondary standards for certain classes of groundwater.
Closure/Postclosure Care	Yes	Closure with waste in place is allowed by state regulations if the impoundment is dewatered, lined, and measures (such as leachate collection) are in place to ensure liner integrity. The regulations do not specify any other closure/postclosure provisions.
Financial Assurance	No	Not specified in state regulations.

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Florida Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the states regulation or program.

Sources:

Florida Administrative Code (FAC) Chapters 62-520; 62-522; 62-620; 62-701.

Florida Department of Environmental Protection (FDEP) web page (<http://www.dep.state.fl.us/>).

Georgia

The Environmental Protection Division (EPD) of the Georgia Department of Natural Resources has the responsibility for regulating surface impoundments in Georgia. EPD does not require permits for non-discharging ponds, however, a few slow infiltration ponds are permitted. Surface impoundments that discharge to groundwater must obtain a state land disposal system permit. Impoundments that discharge to surface water must obtain a state NPDES permit.

Georgia Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	No	Not specified in state regulations, but may be applied on a permit-specific basis.
Design Criteria (liner, leachate collection)	No	Not specified in state regulations, but may be applied on a permit-specific basis.
Operating Criteria	No	Not specified in state regulations, but may be applied on a permit-specific basis.
Monitoring	Case-by-case	Groundwater monitoring may be required under land disposal system permit, with details determined on a site specific basis.
Reporting and Recordkeeping	No	Not specified in state regulations, but may be applied on a permit-specific basis.
Inspection and Enforcement	Yes	State regulations give the authority to inspect, but do not specify the frequency.
Performance Standards and Corrective Action	Yes	The under land disposal permit requires that groundwater must be within state maximum contaminant levels (MCLs). Where groundwater exceeds state MCLs, corrective measures and a compliance schedules are determined on a site-specific basis.
Closure/Postclosure Care	No	Not specified in state regulations, but may be applied on a permit-specific basis.
Financial Assurance	No	Not specified in state regulations, but may be applied on a permit-specific basis.

(continued)

Georgia Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the states regulation or program.

Sources:

Official Code of Georgia Statutes (OCGA) 12-8-20.

Georgia Regulations – Control No. 391-3-4; 391-3-6-.11.

Georgia Department of Natural Resources (GDNR) web page (<http://www.dnr.state.ga.us/dnr/environ>).

Hawaii

Hawaii's environmental regulations, administered by the Environmental Management Division of the Department of Health, include few requirements applicable to nonhazardous waste surface impoundments beyond the requirements associated with a state NPDES permit for discharges to surface or groundwater. In addition to the NPDES regulations, there are separate regulations and guidance governing wastewater treatment works.

Hawaii Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	Yes	For wastewater treatment works, treatment units must be located 25 feet or more from the property line and more than 10 feet away from buildings and swimming pools. Private wastewater treatment works must also conform to the Recommended Standards for Wastewater Facilities (Ten State Standards).
Design Criteria (liner, leachate collection)	No	Not specified in state regulations.
Operating Criteria	No	Not specified in state regulations.
Monitoring	No	Not specified in state regulations.
Reporting and Recordkeeping	No	Not specified in state regulations.
Inspection and Enforcement	Yes	State regulations give the authority to inspect, but do not specify the frequency.
Performance Standards and Corrective Action	No	Not specified in state regulations.
Closure/Postclosure Care	No	Not specified in state regulations.
Financial Assurance	No	Not specified in state regulations.

(continued)

Hawaii Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the states regulation or program.

Source:

Hawaii Administrative Rules Chapter 55.

Idaho

In Idaho, the only regulations applicable to surface impoundments are design and operating requirements for ore processing by cyanidation or mine tailing impoundments – there are not even state NPDES regulations that apply since Idaho is not an NPDES-authorized state. Idaho relies on Recommended Standards for Sewage Treatment Works (Ten State Standards) in reviewing wastewater treatment plant plans.

Idaho Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	No	Not specified in state regulations.
Design Criteria (liner, leachate collection)	No	Not specified in state regulations.
Operating Criteria	No	Not specified in state regulations.
Monitoring	No	Not specified in state regulations.
Reporting and Recordkeeping	No	Not specified in state regulations.
Inspection and Enforcement	Yes	State regulations give the authority to inspect, but do not specify the frequency.
Performance Standards and Corrective Action	No	Not specified in state regulations.
Closure/Postclosure Care	No	Not specified in state regulations.
Financial Assurance	No	Not specified in state regulations.
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the states regulation or program.

Source:

Idaho Regulations – IDAPA Department of Environmental Quality Title 01 Chapter 02.

Illinois

Illinois requirements regarding nonhazardous surface impoundments are administered by the Illinois Environmental Protection Agency (IEPA) by the Bureau of Water.

The Illinois Environmental Protection Act exempts on-site treatment, storage, and disposal from permitting requirements. Owners/operators of surface impoundments, however, that receive special waste (i.e., from off-site) not listed in an NPDES permit must obtain an operating permit, unless the owner/operator gives notice of the operation to IEPA 30 days after operations begin, and every three years thereafter. In the three-year notice, the owner/operator must submit information on the types and amounts of waste stored, treated, or disposed each year; the remaining capacity of the facility; and the remaining expected life of the facility. A state NPDES permit is required for impoundments discharging into surface waters.

In addition, Illinois has specific design standards for new or modified livestock waste treatment lagoons after November 12, 1998 (35 IAC 503.204). Owners/operators of these lagoons must construct or modify the lagoon in accordance with "Design of Anaerobic Lagoons for Animal Waste Management" which is incorporated by reference in 35 IAC 506.104. Some of these requirements are included in the table below.

The IEPA Bureau of Air implements the requirements of the Clean Air Act, develops state rules governing air quality standards, evaluates and issues permits for construction and operation, and monitors Illinois' air quality.

Illinois Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	No	Not specified in state regulations, but may be applied on a permit-specific basis.
Design Criteria (liner, leachate collection)	No	Not specified in state regulations, but may be applied on a permit-specific basis.
Operating Criteria	Yes	<p>Livestock waste treatment lagoons must include:</p> <ul style="list-style-type: none"> • The use of a liner at least 2 feet thick. • Entrapment dikes and other appropriate control measures to prevent any spillage of contaminants from causing water pollution. • Freeboard of at least 2 feet above the fluid surface level of the lagoon. <p>Extensive groundwater quality standards exist, and owners/operators cannot cause, threaten, or allow the release of any contaminant so as to violate a groundwater quality standard.</p>

(continued)

Illinois Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Monitoring	No	Not specified in state regulations, but may be applied on a permit-specific basis.
Reporting and Recordkeeping	No	Not specified in state regulations, but may be applied on a permit-specific basis.
Inspection and Enforcement	Yes	The state regulations provide IEPA with the authority to require periodic reports, inspect facilities, and have access to records. The frequency of the inspections is not specified.
Performance Standards and Corrective Action	Yes	No person shall cause or allow the release of any contaminant to a resource groundwater such that: treatment is necessary to continue an existing use or to assure a potential use of such groundwater, or an existing or potential use of such groundwater is precluded.
Closure/Postclosure Care	No	Not specified in state regulations.
Financial Assurance	No	Not specified in state regulations
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the states regulation or program.

Sources:

Illinois Regulations: Title 35 Subtitle C Parts 305, 309; Title 35 Subtitle E Part 506.

Illinois Statutes: 415 ILCS 5/21(d).

Illinois Environmental Protection Agency (IEPA) web page (<http://www.epa.state.il.us/water/index.html>).

Indiana

In Indiana, nonhazardous waste surface impoundments are regulated through the Indiana Department of Environmental Management (IDEM) by the Office of Land Quality (OLQ) and the Office of Water Management (OWM). Nonhazardous waste surface impoundments are exempt from Indiana's Solid Waste Management requirements; however, closure of an impoundment is subject to approval by IDEM and usually occurs, at the discretion of IDEM, in the same manner as other solid waste management facilities (e.g., final cover and groundwater monitoring required).

The construction, installation, or modification of any facility used for wastewater treatment requires that a construction permit be obtained from the OWM Permits Branch. These permits are required for the construction of all water pollution treatment/control facilities including industrial wastewater facilities. All new facilities (i.e., within the last 20 years) must have a construction permit.

Off-site "earthen lagoons" that store industrial waste product are regulated by the Water Pollution Control Board under 327 IAC 6.1. IDEM's OWM implements and enforces the Federal Water Pollution Control Act (as amended), also referred to as the Clean Water Act. IDEM's OWM Wastewater Permitting Branch has responsibility for the permit program.

Under 329 IAC 10-8.1-4, decharacterized wastes can be classified as a "special waste" if the waste contains a toxicity characteristic contaminant listed in 40 CFR 261.24, Table 1, at a level equal to or greater than seventy-five percent (75%) of the regulatory level for that contaminant.

The IDEM Office of Air Management (OAM) implements the requirements of the Clean Air Act, develops state rules governing air quality standards, evaluates and issues permits for construction and operation, and monitors Indiana's air quality.

Indiana Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	Case-by-case	Design criteria and location standards are not specified in state regulations, but may be applied through construction permits on a site-specific basis. Location restrictions are specified for earthen lagoons under 327 IAC 6.1-8-3 ("Site restrictions for off-site storage structures").

(continued)

Indiana Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Design Criteria (liner, leachate collection)	Case-by-case	Not specified in state regulations. May be applied through construction permits on a site-specific basis. Generally, IDEM and owners/operators follow the Recommended Standards for Wastewater Facilities and Sewage Works (Ten States Standards), 1990 edition, as guidance. Owners/operators of wastewater treatment ponds generally must comply with standards for liners, soil borings/freeboard limits, etc., to protect the waters of the state.
Operating Criteria	Yes	The industrial activity permit requirements contain a waste discharge/run-off control performance standard. Freeboard requirements are specified in 327 IAC 6.1 for earthen lagoons. Other operating criteria for earthen lagoon are specified at 327 IAC 6.1-8-7 (“Operational requirements for off-site storage structures”).
Monitoring	Case-by-case	Not specified in state regulations. May be applied by the IDEM on a site-specific basis upon closure with waste in place.
Reporting and Recordkeeping	Yes	Reporting of discharge monitoring results must be maintained for 3 years.
Inspection and Enforcement	Yes	Owners/operators conducting practices that are likely to cause exceedances of applicable effluent limitations must notify the commissioner. IDEM must be allowed to enter the premises of a facility at any reasonable time to inspect, sample, or monitor. IDEM’s Office of Enforcement has authority to issue civil, administrative, judicial, and criminal penalties.
Performance Standards and Corrective Action	No	Not specified in state regulations.
Closure/Postclosure Care	Yes	327 IAC 6.1-8-8, “Closure and abandonment of off-site storage structures” applies.
Financial Assurance	No	Not specified in state regulations.
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the state’s regulation or program.

Sources:

Indiana Administrative Code (IAC)

Indiana Department of Environmental Management (IDEM) web page (<http://www.state.in.us/idem/index.html>).

Iowa

In Iowa, nonhazardous waste surface impoundments are regulated through the Environmental Protection Division (EPD) of the Iowa Department of Natural Resources (IDNR). The Wastewater Section of the EPD issues construction, operation (discharges to groundwater), and NPDES permits (discharges to surface water) for surface impoundments.

Iowa also has specific requirements in place for waste stabilization ponds under the state water rules. These requirements are included below.

Iowa Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	Yes	State permit-to-construct regulations require that all surface impoundments must be located 1000 feet from residences and commercial buildings, 400 feet or more from wells (depending on type) and lakes, and 25 feet from property lines.
Design Criteria (liner, leachate collection)	Yes	For waste stabilization ponds only, pond length can not exceed three times the width, capacity must be equivalent to 180 times the average daily design flow, bottom lined with impermeable natural or man-made material, and the depth must be uniform from 3 to 5 feet. For other types of impoundments, not specified in regulations but may be required as part of construction permit on a site-specific basis.
Operating Criteria	Yes	For waste stabilization ponds only, a minimum freeboard of 2 feet is required, as well as fencing and vegetation. For other types of impoundments, not specified in regulations but may be required as part of NPDES or operating permit on a site-specific basis.
Monitoring	No	Not specified in regulations but groundwater monitoring may be required on a site-specific basis.
Reporting and Recordkeeping	Yes	State regulations require monthly submission of records of operation.
Inspection and Enforcement	Yes	State regulations provide the authority to inspect, but do not specify the frequency.
Performance Standards and Corrective Action	Case-by-case	Determined on a permit-specific basis.
Closure/Postclosure Care	No	Not specified in state regulations.
Financial Assurance	No	Not specified in state regulations.

(continued)

Iowa Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the state's regulation or program.

Sources:

Iowa Administrative Code (IAC) Title IV, Chapters 63, 64 and 69.

Iowa Department of Natural Resources (IDNR) web page (<http://www.state.ia.us/government/dnr>).

Kansas

In Kansas, nonhazardous waste surface impoundments are regulated through the Bureau of Waste Management, Division of Environment, Kansas Department of Health and Environment.

Kansas requires a solid waste disposal permit if the owner/operator plans to close the surface impoundment with waste still in place; the expiration date of this permit is determined on a case-by-case basis. In addition, all impoundments that discharge to surface or groundwater must obtain a state NPDES permit, which is valid for up to 5 years.

Kansas Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	Yes	The solid waste disposal permit regulations require that surface impoundments be located at least one-half mile from a navigable stream used for interstate commerce; one mile from a public surface water supply; and 25 feet from pipelines, underground utility lines, or an electric transmission line easement. There are also restrictions on 100-year floodplains and endangered species areas.
Design Criteria (liner, leachate collection)	Yes	The solid waste disposal permit regulations specify restrictions for limited access and requires all-weather access roads.
Operating Criteria	No	Not specified in state regulations.
Monitoring	Yes	Appropriate groundwater monitoring required, but specific details are not listed in the regulations (determined on a permit-specific basis).
Reporting and Recordkeeping	Yes	The solid waste disposal permit regulations require the facility to retain records of volume or tonnage of waste received, land area used, and other records as specified in the permit. A summary report of these records must be submitted to the Department.
Inspection and Enforcement	Yes	State regulations provide the authority to inspect, but do not specify the frequency.
Performance Standards and Corrective Action	No	Not specified in state regulations.
Closure/Postclosure Care	Yes	The solid waste permit regulations require a closure plan, including provisions for postclosure operation and maintenance. The plan may also include liners and leachate collection if deemed applicable by the state. There is a postclosure period of at least 30 years.

(continued)

Kansas Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Financial Assurance	Yes	The solid waste permit regulations require a trust fund, surety bond, irrevocable letter of credit, or insurance; or pass a financial test or obtain a financial guarantee from a related entity. The operator/owner of the impoundment must also have liability insurance coverage.
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the state's regulation or program.

Sources:

Kansas Statutes – KSA 65-33; 65-34.

Kansas Regulations – KAR 28-13; 28-16; 28-29-2 through 28-29-23.

Kansas Department of Health and Environment (KDHE) web page (<http://www.kdhe.state.ks.us/waste/>).

Kentucky

In Kentucky, nonhazardous waste surface impoundments with discharges to surface or groundwater must obtain a state NPDES (KPDES) permit. The regulations are largely silent on the requirements under these permits, leaving specific requirements to be determined by the permit writer on a case-by-case basis. Surface impoundments that have a KPDES permit are covered under a Permit-by-Rule for purposes of the solid waste regulations. The Permit-by-Rule contains no specific requirements beyond those of the KPDES regulations, except that groundwater monitoring may be required on a case-by-case basis and that the state has authority to require corrective action.

In addition to the KPDES and solid waste permit, surface impoundments constructed after August 24, 1994 are required to develop a Groundwater Protection Plan (GWPP). The GWPP must consider site hydrogeology and minimize discharges to soil. The actions required to meet the goals of the GWPP are determined by the facility operator, and minimization of discharges to soil may be accomplished through liners, secondary containment, leak detection, or other measures.

Kentucky Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	Yes	The regulations specify restrictions for floodplains, endangered species habitats, and wetlands.
Design Criteria (liner, leachate collection)	Yes	The required GWPP must consider hydrogeology and minimize discharges to soil. At the operator's option, this may be accomplished through liners, secondary containment, leak detection, or other measures. No other controls are specified by the NPDES or solid waste regulations, but may be required in the permits on a site-specific basis.
Operating Criteria	No	Not specified in state regulations.
Monitoring	Case-by-case	The solid waste regulations specify that groundwater monitoring may be required on a case-by-case basis.
Reporting and Recordkeeping	Yes	A GWPP must be submitted upon request, and records of compliance must be retained. The solid waste regulations require annual or quarterly reports covering facility activities, as determined in the permit.
Inspection and Enforcement	Yes	State regulations give the authority to inspect, but do not specify the frequency.

(continued)

Kentucky Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Performance Standards and Corrective Action	Yes	The solid waste regulations provide the authority to require that appropriate corrective action to be implemented if needed. The regulations also specify that surface impoundments may not cause exceedances of MCLs in groundwater, adversely impact endangered species, or violate applicable air pollution requirements.
Closure/Postclosure Care	No	Not specified in state regulations
Financial Assurance	Yes	The solid waste regulations state that financial assurance requirements apply to owners/operators of any solid waste disposal site or facility. Mechanisms can include performance bond, surety bond, letter of credit, escrow or trust fund. Not specified in state regulations.
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the state's regulation or program.

Sources:

Kentucky Administrative Regulations (KAR) Title 401, Chapters 5, 47, and 48.

Kentucky Department for Environmental Protection (KDEP) web page (<http://www.nr.state.ky.us/nrepc/dep/dep2.htm/>).

Louisiana

In Louisiana, nonhazardous waste surface impoundments are regulated by the Solid Waste Division, Office of Solid and Hazardous Waste, Department of Environmental Quality (Title 33, Part VII, Subpart 1, Chapter 7, Subchapter B of the Louisiana Code). Section 709—Standards Governing All Solid Waste Disposal Facilities (Type I and II)—establishes the basic management program for solid waste within the state. A Type I surface impoundment is used for the disposal of industrial solid wastes, and a Type II surface impoundment is used for the disposal of commercial or residential solid wastes. Discharges are subject to the Louisiana Pollutant Discharge Elimination System (LPDES) program at Title 33, Part IX.

All surface impoundments (dischargers and nondischargers) storing nonhazardous waste are required to obtain a state solid waste permit. In addition, all impoundments that discharge are required to obtain a state NPDES permit.

Louisiana Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	Yes	Location standards are specified in Louisiana Administrative Code (LAC) Sections 521, 709, and 713. These standards include (1) requirements for accessing (e.g., via water or land) surface impoundment facilities; (2) restrictions for siting such facilities near airports, critical environmental areas (e.g., wetlands, estuaries, wildlife hatchery areas; habitats of endangered species), faults, 100-year flood plains, and other requirements; and (3) requirement for compliance with local land use and zoning laws.
Design Criteria (liner, leachate collection)	Yes	State regulations specify requirements for liners, leachate detection, collection, and removal systems, run-on/run-off controls, standards for dikes and berms, and freeboard limits.
Operating Criteria	Yes	Facilities must have a barrier around the facility that prevents unauthorized ingress or egress, except by willful entry. During operating hours, each facility entry point must be continuously monitored, manned, or locked. During non-operating hours, each facility entry point must be locked. These standards also include requirements for buffer zones, fire protection and medical care, and other requirements. Surface impoundments must be inspected daily and after storms to detect evidence of deterioration of the dikes and levees, overtopping, malfunctions, or improper operation.

(continued)

Louisiana Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Monitoring	Yes	<p>Groundwater Monitoring: A groundwater monitoring system must be installed at each facility. The system must contain a sufficient number of wells, installed at appropriate locations and depths, to yield groundwater samples from the uppermost aquifer. These standards include specific requirements for groundwater sampling, location of wells, well construction, post-construction, plugging and abandonment of monitoring wells.</p> <p>Surface Water Monitoring: Under the Louisiana Water Discharge Permit System, effluent standards and limitations are imposed upon discharges. The control and treatment limitations must be equivalent to secondary treatment, best practicable control technology currently available, best conventional technology for conventional pollutants, and/or best available control technology economically achievable for nonconventional or toxic pollutants. The permitting authority may, however, prescribe more stringent or seasonal limitations.</p>
Reporting and Recordkeeping	Yes	Facilities must submit annual reports to the administrative authority indicating quantities and types of solid waste and an estimate of the remaining permitted capacity. Records must be maintained for the life of the facility and at least three years after closure.
Inspection and Enforcement	Yes	The Solid Waste Division will inspect each facility and each facility's records periodically to determine the facility's compliance with the terms of standard or temporary permits and these regulations.
Performance Standards and Corrective Action	Yes	Performance standards and corrective action requirements are specified by the state regulations.
Closure/Postclosure Care	Yes	Standards governing facility closure are contained in LAC 33:VII.713.E (Type I and II surface impoundments). The closure plan for all facilities must include the following: the date of final closure, the method to be used and steps necessary for closing the facility; and the estimated cost of closure of the facility, based on the cost of hiring a third party to close the facility at the point in the facility's operating life when the extent and manner of its operation would make closure the most expensive.
Financial Assurance	Yes	The state solid waste permit requires evidence of a financial assurance mechanism for closure and/or postclosure care and corrective action for known releases when needed.

(continued)

Louisiana Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	Yes	Facilities receiving waste with a potential to produce methane gas are subject to air monitoring requirements.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the states regulation or program.

Sources:

Louisiana Administrative Code (LAC).

Louisiana Department of Environmental Quality (LDEQ) web page (<http://www.deq.state.la.us>).

Maine

Maine does not have any regulatory standards or management guidelines specific to surface impoundments. However, if the facility discharges, Maine's Bureau of Land & Water Quality Control (L&W) may include, on a case-by-case basis, standards and guidelines for surface impoundments in the state's wastewater discharge permit and site approval process.

If a surface impoundment has a point source discharge to surface waters of the United States, the owner/operator must obtain a federal NPDES permit pursuant to Section 402 of the Clean Water Act (CWA). Also pursuant to Section 402 of the CWA, NPDES permits are required for storm water discharges associated with an industrial activity. (Note: Region 1 issues NPDES permits, as Maine is not authorized.)

Licenses are required for discharges to surface waters and groundwater. Discharges to groundwater may be direct or indirect (e.g., infiltration-percolation lagoon). Discharges are subject to effluent limitations that require application of "best practicable treatment" (38 MRSA Section 414-A). Permits are issued by L&W. (Note: Maine has no infiltration-percolation lagoons holding industrial nonhazardous wastewater. Some exist to hold storm water, which require a federal NPDES Permit.)

L&W must approve all industrial developments that occupy a land or water area in excess of 20 acres. L&W will approve the development as long as it will not adversely effect the natural environment; cause unreasonable erosion of soil or inhibit the natural transfer of the soil; cause unreasonable erosion of soil or inhibit the natural transfer of the soil; discharge to a significant groundwater aquifer; cause or increase flooding, etc. State contacts report that no on-site industrial nonhazardous waste surface has land site approval. This may be because the impoundment was constructed prior to 1970 (in which case the impoundment is "grandfathered"), does not meet the minimum size requirement, or is not a permitting priority.

Maine Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	No	Not specified in state regulations.
Design Criteria (liner, leachate collection)	Case-by-case	L&W usually includes an impervious clay liner requirement in the wastewater discharge permit.
Operating Criteria	No	Not specified in state regulations.

(continued)

Maine Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Monitoring	Case-by-case	<p>Groundwater Monitoring: L&W may include groundwater monitoring as a requirement for site approval, however, only in limited circumstances.</p> <p>Surface Water Monitoring: Surface water monitoring is required if the facility has a federal NPDES permit.</p>
Reporting and Recordkeeping	No	Not specified in state regulations.
Inspection and Enforcement	Yes	MDEP is authorized to conduct on-site inspections of wastewater discharge licenses (38 MRSA Section 414). MDEP also has administrative, civil, and criminal enforcement authority, including the authority to levy penalties.
Performance Standards and Corrective Action	No	Not specified in state regulations.
Closure/Postclosure Care	No	Not specified in state regulations.
Financial Assurance	No	Not specified in state regulations.
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the states regulation or program.

Sources:

Maine Revised Statutes Annotated (MRSA).

Maine Department of Environmental Protection (MDEP) web page (<http://janus.state.me.us/dep/home.htm>).

Maryland

In Maryland, nonhazardous waste surface impoundments are regulated by the Water Management Administration, Wastewater Discharge Program (WDP) of the Maryland Department of the Environment (MDE) and the Air and Radiation Management Administration (ARMA). The WDP has regulatory responsibility for the control of surface water discharges from industrial impoundments, including most other requirements for surface impoundments. ARMA is responsible for regulating air emissions from industrial surface impoundments. Maryland currently requires surface impoundments to have a permit to construct unless they are specifically exempt (exemptions listed in COMAR 26.11.02.10).

Maryland Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	Case-by-case	Not specified in state regulations. May be applied by the Department on a site-specific basis.
Design Criteria (liner, leachate collection)	Case-by-case	Not specified in state regulations. May be applied by the Department on a site-specific basis.
Operating Criteria	Yes	State regulations specify requirements for runoff/runoff controls only. Additional requirements may be applied by the Department on a site-specific basis.
Monitoring	Case-by-case	Groundwater/Leak Detection: Not specified in state regulations. May be applied by the Department on a site-specific basis. Surface Water Monitoring: Not specified in state regulations. May be applied by the Department on a site-specific basis.
Reporting and Recordkeeping	No	Not specified in state regulations.
Inspection and Enforcement	Yes	State regulations give the authority to inspect, but do not specify the frequency.
Performance Standards and Corrective Action	No	Not specified in state regulations.
Closure/Postclosure Care	No	Not specified in state regulations.
Financial Assurance	No	Not specified in state regulations.

(continued)

Maryland Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	Yes	The Air and Regulations Management Administration regulations requires surface impoundments to have a permit to construct.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the states regulation, program, or guidance.

Sources:

Annotated Code of Maryland.

Code of Maryland Regulations (COMAR).

Maryland Department of the Environment (MDE) web page (<http://www.mde.state.md.us>).

Massachusetts

The Massachusetts Department of Environmental Protection does not regulate nonhazardous surface impoundments under solid waste regulations. Massachusetts is not authorized to administer the federal NPDES program.

Massachusetts Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	No	Not specified in state regulations.
Design Criteria (liner, leachate collection)	No	Not specified in state regulations.
Operating Criteria	No	Not specified in state regulations.
Monitoring	No	Not specified in state regulations.
Reporting and Recordkeeping	No	Not specified in state regulations.
Inspection and Enforcement	No	Not specified in state regulations.
Performance Standards and Corrective Action	No	Not specified in state regulations.
Closure/Postclosure Care	No	Not specified in state regulations.
Financial Assurance	No	Not specified in state regulations.
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the states regulation, program, or guidance.

Sources:

Code of Massachusetts Regulations (CMR).

Massachusetts Department of Environmental Protection web page (<http://www.state.ma.us/dep>).

Michigan

In Michigan, responsibility for regulating and permitting surface impoundments is consolidated in the state's water program of the Michigan Department of Environmental Quality (MDEQ) if wastewater is discharged to surface or groundwater. If an impoundment is being closed with waste in place, it is regulated under the Solid Waste Management Division.

An NPDES permit is required for impoundments that discharge to surface water and a State permit is required for discharges to groundwater. Both permits are valid for no more than five years, after which they must be renewed.

Michigan Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	Yes	State regulations require surface impoundments discharging to groundwater to be located 50 or more feet (depending on well type) from water supply wells. There must also be 4 feet of vertical isolation between the bottom of the pit and the uppermost groundwater level.
Design Criteria (liner, leachate collection)	Yes	A surface impoundment must have a composite liner, demonstrate that an impoundment is not leaking (at a rate likely to impact groundwater), or conduct monitoring verifying that the impoundment has not impacted groundwater and is not likely to do so.
Operating Criteria	Yes	Surface impoundments must meet certain operating criteria. This includes a minimum of 2 feet of freeboard, and earthen dikes must meet structural integrity and erosion control requirements.
Monitoring	Yes	Groundwater discharge permits require unlined impoundments to monitor for parameters and frequency which are specified in the permit on a case-by-case basis.
Reporting and Recordkeeping	Yes	The owner/operator of impoundments must report monitoring results at least annually.
Inspection and Enforcement	Yes	State regulations give the authority to inspect, but do not specify the frequency.
Performance Standards and Corrective Action	Yes	Notification is required and response action is determined by the state agency if groundwater exceeds state standards.

(continued)

Michigan Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Closure/Postclosure Care	Yes	Impoundments closing with waste in place are subject to Type III landfill closure requirements (i.e., final cover, 6 inches of topsoil, revegetation and erosion control, 30-year postclosure period, and biannual groundwater monitoring), and must remove all free liquids and demonstrate that waste has sufficient bearing capacity for final cover.
Financial Assurance	Yes	Impoundments closing with waste in place are subject to Type III landfill financial assurance requirements that mandate a bond, perpetual care trust, escrow account, or financial test for closure and postclosure care.
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the state's regulation or program.

Sources:

Michigan Administrative Code (MAC).

Michigan Department of Environmental Quality (MDEW) web page (<http://www.deq.state.mi.us/>).

Minnesota

In Minnesota, nonhazardous waste surface impoundments are regulated through the Water Quality Division of the Minnesota Pollution Control Agency (MPCA). A surface impoundment must be covered by the state NPDES permit for discharges to surface or groundwater.

Minnesota Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	No	Not specified in state regulations, but may be applied on a permit-specific basis.
Design Criteria (liner, leachate collection)	No	Not specified in state regulations, but may be applied on a permit-specific basis.
Operating Criteria	No	Not specified in state regulations, but may be applied on a permit-specific basis.
Monitoring	No	Groundwater monitoring not specified in state regulations, but may be applied on a permit-specific basis.
Reporting and Recordkeeping	No	No specified in state regulations.
Inspection and Enforcement	Yes	State regulations give the authority to inspect, but do not specify the frequency. Enforcement mechanisms are not specified in the regulations.
Performance Standards and Corrective Action	Yes	All surface impoundments must conform to applicable effluent limitations and water quality standards.
Closure/Postclosure Care	No	Not specified in state regulations.
Financial Assurance	No	Not specified in state regulations.

(continued)

Minnesota Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the state's regulation or program.

Sources:

Minnesota Statute – Chapter 115.

Minnesota Regulations – Chapters 7001 and 7050.

Minnesota Pollution Control Agency (MPCA) web page (<http://www.state.in.us/idem/index.html>).

Mississippi

In Mississippi, responsibility for regulating and permitting surface impoundments is consolidated in the state's Office of Pollution Control's Surface Water Division of the Mississippi Department of Environmental Quality (DEQ). Mississippi DEQ established guidelines for permitting of surface impoundments within the state.

Any person discharging wastes into waters of Mississippi must obtain an individual NPDES permit or be covered under a general NPDES permit. Any person operating a treatment works from which no discharge of wastes occurs must obtain a state operating permit. Permit writers have the flexibility to impose additional and/or more stringent conditions in the permits. The permit writers have internal guidance that they use. NPDES permits have a fixed term not to exceed five years. At the time of expiration, NPDES permits are reviewed. Permits are modified only if DEQ discovers new information about a facility or upon the request of permittee. State wastewater permits may be issued for a period up to the operating life of the facility.

Mississippi Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	Yes	The location of all surface impoundments within the state must be at least 150 feet from the nearest adjoining property line except where the adjoining property is zoned for commercial or industrial use, or where the adjoining property, dwelling, or commercial establishment is used for commercial or industrial use. The Permit Board will consider requests for exception.
Design Criteria (liner, leachate collection)	No	Not specified in state regulations.
Operating Criteria	No	Not specified in state regulations.
Monitoring	Yes	Surface Water Monitoring: Dischargers are subject to applicable federal effluent standards and limitations if the limitations are not in conflict with state laws. The Permit Board is authorized to specify more stringent effluent limitations to meet applicable water quality standards, treatment standards, or schedules of compliance established by state laws or regulations. The Permit Board specifies average and maximum daily quantitative limitations for the level of wastewater constituents in the discharge in terms of weight and, if appropriate, average or maximum concentration limits.
Reporting and Recordkeeping	Yes	A permittee required to monitor discharges must maintain records and results of the monitoring activities for a minimum of three years. The Permit Board must request the monitoring reports at least once a year.

(continued)

Mississippi Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Inspection and Enforcement	Yes	DEQ is authorized to conduct investigations relating to water quality and pollution causes, prevention, control, and abatement as it deems necessary. DEQ is also authorized to enforce the Mississippi Air and Water Pollution Control Law and all rules and regulations and orders promulgated thereunder.
Performance Standards and Corrective Action	No	Not specified in state regulations.
Closure/Postclosure Care	No	Not specified in state regulations.
Financial Assurance	No	Not specified in state regulations.
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the states regulation or program.

Sources:

Mississippi Statutes and Regulations.

Mississippi Department of Environmental Quality (MDEQ) web page (<http://www.deq.state.ms.us>).

Missouri

In Missouri, the Water Pollution Control Division of the Missouri Department of Natural Resources has the responsibility for regulating and permitting surface impoundments. The regulations for surface impoundments depend on whether there will be surface water or groundwater discharges, and whether the facility plans to close with waste in place. Surface impoundments that remove waste prior to closure are subject to the following permit programs:

- Wastewater construction permit
- State NPDES wastewater operation permit if discharging to surface water or groundwater
- No Discharge Permit if not discharging to surface water or groundwater.

Surface impoundments closing with waste in place are subject to the following permit programs:

- Wastewater construction permit
- State NPDES wastewater operation permit if discharging to surface water or groundwater
- Solid Waste Disposal Area construction and operation permits, but EXEMPT from this requirement if already covered by a state NPDES permit and comply with the solid waste regulation regarding filing of the survey plat with the county recorder upon closure. [10 CSR 80-2.030(2)(B)].

The multiple regulations concerning nonhazardous waste surface impoundments are largely silent on specific requirements and details, leaving them to the discretion of the permit writer.

Missouri Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	No	Not specified in state regulations, but may be required on a permit-specific basis.
Design Criteria (liner, leachate collection)	No	Not specified in state regulations, but may be required on a permit-specific basis.

(continued)

Missouri Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Operating Criteria	No	Not specified in state regulations, but may be required on a permit-specific basis.
Monitoring	Case-by-case	The regulations provide for groundwater monitoring to be required in an NPDES or No-Discharge permit on a case-by-case basis.
Reporting and Recordkeeping	No	Not specified in state regulations, but may be required on a permit-specific basis.
Inspection and Enforcement	Yes	The state regulations provide the authority to inspect but do not specify the frequency.
Performance Standards and Corrective Action	No	Not specified in state regulations, but may be required on a permit-specific basis.
Closure/Postclosure Care	Yes	All impoundments must be closed in accordance with a closure plan, details of plan not specified in regulations. If waste is to be left in place and NPDES permit coverage is obtained, solid waste regulations require the filing of the survey plat with the county recorder upon closure.
Financial Assurance	No	Not specified in state regulations, but may be required on a permit-specific basis.
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the state's regulations or programs.

Sources:

Missouri Statutes: RSMo 16-260; 40-644.

Missouri Regulations: 10 CSR 20-6; 20-8; 80-2; 80-11.

Montana

In Montana, responsibility for regulating and permitting surface impoundments is consolidated in the state's water quality Section of the Montana Department of Environmental Quality (DEQ). Additional state water program requirements are detailed below.

Montana regulations do not include design and operating criteria for surface impoundments. The Montana DEQ, Water Quality Bureau (WQB) reviews the applicable information submitted in the Montana Pollutant Discharge Elimination System (MPDES) and Montana Groundwater Pollution Control System (MGWPCS) permit applications and includes criteria in the conditions of the permit on a case-by-case basis.

The state has full authority to administer the federal NPDES permit program and to issue general permits. Owners and/or operators must obtain a two part MPDES permit that establishes effluent limitations, and monitoring and reporting requirements for discharges into surface waters of Montana. MPDES permit application requirements parallel the federal program. WQB issues MPDES permits.

An owner and/or operator of any source that may discharge pollutants into state groundwaters must obtain a MGWPCS permit. All applications for a MGWPCS permit must include general information on the site, processes, existing groundwater quality, etc. The state may require submission of more detailed information, such as specific design criteria; description of liner; proposed emergency procedures; and specifically for industrial waste, a description of the waste volumes and concentrations. WQB issues MGWPCS permits. Holders of MGWPCS permits must assure compliance with the groundwater quality standards and non-degradation policy.

Montana Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	No	Not specified in state regulations.
Design Criteria (liner, leachate collection)	Case-by-case	WQB may include design criteria (e.g., liners) in MGWPCS on a case-by-case basis.
Operating Criteria	Case-by-case	WQB may include operating criteria in MGWPCS on a case-by-case basis.

(continued)

Montana Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Monitoring	Yes	<p>Surface Water Monitoring: MPDES regulations adopt the monitoring and reporting requirements at 40 CFR 122.44.</p> <p>Groundwater Monitoring: All MGWPCS permits must include self-monitoring requirements for each discharge. Permits must discuss monitoring well configuration, pollutants to be monitored, frequency of monitoring, sampling methods, and recording and reporting procedures.</p>
Reporting and Recordkeeping	No	Not specified in state regulations.
Inspection and Enforcement	No	Not specified in state regulations.
Performance Standards and Corrective Action	Case-by-case	WQB may include remediation requirements (e.g., emergency procedures) in MGWPCS on a case-by-case basis.
Closure/Postclosure Care	No	Not specified in state regulations.
Financial Assurance	No	Not specified in state regulations.
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the states regulation, program, or guidance.

Sources:

Montana Administrative Code (MAC).

Montana Department of Environmental Quality (MDEQ) web page (<http://www.deq.state.mt.us>).

Nebraska

In Nebraska, responsibility for regulating and permitting surface impoundments is consolidated in the state's water quality division of the Nebraska Department of Environmental Quality (NDEQ). NDEQ established guidelines for permitting of surface impoundments within the state.

Nebraska is authorized to issue NPDES permits in the state. In addition, the state is also authorized to implement and enforce the pretreatment program pursuant to 40 CFR 403.10(e).

Nebraska Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	Yes	A lagoon shall not be installed or operated on a property less than 3 acres in size. The floor of the lagoon shall be located at least 2 feet above the highest expected groundwater level and at least 2 feet above fractured bedrock. The regulations specify the maximum permissible distances to surface water, types of wells, and property lines.
Design Criteria (liner, leachate collection)	Yes	The soil material of the impoundment floor shall be designed so that it shall not seep more than 1/8th inch per day. If soil borings and tests indicate that the existing soils are not conducive to compaction, then soda ash, bentonite, or a synthetic liner shall be used. The floor of the impoundment shall be level with a difference of plus or minus 3 inches is permitted. The regulations specify the maximum slope permissible.
Operating Criteria	Yes	A minimum of one foot of freeboard is required. The crest elevation of the impoundment should be greater than the elevation of a 100-year flood elevation. The impoundment shall be located and constructed so it will not receive surface runoff water. The lagoon shall be fenced with a 4-foot high woven wire, welded wire, or 7 strand barbed wire with the first strand starting 3 inches from the ground and the following strands spaced evenly. The fence shall be equipped with a standard main gate that is kept locked. The fence shall be placed on the outside edge of the top of the dike or 4 feet outside the toe of the dike. Signs shall be located on each gate with a warning of "NO TRESPASSING - WASTEWATER LAGOON."
Monitoring	Yes	Groundwater Quality: The Department may require, as a permit condition, groundwater monitoring for any onsite wastewater treatment system if there is a potential for groundwater pollution.
Reporting and Recordkeeping	No	Not specified in state regulations.
Inspection and Enforcement	Yes	NDEQ has administrative enforcement authority and the authority to levy a penalty.

(continued)

Nebraska Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Performance Standards and Corrective Action	No	Not specified in state regulations.
Closure/Postclosure Care	No	Not specified in state regulations.
Financial Assurance	No	Not specified in state regulations.
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the states regulation, program, or guidance.

Source:

Nebraska Administrative Code (NAC).

Nebraska Department of Environmental Quality (NDEQ) web page (<http://www.deq.state.ne.us>).

Nevada

Nevada regulates surface impoundments as part of its water program. A Surface Water Discharge Permit is required before any discharge to surface waters or to an area where surface waters may be affected. Permits are valid for five years.

Nevada Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	No	Not specified in state regulations.
Design Criteria (liner, leachate collection)	Yes	All ponds that are intended to contain process fluids must have a primary synthetic liner and a secondary liner. Ponds that are primarily designed to contain excess quantities of process fluids that result from storm events for limited periods may be constructed with a single liner if approved by the department. Ponds containing nonprocess fluids may be required to be lined depending on their potential to degrade waters of the state. A tailings impoundment must utilize a system of containment equivalent to 12 inches of recompacted native, imported, or amended soils which have an in place recompacted coefficient of permeability of no more than 1×10^{-6} cm/sec; or competent bedrock or other geologic formations underlying the site that has been demonstrated to provide a degree of containment equivalent 1×10^{-6} cm/sec. No operator who conducts oil or gas development and production may use unlined collecting pits for storage and evaporation of brines from the oil field. Between the liners there must be a material which has the ability to rapidly transport any fluids entering it to a collection point which is accessible and has a system for recovering those fluids. When the material between the liners is unable to collect, transport and remove all liquids at a rate that will prevent hydraulic head transference from the primary liner to the secondary liner, the pond must be shut down.
Operating Criteria	No	Not specified in state regulations.
Monitoring	Yes	Surface water monitoring is required for surface impoundments that are permitted under the NPDES program.
Reporting and Recordkeeping	No	Not specified in state regulations.
Inspection and Enforcement	Yes	State regulations give the authority to inspect, but do not specify the frequency.
Performance Standards and Corrective Action	No	Not specified in state regulations.

(continued)

Nevada Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Closure/Postclosure Care	No	Not specified in state regulations.
Financial Assurance	No	Not specified in state regulations.
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the states regulation, program, or guidance.

Sources:

Nevada Administrative Code (NAC).

Nevada Department of Environmental Protection (NDEP) web page (<http://www.state.nv.us/ndep>).

New Hampshire

The responsibility for regulating surface impoundments is found in New Hampshire's Division of Water program of the New Hampshire Department of Environmental Services. New Hampshire is not delegated NPDES authority. EPA is responsible for implementing the NPDES permit process in accordance with Section 402 of the CWA. The state works closely with EPA to establish appropriate discharge limits. Prior to issuance of the NPDES permit, the state must certify that the permit meets state water quality laws and regulations. Permits are generally issued for five years.

New Hampshire Department of Environmental Services (DES) established regulations regarding surface impoundments within the state. Key elements of the regulations are highlighted below.

New Hampshire Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	No	Not specified in state regulations.
Design Criteria (liner, leachate collection)	Yes	Plastic membrane liners must be installed in all new lagoons. Lagoon bottoms must form a stable structure impervious to seepage of lagoon liquid. The lagoon bottom must be smooth and level at all points. Finished elevations must vary not more than 3 inches from the average elevation of the bottom. Lagoons must be designed such that surface water shall not flow or drain into the lagoons. Lagoon dikes, embankments, and bottoms shall form a stable structure impervious to seepage of lagoon liquid. The minimum top width of a dike or embankment must be 8 feet to permit access by maintenance vehicles. The embankments must have inner faces not steeper than a 3:1 (horizontal to vertical) slope nor shallower than a 4:1 slope, and outer faces not steeper than a 3:1 slope.
Operating Criteria	Yes	Lagoon dikes must be designed to provide a minimum of three feet of freeboard above normal lagoon water surface elevation. The maximum and minimum normal operating depths shall be 5 feet and 3 feet, respectively. Seeding and erosion control shall have all outside slopes seeded and inside slopes shall have rip rap of suitable size and weight installed to at least one foot below normal lagoon level. To prevent erosion due to discharge at the termination of distribution piping, the piping must rest on a concrete apron 4 feet square, as a minimum.
Monitoring	No	Not specified in state regulations.
Reporting and Recordkeeping	No	Not specified in state regulations.

(continued)

**New Hampshire Requirements for Nonhazardous Waste Surface
Impoundments (continued)**

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Inspection and Enforcement	Yes	State regulations give the authority to inspect, but do not specify the frequency. Formal enforcement actions may be taken. These may include Letters of Deficiency (LOD), Administrative Orders (AO), Administrative Fines, Consent Agreements, or Consent Decrees. In cases where court orders such Consent Agreements or Consent Decrees are to be issued, a referral is made to the New Hampshire Department of Justice. Depending on the availability of resources, and the specifics of a case, enforcement actions may be turned over to the EPA or performed in conjunction with EPA
Performance Standards and Corrective Action	No	Not specified in state regulations.
Closure/Postclosure Care	No	Not specified in state regulations.
Financial Assurance	No	Not specified in state regulations.
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the states regulation, program, or guidance.

Sources:

New Hampshire Administrative Rules.

New Hampshire Department of Environmental Services (DES) web page (<http://www.des.state.nh.us>).

New Jersey

In New Jersey, responsibility for regulating and permitting surface impoundments is consolidated in the state's water quality Section of the New Jersey Department of Environmental Protection (NJDEP). NJDEP established guidelines for permitting of surface impoundments within the state. State Regulations require a New Jersey Pollutant Discharge Elimination System (NJPDES) permit for any discharge of any pollutant. NJDEP has full authority to administer the Federal NPDES permit program and to issue general permits.

New Jersey Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	Yes	NJDEP requires applicants to submit scale plan; topographic, geologic, soil, and water table maps; a plot plan showing the impoundment area; and a soils evaluation report. NJDEP usually requires some type of siting or location standards. In general NJDEP will not allow applicants to site impoundments in a 100-year floodplain, unless the applicant proves that the impoundment will not create a danger to health or the environment.
Design Criteria (liner, leachate collection)	Yes	All surface impoundments must have a liner either of natural or man-made material. The liners must be impervious, which is defined as having a permeability of 10 ⁻⁷ cm/sec. Leachate collection and removal systems are not usually required for nonhazardous waste surface impoundments. However, if NJDEP finds the waste constituents to be a potential danger to human health and the environment, a leachate collection system (e.g. underdrains) may be required.
Operating Criteria	Yes	A minimum of 2 feet of freeboard is required. NJDEP incorporates standards into the permit on a case-by-case basis for soil erosion and sedimentation control. At a minimum, vegetation must be placed on earthen dikes to prevent erosion. NJDEP incorporates standards into the permit on a case-by-case basis. At a minimum, dikes must be maintained to prevent failure.
Monitoring	Yes	NPDES permittees must comply with extensive sampling, analysis, and water monitoring requirements, and must submit monthly monitoring reports. Groundwater and Surface Water: Surface impoundment applications must include designs for groundwater and surface water monitoring, including the proposed location and sampling procedures. Nonhazardous waste facilities must conduct groundwater quality monitoring according to the requirements for hazardous waste facilities, including number and type of wells, sampling and analysis procedures, sampling parameters, etc.

(continued)

New Jersey Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Reporting and Recordkeeping	Yes	Applicants must submit information on waste volume, degree of treatment, and raw and treated effluent analyses of several parameters. NJDEP incorporates standards into the permit on a case-by-case basis.
Inspection and Enforcement	Yes	Permits include monthly operator inspection requirements of the liner and dikes.
Performance Standards and Corrective Action	Yes	<p>If leakage occurs, the amount of corrective measures to be taken is contingent on the potential danger of the waste to human health and the environment. If a low-impact leak occurs, corrective measures may include placement of wells to monitor impact on groundwater. A high-impact leak may require removal of the wastewater from the impoundment, removal and replacement of liner, and soil sampling.</p> <p>Permits include plans for accidents and emergencies. In the event of an accident or an emergency, the owner/operator must be able to stop the flow of wastewater into the impoundment, empty the impoundment, and take other measures necessary to correct the problem. Owner/operators must notify NJDEP in the event of dike failure, overflow, or substantial drop in level of wastewater in pond.</p>
Closure/Postclosure Care	Yes	The state NJPDES permit specifies regulations for impoundments which discharge to surface or groundwater.
Financial Assurance	No	Not specified in state regulations.
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the states regulation, program, or guidance.

Sources:

NJDEP Regulations.

New Jersey Department of Environmental Protection (NJDEP) web page (<http://www.state.nj.us/dep/>).

New Mexico

In New Mexico, nonhazardous waste surface impoundments are regulated through the New Mexico Environment Department (NMED). Surface impoundments that discharge to groundwater must have a groundwater discharge plan approved by the NMED (maximum duration of 5 years). Additional requirements may be imposed on surface water dischargers by the EPA region under the NPDES program.

New Mexico Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	No	Not specified in state regulations.
Design Criteria (liner, leachate collection)	Yes	State regulations require that the design of a surface impoundment must include the site and method for flow measurement and sampling.
Operating Criteria	No	Not specified in state regulations.
Monitoring	Case-by-case	The state agency may require monitoring as part of groundwater discharge plan on a site-specific basis.
Reporting and Recordkeeping	Case-by-case	The state agency may require submission of monitoring results, retention of records for 5 years, and other reporting and recordkeeping as part of groundwater discharge plan on a site-specific basis.
Inspection and Enforcement	Yes	State regulations give the authority to inspect, but do not specify the frequency.
Performance Standards and Corrective Action	Case-by-case	The state agency may require a site-specific contingency plan as part of a groundwater discharge plan. The facility may be required to modify the discharge plan (or prepare an abatement plan if the discharge plan has expired or been terminated) if groundwater exceeds state standards at the current or foreseeable withdrawal points; or surface water exceeds state standards.
Closure/Postclosure Care	Case-by-case	The state agency may require a closure plan sufficient to prevent exceedances of state standards as part of a groundwater discharge plan. The closure plan may include provisions for postclosure monitoring and maintenance.
Financial Assurance	Case-by-case	The closure plan may include requirements for financial assurance. The allowable mechanisms are not specified in the state regulations.

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New Mexico Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the state's regulation or program.

Sources:

New Mexico Administrative Code (NMAC) Chapter 6, Part 2, Subparts III & IV.

New Mexico Environment Department (NMED) web page (<http://www.nmenv.state.nm.us>).

New York

New York requirements regarding nondischarge, nonhazardous surface impoundments are found in the state's RCRA program under the New York State Department of Environmental Conservation (NYDEC). Surface impoundments that discharge to waters of the state are permitted under the water program.

For other surface impoundments, New York requires permits. Under the solid waste regulations, surface impoundments are regulated as land application units and also are subject to requirements for liquid storage. Permits for surface impoundments must include a description of the liquid to be stored; the estimated volume of liquid generated and a proposed recordkeeping system to record actual quantities stored; a schedule of liquid removal; a description of the final treatment and disposal of the liquid stored; a description of the liquid storage facility design; and a closure plan.

RCRA permit: Solid waste permits are valid for up to 10 years, except that permits issued pursuant to the Clean Water Act for sewage sludge must not be issued for a period exceeding five years.

NYPDES permit: New York is authorized to implement the federal CWA NPDES program. Any owner/operator of a surface impoundment subject to NPDES requirements (i.e., discharging directly to waters of the state) must submit an NPDES permit application. NYDEC also establishes and ensures compliance with effluent limitations or other more stringent limitations to ensure compliance with water quality standards.

The requirements below do not apply to a facility that exclusively treats wastewater that is regulated under the Clean Water Act.

New York Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	Yes	Solid waste management facilities must not be constructed or operated in a manner that causes or contributes to the taking of any endangered or threatened species or to the destruction or adverse modification of their critical habitat. Siting is prohibited in agricultural land, floodplains (unless provisions have been made to prevent the encroachment of flood waters), or within the boundary of a regulated wetland. Any surface impoundment must be constructed a minimum of 5 feet above the seasonally high groundwater table, and a minimum of 5 feet of vertical separation must be maintained between the base of the constructed liner and bedrock. Surface impoundments must be constructed above the 100-year flood elevation.

(continued)

New York Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Design Criteria (liner, leachate collection)	Yes	Surface impoundments must be constructed with a liner system to minimize percolation. Surface impoundments must be constructed with a liner system consisting of a minimum of two liners and a leak-detection system. The top liner must be a geosynthetic liner with a minimum thickness equal to 60 mils. Ballast material, such as rounded gravel or sand, that will not cause damage to the geosynthetic liner must be placed on top of the liner to preserve liner integrity. The lower composite liner must consist of a minimum of 2 feet of compacted soil with a maximum coefficient of permeability of 1×10^{-7} centimeters per second overlain by a geosynthetic liner at least 60 mils thick. The bottom of the impoundment liner system must be a minimum of 5 feet above both the seasonal high groundwater table and top of bedrock.
Operating Criteria	Yes	All solid waste management facilities must be constructed, operated and closed in a manner that minimizes the generation of leachate that must be disposed of and prevent the migration of leachate into surface and groundwaters. Leachate must not be allowed to drain or discharge into surface water except pursuant to a State Pollutant Discharge Elimination System permit and must not cause or contribute to contravention of groundwater quality standards established by the state. A leak detection and removal system must be installed between the two synthetic liners. Surface impoundments must have a minimum 2 feet of freeboard. Proper site grading must be maintained to prevent depressions, desiccation cracks or soil erosion and minimize ponding. Facilities are required to have a waste control plan as part of their permit.
Monitoring	Yes	<p>Surface and groundwater quality monitoring: Solid waste must not be deposited in, and must be prevented from, entering surface waters or groundwaters. Groundwater monitoring is required. A minimum of three groundwater monitoring wells, one upgradient and two downgradient of the surface impoundment, must be installed and sampled. Quarterly sampling of the wells at the surface impoundment must be conducted on the following parameters: chloride, nitrate, sulfate, specific conductivity, total hardness, alkalinity, and total organic carbon or chemical oxygen demand.</p> <p>Samples and measurements taken for the purpose of monitoring must be representative of the monitored activity and must be conducted in a manner approved by the department, including the use of a laboratory and data-reporting format acceptable to the department.</p>
Reporting and Recordkeeping	No	Not specified in state regulations.

(continued)

New York Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Inspection and Enforcement	Yes	NYDEC is authorized to implement the RCRA solid waste requirements by the state legislature. New York has the authority to implement the federal CWA requirements.
Performance Standards and Corrective Action	Yes	Every application for a permit must include a contingency plan. For surface impoundments, the contingency plan must address the steps that will be taken in the event of contamination detected in the downgradient wells or leak detection system. Contingency plans approved by the department for emergency situations must be implemented in accordance with the terms of the plan.
Closure/Postclosure Care	Yes	Regulations specify specific requirements for non-discharging impoundments.
Financial Assurance	Yes	Financial assurance is required for non-discharging impoundments.
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the states regulation or program.

Sources:

New York Codes, Rules and Regulations (NYCRR).

New York State Department of Environmental Conservation (NYS DEC) web page (<http://www.dec.state.ny.us>).

North Carolina

In North Carolina, responsibility for regulating and permitting nonhazardous surface impoundments is consolidated in the Water Quality Section of the North Carolina Department of Environment and Natural Resources (DENR). An impoundment must be covered by either a state NPDES permit if it discharges to surface water or a state permit if it does not. The regulations outlined in the table below apply to discharging and non-discharging facilities unless otherwise indicated.

North Carolina Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	Yes	State regulations require that a surface impoundment must be at least 4 feet above the seasonal water table; 50 feet from property lines rivers, and streams; and 500 feet from dwellings and wells. Restrictions also apply for locations near 100-year floodplains, endangered species habitats, and historical sites and parks.
Design Criteria (liner, leachate collection)	Yes	State regulations require that if waste is less than 4 feet above bedrock there must be a liner of 10^{-7} hydraulic conductivity or demonstration that the design will meet groundwater standards.
Operating Criteria	Yes	State regulations identify minimum freeboard requirements.
Monitoring	Yes	State regulations require that nondischangers monitor groundwater quality, but details determined on case-by-case basis.
Reporting and Recordkeeping	No	Not specified in state regulations.
Inspection and Enforcement	Yes	State regulations give the authority to inspect with the frequency not specified.
Performance Standards and Corrective Action	Yes	Corrective action is required if groundwater exceeds state standards at compliance boundary (250 feet from waste boundary). Assessment and possible preventative measures are required if groundwater exceeds state standards at review boundary (midway to compliance boundary).
Closure/Postclosure Care	No	Not specified in state regulations, but may be applied on a permit-specific basis.
Financial Assurance	No	The authority to require financial assurance exists, but no specific mechanisms are identified/required in the state regulations.

(continued)

**North Carolina Requirements for Nonhazardous Waste Surface
Impoundments (continued)**

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the state's regulations or programs.

Sources:

North Carolina Administrative Code (NCAC) Title 15A, Chapter 2, Subchapters 2L & 2H; Title 15A Chapter 13, Subchapter 13B.

North Carolina Department of Environment and Natural Resources (DENR) web page (<http://h2o.enr.state.nc.us/admin/rules/>).

North Dakota

In North Dakota, nonhazardous waste surface impoundments are regulated through the Department of Health's Division of Waste Management. Impoundments must be covered by a solid waste management permit (duration not specified in the regulations), and an NPDES permit if discharging to surface water (duration of up to 5 years). If an impoundment has both permits because it is a surface water discharger, the design and operating criteria specified in the solid waste management permit regulations are not applicable.

North Dakota Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	Yes	State regulations require surface impoundments to be located 1,000 feet downgradient from drinking water wells, 200 feet from surface water or wetlands, 200 feet from surface water or wetlands, and 1,000 feet from parks. The regulations specify prohibitions for disposal within an aquifer, wellhead protection areas, 100-year flood plains, unstable areas, critical habitats, principal glacial drift aquifers, and pipelines and transmission lines.
Design Criteria (liner, leachate collection)	Yes	Non-discharging impoundments: Impoundments that do not discharge to surface water must have a liner that is 4 feet thick with a permeability of less than 10^{-7} or equivalent (applicable to units permitted after December 1, 1992) and meet dike construction criteria. Surface water discharging impoundments: Not specified in state regulations. May be required as part of permit on a site-specific basis.
Operating Criteria	Yes	Non-discharging impoundments: Impoundments that do not discharge to surface water must have a minimum of 2 feet of freeboard, monthly operational inspections, and a contingency plan. Surface water discharging impoundments: Not specified in state regulations. May be required as part of permit on a site-specific basis.
Monitoring	Yes	State regulations require a measurement of quantity of waste disposed if >20 tons per day. Semiannual groundwater monitoring of at least 1 upgradient and 2 downgradient wells is required (constituents determined on case-by-case basis). Monitoring of compliance boundary is required within property line no more than 500 feet from the unit.
Reporting and Recordkeeping	Yes	Semiannual groundwater monitoring results; operating records; annual audits of financial assurance mechanisms; and annual reporting of waste quantity and noncompliances.
Inspection and Enforcement	Yes	State regulations give the authority to inspect, but do not specify the frequency.

(continued)

**North Dakota Requirements for Nonhazardous Waste Surface
Impoundments (continued)**

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Performance Standards and Corrective Action	Yes	Remedial measures are required if groundwater exceeds state standards or other permit limits at compliance boundary.
Closure/Postclosure Care	Yes	State regulations require a closure plan. Closure in place is allowed if liquids are removed, impoundment is lined with low-permeability material (applicable to units permitted after December 1, 1992), a final cover is installed with vegetation and a permeability less than the liner, run-on and erosion controls are installed, and postclosure monitoring is conducted.
Financial Assurance	Yes	A reserve account, trust fund, surety bond, irrevocable letter of credit, financial test insurance policy, or corporate guarantee is required for closure, postclosure, and corrective action (for facilities closed after April 9, 1994).
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the state's regulations or program.

Sources:

North Dakota Century Code (NDCC) Chapters 23–29 & 33–20.

North Dakota Department of Health (NDHD) web page
(<http://www.health.state.nd.us/ndhd/environ/wm/index.htm>).

Ohio

The Permits Section in the Division of Water Pollution Control of the Ohio Environmental Protection Agency (OEPA) oversees the regulations and permits regarding nonhazardous waste surface impoundments. The regulatory program related to surface impoundments has two components: the permit to install (valid for life of the facility) and the NPDES permit for discharges to surface water or groundwater (valid for up to 5 years).

Ohio Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	No	Not specified in state regulations, but may be required as part of a permit on a site-specific basis.
Design Criteria (liner, leachate collection)	No	Not specified in state regulations, but may be required as part of a permit on a site-specific basis.
Operating Criteria	No	Not specified in state regulations, but may be required as part of a permit on a site-specific basis.
Monitoring	No	Not specified in state regulations, but may be required as part of a permit on a site-specific basis.
Reporting and Recordkeeping	Yes	State regulations require monthly and annual reports with information as specified in the permit. If applicable, reports of monitoring are required at least annually.
Inspection and Enforcement	Yes	State regulations give the authority to inspect, but do not specify the frequency.
Performance Standards and Corrective Action	Yes	State regulations require compliance with applicable effluent limitations, water quality standards, and standards which prohibit significant degradation of waters of the state. Specific enforcement mechanisms, however, are not specified in the regulations.
Closure/Postclosure Care	No	Not specified in state regulations, but may be required as part of a permit on a site-specific basis.
Financial Assurance	No	Not specified in state regulations, but may be required as part of a permit on a site-specific basis.

(continued)

Ohio Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the state's regulations or programs.

Sources:

Ohio Regulations: Ohio Administrative Code (OAC) 3745-31; 3745-33.

Ohio Environmental Protection Agency (OEPA) web page (<http://www.epa.state.oh.us>).

Oklahoma

In Oklahoma, nonhazardous waste surface impoundments are regulated through the Oklahoma Department of Environmental Quality (ODEQ) under its water program. A State Operation Permit is required for all impoundments (valid for up to 5 years), while a state NPDES permit is required for discharges to surface water or groundwater (valid for up to 5 years).

The state regulations establish five classes of surface impoundments with little difference in the regulatory requirements for each class. The determination of impoundment class is at the discretion of the permit writer. In general, Classes I and II contain wastes with high concentrations of harmful pollutants with (I) high or (II) low mobility in groundwater; Class III contains wastes with other pollutants that may, if discharged, pollute the environment or waters of the state; Class IV contains sanitary wastewater; and Class V contains industrial wastewater not otherwise classified. The regulations outlined in the table below apply to all classes of impoundments unless otherwise indicated.

Oklahoma Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	Yes	The state regulations specify the following location/siting standards: <ul style="list-style-type: none"> • Not in floodways or floodplains • 50 feet from private wells • 300 feet from public water supplies • 10 feet from property lines • Crest of dikes must be at least 1 foot above 100-year flood elevation • Bottom of impoundment must be 15 feet above groundwater table
Design Criteria (liner, leachate collection)	Yes	The state regulations specify the following design standards: <ul style="list-style-type: none"> • Run-on/run-off controls • Erosion controls • Dike slopes no steeper than 1:3 • Liner system (native soil, compacted clay with 12 inches of soil, flexible membrane liner with protective soil cover, or composite liner) depending on class of impoundment
Operating Criteria	Yes	The state regulations specify a minimum of 3 feet of freeboard. In addition, a written Maintenance and Operation Plan is required for Classes I and II only.
Monitoring	Case-by-case	Groundwater monitoring may be required when there is a potential for groundwater contamination. If required, there must be 1 upgradient and 2 downgradient wells, and a detailed monitoring plan must be submitted.
Reporting and Recordkeeping	Yes	The state regulations require submission of Self-Monitoring Report forms and reports of spills or releases.

(continued)

Oklahoma Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Inspection and Enforcement	Yes	State regulations give the authority to inspect, but do not specify the frequency.
Performance Standards and Corrective Action	Yes	The state regulations require conformance to applicable water quality standards.
Closure/Postclosure Care	Yes	The state regulations require the submission of a preclosure sampling and analysis plan, and a closure plan. In addition, caps must be installed in conformance with liner requirements. The state agency may require submission of a postclosure maintenance plan on a case-by-case basis. A postclosure duration is not specified in the state regulations.
Financial Assurance	Yes	The state regulations stipulate that the owner/operator of the impoundment must demonstrate financial capability for operation, maintenance, replacement, and closure. The types of mechanisms and duration are not specified in the state regulations.
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the state's regulations or programs.

Sources:

Oklahoma Agency Rules (OAR) 252-605 & 252-616.

Oklahoma Department of Environmental Quality (ODEQ) web page (<http://www.deq.state.ok.us>).

Oregon

In Oregon, the responsibility for regulating and permitting nonhazardous surface impoundments is divided between the Water Quality Program and the Recycling and Solid Waste Program of the Oregon Department of Environmental Quality. The RCRA program requirements provide a general basis for surface impoundment regulations. Additional facility-specific requirements may be added to permits.

All sources that discharge wastewater to surface waters of the state must obtain a NPDES permit. Sources that discharge wastes into a sewerage system do not have to obtain a permit. General requirements require effluent and discharge limitations, recordkeeping, monitoring and reporting, and operation and maintenance responsibilities.

Along with a NPDES permit, facilities containing land irrigation systems, evaporation lagoons, industrial seepage pits, and on-site sewage disposal systems designed for wastewater flows greater than 2,500 gallons per day that have no direct discharge to surface waters are required to obtain a water pollution control facility permit.

Some facilities are required to obtain a storm water permit dependent on the facility's industrial activity.

A facility is required to obtain a solid waste permit prior to operation if it plans to store, receive, or landfill any garbage, demolition waste, industrial waste, or sludge. Typical requirements of these permits generally include the use of "best management practices" to prevent contamination of the surrounding environment.

Oregon Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	Yes	Location of disposal sites shall be determined by giving special consideration to the topography and geology of the surrounding area as well as other characteristics as they may affect the protection of ground and surface waters and air pollution. All industrial solid waste impoundments shall be located a minimum of 100 feet horizontal distance from the normal highwater mark of any public waters. All sludge lagoons shall be located a minimum of 1/4 mile from the nearest residence. Barriers shall be constructed to prevent public access to the facility.

(continued)

Oregon Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Design Criteria (liner, leachate collection)	Yes	All surface impoundments must include a readily washable landfill-type liner with a leachate removal system. The liner must demonstrate both physical and chemical compatibility with the waste being stored. Liners must be impervious to damage such as cracks and leaks. A concrete slab is not considered an acceptable liner. The impoundment shall also have a tight lid or cover. All impoundments are required to have a leachate removal system incorporated with a liner unless the facility contains a vadose monitoring system. Some facilities may be required to incorporate such physical features as dikes and berms into the design criteria for the impoundment.
Operating Criteria	Yes	Each facility is to ensure that surface runoff and leachate seeps are controlled as to minimize discharge of pollutants to public waters. A minimum of 3 feet of dike freeboard shall be maintained above the maximum water level within a sludge lagoon. It is required that all facilities dispose of nonhazardous sludge.
Monitoring	Yes	<p>Groundwater: The department and/or solid waste permits may require a groundwater monitoring system dependent on the type of waste contained in the impoundments and the facility's cover, run-on controls and irrigation system.</p> <p>Surface Water: NPDES requirements include surface water monitoring, analysis, and recordkeeping and reporting.</p>
Reporting and Recordkeeping	Yes	The state solid waste storage permit specifies reporting and recordkeeping requirements.
Inspection and Enforcement	Yes	All nonhazardous waste producing facilities are required to grant inspection authority to the appropriate implementing agency. The terms of these inspections are permit specific for each facility. The Environmental Quality Commission has the authority to take the necessary appropriate actions to ensure the enforcement of its rules or orders, as well as, levy both criminal and civil penalties against a facility.
Performance Standards and Corrective Action	Yes	The state solid waste storage permit specifies that corrective action is required if necessary.
Closure/Postclosure Care	Yes	The state solid waste storage permit specifies that closure/postclosure care is required.
Financial Assurance	Yes	The state solid waste storage permit specifies that financial care is required.

(continued)

Oregon Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the states regulation, program, or guidance.

Sources:

Oregon Administrative Rules (OAR).

Oregon Department of Environmental Quality web page (<http://www.deq.state.or.us>).

Pennsylvania

Pennsylvania Department of Environmental Resource (PADEP) regulates surface impoundments based on their type and establishes design and operating requirements based on the nature of the waste being managed.

In Pennsylvania, responsibility for regulating and permitting nonhazardous surface impoundments is delegated between the state's Division of Water Quality, responsible for the NPDES program for discharging impoundments, and the Division of Municipal and Residual Waste, responsible for managing disposal and processing impoundments under the residual waste program.

Operators of disposal surface impoundments must obtain a Residual Waste Disposal Permit, and a Water Quality Management Permit Part I (i.e., NPDES permit) if the impoundment will discharge to waters of the state. A "disposal" impoundment is one that stores waste for more than 1 year without regularly removing the waste. Disposal impoundments are classified into two types, the only difference in requirements being the type of liner system:

- Type 1: Wastes with TCLP \geq 50 times Federal MCLs
- Type 2: Wastes with TCLP <50 times Federal MCLs.

Operators of captive processing surface impoundments must abide by the residual waste Permit-by-Rule regulations, and must obtain a Water Quality Management Permit Part I (i.e., NPDES permit) if the impoundment will discharge to waters of the state.

The residual waste regulations for the Permit-by-Rule and Residual Waste Disposal Permit address all the criteria listed in the table below. The table includes the regulatory requirements under the Residual Waste Disposal Permit—some requirements are less stringent under the Permit-by-Rule regulations.

Pennsylvania Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	Yes	The residual permit regulations specify restrictions for 100-year floodplains, wetlands, sinkhole-prone limestone and carbonate formations, perennial streams, property lines, and nearby water sources.
Design Criteria (liner, leachate collection)	Yes	The residual permit regulations specify requirements for liners, leachate detection and collection, structural integrity, and run-on/run-off controls.

(continued)

**Pennsylvania Requirements for Nonhazardous Waste Surface
Impoundments (continued)**

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Operating Criteria	Yes	The residual permit regulations specify minimum freeboard requirements, separation of liquids from solid waste, and solidification of waste times.
Monitoring	Yes	The residual permit regulations require a monitoring plan and upgradient and downgradient groundwater monitoring within 200 feet of disposal area. Regulations require that indicators shall be monitored quarterly, and metals and VOCs shall be samples annually.
Reporting and Recordkeeping	Yes	The residual permit regulations require annual waste quantity and disposition reports; quarterly groundwater results; and daily, quarterly and annual operational reports. These records must be maintained for the entire length of the bond held for that facility.
Inspection and Enforcement	Yes	The residual permit regulations allow PADER to conduct up to 12 inspections per year. However, there is no established minimum number of inspections per year for any given facility.
Performance Standards and Corrective Action	Yes	The residual permit regulations require abatement if: groundwater exceeds permit-specific trigger levels, groundwater exceeds state standards, groundwater exceeds background where background is greater than state standards, or degradation of groundwater at property boundaries.
Closure/Postclosure Care	Yes	The residual permit regulations require an approved closure plan that includes plans for caps, leachate management, and revegetation. There is no postclosure period specified by the regulations.
Financial Assurance	Yes	The residual permit regulations stipulate that a surety bond, collateral bond, letter of credit, certificate of deposit, or combination thereof must be maintained for a duration of 10 years after final closure along with public liability insurance.
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	Yes	The state regulations require all owners/operators of surface impoundments to implement fugitive air contaminant control measures. If the waste managed at the facility generates gas, the operator must monitor quarterly off-site gas migration and gas accumulation on and off the site.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the state's regulations or programs.

Sources:

Pennsylvania Code (PAC) Chapters 92, 287, 289.

Pennsylvania Department of Environmental Protection (PADEP) web page (http://www.dep.state.pa.us/business_industry/default.htm).

Rhode Island

Rhode Island requires a state NPDES permit for discharges to surface and groundwater, administered by the Division of Water Resources in the Department of Environmental Management, but does not further regulate nonhazardous waste surface impoundments. If an impoundment has a liner and doesn't not leach or overflow, an NPDES permit is not necessary, but the liner is not required.

Rhode Island Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	No	Not specified in state regulations.
Design Criteria (liner, leachate collection)	No	Not specified in state regulations.
Operating Criteria	No	Not specified in state regulations.
Monitoring	No	Not specified in state regulations.
Reporting and Recordkeeping	No	Not specified in state regulations.
Inspection and Enforcement	Yes	State regulations give the authority to inspect, but do not specify the frequency.
Performance Standards and Corrective Action	No	Not specified in state regulations.
Closure/Postclosure Care	No	Not specified in state regulations.
Financial Assurance	No	Not specified in state regulations.
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the states regulation or program.

Source:

Rhode Island Administrative Rules 12-190 et seq.

South Carolina

The Bureau of Water Pollution Control under the South Carolina Department of Environmental Control administers the programs concerning nonhazardous waste surface impoundments. Surface impoundments must be covered either by a state NPDES permit (if discharge to surface or groundwater), or a nondischarge permit. In addition, construction and operation permits need to be obtained if an impoundment exceeds wastestream limitations.

South Carolina Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	No	Not specified in state regulations.
Design Criteria (liner, leachate collection)	No	Not specified in state regulations. Under non-discharge permit, determined on a case-by-case basis.
Operating Criteria	No	Not specified in state regulations. Under non-discharge permit, determined on a case-by-case basis.
Monitoring	Yes	Non-discharge permits require groundwater monitoring
Reporting and Recordkeeping	No	Not specified in state regulations.
Inspection and Enforcement	No	Not specified in state regulations.
Performance Standards and Corrective Action	Yes	Non-discharge permits require the facility's groundwater monitoring system to meet state groundwater standards.
Closure/Postclosure Care	Yes	State regulations specify closure guidelines and require monitoring on case-by-case basis as necessary to prevent water quality violations or nuisance conditions.
Financial Assurance	No	Not specified in state regulations.
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the states regulation or program.

Source:

South Carolina Regulations Title 61-9 and 61-82.

South Dakota

South Dakota's Department of Environment and Natural Resources administers the programs regulating nonhazardous waste surface impoundments. Such impoundments are subject to water, solid waste, and air regulations. Required permits include a solid waste facility permit, a state NPDES permit for discharges to surface or groundwater, and a state groundwater discharge permit for discharges to groundwater. In addition, the Department has published non-regulatory design criteria for wastewater stabilization and pollution control ponds, and aerated ponds.

South Dakota Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	Yes	Solid waste permit regulations specify that impoundments can not be located in a 100-year floodplain, wetlands, or unstable areas. They also cannot be located within 1,000 feet of dwelling, school, hospital, interstate, highway, or public park. If surface waters can be polluted, not within 1,000 feet of surface waters.
Design Criteria (liner, leachate collection)	Case-by-case	Solid waste permit regulations state that a liner and leachate collection system may be required.
Operating Criteria	Yes	Solid waste permit regulations specify operating criteria for impoundments as appropriate.
Monitoring	Yes	Groundwater monitoring required under solid waste and groundwater discharge permit regulations, and may be required by a state NPDES permit.
Reporting and Recordkeeping	Case-by-case	Solid waste permit regulations and groundwater discharge permit regulations state that the reporting and recordkeeping requirements are those as specified in the permits by the permit writer.
Inspection and Enforcement	Yes	State regulations give the authority to inspect, but do not specify the frequency.
Performance Standards and Corrective Action	Yes	Solid waste permit regulations and groundwater discharge permit regulations require meeting groundwater quality standards. The groundwater discharge permit also requires a contingency plan for bringing the facility into compliance with such standards.
Closure/Postclosure Care	Yes	Solid waste permit regulations require closure and postclosure plans, and specify some criteria to be addressed in the plans.
Financial Assurance	Yes	Solid waste permit regulations require financial assurance mechanisms for closure/postclosure care, such as trust fund, surety bond, letter of credit, insurance, or cash.

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**South Dakota Requirements for Nonhazardous Waste Surface
Impoundments (continued)**

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the states regulation or program.

Source:

South Dakota Regulations Title 74, Articles 74-27, 74-52, and 74-54.

Tennessee

The responsibility for regulating and permitting surface impoundments is held by the Tennessee Department of Health and Environment. Under this Department, the Division of Water Quality and the Division of Solid Waste Management enforce the regulations and oversee closure of surface impoundments, respectively.

Three sets of regulations apply to nonhazardous waste surface impoundments.

- State NPDES permit is required for dischargers to surface or groundwater (valid for up to 5 years).
- State Operation Permit is required for nondischargers (valid for up to 5 years).
- If closing with waste in place, solid waste regulations for Class VI Disposal Facilities apply (to facilities in operation on or after March 19, 1990), but a Solid Waste Processing and Disposal Permit is not required.

Tennessee Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	No	Not specified in state regulations, but may be applied on a permit-specific basis.
Design Criteria (liner, leachate collection)	No	Not specified in state regulations, but may be applied on a permit-specific basis.
Operating Criteria	No	Not specified in state regulations, but may be applied on a permit-specific basis.
Monitoring	Case-by-case	Monitoring requirements are determined on a case-by-case basis and specified in applicable permits.
Reporting and Recordkeeping	No	Not specified in state regulations.
Inspection and Enforcement	Yes	State regulations give the authority to inspect, but do not specify the frequency.
Performance Standards and Corrective Action	Yes	The operator must comply with applicable effluent standards, limitations, and water quality standards. Specific enforcement mechanisms are not specified in the regulations.

(continued)

Tennessee Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Closure/Postclosure Care	Yes	If closing with waste in place, closure/postclosure plans are required, but specific details of the plans are not specified in the state regulations.
Financial Assurance	Yes	If closing with waste in place, state regulations require a trust fund, surety bond, personal bond, letter of credit, insurance, financial test, and corporate guarantee for closure and postclosure care of an impoundment.
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the state's regulations or programs.

Sources:

Tennessee Code Annotated (TCA) 1200-1-7 & 1200-4-10.

Tennessee Department of Environment and Conservation (TDEC) web page (<http://www.state.tn.us/environment>).

Texas

The Waste Permits Division and the Water Permits & Resource Management Division, under the Office of Permitting, Remediation & Registration of the Texas Natural Resource Conservation Commission (TNRCC), are responsible for permitting nonhazardous waste surface impoundments.

Both solid waste and water quality regulations apply to surface impoundments. Facilities that discharge into or adjacent to surface water or groundwater must obtain a State Water Quality Permit. A solid waste management permit is not required, but facilities must notify the TNRCC with information including waste composition, facility design, and geology. The specific regulations and guidelines for surface impoundments are largely determined on a case-by-case basis and are found in each individual facility's permit.

Texas Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	No	Not specified in state regulations, but may be required as part of a Water Quality Permit on a site-specific basis.
Design Criteria (liner, leachate collection)	No	Not specified in state regulations, but may be required as part of a Water Quality Permit on a site-specific basis.
Operating Criteria	No	Not specified in state regulations, but may be required as part of a Water Quality Permit on a site-specific basis.
Monitoring	Yes	Waste characterization and surface-water discharge monitoring are required by state regulations. Groundwater monitoring may be required as part of Water Quality Permit on a site-specific basis.
Reporting and Recordkeeping	Yes	State regulations require the maintenance of records of quantity of waste generated, disposition of waste, and waste characteristics.
Inspection and Enforcement	Yes	State regulations authorize the state to audit records and to inspect dischargers (frequency not specified in the regulations).
Performance Standards and Corrective Action	Yes	The regulations stipulate that waste disposal may not cause a nuisance or endanger public health and welfare. They also state that dischargers must comply with state water quality standards. In addition, groundwater degradation is not allowed, although specific enforcement mechanisms are not specified in regulations beyond the authority to issue emergency orders.

(continued)

Texas Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Closure/Postclosure Care	Yes	<p>The state regulations state that the decision to close a surface impoundment is at the operator's discretion and that prior notification of TNRCC is required.</p> <p>Closure must be in a manner that is compliant with the risk-based standards of the Texas Risk Reduction Program:</p> <ul style="list-style-type: none"> • Minimize or eliminate postclosure escape of waste, contaminants, leachate, or run-off. • Minimize or eliminate the need for further maintenance and control • Specific closure controls and activities are not specified in regulations
Financial Assurance	No	Not specified in state regulations, but may be required as part of a Water Quality Permit on a site-specific basis.
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the state's regulations or programs.

Sources:

Texas Administrative Code (TAC).

Texas Natural Resource Conservation Commission (TNRCC) web page (<http://www.tnrcc.state.tx.us>).

Utah

In Utah, the Utah Department of Environmental Quality's Division of Water Quality is responsible for regulating and permitting nonhazardous surface impoundments. Utah regulations require owners/operators obtain a construction permit prior to building storage or treatment surface impoundments (valid for one year). In addition, dischargers to surface water or groundwater must obtain a state NPDES permit (valid for up to five years), and dischargers or potential dischargers to groundwater must also obtain a state groundwater permit (valid for up to five years).

Utah Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	No	Not specified in state regulations, but may be required in a permit on a site-specific basis.
Design Criteria (liner, leachate collection)	No	Not specified in state regulations, but may be required in a permit on a site-specific basis.
Operating Criteria	No	Not specified in state regulations, but may be required in a permit on a site-specific basis.
Monitoring	Yes	State regulations require groundwater monitoring; however, monitoring details are determined on a site-specific basis and are included in the groundwater permit.
Reporting and Recordkeeping	No	Not specified in state regulations.
Inspection and Enforcement	Yes	State regulations give the authority to inspect, but do not specify the frequency.
Performance Standards and Corrective Action	Yes	State regulations require a contamination investigation and corrective action plan if monitoring indicates violation or possible violation of water quality standards.
Closure/Postclosure Care	No	Not specified in state regulations, but may be required in a permit on a site-specific basis.
Financial Assurance	No	Not specified in state regulations, but may be required in a permit on a site-specific basis.

(continued)

Utah Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the state's regulations or programs.

Sources:

Utah Administrative Rules (UAR) 317-1; 317-6; 317-8.

Utah Department of Environmental Quality (UDEQ) web page (<http://www.deq.state.ut.us>).

Vermont

Vermont's Department of Environmental Conservation under the Agency of Natural Resources is responsible for overseeing the regulations regarding nonhazardous waste surface impoundments. Vermont requires discharge (to surface water) and indirect discharge (to groundwater) permits for all impoundments with discharges. Storage surface impoundments are also subject to solid waste regulations. However, "wastewater treatment lagoons and digesters" are exempt from the solid waste regulations if they are covered by a discharge and/or indirect discharge permit. In addition, there are dam safety regulations that apply to industrial lagoons greater than 50,000 cubic feet.

Vermont Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	Yes	The state solid waste regulations specify siting requirements with minimum isolation and separation distances from drinking water sources and property lines.
Design Criteria (liner, leachate collection)	Yes	The state solid waste regulations include design standards such as 5 months minimum storage capacity, standards for synthetic or clay liners, and freeboard requirements
Operating Criteria	Yes	The owner and operator shall take all steps necessary to prevent and/or control spills, nuisance dust, vectors, wind blown debris, and odors. The owner and operator shall take all practicable steps to prevent the inclusion of hazardous wastes, as defined and regulated by Vermont's Hazardous Waste Management Regulations, into the waste stream being managed by the facility.
Monitoring	Yes	Groundwater monitoring required by indirect discharge permit and may be required under solid waste regulations.
Reporting and Recordkeeping	No	Not specified in state regulations.
Inspection and Enforcement	Yes	State regulations give the authority to inspect, but do not specify the frequency.
Performance Standards and Corrective Action	No	Not specified in state regulations.

(continued)

Vermont Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Closure/Postclosure Care	Yes	The closure plan must identify steps necessary to completely close the facility at any point during its intended life. The closure plan must include, at least a description of the steps necessary to close the facility; a listing of labor, materials, and testing necessary to close the facility; an estimate of the expected year of closure; a schedule for final closure including, at a minimum, the total time required to close the facility and the time required for the various steps or phases in the closure process; a cost estimate for facility closure that satisfies the requirements of Section 6-1004; a description of the methods for compliance with the closure requirements; and any remedial action necessary prior to closure, if required by the Secretary pursuant to Section 6-311.
Financial Assurance	No	Not specified in state regulations.
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the states regulation or program.

Sources:

Vermont Administrative Code Chapters 6 and 13.

Vermont Agency of Natural Resources web page (<http://www.anr.state.vt.us/dec/dec.htm>).

Virginia

The Water Division of the Virginia Department of Environmental Quality administers the permit program pertaining to nonhazardous waste surface impoundments. Lagoons and surface impoundments are regulated under state water control law and by agencies other than the Department. Impoundments must be covered either by a state NPDES permit if it discharges directly to surface waters, or a Virginia Pollution Abatement (VPA) permit if it does not.

Virginia Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	Case-by-case	Determined on a site-specific basis in VPA permit.
Design Criteria (liner, leachate collection)	Case-by-case	Determined on a site-specific basis in VPA permit.
Operating Criteria	Case-by-case	Determined on a site-specific basis in VPA permit.
Monitoring	Yes	Groundwater monitoring is required under the VPA permit.
Reporting and Recordkeeping	No	Not specified in state regulations.
Inspection and Enforcement	Yes	State regulations give the authority to inspect, but do not specify the frequency.
Performance Standards and Corrective Action	No	Not specified in state regulations.
Closure/Postclosure Care	Yes	Applies only if closure with waste left in place.
Financial Assurance	Yes	Applies only if closure with waste left in place.
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the states regulation or program.

Sources:

Virginia Administrative Code – Title 9 VAC 25.

Virginia Department of Environmental Quality web page (<http://www.deq.state.va.us/>).

Washington

The responsibility for regulating and permitting surface impoundments in the state of Washington is administered by the Washington Department of Ecology (DE). The department that actually regulates surface impoundments is dependent on the type of waste handled and whether the impoundment discharges to a water of the state. The Solid and Hazardous Waste Program (SHWP) and Jurisdictional Health Department regulate impoundments handling dangerous and nonhazardous wastes that do not discharge to a water of the state. All impoundments handling nonhazardous waste that discharge to waters of the state are regulated by the Water Quality Program (WQP). State RCRA requirements are located in the Water Pollution Control Act and the Solid Waste Management Act and are described in detail below.

Impoundments managing dangerous wastes are required to have a dangerous waste permit, which are issued by the SHWP.

Solid Waste Facility Permit: Impoundments that handle non-dangerous waste, but do not discharge into waters of the state are required to obtain a Solid Waste Facility Permit. Permits are not required if the impoundment obtains a state waste discharge permit. Permits are issued by the jurisdictional health departments.

State Waste Discharge Permit: Surface impoundments that discharge to groundwater, or have the potential to discharge to groundwater and/or impair groundwater quality, must obtain a state waste discharge permit. Permits are issued by WQP.

State NPDES Permit: Surface impoundments that have a point source discharge to surface water must obtain a state NPDES permit. Permits are issued by WQP.

Construction Permits: Surface impoundments handling more than 10 acre-feet of water must obtain dam safety approval and a construction permit from WPR. Construction permits ensure that the impoundment will remain intact throughout its life and will not threaten human health or the environment. Criteria include requirements for dikes and berms and freeboard limits.

The states regulatory and management guidelines for surface impoundments depend on the type of waste managed in the impoundment and whether the impoundment discharges to waters of the state.

Washington Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	Yes	<p>Surface Impoundments Discharging Non-Dangerous Waste to Waters of the State: Not specified in state regulations.</p> <p>Surface Impoundments Managing Dangerous and Non-Dangerous Waste, But Not Discharging to Waters of the State: Impoundments managing dangerous waste must not be located within a 500-year floodplain or in areas having a mean annual precipitation greater than 100 inches and must comply with restrictions concerning proximity to faults, public water sources, wetlands, critical habitats, and depth to groundwater.</p>
Design Criteria (liner, leachate collection)	Yes	<p>Surface Impoundments Discharging Non-Dangerous Waste to Waters of the State: Permit conditions for waste discharges may include requirements for liners to protect the beneficial uses of groundwater by specifying.</p> <p>Surface Impoundments Managing Dangerous and Non-Dangerous Waste, But Not Discharging to Waters of the State: Surface impoundments must have an in place or imported soil liner of at least 2 feet of 1×10^{-7} cm/sec permeability or an equivalent combination of any thickness greater than 2 feet and a greater permeability to protect the underlying aquifers or a 30 mil reinforced artificial liner. DE may exempt the operator from the liner requirement if an alternate design will prevent migration of pollutants into ground and surface waters. Surface impoundments must have either a groundwater monitoring system that is consistent with permit regulations, or a leachate detection, collection and treatment system, for facilities having a capacity of more than two million gallons unless the jurisdictional health department and the DE require either for smaller surface impoundments. Impoundments managing dangerous wastes must have dikes with slopes as to maintain the structural integrity under conditions of a leaking liner and must be capable of withstanding erosion from wave action.</p>

(continued)

Washington Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Operating Criteria	Yes	<p>Surface Impoundments Discharging Non-Dangerous Waste to Waters of the State: Permit conditions for waste discharge permits and NPDES permits may require prevention and control of pollutant discharges from plant site run-off. NPDES and state waste discharge permits contain conditions to prevent and control pollutant discharges from sludge disposal.</p> <p>Surface Impoundments Managing Dangerous and Non-Dangerous Waste, But Not Discharging to Waters of the State: Impoundments managing dangerous waste must have the freeboard equal to or greater than 18 inches to avoid overtopping from wave action, overfilling, or precipitation. In addition, impoundments should be designed and operated to prevent overtopping and designed so that any flow of waste into the impoundment can be shut off should overtopping or linear failure occur. Impoundments managing dangerous waste must have earthen dikes with a protective cover to minimize wind and water erosion. Dangerous wastes must not be stored in an impoundment for more than 5 years after the waste is first placed in the impoundment. Operators of impoundments managing dangerous waste must perform weekly inspections. In addition, operators must inspect the facility after each storm event to detect any deterioration to dikes and containment devices, malfunction of overtopping</p>

(continued)

Washington Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Monitoring	Yes	<p>Surface Impoundments Discharging Non-Dangerous Waste to Waters of the State:</p> <p>Groundwater: Waste discharge permits must contain any monitoring requirements specified by the DE, including any applicable requirements under the federal CWA.</p> <p>Surface Water: NPDES permits are subject to monitoring requirements as determined by DE. The monitoring requirements include: flow, pollutants subject to reduction or elimination under the permit, pollutants that may have adverse impact on human health and the environment, and pollutants specified by the DE.</p> <p>Waste Analysis: DE requires NPDES permittees to monitor intake water, influent to treatment facilities, internal waste streams, and/or receiving waters when determined necessary.</p> <p>Surface Impoundments Managing Dangerous and Non-Dangerous Waste, But Not Discharging to Waters of the State:</p> <p>Groundwater: Operators of impoundments managing dangerous waste and having a capacity of more than two million gallons must implement a groundwater monitoring program to detect releases to the groundwater. The jurisdictional health departments may require a groundwater monitoring program for facilities with less than two million gallons capacity.</p> <p>Waste Analysis Requirements: Operators of impoundments managing dangerous wastes must perform a chemical, physical and/or biological analysis of each dangerous waste that is stored, treated or disposed. The analysis may consist of existing data or data obtained via testing.</p>
Reporting and Recordkeeping	No	Not specified in state regulations.
Inspection and Enforcement	Yes	<p>Inspections: DE is authorized to inspect facilities having a state waste discharge and NPDES permits. Jurisdiction health departments to inspect solid waste facility permittees.</p> <p>Enforcement/Penalties: DE has administrative, civil, and criminal enforcement authority, including the authority to levy penalties. Penalties for violations to waste discharge and NPDES permits are \$10,000 per day of violation.</p>

(continued)

Washington Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Performance Standards and Corrective Action	Yes	<p>Surface Impoundments Discharging Non-Dangerous Waste to Waters of the State: Not specified in state regulations.</p> <p>Surface Impoundments Managing Dangerous and Non-Dangerous Waste, But Not Discharging to Waters of the State: Operators of impoundments managing dangerous waste must maintain a contingency plan at the facility in case of facility failure.</p>
Closure/Postclosure Care	Yes	Impoundments managing dangerous waste, but not discharging to waters of the state and impoundments Managing nondangerous waste, but not discharging to waters of the state have specific regulations requiring closure/postclosure care.
Financial Assurance	Yes	Impoundments managing dangerous waste, but not discharging to waters of the state have specific requirements for financial assurance.
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the states regulation or program.

Sources:

Washington Administrative Code (WAC).

Washington Department of Ecology (DEC) web page (<http://www.ecy.wa.gov>).

West Virginia

The Office of Water Resources of the West Virginia Department of Environmental Protection is responsible for permitting and enforcement of nonhazardous waste surface impoundments.

All nonhazardous waste surface impoundments at industrial facilities are subject to the applicable solid waste regulations for Class F (i.e., industrial) Solid Waste Facilities and a solid waste facility permit must be obtained. These regulations are not applicable to surface impoundments in existence on or before May 1, 1990 which are operating under a state NPDES permit, except that all such impoundments are required to have an adequate groundwater monitoring system in place.

The Groundwater Protection Rule also applies and is addressed in the regulatory provisions for the solid waste permit.

Finally, a state NPDES permit is required for discharges to surface water and groundwater.

West Virginia Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	Yes	State regulations specify that surface impoundments must be located at least 5 feet above the groundwater table and must maintain a distance of 4 feet between liner and bedrock. The facilities also must comply with restrictions for natural wetlands and endangered species.
Design Criteria (liner, leachate collection)	Yes	The state regulations require a composite liner (18-inch compacted clay, 60 mil HDPE) and a leachate detection and collection system.
Operating Criteria	Yes	Freeboard requirements are specified in the regulations (minimum of 2 feet).
Monitoring	Yes	Groundwater/Leachate: Regulations specify that a minimum of three groundwater monitoring wells are required, one up-gradient and two down -gradient of any surface impoundment. Baseline and background monitoring must be completed along with semiannual monitoring for conventional parameters and metals. Daily monitoring of flow rate and volume, and semiannual testing for conventional parameters and metals for leachate must also be completed.
Reporting and Recordkeeping	No	Not specified in state regulations.

(continued)

**West Virginia Requirements for Nonhazardous Waste Surface
Impoundments (continued)**

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Inspection and Enforcement	Yes	The DEP is authorized to inspect any facility, but the frequency is not specified in the regulations.
Performance Standards and Corrective Action	Yes	Expansion of monitoring if statistically significant increase in one or more groundwater parameters. Corrective action assessment required if: <ul style="list-style-type: none"> • evidence of groundwater contamination • significant increase in a Phase II monitoring parameter • groundwater exceeds state standards
Closure/Postclosure Care	Yes	Closure and postclosure plans are required by the regulations. The plans must include final cover (details not specified by the regulations) and revegetation. Additional requirements determined on a case-by-case basis.
Financial Assurance	No	The regulations do not require financial assistance for non-commercial facilities.
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the state's regulations or programs.

Sources:

West Virginia Solid Waste Regulations (WVSWR) Titles 33-1; 47-10; 47-58.

West Virginia Department of Environmental Protection (WVDEP) web page (<http://www.dep.state.wv.us/offices.html>).

Wisconsin

Responsibility for surface impoundments resides with the Wisconsin Department of Natural Resources Division of Water if the surface impoundment discharges to waters of the state and has a Wisconsin Pollutant Discharge Elimination System (WPDES) permit. If the surface impoundment does not have a WPDES permit and is designed for the disposal of solid waste, it is subject to solid waste regulations. The solid waste regulations require a permit, a closure plan, and, on a case-by-case basis, proof of financial responsibility for closure of the impoundment.

Wisconsin Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	Yes	For WPDES permitted impoundments: The regulations stipulate that the impoundment may not be located 1,000 feet from a well serving a community public water supply system, 250 feet from other potable water supplies, or 500 feet from an inhabited dwelling, in a floodway, or in a wetland. In addition, a separation of 5 feet is required between the bottom of the impoundment and either bedrock or groundwater table, whichever is higher.
Design Criteria (liner, leachate collection)	Yes	For WPDES permitted impoundments: Natural soil materials, soil-bentonite mixtures, or synthetic liners may be used. The bottom must be compacted to a depth of 6 inches, and an additional inorganic layer to protect the liner may be required. The permeability of a soil or soil-bentonite liner may not exceed 10^{-7} . Specific requirements for oil, soil-bentonite, and synthetic liners are provided in the regulations. Synthetic liners must be at least 30 mils thick. Water losses from impoundment may not exceed 500 gallons per acre per day.
Operating Criteria	No	Not specified in state regulations, but may be applied on a permit-specific basis.
Monitoring	Case-by-case	Groundwater monitoring may be required on a case-by-case basis under either a WPDES or solid waste permit.
Reporting and Recordkeeping	No	Not specified in state regulations.
Inspection and Enforcement	Yes	State regulations give the authority to inspect, but do not specify the frequency.

(continued)

Wisconsin Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Performance Standards and Corrective Action	Yes	For solid waste permitted impoundments: The regulations stipulate that facilities may not cause a detrimental effect on any surface or groundwater or exceedances of water quality standards, significant adverse impact on wetlands or critical habitat areas, or emissions of any hazardous air contaminant exceeding the limitations for those substances.
Closure/Postclosure Care	Yes	For solid waste permitted impoundments: The regulations require a closure plan. Postclosure groundwater monitoring may be required on a site-specific basis.
Financial Assurance	Case-by-case	For solid waste permitted impoundments: The regulations state that financial assurance may be required on a site-specific basis.
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the state's regulations or programs.

Sources:

Wisconsin Administrative Code (WAC) Chapters 213 and 502.

Wisconsin Department of Natural Resources (WDNR) web page (<http://www.dnr.state.wi.us/>).

Wyoming

In Wyoming, responsibility for regulating and permitting surface impoundments is consolidated in the Wyoming Department of Environmental Quality's Water Quality Division. Industrial nonhazardous waste surface impoundments must be covered by a Permit to Construct, Install, Modify or Operate, and a state NPDES discharge permit (if discharging to surface water). The applicable regulations for the Permit to Construct are found under the nonbiological treatment ponds section. The summary table contains these standards.

Wyoming State Requirements for Nonhazardous Waste Surface Impoundments

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Location or Siting Standards	Yes	The Permit to Construct regulations state that impoundments can not be located within high-water mark of perennial water bodies, and not where surface water and groundwater are able to enter it.
Design Criteria (liner, leachate collection)	Yes	The Permit to Construct regulations: <ul style="list-style-type: none"> • provide guidelines for inlet and outlet structures, and dike protection • specify water depth on a case-by-case basis • require a permanent flow measuring device • require a composite liner if wastewater characteristics or site conditions will not ensure the protection of the groundwater
Operating Criteria	Yes	The Permit to Construct regulations require a minimum of 3 feet of freeboard (or 2 feet for impoundments less than 2 acres)
Monitoring	No	Groundwater monitoring not specified in state regulations.
Reporting and Recordkeeping	No	Not specified in state regulations.
Inspection and Enforcement	Yes	State regulations give the authority to inspect, but do not specify the frequency. Specific enforcement mechanisms are also not specified in the regulations.
Performance Standards and Corrective Action	Yes	All surface impoundments must conform to applicable ground and surface water quality standards.
Closure/Postclosure Care	No	Not specified in state regulations.
Financial Assurance	No	Not specified in state regulations.

(continued)

Wyoming Requirements for Nonhazardous Waste Surface Impoundments (continued)

Criteria	Program or Regulation Addresses Criteria?	Description of Regulation or Program
Air Emission Controls, Operating Requirements, and Recordkeeping Requirements	No	Not specified in state regulations.

Yes: Regulation or program addresses criteria.

No: There is no specific state regulation or program that addresses the criteria.

Case-by-case: The criteria can be addressed by the state via a permit condition or as allowed under the flexibility built in to the state's regulations or programs.

Sources:

Wyoming Regulations: Department of Environmental Quality, Water Quality, Chapters 2, 3 and 11.

Wyoming Statutes: 35-11-101 et seq.

Wyoming Department of Environmental Quality (WDEQ) web page (<http://deq.state.wy.us/wqd/w&ww.htm>).

Section D-2

Table for Comparison of TC Levels to Wastewater Concentrations in Surface Impoundments Predicted to Cause Environmental Releases

CAS Number	Constituent	TC Regulatory Level (mg/L)	Range of Wastewater Concentrations (mg/L) (number of facility-unit risk estimates in the range)		
			No Predicted Environmental Releases as Indicated by Screening Level Inhalation Risks < Risk Criteria	Predicted Environmental Releases as Indicated by Screening Level Inhalation Risks = 10E-5 to 10E-4 or HI = 1 to 10	Predicted Environmental Releases as Indicated by Screening Level Inhalation Risks > 10-4 or HI > 10
7440-38-2	Arsenic	5	NA	NA	NA
7440-39-3	Barium	100	NA	NA	NA
71-43-2	Benzene	0.5	0 - 1.1 (79)	0.005 - 0.125 (4)	No data
7440-43-9	Cadmium	1	NA	NA	NA
56-23-5	Carbon tetrachloride	0.5	0 - 0.125(34)	0.005 - 0.01166 (2)	No data
57-74-9	Chlordane, alpha & gamma isomers	0.03	NA	NA	NA
108-90-7	Chlorobenzene	100	0 - 0.125(44)	No data	No data
67-66-3	Chloroform ^a	6	0 - 0.99819(96)	0.0037 - 0.99819 (15)	No data
7440-47-3	Chromium	5	NA	NA	NA
95-48-7	o-Cresol [2-Methyl phenol]	200	NA	NA	NA
108-39-4	m-Cresol [3-Methyl phenol]	200	NA	NA	NA
106-44-5	p-Cresol [4-Methyl phenol]	200	NA	NA	NA
1319-77-3	Cresols (total)	200	0.0022 - 0.03(47)	No data	No data
94-75-7	2,4-D [2,4-Dichlorophenoxyacetic acid]	10	NA	NA	NA
106-46-7	1,4-Dichlorobenzene	7.5	0.001 - 0.1(43)	No data	No data
107-06-2	1,2-Dichloroethane [ethylene dichloride]	0.5	0.00087 - 0.125(48)	0.01166 (1)	No data
75-35-4	1,1-Dichloroethylene [vinylidene chloride]	0.7	0 - 0.125(39)	0.005 - 0.125 (7)	No data
121-14-2	2,4-Dinitrotoluene	0.13	0 - 0.1(33)	No data	No data
72-20-8	Endrin	0.02	NA	NA	NA
76-44-8	Heptachlor	0.008	NA	NA	NA
118-74-1	Hexachlorobenzene	0.13	0 - 0.1(21)	.01 - 0.1 (9)	No data
87-68-3	Hexachloro-1,3-butadiene [hexachlorobutadiene]	0.5	0.0075 - 0.1(26)	0.01 (4)	No data
67-72-1	Hexachloroethane	3	0 - 0.1(30)	No data	No data
7439-92-1	Lead	5	NA	NA	NA

(continued)

Table (continued)

CAS Number	Constituent	TC Regulatory Level (mg/L)	Range of Wastewater Concentrations (mg/L) (number of facility-unit risk estimates in the range)		
			No Predicted Environmental Releases as Indicated by Screening Level Inhalation Risks < Risk Criteria	Predicted Environmental Releases as Indicated by Screening Level Inhalation Risks = 10E-5 to 10E-4 or HI = 1 to 10	Predicted Environmental Releases as Indicated by Screening Level Inhalation Risks > 10-4 or HI > 10
58-89-9	Lindane	0.4	NA	NA	NA
7439-97-6	Mercury	0.2	0 - 0.01(106)	No data	0.00055 - 0.07(2)
72-43-5	Methoxychlor	10	NA	NA	NA
78-93-3	Methyl ethyl ketone [2-butanone] [MEK]	200	0 - 18.28(96)	No data	No data
98-95-3	Nitrobenzene	2	0 - 0.1(34)	No data	No data
87-86-5	Pentachlorophenol [PCP]	100	NA	NA	NA
110-86-1	Pyridine	5	0.01 - 0.1(24)	5(2)	No data
7782-49-2	Selenium	1	NA	NA	NA
7440-22-4	Silver	5	NA	NA	NA
127-18-4	Tetrachloroethylene [perchloroethylene]	0.7	0 - 0.125(49)	No data	No data
8001-35-2	Toxaphene [chlorinated camphene] ^a	0.5	NA	NA	NA
79-01-6	Trichloroethylene [TCE]	0.5	0.001 - 0.125(43)	No data	No data
95-95-4	2,4,5-Trichlorophenol	400	NA	NA	NA
88-06-2	2,4,6-Trichlorophenol	2	NA	NA	NA
93-72-1	Silvex [2,4,5-Trichlorophenoxypropionic acid]	1	NA	NA	NA
75-01-4	Vinyl chloride [chloroethylene]	0.2	0.00053 - 0.125(36)	0.02333(1)	No data

NA = Not applicable because the constituent was not evaluated for air risks.

No Data = no concentration data were reported in response to the long survey that, when modeled, indicated risks in the specified range.

Note: **Bold** entries indicate concentration ranges less than TC regulatory levels **and** causing environmental air release. Values in () indicate the number of concentration values in the range used to estimate risk for each facility, unit, and chemical combination.

^a Indicates the constituent also exceeded the risk criteria for the air pathway in the risk assessment in which actual (rather than default) distances to receptors were used.

Section D-3

Table of In-Scope Industry Sectors and Potentially Applicable NSPS VOC Standards

SIC Industry Code	SIC Title	NSPS	Regulatory Citation
2011 [*] , 2022 [*] , 2035 [*] , 2063 [*] , 2092 [*]	Food and Kindred Products	No VOC NSPS standard	N/A
2211, 2251	Textile mill products	No VOC NSPS standard	N/A
2435, 2436	Hardwood, softwood veneer and plywood	No VOC NSPS standard	N/A
2611 [*] , 2621 [*] , 2631 [*] , 2653 [*] , 2679 [*]	Paper and allied products (e.g., pulp and paper mills, etc.)	No VOC NSPS standard	N/A
2819 [*]	Industrial inorganic chemicals, not elsewhere classified	No VOC NSPS standard	N/A
2821 [*]	Plastics materials and resins	VOC Emissions from Polymer Manufacturing Industry	40 CFR 60 Subpart DDD
2824 [*]	Organic fibers, noncellulosic	Synthetic Fiber Production Facilities	40 CFR 60 Subpart H.H.
2833 [*]	Medicinals and botanicals	No VOC NSPS standard	N/A
2834 [*]	Pharmaceutical preparations	No VOC NSPS standard	N/A
2843 [*]	Surface active agents	No VOC NSPS standard	N/A
2865 [*]	Cyclic crudes and intermediates, and organic dyes and pigments	No VOC NSPS standard	N/A

(continued)

Table (Continued)

SIC Industry Code	SIC Title	NSPS	Regulatory Citation
2869*	Industrial organic chemicals, not elsewhere classified	Equipment Leaks of VOC Synthetic Organic Chemical Manufacturing Industry (SOCMI)	40 CFR 60 Subpart VV
		VOC Emissions from the SOCMI Air Oxidation Unit Processes	40 CFR 60 Subpart III
		VOC Emissions from the SOCMI Air Distillation Operations	40 CFR 60 Subpart NNN
		VOC Emissions from the SOCMI Reactor Processes	40 CFR 60 Subpart RRR
		(Proposed) VOC Emissions from the SOCMI Wastewater	40 CFR 60 Subpart YYY
2873*	Nitrogenous fertilizers	No VOC NSPS standard	N/A
2874*	Phosphatic fertilizers	No VOC NSPS standard	N/A
2899*	Chemical preparations, not elsewhere classified	No VOC NSPS standard	N/A
2911*	Petroleum refining	VOC Emissions from Petroleum Refinery Wastewater Systems	40 CFR 60 Subpart QQQ
2952*	Asphalt felts and coatings	No VOC NSPS standard	N/A
3011	Tires and inner tubes	Rubber Tire Manufacturing Industry	40 CFR 60 Subpart BBB
3052	Rubber & plastics hose and belting	No VOC NSPS standard	N/A
3069	Fabricated rubber products, not elsewhere classified	Pressure Sensitive Tape and Label Surface Coating	40 CFR 60 Subpart RR
3081	Unsupported plastics film & sheet	Polymeric Coating of Supporting Substrates Facilities	40 CFR 60 Subpart VVV
3087	Custom compound purchased resins	No VOC NSPS standard	N/A
3089	Plastics products, not elsewhere classified	Polymeric Coating of Supporting Substrates Facilities	40 CFR 60 Subpart VVV
3229*	Pressed and blown glass, not elsewhere classified	No VOC NSPS standard	N/A
3273*	Ready-mixed concrete	No VOC NSPS standard	N/A
3312*	Blast furnaces and steel mills	Metal Coil Surface Coating	40 CFR 60 Subpart TT
3313*	Electro metallurgical products	Metal Coil Surface Coating	40 CFR 60 Subpart TT

(continued)

Table (Continued)

SIC Industry Code	SIC Title	NSPS	Regulatory Citation
3316*	Cold finishing of steel shapes	Metal Coil Surface Coating	40 CFR 60 Subpart TT
3317*	Steel pipe and tubes	Metal Coil Surface Coating	40 CFR 60 Subpart TT
3321*	Gray and ductile iron foundries	No VOC NSPS standard	N/A
3324*	Steel investment foundries	No VOC NSPS standard	N/A
3334*	Primary aluminum	Metal Coil Surface Coating	40 CFR 60 Subpart TT
3339*	Primary nonferrous metals, not elsewhere classified	No VOC NSPS standard	N/A
3341*	Secondary nonferrous, metals	Metal Coil Surface Coating	40 CFR 60 Subpart TT
3351*	Copper rolling and drawing	No VOC NSPS standard	N/A
3353*	Aluminum sheet, plate, and foil	Metal Coil Surface Coating	40 CFR 60 Subpart TT
3357*	Nonferrous wiredrawing & insulating	No VOC NSPS standard	N/A
3398*	Metal heat treating	No VOC NSPS standard	N/A
3399*	Primary metal products, not elsewhere classified	No VOC NSPS standard	N/A
3462	Iron and steel forgings	No VOC NSPS standard	N/A
3499	Fabricating metal products, not elsewhere classified	Metal Coil Surface Coating	40 CFR 60 Subpart TT
		Surface Coating of Metal Furniture	40 CFR 60 Subpart EE
3624, 3674	Electronic and other electric equipment	No VOC NSPS standard	N/A
3731, 3761	Transportation equipment	No VOC NSPS standard	N/A
4952, 4953	Electric, gas, and sanitary services	No VOC NSPS standard	N/A
5171*	Petroleum bulk stations and terminals	Bulk Gasoline Terminal	40 CFR 60 Subpart XX
9711	National security	No VOC NSPS standard	N/A

* Denotes SIC code is associated with one of the seven two-digit SIC Code that manage 98 percent of the wastewater capacity at impoundments within the scope of this study.