



COLORADO

Department of Public
Health & Environment

SECTION 9 WASTE IMPOUNDMENTS
Permitting, Operation, Monitoring, Closure
and Post-Closure Care According to the
Regulations Pertaining to Solid Waste Sites
and Facilities, 6, C.C.R. 1007-2, Part 1
Final Guidance

Hazardous Materials and Waste Management Division
(303) 692-3300 | Version One - November 2014

Purpose of this Guidance

This guidance is intended to serve as clarification of and as a companion document for "Section 9 - Waste Impoundments" of the Regulations Pertaining to Solid Waste Sites and Facilities (the regulations), 6 C.C.R. 1007-2, Part 1. This guidance is meant to assist in compliance with the regulations by providing direction and structure for consultants, contractors, local governments, citizens, owners and operators who are involved in the permitting, design, operation, monitoring and closure of a waste impoundment. These guidelines are designed to help ensure protection of public health and the environment.

This guidance also is meant to provide general information to help individuals comply with Colorado's solid and hazardous waste regulations. It cannot cover every situation and is not intended to do so. It does not modify or replace adopted regulations, which undergo periodic revisions. If there is a conflict between this guidance and the regulations, the regulations govern. This document is not intended to be and cannot be relied upon to create any rights, substantive or procedural, enforceable by any party in litigation with Colorado. The Hazardous Materials and Waste Management Division reserves the right to act at variance with this guidance and to change it at any time.

Some portions of the regulations are complex and this guidance does not go into details of these complex situations. For answers to frequently asked questions, please see Appendix A. For additional questions please contact:

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Acronyms

C.C.R.	Code of Colorado Regulations
C.R.S.	Colorado Revised Statutes

Glossary

“Ancillary equipment” as used in Section 9 - Waste Impoundments of the Regulations Pertaining to Solid Waste Sites and Facilities, 6 Colorado Code of Regulations (C.C.R.) 1007-2, Part 1

(the regulations) means any device, such as, but not limited to, piping, fittings, flanges, valves, or pumps, from the first such equipment upstream of a waste impoundment to the first such equipment downstream of the waste impoundment. All other equipment not included in this definition is not ancillary equipment for the purposes of Section 9.

“Basic Standards for Ground Water (also “ground water standard”)/Appendix B” as used in Section 9 - Waste Impoundments of the regulations means the ground water quality standards presented in the Water Quality Control Division Regulation 41 (Basic Standards for Ground Water, 5 C.C.R. 1002-41), augmented by Appendix B to the regulations. Appendix B presents a methodology for determining alternate facility- or impoundment-specific enforceable limits for constituents not included in Regulation 41, a methodology for establishing background concentrations in ground water, and a statistical method for evaluating ground water data.

“Certificate of designation” as used in the regulations means a document issued by the local governing body having jurisdiction to a person authorizing the use of land for a solid wastes disposal site and facility pursuant to the Solid Wastes Disposal Sites and Facilities Act, Colorado Revised Statutes (C.R.S.) Title 30, Article 20, Parts 1 and 10 (solid waste act). The “Certificate of designation,” which incorporates all information as may be required by the Colorado Department of Public Health and Environment (the department) and the local governing body having jurisdiction, is then issued by the local governing body having jurisdiction if the department’s Hazardous Materials and Waste Management Division (the division) has determined that the minimum standards have been met.

“Demonstration plan” as used in Section 9 - Waste Impoundments of the regulations means an evaluation prepared by an existing waste impoundment facility in compliance with Section 9.1.8 - Inventory and Classification of Impoundments at Existing Facilities of the regulations for purposes of classifying each waste impoundment at the facility as Type A or Type B.

“Demonstration report” as used in this guidance means a summary of the findings of the demonstration plan to the division for review and approval within three (3) months of completing implementation of the demonstration plan.

“Department” (also, “the department”) as used in the regulations means the Colorado Department of Public Health and Environment.

“Division” (also, “the division”) as used in this guidance means the Colorado Department of Public Health and Environment’s Hazardous Materials and Waste Management Division.

“Engineering design and operations plan,” also known as an engineering design and operations report, as used in this guidance means the analysis and design work prepared for construction, operation, monitoring and closure of a waste impoundment solid waste site or facility. The engineering design and operations plan might contain a report of design specifications, maps and plans drawn to a convenient and common scale, solid waste site or facility operation plans, waste characterization plans, environmental monitoring plans, solid waste site or facility closure and post-closure plans, and all information and data otherwise specified by the regulations.

“Environmental media” as used in the regulations means earth materials including soil, sand, silt, gravel, rock, stone, sediment and other naturally occurring solids.

“Existing facility” as used in Section 9 - Waste Impoundments of the regulations refers to a facility with waste impoundments that have received solid waste prior to March 30, 2012, the effective date of Section 9 of the regulations. See “Existing impoundment.”

“Existing impoundment” as used in Section 9 - Waste Impoundments of the regulations refers to a facility with waste impoundments that have received solid waste prior to March 30, 2012, the effective date of Section 9 of the regulations. See “Existing facility.”

“Facility” as used in Section 9 - Waste Impoundments of the regulations means a solid waste site and facility with at least one waste impoundment. See “Site.”

“Inventory and preliminary classification report” as used in Section 9 - Waste Impoundments of the regulations is a report submitted by each existing facility, except for those pre-classified as Type A, and essentially serves two purposes: (1) inventory each impoundment at its facility and (2) propose a classification for each impoundment subject to division approval.

“Point of compliance” as used in the regulations and as referred to in Section 9.1.8 of the regulations, must be located on land owned by the owner of the solid waste site and facility and means either:

- (1) For a landfill, a vertical surface that is not more than 150 meters from the waste management unit boundary as described in the engineering design and operations plan; or
- (2) For other sites and facilities a vertical surface that is at the perimeter of the solid waste disposal site and facility boundary.

“Site” as used in this guidance means a solid waste site and facility with at least one waste impoundment. See “Facility.”

“Site setting” as used in Section 9 - Waste Impoundments of the Solid Waste Regulations means the hydrology, geology, hydrogeology, geography, ground water quality, climate, or any or all of these, at a particular site or impoundment location.

“Solid waste act” as used in this guidance means the Solid Wastes Disposal Sites and Facilities Act, C.R.S. Title 30, Article 20, as amended.

“Solid Waste Site and Facility” means the location and facility at which the deposit and final treatment of solid wastes occur. Also known as solid wastes disposal site and facility, solid waste disposal site and facility, solid waste site and facility, site and facility, and similar phrases as used in the solid waste act, regulations, and other similar documents. For internal consistency and to the extent possible this guidance uses solid waste site and facility when referring to a solid wastes disposal site and facility as defined in the solid waste act.

“Solid waste regulations” (also, **“solid waste regulations,”** **“regulations”**) as used in this guidance means the Regulations Pertaining to Solid Waste Sites and Facilities, 6 C.C.R. 1007-2, Part 1. The solid waste regulations were adopted under the authority of the solid waste act.

“Sludge” as used in the regulations means any solid or semi-solid waste generated by a municipal, commercial, or industrial waste water treatment plant, water supply treatment plant, or air pollution control facility.



Section 9

Waste Impoundments

Final Guidance / November 2014

1.0 Introduction

To ensure the protection of public health and the environment, the Hazardous Materials and Waste Management Division (the division) of the Colorado Department of Public Health and Environment (the department) has defined specific design, operating, monitoring, closure and post-closure criteria for waste impoundments under Section 9 - Waste Impoundments of the Regulations Pertaining to Solid Waste Sites and Facilities (solid waste regulations or regulations), 6 Code of Colorado Regulations as (C.C.R.) 1007-2, Part 1. This guidance follows the general format of Section 9 and reference citations are placed within brackets next to main headers and sub-headers for each section and sub-section and within the text as needed to assist in navigating between the regulations and this guidance. This guidance is not meant to modify or replace the regulations, but instead to provide clarification and assistance. In the event of a conflict between this guidance and the regulations, the regulations must govern. This guidance does not apply to commercial solid waste disposal sites and facilities with waste impoundments that accept exploration and production wastes for treatment, storage, or disposal. Such sites and facilities are subject to Section 17 - Commercial Exploration & Production Waste Impoundments of the regulations.

As an aid to owners and operators of waste impoundments, answers to frequently asked questions are included in Appendix A of this guidance.

1.1 Scope and Applicability [Section 9.1.1]

Section 9 applies to impoundments where storage, treatment, use, processing, or deposit and final treatment of solid waste occurs. It is important to recognize that not all impoundments hold solid waste. Some impoundments manage product; others (e.g., a manure lagoon at an agricultural operation) manage material that might look like solid waste, but is exempt from the statutory or regulatory definition of solid waste. Agricultural waste and domestic sewage are excluded from the definition of solid waste; hence, units managing only such material are not waste impoundments for purposes of Section 9.

1.2 Exemptions [Section 9.1.2]

The exemptions listed in Section 9.1.2 fall into three main categories: statutory exemptions, regulatory exemptions, and exemptions specific to Section 9 and included for clarity. Stakeholders in the rule-making process for Section 9 expressed a strong desire to have Section 9 be a stand-alone document. Stakeholders wanted Section 9 to reiterate exemptions found in the Solid Waste Disposal Sites and Facilities Act (Colorado Revised Statutes [C.R.S.] Title 30, Article 20, as amended) (solid waste act) or in Sections 1 and 2, the general sections of the regulations. The goal was to ensure that users in industry who might not be familiar with the solid waste act or the regulations as a whole could find most of the exemptions that would apply to these units. Responding to stakeholder wishes on this point accounts for the repetition of certain statutory and regulatory exemptions in Section 9 that also appear elsewhere in the solid waste act or the regulations.

Another primary objective of the division in crafting these exemptions was to ensure, where possible, that there are no gaps or overlaps in the regulatory construct for these units. The department is an implementing agency for Regulation 41 (5 C.C.R. 1002-41), the Colorado Basic Standards for Ground Water (ground water standards). Senate Bill 181 prohibits dual regulation of discharges to ground water under Regulation 41. Thus, in many cases where overlapping regulatory authorities have been identified, to avoid such dual regulation Section 9 includes exemptions intended to remove possible confusion regarding which regulatory program would control.

The regulations provide clarity on which of the exemptions in Section 9.1.2 are exemptions from Section 9 only and which exemptions represent complete exemption from all solid waste regulatory oversight. The focus of following sub-sections of the guidance will be to explain those exemptions that have generated the most questions from stakeholders.

1.2.1 Exemptions from the Solid Waste Regulations [Section 9.1.2]

Impoundments that do not contain solid waste, as defined in C.R.S. § 30-20-101 are exempt from Section 9 under Section 9.1.2 (A) (7), and impoundments containing only substances exempted from the definition of solid waste by C.R.S. § 30-20-101 (6) are exempt under Section 9.1.2 (A) (8) of the regulations. Examples include impoundments associated with agricultural activities or domestic sewage.

The exemption under Section 9.1.2 (A) (14) applies to an impoundment at a domestic waste water treatment works in which biosolids are generated and from which those biosolids are withdrawn for beneficial use.

Impoundments operating under Water Quality Regulation 84 (Reclaimed Water Control) are exempt under Section 9.1.2 (A) (16). Examples include ponds holding reclaimed irrigation water for golf courses, parks, open spaces, etc.

1.2.2 Exemptions from All or Part of Section 9 [Sections 9.1.1, 9.1.2]

Section 9.1.2 (A) (1) exempts impoundments whose design and primary function is retaining or detaining storm water for water quality or flood control purposes. Solids or semi-solids that are not environmental media as defined in Section 1.2 and Section 8.5.3 (C) of regulations and are removed from an exempt impoundment must be evaluated to determine whether they constitute solid waste. This can be determined through site or process knowledge or through sampling and testing of the solids or semi-solids.

Section 9.1.2 (A) (15) of the regulations exempts impoundments used for temporary or emergency storage of solid waste. Temporary or emergency storage of solid waste must be documented to ensure the 30-day time frame is not exceeded. As discussed in the *Statement of Basis and Purpose and Specific Statutory Authority for Addition to Regulations Pertaining to Solid Waste Sites and Facilities (6 C.C.R. 1007-2, Part 1) - Deletion and Replacement of Section 9, Waste Impoundments, and the Associated Revision of the Section 1.2 Definition of "Sludge" (Statement of Basis and Purpose)*, on a case-by-case basis the division will assess whether post-storage sampling is necessary to confirm that no negative environmental effects have occurred. During inspections, the division may inquire whether or not the site has used any impoundments for temporary or emergency storage so that it may assess whether post-storage sampling is necessary. Although exempt from the regulations, for these types of impoundments there might be requirements under the Water Quality Control Division's low-risk discharge policy, located on the Water Quality Control Division's web site. The *Statement of Basis and Purpose* is located on the division's web site.

Based on a case-by-case determination by the division, other waste impoundments may be exempted under Section 9.1.2 (A) (18) of the regulations. If a solid waste site and facility wishes to pursue this exemption, the facility should contact the division prior to making a formal request.

2.0 Waste Impoundment Classification Types [Section 9.1.6]

Section 9 includes two classes of waste impoundments, which are defined according to potential impact to ground water. Those classes are Type A waste impoundments, discussed in Section 2.1 of this guidance and Section 9.1.6 (A) of the regulations, and Type B waste impoundments, discussed in Section 2.2 of this guidance and Section 9.1.6 (B) of the regulations.

2.1 Type A Waste Impoundments [Section 9.1.6 (A)]

A waste impoundment is Type A if it meets one of the following criteria:

- Liquid captured from the under drain system of the waste impoundment has constituent concentrations less than the standards set forth in Regulation 41 (5 C.C.R. 1002-41) Basic Standards for Ground Water (ground water standards) for all constituents relevant to the impoundment's waste stream(s) (if there are multiple waste impoundments at a facility handling the same waste stream and not all waste impoundments are equipped with an under drain system, then under drain samples from those impoundments having under drains may be representative of leaching potential from those not having an under drain system); or
- The constituent concentrations in the liquid fraction of the sludge managed in the waste impoundment are less than the standards set forth in ground water standards for all constituents relevant to the impoundment's waste stream(s); or
- Toxicity Characteristic Leaching Procedure or Synthetic Precipitation Leaching Procedure data on the solid fraction of the sludge shows concentrations in the leachate extract to be below standards set forth in the ground water standards for all constituents relevant to the impoundment's waste stream(s).

If insufficient information is available to satisfy the criteria in Section 9.1.6 (A) (1), but the constituent concentrations in the flow coming into the waste impoundment are less than the ground water standards, the impoundment still can be classified as a Type A waste impoundment. (Ground water standards are determined using a division-approved sampling plan to assure sampling results are representative of impoundment conditions given the potential variability in the influent, or incoming, waste stream.)

Based on evaluation of waste characteristics and site setting, and not considering impoundment design or operations, if the solid waste site and facility is able to demonstrate that there is no reasonable potential to exceed the ground water standards at the point of compliance as defined in Section 1.2 of the regulations, the impoundment still can be classified as a Type A waste impoundment despite failing to meet one of the criteria in Section 9.1.6 (A) (1) or (2) of the regulations.

A demonstration that an impoundment meets one or more of the criteria in this section and should be classified as a Type A waste impoundment is subject to division approval in accordance with Section 9.1.8 of the regulations.

2.1.1 Pre-Classification [Section 9.1.3]

Coagulant sludge impoundments at surface water treatment plants are pre-classified as Type A. The impoundment types that are pre-classified as Type A are not subject to the compliance schedule, classification, engineering design and operations plan or other Type B waste impoundment requirements of Sections 9.1.7, 9.1.8, 9.1.9 and 9.3 of the regulations. The impoundment types pre-classified as Type A, however, are subject to the requirements for Type A waste impoundments in Section 9.2 of the regulations.

2.1.2 Other

When submitting a demonstration that an impoundment meets one or more of the criteria in Section 2.1 of this guidance and should be classified as a Type A waste impoundment, a liner design should not be submitted (also see Section 3.1 of this guidance). If the division approves the demonstration, the division will not review the liner design unless specifically requested by the submitter. If the submitter requests that the division review the liner design, the division would be authorized to bill for its review of technical submittals at the current document review fee in accordance with Section 1.7 of the regulations. An invoice for the division's review of the subject document would be sent under separate cover.

2.2 Type B Waste Impoundments [Section 9.1.6 (B)]

A waste impoundment is Type B if it does not meet one of the criteria in Section 9.1.6 (A) (1) of the regulations (Section 2.1 of this guidance) and does not meet one of the exemptions in Section 9.1.2 of the regulations.

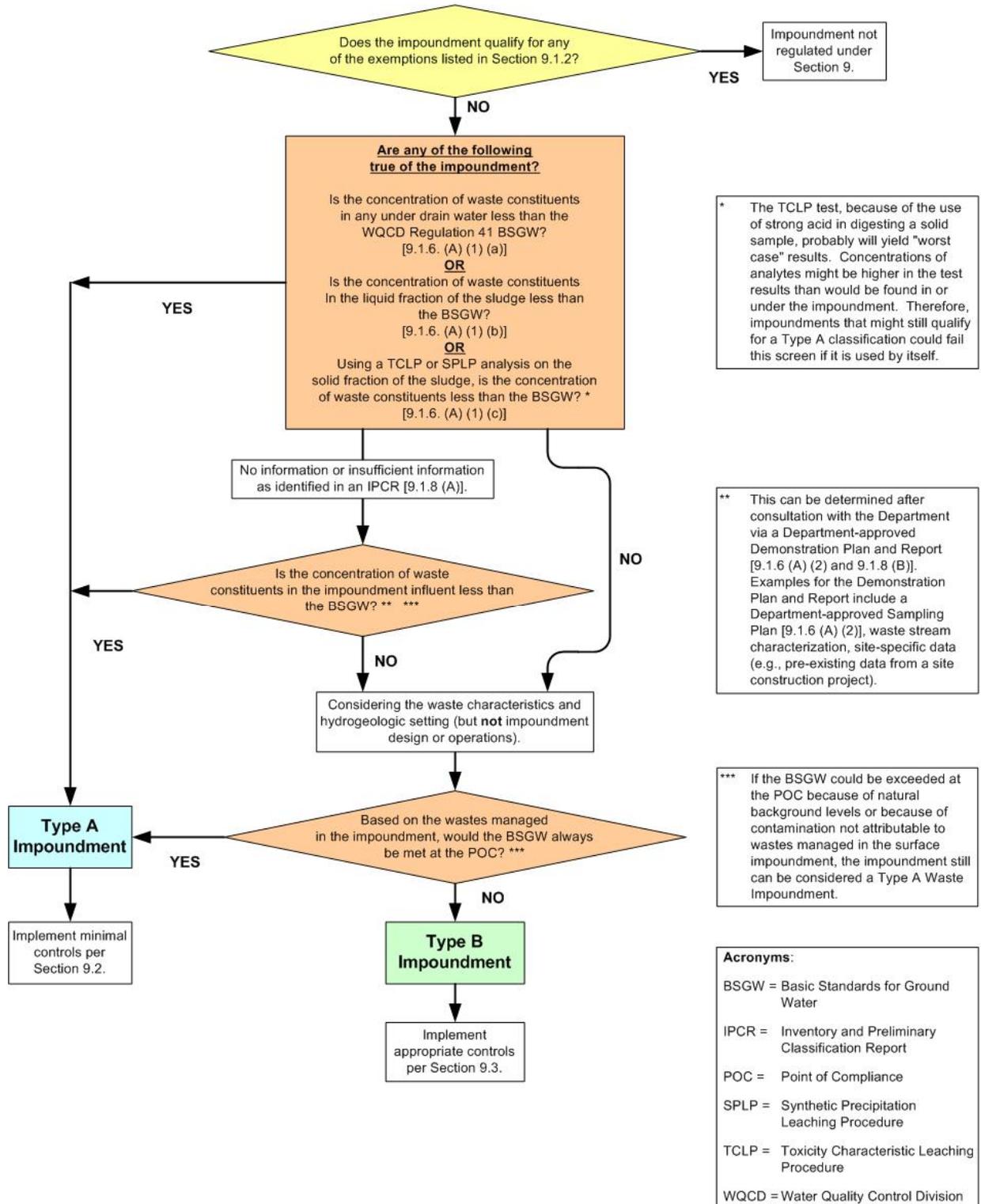
2.2.1 Re-Classification [Section 9.1.6 (C)]

Section 9.1.6 (C) of the regulations recognizes that changes in waste stream characteristics might result in changes to the classification of impoundments at a solid waste site and facility. Whenever there are significant changes to the process generating the waste stream, the solid waste site and facility should perform additional characterization on the waste stream to verify that the original classification still holds.

2.3 Type A or Type B Decision Tree Flow Chart

To help in the determination of whether an impoundment is classified as Type A or Type B, a Solid Waste Surface Impoundment Classification Flow Chart is shown on Figure 2.3-1. This figure is based on Figure 1 from the *Statement of Basis and Purpose*. Note that the Flow Chart in Figure 2.3-1 is a visual guideline only, and the regulations govern.

Figure 2.3-1
Solid Waste Surface Impoundment Classification Flow Chart [Section 9.1.6]



3.0 Requirements for Inventory and Classification of Impoundments at Existing Facilities [Section 9.1.8]

3.1 Inventory and Preliminary Classification Report [Section 9.1.8 (A)]

A sample inventory and preliminary classification report—including cover sheet, text, and flow diagram—is included for reference in Appendix B of this guidance. As shown in the sample inventory and preliminary classification report, it is the division's recommendation that an inventory and preliminary classification report include the information listed below. Note that not all of the items listed below will apply to every solid waste site and facility.

- Site background information including location and a brief site history.
- Environmental setting including hydrogeology and surface water, if known.
- Individual waste impoundment inventory including a brief description and history of each impoundment, and impoundments classified as exempt, Type A, and Type B. The inventory could include as much as-built information as possible. Such information should include impoundment names, types of liners; dates of construction or reconstruction (or both); and pond dimensions and capacity.
- Notes on any impoundments for which no information or insufficient information is available.
- Waste stream characteristics.
- Any exceedances of the ground water standards.
- Summary of classifications in table format.
- Any relevant figures and drawings for each impoundment.
- A facility map that identifies each impoundment and its site location.
- An appendix that includes any back-up materials that support the proposed classification(s), including, but not limited to, laboratory analytical reports.

The inventory and preliminary classification report for a Type A waste impoundment, however, could be as simple as filling out the inventory and preliminary classification report cover sheet and attaching the sample test data that support the Type A classification.

3.2 Demonstration Plan [Section 9.1.8 (B)]

The demonstration plan must include a **scope of work** and **schedule for implementation**, and may include any of the information listed in Section 9.1.8 (B) of the regulations as necessary to complete classification of each impoundment.

4.0 Approval Process and Compliance Schedules

4.1 Approval Process for Type A Waste Impoundments

4.1.1 Type A Waste Impoundments [Section 9.2]

As discussed in Section 5.0 of this guidance, Type A waste impoundment sites and facilities must meet the requirements of Section 9.2 of the regulations.

4.2 Approval Process for Type B Waste Impoundments

4.2.1 One's Own Waste on One's Own Property

Anyone operating a facility for solid waste disposal where storage, treatment, use, processing, or deposit and final treatment of solid waste occurs must obtain a certificate of designation. There are several exemptions for which obtaining a certificate of designation is not required. The most relevant exemptions to Section 9 include:

- a. Anyone other than a governmental unit may dispose of their own waste on their own property as long as the division has reviewed an engineering design and operations plan submitted by the owner or operator and has determined that the site complies with state regulations and will not be a public nuisance; and
- b. Public water treatment plants.

4.2.2 Type B Waste Impoundments [Section 9.3]

As discussed in Section 6.0 of this guidance and required in Section 9.3 of the regulations, Type B waste impoundments exempted from a certificate of designation, but subject to Section 9, must submit an engineering design and operations plan to the division for review and approval. A copy of the engineering design and operations plan should be sent to the local governing authority as well. The local governing authority may conduct its own review of the engineering design and operations plan under its local ordinances and rules. Although not required by the regulations, the division will follow the certificate of designation process and timeframes during its technical and regulatory review of the engineering design and operations plan.

4.2.3 Certificate of Designation

A certificate of designation is a document issued by the local governing authority approving the use of the land for a solid waste site and facility. In effect, the certificate of designation is the permit. The certificate of designation is issued if it has been determined that the technical standards and requirements set forth in the regulations are met and after the local issues are considered and satisfied.

The solid waste act (C.R.S. § 30-20-100, et seq.) defines a dual-jurisdictional relationship between the department and the local governing authority for siting, permitting, and regulating a solid waste site and facility. Roles and responsibilities in the solid waste act provide for the department to regulate the design, operations, monitoring, closure and post-closure of a solid waste site and facility. Land use decisions are left to the local governing authority. The department works with the local governing authority to evaluate the proposed solid waste site and facility. While the statute does not prohibit a local governing authority from conducting its own technical review of the engineering design and operations

plan for permitting a solid waste site and facility, most local jurisdictions defer to the department’s expertise for this review and determination.

Persons proposing a solid waste site and facility in unincorporated portions of any county must apply to the commissioners of the county in which the site is proposed to be located. If the solid waste site and facility is proposed to be within the corporate boundaries of a municipality, the applicant must apply to the governing authority of the municipality.

4.2.4 Local Land Use

In addition to a certificate of designation or engineering design and operations plan, an applicant for a solid waste site and facility will need to go through the local land use process to get siting approval. The local land use approval process is independent of the division’s review process. The local land use process may come prior to, during, or after the division’s review.

To help in developing the required documentation, a Certificate of Designation Process Flow Chart is shown on Figure 4.2.4-1, and a Non-Certificate of Designation Process Flow Chart – Engineering Design and Operation Plan for One’s Own Waste is shown on Figure 4.2.4-2.

Figure 4.2.4-1
Certificate of Designation Process Flow Chart

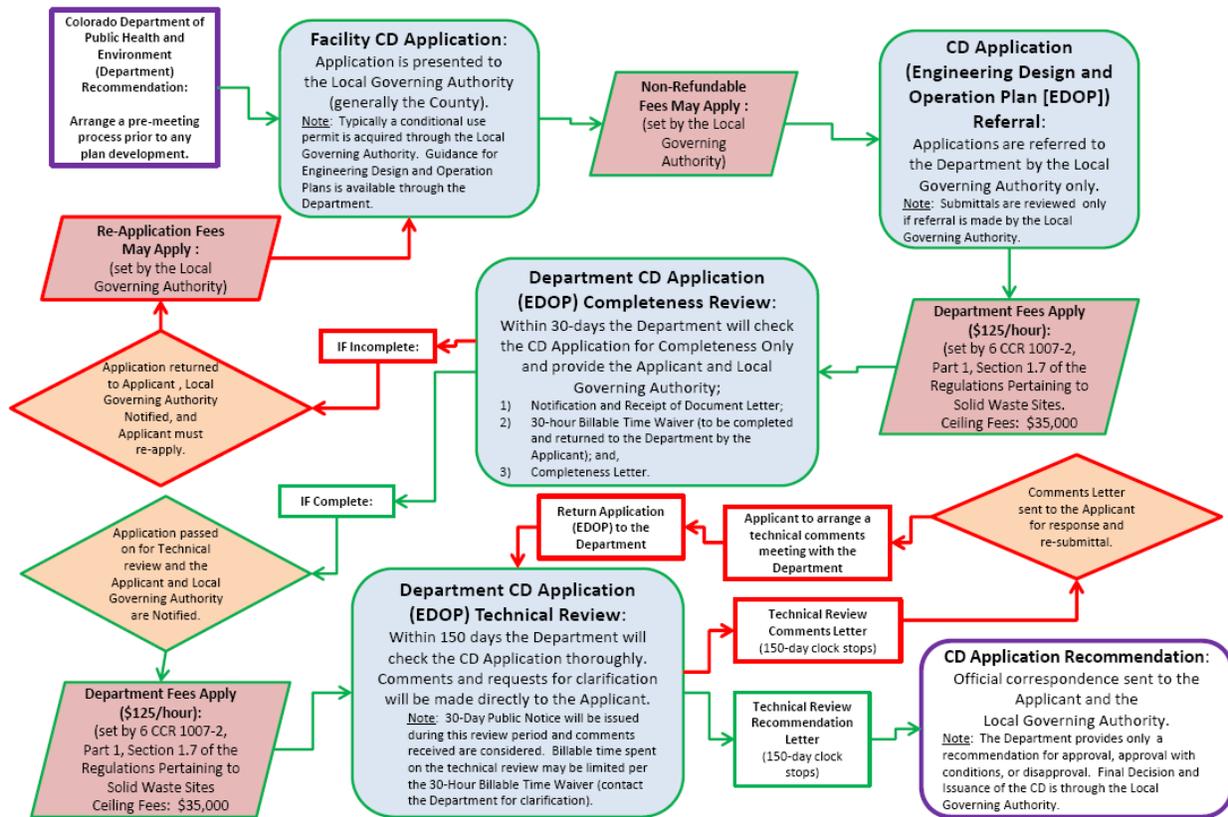
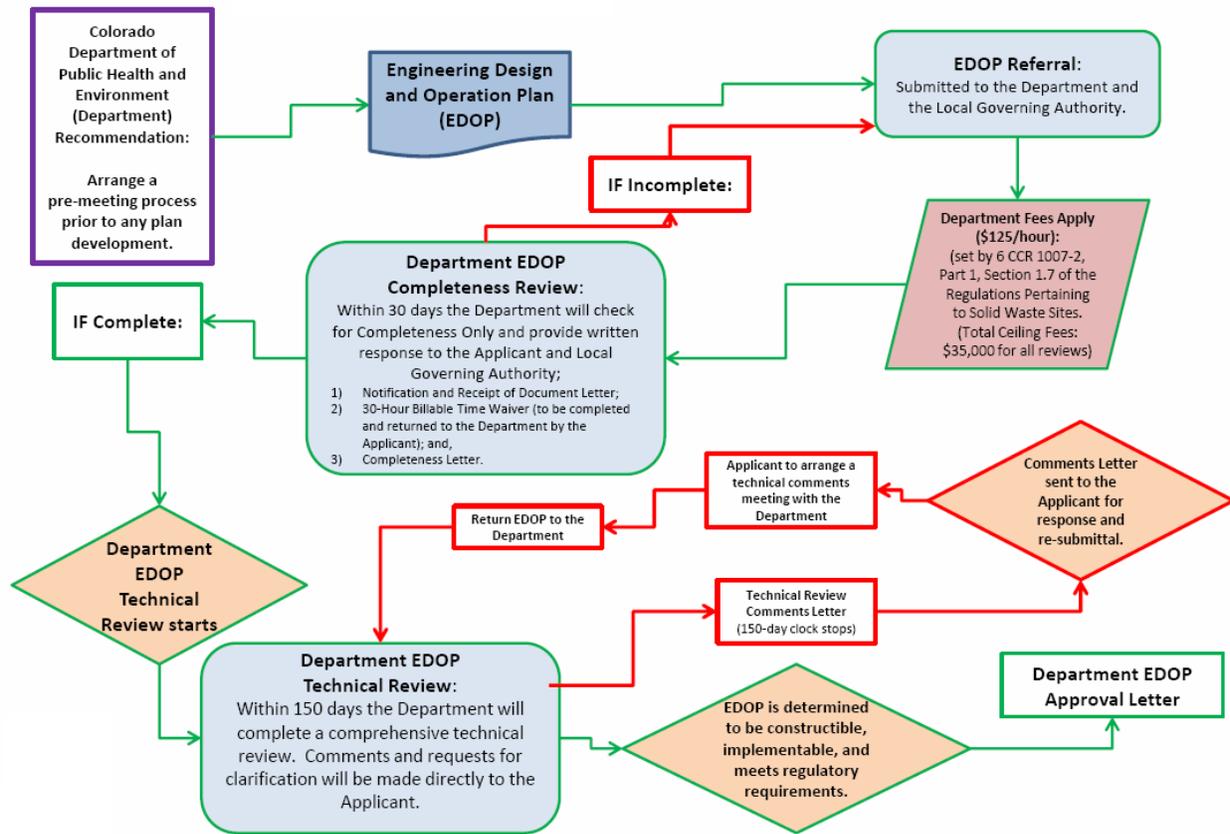


Figure 4.2.4-2
 Non-Certificate of Designation Process Flow Chart -
 Engineering Design and Operation Plan for One's Own Waste



4.3 Compliance Schedules [Section 9.1.7]

By March 30, 2013, Type B Waste Impoundments receiving sludge from (1) reverse osmosis, (2) ion exchange, and (3) iron filtration operations had to submit (1) an engineering design and operations plan for a Type B waste impoundment in accordance with Section 9.3 of the regulations, or (2) a demonstration plan in accordance with Section 9.1.8 (B) showing that the solid waste site and facility can qualify as Type A on the basis of favorable site hydrogeology. As stated in Section 9.1.7 of the regulations, the compliance date for Type B waste impoundments receiving sludge from (1) reverse osmosis, (2) ion exchange, and (3) iron filtration operations was December 30, 2012. On December 21, 2012, the division extended the deadline by ninety (90) calendar days to March 30, 2013.

The compliance schedule in Section 9.1.7 (A) of the regulations was designed to address the impoundments that present the highest risk for impacts to human health and the environment. The division recognizes, however, that not every unit managing this type of waste will present the same level of risk. Therefore, as part of the division's implementation strategy for these types of waste impoundments, the division also will accept an engineering design and operations plan for a Type B waste impoundment in accordance with Section 9.3 of the regulations, or a demonstration plan in accordance with Section 9.1.8 (B) of the regulations.

4.3.1 Regulatory Requirements Matrix

To help in meeting the compliance schedules, a Solid Waste Surface Impoundment Regulatory Requirements Matrix - by Impoundment Type is shown on Figure 4.3.1-1. This figure is based on Figure 2 from the *Statement of Basis and Purpose*.

Figure 4.3.1-1
Solid Waste Surface Impoundment Regulatory Requirements Matrix - by Impoundment Type

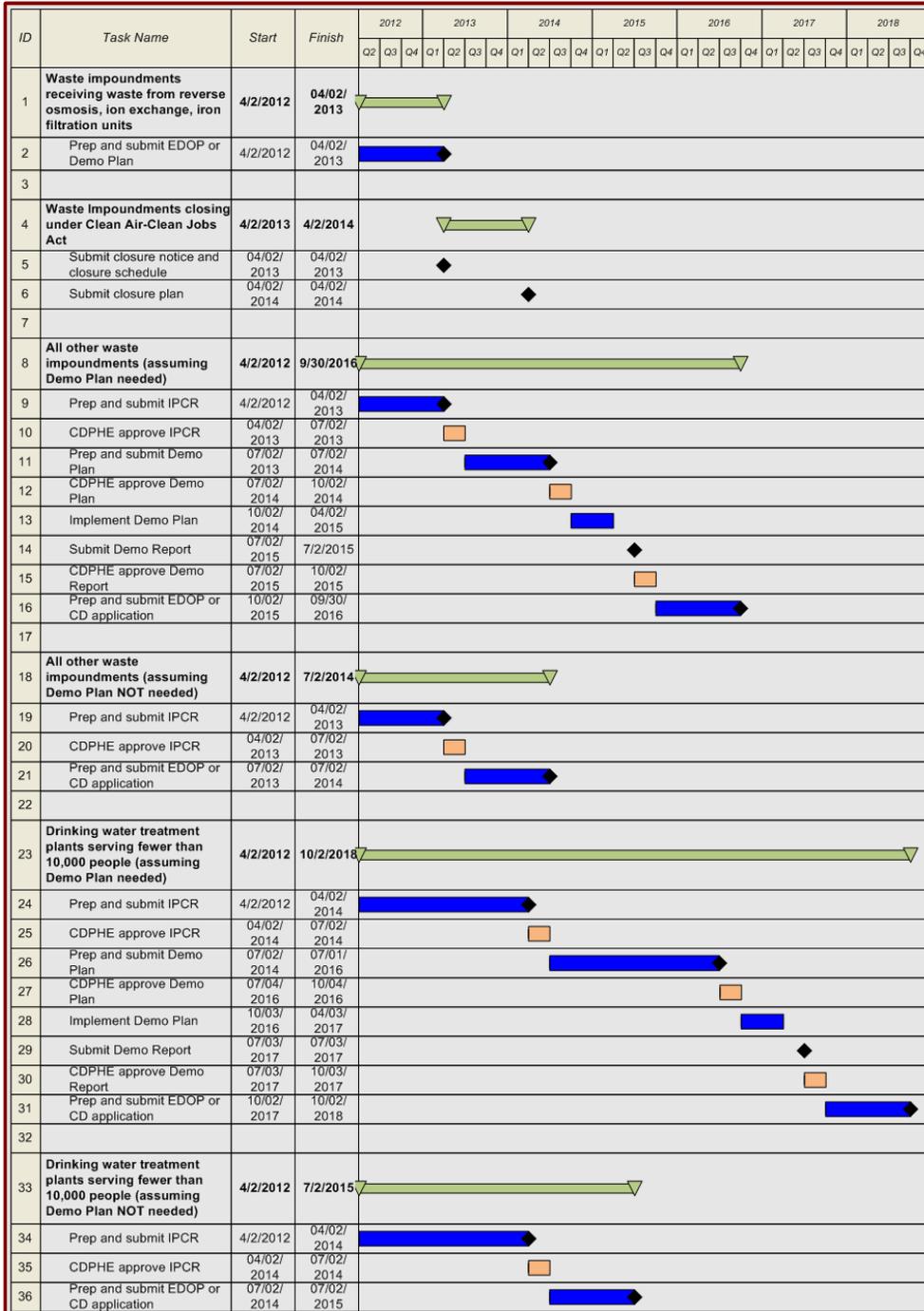
Category	Requirement	Type A	Type B
General	Engineering Design and Operations Plan		X
	Construction Quality Assurance Plan		X
Design Criteria	Access Control	X	X
	Freeboard Monitoring		X
	Ground Water / Leak Detection Monitoring		X ³
	Storm Water Controls	X	X
	Liner System		X ³
	Surface Water Monitoring		X ⁴
Operating Criteria	Contingency Plan / Procedures		X
	Facility Inspections		X
	Waste Characterization Plan / Procedures		X ⁵
	Personnel Training		X
	Financial Assurance	X ¹	X
	Removal of Surface Accumulation		X ⁶
Reporting	Excursions from Approved Plans		X
	Annual Report / Self-Certification	X	X
	Fluid Level Measurement		X
Closure and Post-Closure	Closure Plan	X ²	X
	Closure Report	X ²	X
Care and Maintenance	Post-Closure Care Plan and Environmental Covenant (if not cleaned for unrestricted use)	X ⁷	X ⁷

- Notes:
1. For Type A waste impoundments, the amount of financial assurance needed depends on the closure plan.
 2. Some Type A waste impoundments may need only a very simple closure plan or may be able to use another similar and pre-existing document for a closure plan. Similarly, for facilities with very simple closure plans, very simple closure reports may suffice. This can be worked out between the solid waste site and facility and the division before these plans and reports are prepared and submitted.
 3. Depending on the waste managed and the hydrogeologic setting, Type B waste impoundments could be subject to a range of liner capabilities—from a minimal clay liner to a double-liner system with leak detection. In turn, the amount of ground water monitoring required at a Type B waste impoundment might be dependent on the liner system used and therefore, also might range from a few monitoring wells to many. An appropriate liner/ground water monitoring system will be a site-specific determination by the division.
 4. Surface water monitoring would be required only when nearby surface water bodies are likely to be affected by the waste impoundment.
 5. A waste characterization plan is applicable only to commercial impoundment owners or operators to prevent the acceptance of hazardous waste.
 6. Removal of surface accumulation applies only to operators that could receive oily waste.
 7. A post-closure care plan and an environmental covenant are required only if an impoundment closes with waste left in place, where contaminant concentrations in the waste are not safe for all future uses of the property, on-going engineering controls are necessary for protection of human health or the environment, or any or all of these.

4.3.2 Compliance Schedule Gantt Chart

To help in meeting the compliance schedules, a Compliance Schedule Gantt Chart is shown on Figure 4.3.2-1. This figure is based on Figure 3 from the *Statement of Basis and Purpose*. Note that the Gantt Chart in Figure 4.3.2-1 is a guideline only and is based on quarters, and the regulations govern.

Figure 4.3.2-1
Compliance Schedule Gantt Chart (see Notes to the Figure on following page)



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- Notes:
- Lines 4-6: For consistency, on a case-by-case basis the division will determine whether other waste impoundments closing by 2017 may follow this procedure.
 - Lines 8-36: Various time frames were assumed during preparation of the revised Section 9 regulation and are shown on Figure 4.3.2-1. Some examples: (1) For Lines 9, 19, 24, and 34, the Gantt chart assumes each solid waste site and facility would take the maximum time of one (1) year or two (2) years to prepare and submit an inventory and preliminary classification report, and for Lines 10, 20, 25, and 35, the Gantt chart assumes the division would take three (3) months to review and approve each inventory and preliminary classification report. Actual time frames may vary and will depend upon the date of submission of a given document and the date of the division's approval of that document; and (2) For Line 13, six (6) months to implement the demonstration plan are shown here. Actual schedules may vary and will depend upon the date of the division's approval of the demonstration plan.
 - EDOP is engineering design and operations plan. Demo Plan is demonstration plan. IPCR is inventory and preliminary classification report. CDPHE is Colorado Department of Public Health and Environment. Demo Report is demonstration report. CD is certificate of designation.

4.4 Engineering Design and Operation Plan Schedules [Sections 9.1.7, 9.1.9]

The engineering design and operations plan submission schedules for Type B waste impoundments are summarized in Figure 4.4-1. Also see Figure 4.3.2-1 for more information.

**Figure 4.4-1
Engineering Design and Operations Plan Schedules**

Document to be Submitted	Regulation Reference	Document Due Date	Remarks ³
<i>For Waste Impoundments Receiving Sludge from Reverse Osmosis, Ion Exchange or Iron Filtration [Section 9.1.7 (A)]</i>			
EDOP	Section 9.3	March 30, 2013 ¹	Submit (1) an EDOP for a Type B waste impoundment or (2) a Demonstration Plan showing that the facility can qualify as Type A on the basis of favorable site hydrogeology.
Demonstration Plan	Section 9.1.8 (B)	March 30, 2013 ¹	
<i>For All Waste Impoundments Except as Noted Above [Section 9.1.8 (A)]</i>			
IPCR (Larger Facilities)	Section 9.1.8 (A)	March 30, 2013 ²	--
IPCR (Smaller Facilities)	Section 9.1.8 (A)	March 30, 2014	Water treatment plants other than those listed in Section 9.1.7 (A) and serving fewer than 10,000 persons may petition the Division for an additional twelve (12) months to submit the IPCR.
Demonstration Plan (Larger Facilities)	Section 9.1.8 (B)	To Be Determined	Within twelve (12) months of the date of the Division's written determination on the IPCR, facilities shall submit the Demonstration Plan for Division review and approval. Existing facilities without sufficient readily available information with which to classify their waste impoundments in the IPCR must develop a Demonstration Plan. A facility obtaining an approved IPCR that was successful in classifying all waste impoundments at the facility may skip Section 9.1.8 (B) and proceed to development of an EDOP (Section 9.3.4), if necessary.
Demonstration Plan (Smaller Facilities)	Section 9.1.8 (B)	To Be Determined	Water treatment plants other than those listed in Section 9.1.7 (A) and serving fewer than 10,000 persons may petition the Division for an additional twelve (12) months to complete the Demonstration Plan.
Demonstration Report	Section 9.1.8 (C)	To Be Determined	Submit a Demonstration Report summarizing the findings of the Demonstration Plan to the Division for review and approval within three (3) months of completing implementation of the Demonstration Plan.
EDOP (Existing Facilities)	Sections 9.1.9 and 9.3.4	To Be Determined	Within twelve (12) months of the Division's formal determination approving the IPCR, or within twelve (12) months of the Division's formal determination approving the Demonstration Report in the case of those impoundments for which a Demonstration Report is required, facilities having Type B waste impoundments shall submit a CD application including an EDOP, or, for CD-exempt facilities, submit an EDOP (Section 9.3.4).
EDOP (New Facilities After March 30, 2012)	Sections 9.1.9 and 9.3.4	To Be Determined	Any new Type B waste impoundments constructed after March 30, 2012, the effective date of the Revised Section 9, must include the waste impoundment evaluation and demonstration required by Section 9.1.8 (B) as part of the CD application, or as part of the EDOP submittal if the facility is managing its own waste in its own impoundments.
EDOP	Sections 9.1.9 and 9.3.4	To Be Determined	Alternative implementation schedules may be proposed to the Division and approved on a site-specific basis.

- Notes:
- Nine (9) months after March 30, 2012, the effective date of the revised Section 9, plus a division-granted extension of ninety (90) calendar days.
 - Twelve (12) months after March 30, 2012, the effective date of the revised Section 9.
 - EDOP is engineering design and operations plan. IPCR is inventory and preliminary classification report. CD is certificate of designation.

5.0 Requirements for Type A Waste Impoundments [Section 9.2]

Type A waste impoundments are assumed not to require engineered waste containment to protect ground water. Therefore, as noted below, the only design and construction requirements are for access control and storm water control. While Section 9.2.1 of the regulations does not require that the design criteria for access control and storm water control be provided for division review, during inspections the division will verify these design criteria have been incorporated.

Operational requirements such as recordkeeping and reporting are proportional to risk. Therefore, there are no operational requirements for Type A waste impoundments.

Solid waste sites and facilities with Type A waste impoundments must meet the requirements listed in Section 9.2.1 of the regulations. For storm water control, Section 9.2.1 (B) requires that each waste impoundment must be designed, constructed and maintained to provide (1) run-on control and diversion structures to prevent flow into the unit from a 25-year, 24-hour storm; and (2) a run-off control system to collect run-off from a 25-year, 24-hour storm and control run-off from a 100-year, 24-hour storm. Precipitation that cannot be diverted from the impoundment, and therefore comes in contact with impounded waste, must be managed as solid waste. Each impoundment must be designed, constructed and maintained to prevent damage to the containment structure from erosion. A site-wide storm water management plan to control run-off from a 25-year, 24-hour storm and to control run-off from a 100-year, 24-hour storm might satisfy these requirements.

The solid waste act requires all solid waste sites and facilities to establish financial assurance. Financial assurance cost estimates are derived from each solid waste site and facility's closure and post-closure care plans. Type A waste impoundments must have financial assurance in accordance with the requirements of Section 1.8 of the regulations.

The solid waste act authorizes the department to inspect solid waste sites and facilities, including those facilities subject to Section 9. Because the Section 9 universe potentially encompasses a large number of facilities, with estimate as high as 250 sites, the division sought an alternative to a traditional inspection program, which can be labor-intensive. Section 9.2.3 provides the division with the authority to implement a self-certification program modeled on one already implemented successfully by the Hazardous Waste Compliance Assurance Unit. Self-certification is a different enforcement strategy in which facilities are sent compliance check lists and guidance materials to evaluate their own compliance. Each solid waste site and facility must complete and certify the check list and return it to the division, and the division then inspects a percentage of the facilities to verify the accuracy of the compliance data received back from the facilities. Self-certification can be an efficient and effective compliance tool, particularly for a large and sophisticated regulatory sector.

5.1 Annual Report [Section 9.2.4]

Section 9.2.4 of the regulations requires the owner or operator of a Type A waste impoundment to submit an annual report that documents the information required in Section 9.2.4. The annual report must document the required waste impoundment activities during the previous calendar year and must be provided to the division by March 1 of each year.

5.2 Closure [Section 9.2.5]

Many solid waste sites and facilities already might have a closure plan, but might call it something else (e.g., a “decommissioning plan”). On a case-by-case basis, the division would allow the requirement for a Type A closure plan to be met by these alternative documents. In addition, some facilities might have a very long or indefinite design life, as is the case for most drinking water treatment facilities, making the need for a closure plan less obvious. In these cases, it is the intent of the division to allow creation of a closure plan via check lists and formulas for sites and facilities that would envision clean closure, which is closure that meets the requirements for unrestricted use (also, see the frequently asked questions in Appendix A of this guidance for more discussion on clean closure). As noted above, closure cost estimates must be included with the closure plan.

If a solid waste site and facility has a former impoundment that is inactive, but the impoundment contains solid waste, then the inventory and preliminary classification report needs to (1) identify the impoundment and (2) indicate whether there is a long-term plan to close (with waste in place or as clean closure) or whether there is a plan or the possibility for reactivating the use of the impoundment.

If a solid waste site and facility has a former impoundment that is inactive and contains no solid waste, Section 9 of the regulations does not apply. Therefore, the impoundment does not need to be addressed in the inventory and preliminary classification report, and nothing else is required.

5.3 Submission Schedules

Section 9 does not discuss due dates for submittal of closure and post-closure care plans for facilities with Type A waste impoundments classified via division-approved inventory and preliminary classification reports or demonstration reports and does not specify when such facilities must secure financial assurance. The division is requesting that such facilities submit their closure and post-closure care plans with associated cost estimates, or a compliance schedule to provide these plans (as noted below), within ninety (90) calendar days from division approval of the inventory and preliminary classification report or demonstration report, and to secure financial assurance within sixty (60) calendar days from approval of these plans.

At a minimum the compliance schedule noted above should include:

- Date to provide the closure and post-closure care plans in accordance with Section 9.2.5.
- Date to provide third-party cost estimates for closure and post-closure care in accordance with Sections 1.8.1 (C) and 9.2.2.
- Date for proposed financial assurance mechanism in accordance with Section 1.8.4 (C).
- Date to be in compliance with access control and storm water control in accordance with Section 9.2.1.

The division will evaluate the compliance schedule on a case-by-case basis.

Facilities with Type A and Type B impoundments may submit a Type B engineering design and operations plan to address both types of impoundments rather than submitting a Type A closure plan and a separate Type B engineering design and operations plan. In addition, financial assurance deadlines and the compliance schedule may follow the model for development of a Type B engineering design and operations plan.

For a solid waste site and facility with multiple impoundments, whether Type A or Type B, the division may consider the financial assurance mechanism on a case-by-case basis. To avoid unnecessary modifications to the Type B engineering design and operations plan, financial assurance documentation should be submitted under separate cover.

The above applies to pre-existing impoundments, which the division interprets as waste impoundment in place and approved to accept solid waste as of March 30, 2012, the effective date of the revised Section 9. New impoundments may not start operating until all required plans have been approved and financial assurance has been secured.

6.0 Requirements for Type B Waste Impoundments [Section 9.3]

Type B waste impoundments represent a broad range of risk, and, therefore, the design elements necessary to manage such risk will vary considerably from site to site. The design and operation of Type B waste impoundments must not cause exceedances of the ground water standards/Appendix B of the regulations at the point(s) of compliance. The design element of most concern is the impoundment liner system. In some cases, existing facilities will be able to demonstrate that the existing liner system is sufficient to protect ground water, as discussed in Sections 9.1.8 (A), (B) and (C) of the regulations and Sections 3.1, 3.2 and 3.3 of this guidance. For waste impoundments on the riskier end of the spectrum, a new liner system or an upgraded liner system might be necessary to achieve ground water protection.

6.1 Facility Design [Section 9.3.1]

Solid waste sites and facilities with Type B waste impoundments must meet the facility design requirements listed in Section 9.3.1 of the regulations.

6.2 Facility Construction [Section 9.3.2]

Solid waste sites and facilities with Type B waste impoundments must meet the facility construction requirements listed in Section 9.3.2 of regulations.

The division has guidance on construction quality assurance / quality control and as-built documentation on the division's web site.

6.3 Facility Operation [Section 9.3.3]

Solid waste sites and facilities with Type B waste impoundments must meet the facility operation requirements listed in Section 9.3.3 of the regulations.

In addition, note that for ground water monitoring, discussed in Section 9.3.3 (A) of the regulations, in cases where naturally occurring concentrations of potential contaminants exceed the ground water standards/Appendix B of the regulations, using natural background as the compliance level is appropriate. The methodology for doing this can be found in Appendix B of the regulations. Appendix B also can be used for establishing a site-specific standard for a contaminant that has no established ground water standard in Water Quality Regulation 41.

6.3.1 Financial Assurance [Section 9.3.3 (J)]

Solid waste sites and facilities with Type B waste impoundments are required to have financial assurance that meets the requirements of Section 1.8 of the regulations. The solid waste act requires that financial assurance be established by all solid waste sites and facilities. Financial assurance cost estimates are derived from each solid waste site and facility's closure and post-closure care plans.

6.4 Engineering Design and Operations Plan [Section 9.3.4]

Solid waste sites and facilities with Type B waste impoundments must meet the engineering design and operations plan requirements listed in Section 9.3.4 of the regulations, though not every requirement listed will apply to every solid waste site and facility.

Section 9.3.4 of the regulations includes the content requirements for an engineering design and operations plan. Facilities with Type B waste impoundments also need to assure the engineering design and operations plan includes the facility design, construction and operation requirements noted in Sections 9.3.1, 9.3.2 and 9.3.3 of the regulations. Given the diverse nature of waste impoundment facilities, not all of the information listed below will pertain to every solid waste site and facility. Refer to the submittal check list in Appendix C of this guidance for more information.

6.5 Recordkeeping and Reporting [Section 9.3.5]

Solid waste sites and facilities with Type B waste impoundments must meet the recordkeeping and reporting requirements listed in Section 9.3.5 of the regulations, though not every requirement listed will apply to every solid waste site and facility.

6.5.1 Annual Report [Section 9.3.5 (D)]

Solid waste sites and facilities with Type B Waste Impoundments must meet the annual report requirements listed in Section 9.3.5 (D) of the solid waste regulations. The owner or operator of a Type B Waste Impoundment must submit an annual report that documents the information required in Section 9.3.5 (D). The annual report must document the required waste impoundment activities during the previous calendar year and must be provided to the division by March 1 of each year.

6.6 Closure [Section 9.3.6]

Solid waste sites and facilities with Type B waste impoundments must meet the closure requirements listed in Section 9.3.6 of the regulations, though not every requirement listed will apply to every solid waste site and facility. A Type B waste impoundment will have a more extensive closure plan than a Type A waste impoundment would have. In fact, a Type B waste impoundment must have a closure plan as well as a post-closure care plan (Section 6.7 of this guidance and Section 9.3.7 of the regulations) that satisfy the regulatory requirements. Sites and facilities with Type B waste impoundments must meet the requirements listed in Sections 9.3.4 (F), 9.3.6 and 9.3.7 of regulations, though not every requirement listed will apply to every solid waste site and facility.

In addition, Senate Bill 01-145 authorizes the department to approve requests to restrict the future use of a property using an enforceable agreement known as an environmental covenant, which is a property right that imposes use restrictions on the property (C.R.S. § 25-15-317 et seq., as amended). When a contaminated site is not cleaned up completely, land use restrictions may be used to ensure that the selected clean up remedy is adequately protective of human health and the environment. The division has guidance on environmental covenants and environmental use restrictions on the division's web site.

In accordance with Section 9.3.6 (E) of the regulations, following closure of an impoundment at a solid waste site and facility, the owner or operator must work with the division to place an environmental covenant on the former impoundment area in compliance with C.R.S. § 25-15-320 if waste is left in place as part of the closure or if the site is not suitable for unrestricted use. If waste is left in place or the site is not suitable for unrestricted use (or both), the owner or operator also must comply with Section 9.3.7 of the regulations.

Regardless of impoundment classification, post-closure care can be eliminated through clean closure, which is closure that meets the requirements for unrestricted use (also, see the frequently asked questions in Appendix A of this guidance for more discussion

on clean closure). If the owner or operator of the solid waste site and facility elects to remove the contaminants from the site down to a level that allows for residential unrestricted use, then post-closure care can be eliminated. Unrestricted use may be demonstrated by comparing soil contamination against (1) the Colorado Ground Water Protection Values or the United States Environmental Protection Agency's Regional Screening Levels (or both) (available on the division's web site); (2) background concentrations; or (3) health protective levels derived from a risk assessment as described in the Corrective Action Guidance Document (available on the division's web site).

In accordance with Section 9.3.7 (B) of the regulations, the owner or operator must implement the solid waste site and facility's division-approved post-closure care plan in accordance with the division-approved schedule. The division-approved post-closure care plan is part of the solid waste site and facility's division-approved engineering design and operations plan. Implementation includes placing an environmental covenant or notice of environmental use restriction on the waste impoundment areas and any others areas with remaining contamination in accordance with Section 9.3.6 (E) of the regulations.

If a solid waste site and facility has a former impoundment that is inactive, but the impoundment contains solid waste, then the inventory and preliminary classification report needs to (1) identify the impoundment as Type A or B if there is adequate information or if there is insufficient information submit a demonstration plan or closure plan, and (2) indicate whether there is a long-term plan to close (with waste in place or as clean closure) or whether there is a plan or the possibility for reactivating the use of the impoundment.

If a solid waste site and facility has a former impoundment that is inactive and contains no solid waste, Section 9 of the regulations does not apply. Therefore, the impoundment does not need to be addressed in the inventory and preliminary classification report, and nothing else is required.

6.7 Post-Closure Care and Maintenance [Section 9.3.7]

Sites and facilities with Type B waste impoundments must meet the closure requirements listed in Section 9.3.7 of the regulations, though not every requirement listed will apply to every solid waste site and facility. A Type B waste impoundment will have a more extensive closure plan than a Type A waste impoundment would have. In fact, a Type B waste impoundment must have a closure plan as well as a post-closure care plan (Section 9.3.7 of the regulations) that satisfy the regulatory requirements. Sites and facilities with Type B waste impoundments must meet the requirements listed in Sections 9.3.4 (F), 9.3.6 and 9.3.7 of regulations, though not every requirement listed will apply to every solid waste site and facility.

7.0 References

5 C.C.R. 1002-41, *Regulation 41 - The Basic Standards for Ground Water*, Denver, Colorado, Colorado Department of Public Health and Environment.

5 C.C.R. 1002-61, *Regulation 61 - Colorado Discharge Permit System Regulations*, Denver, Colorado, Colorado Department of Public Health and Environment.

5 C.C.R. 1002-64, *Regulation 64 - Biosolids Regulations*, Denver, Colorado, Colorado Department of Public Health and Environment.

5 C.C.R. 1002-84, *Regulation 84 - Reclaimed Water Control Regulation*, Denver, Colorado, Colorado Department of Public Health and Environment.

6 C.C.R. 1007-2, Part 1, *Regulations Pertaining to Solid Waste Sites and Facilities (regulations)*, Denver, Colorado, Colorado Department of Public Health and Environment.

30-20, C.R.S., *Solid Waste Disposal Sites and Facilities Act (Solid Waste Act)* [Parts 1 and 10].

75 Federal Register 35127, *Proposed Rule: Disposal of Coal Combustion Residuals from Electric Utilities*, Washington, D.C., United States Environmental Protection Agency, June 21, 2012.

Statement of Basis and Purpose and Specific Statutory Authority for Addition to Regulations Pertaining to Solid Waste Sites and Facilities (6 CCR 1007-2, Part 1) - Deletion and Replacement of Section 9, Waste Impoundments, and the Associated Revision of the Section 1.2 Definition of "Sludge," Denver, Colorado, Colorado Department of Public Health and Environment, November 19, 2013.

APPENDICES

APPENDIX A
FREQUENTLY ASKED QUESTIONS



Appendix A: Answers to Frequently Asked Questions

Section 9 Waste Impoundments / November 2014

- 1. If we have an existing Type B waste impoundment, and we don't already have a division-approved engineering design and operations plan or our engineering design and operations plan is approved but might need to be updated to meet the requirements of the revised Section 9 regulation, how do we demonstrate the adequacy/performance of the liner?**

One way is through leak detection monitoring, discussed in Section 9.3.1 (C) of the Regulations Pertaining to Solid Waste Sites and Facilities, 6 Code of Colorado Regulations 1007-2, Part 1 (regulations). Other ways include:

- Provide as-built information including daily construction reports, a certification report, quality assurance testing, etc., for the existing liner system.
- Install a well close to the impoundment to show that the liner is leaking or is not leaking.
- Drain the impoundment and test the hydraulic conductivity of the soil liner.
- Drain the impoundment and visually inspect the surface of the synthetic liner and perform an electronic leak location survey.
- If the liner system includes a leak detection system, provide the inspection information.
- Site setting.
- Site investigation.

- 2. If we think we have a Type A waste impoundment, but are not sure of the constituents, then what?**

The first step would be to characterize the waste stream(s) being managed in the impoundment. The owner/operator will have to sample the waste stream(s) and, using process knowledge, test for the constituents listed in the Basic Standards for Ground Water that are reasonably expected to be in the waste stream. For any constituents expected in the waste stream that are not listed in Regulation 41, consult with the Solid Waste Permitting Unit on other available standards such as the Colorado Ground Water Protection Values or the United States Environmental Protection Agency (EPA) Regional Screening Levels, both of which are available on the division's web site. A sampling and analysis plan must be developed as part of a demonstration plan to ensure collection of representative samples.

3. What about testing for closure?

The sampling and testing regime could be different. For example, sampling for closure must consider not only potential impacts to ground water, but also whether there is residual contamination that restricts the use of the property going forward. Closing the impoundments with waste left in place, or with residual contamination above unrestricted use levels, will trigger post-closure care obligations. If the owner or operator is contemplating closure of the solid waste site and facility or impoundments within five (5) years of March 30, 2012 (the effective date of the revised Section 9 regulations), consult with the division to discuss a modified process that might include an inventory and preliminary classification report, closure plan and financial assurance submittal. Please also see the answers to Questions 27 and 28.

4. What is the Annual Fee / User Fee for a Type A or Type B waste impoundment?

For now, non-commercial waste impoundments do not have to pay an annual facility fee. As the Revised Section 9 of the regulations is implemented, the Solid Waste Program will evaluate the level of resources being devoted to the sector and at some point in the future will set an annual facility fee for the sector intended to cover program costs associated therewith. In the mean time, and until the fee is changed as noted above, all annual fees for facilities regulated by Section 9 (i.e., not subject to other solid waste fees except the hourly fee) will be waived. New and existing attended commercial facilities collect and remit the solid waste user fee in accordance with Section 1.7 and the Revised Section 9 does not change this fact.

Even though the annual fees for facilities regulated by Section 9 are waived for the time being as noted above, the document review and activity fee, which is set at \$125 (one hundred twenty-five dollars) per hour as discussed in Section 1.7, will remain. This is an hourly fee charged by the Solid Waste Program for the review of submitted documents. The fee recovers only the cost of staff time plus indirect costs associated with that time. This fee may change in the future, but such a change would require a rule change approved by the Solid and Hazardous Waste Commission.

5. If we have a waste impoundment that is exempt from Section 9 of the regulations, do we still have to pay the Annual Fee / User Fee?

In accordance with Sections 9.1.2 (A) (2), (5), (9), (12), and potentially (18), of the regulations, certain impoundments are exempt from Section 9 but still are subject to Sections 1 and 2. As noted in the answer to Question 4, all annual fees for facilities regulated by Section 9 (i.e., not subject to other solid waste fees except the hourly fee) will be waived. Impoundments regulated by Sections 1 and 2, however, still are subject to the Annual Fees in accordance with Section 1.7.3. New and existing attended commercial facilities collect and remit the solid waste user fee in accordance with Section 1.7 and the Revised Section 9 does not change this fact.

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Even though the annual fees for facilities regulated by Section 9 are waived for the time being as noted above, the document review and activity fee, which is set at \$125 (one hundred twenty-five dollars) per hour as discussed in Section 1.7, will remain. The document review and activity fee is an hourly fee charged by the Solid Waste Program for the review of submitted documents. The fee recovers only the cost of staff time plus indirect costs associated with that time. This fee might change in the future, but such a change would require a rule change approved by the Solid and Hazardous Waste Commission.

6. **In review of the rule change that led to the Revised Section 9 regulations and the *Statement of Basis and Purpose and Specific Statutory Authority for Addition to Regulations Pertaining to Solid Waste Sites and Facilities (6 CCR 1007-2, Part 1) - Deletion and Replacement of Section 9, Waste Impoundments, and the Associated Revision of the Section 1.2 Definition of "Sludge,"* there appears no indication that a site-specific geotechnical investigation is called for. Instead, it appears that available data and site professional opinions are sufficient to effect assessments and plans for Type A waste impoundments. Is that a reasonable conclusion?**

While the Division will consider other sources of data, a site-specific investigation to collect site-specific data typically is required. Many sites will have pre-existing geotechnical data from the construction of a water or power plant, and this can be useful for Section 9 purposes as well. See Section 9.1.6 (A) of the regulations.

7. **Our water treatment plant discharge from our arsenic treatment actually goes to our septic tanks, and we have permits from EPA for these septic tanks. Do the permits suffice or does the division still need us to submit a demonstration plan?**

This situation is regulated by the EPA and perhaps the local governing authority. Therefore, Section 9 does not apply. Since tanks are exempt from Section 9 under Section 9.1.2 (A) (5) of the regulations, the Division would not regulate the tank under Section 9.

8. **In accordance with Section 9.2 of the Regulations, for waste impoundments pre-classified as Type A (Section 9.1.3) when would the design and construction, financial assurance, annual report, closure and post-closure care be due?**

For waste impoundments pre-classified as Type A (see Section 9.1.3 of the regulations), the annual report is due March 1 of every year in accordance with Section 9.2.4 of the regulations. Section 9 is silent on the due dates for submittal of closure and post-closure care plans for facilities with Type A waste impoundments and does not specify when such facilities must secure financial assurance. The division is requesting that such facilities submit their closure and post-closure care plans with associated cost estimates by June 30, 2013. Such facilities must obtain financial assurance within sixty (60) calendar days of the division's approval of these plans.

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Section 9 also is silent on due dates for submittal of closure and post-closure care plans for facilities with Type A waste impoundments classified via division-approved inventory and preliminary classification reports or demonstration reports and does not specify when such facilities must secure financial assurance. The division is requesting that such facilities submit their closure and post-closure care plans with associated cost estimates within ninety (90) calendar days from division approval of the inventory and preliminary classification report or demonstration report, and to secure financial assurance within sixty (60) calendar days from approval of these plans.

For a solid waste site and facility with multiple impoundments, whether Type A or Type B, the division may consider the financial assurance mechanism on a case-by-case basis.

The above applies to pre-existing impoundments. New impoundments may not start operating until all required plans have been approved and financial assurance has been established.

9. **Section 9.1.7 (C) of the regulations states that written notice to the department containing the schedule for planned impoundment closure under the Clean Air - Clean Jobs Act must be submitted within twelve (12) months of the effective date of Section 9 of the Regulations. The effective date is March 30, 2012, and twelve (12) months later would be March 30, 2013. The Gantt Chart in Figure 4.2.2-1 of the guidance shows a date of April 2, 2013, to provide the written notice containing the schedule. Why is this?**

The Gantt Chart in Figure 4.2.2-1 of the guidance is a guideline, is based on Figure 3 from the *Statements of Basis and Purpose and Specific Statutory Authority for 6 CCR 1007-2 Regulations*, and is based on quarters. April 2, 2013, is the first working day of the second quarter of 2013. In any event, the regulations govern, so the subject written notice outlining the schedule for planned impoundment closure must be submitted by March 30, 2013. Please note that this answer applies to all similar date-related questions between the regulations and the Gantt Chart in Figure 4.2.2-1 of the guidance.

10. **If we provide an inventory and preliminary classification report that says we have a Type A waste impoundment and the division determines we have a Type B waste impoundment, do we still have twelve (12) months (or twenty-four [24] months if we serve fewer than 10,000 persons and we request an extension) to provide a demonstration plan? Conversely, if the division determines the inventory and preliminary classification report does not contain enough information, would the division require a demonstration plan to provide more information, or could we skip that step and instead provide a Type B waste impoundment engineering design and operations plan?**

If the division determines the solid waste site and facility has a Type B waste impoundment when the solid waste site and facility has provided an inventory and preliminary classification report indicating a Type A waste impoundment, in accordance with Section 9.1.8 (B) of the regulations the facility would have the 12 months (or 24 months as indicated) to submit a demonstration plan.

**Appendix A: Answers to Frequently Asked Questions
Section 9 Waste Impoundments / November 2014**

If the department determines the inventory and preliminary classification report does not contain enough information, in accordance with Section 9.1.8 (B) of the regulations the division would require a demonstration plan. Conversely, the solid waste site and facility could request division approval to provide a Type B waste impoundment engineering design and operations plan in lieu of the demonstration plan.

Note that the answer to this question does not apply to solid waste sites and facilities to which Section 9.1.7 (A) applies. Those solid waste sites and facilities have an expedited compliance schedule that essentially skips inventory and preliminary classification report step. Please also see the answer to Question 12.

11. For an inventory and preliminary classification report for a Type A waste impoundment, is a simple table summarizing waste stream test results sufficient?

Copies of the laboratory data, including chains of custody and sufficient quality assurance / quality control documentation to prove the data are legally defensible, should be submitted to the Division as part of the inventory and preliminary classification report submittal.

12. Which table (or tables) from Regulation 41 should we use?

The division regulates only the human health standards, not the secondary or aesthetic standards.

13. In accordance with Section 9.1.7 (A) of the regulations, if an impoundment is not accepting sludge from one of the three (3) listed treatment types, does Section 9.1.7 (A) apply?

This situation is regulated by the appropriate portions of the balance of Section 9. Therefore, Section 9.1.7 (A) of the regulations does not apply. The solid waste site and facility, however, must meet the requirements of Section 9.1.8.

14. Is waste water a sludge?

In Section 1.2 of the regulations, sludge is defined as any solid or semi-solid waste generated by a municipal, commercial, or industrial waste water treatment plant, water supply treatment plant or air pollution control facility. When evaluating a sludge, total suspended solids (TSSs), and not total dissolved solids (TDSs), would be the relevant consideration, but not the only consideration, and, when requested, the Division would evaluate waste on a case-by-case basis and would want to assess TSS and TDS as a part of that evaluation. Please also see the answer to Question 15.

15. Is reverse osmosis (R/O) brine a sludge?

Please see the answer to Question 14. In addition, of the three treatment types (R/O, ion exchange, and iron filtration) listed in Section 9.1.7 of the regulations, R/O and ion exchange typically produce dissolved solids in a brine or slurry. Of the three treatment types, iron filtration is the most likely to produce a sludge.

16. What about de minimus amounts of sludge and the applicability of Section 9.1.7 of the regulations?

Section 9 contains no de minimus exemption per se. For facilities with one waste stream or multiple waste streams where only a minor, or de minimus, amount of sludge is being managed in an impoundment commingled with other, more benign waste streams, however, the solid waste site and facility has the option to request a waiver to the Section 9.1.7 requirements. To request a waiver, follow the waiver provisions found in Section 1.5 of the regulations. Under this scenario, the solid waste site and facility would request a waiver from the expedited schedule, and, even if such waiver were granted, the impoundment still would be required to follow the standard compliance schedule in Section 9.1.8. Upon receipt of such a waiver request, the Division would assess whether or not the de minimus amount of sludge causes the entire waste volume to exceed the Basic Standards for Ground Water, and this information can be provided in the demonstration report.

17. Should inventory and preliminary classification reports capture daily or natural variability of the constituents?

An inventory and preliminary classification report that does not attempt to classify the impoundment(s) need not go to that level of detail. The demonstration plan that follows the inventory and preliminary classification report, however, would need to assess the variability of the waste streams. Understanding daily fluctuations is not as important as characterizing a likely mean value as well establishing a reasonable upper bound on the concentrations that might be managed in an impoundment. The division recognizes that there likely will be variability in a given waste stream, so the division is interested in a "significant" change as defined in the regulations.

18. Our solid waste site and facility is considered a governmental unit in accordance with Section 1.4.1 of the Regulations, and our solid waste site and facility has only on-site disposal of drinking water treatment residuals. Would our solid waste site and facility be required to obtain a certificate of designation?

No, the subject solid waste site and facility would not be required to obtain a certificate of designation because of another exemption (for drinking water facilities) that became effective subsequent to the effective date of the Revised Section 9 regulations. Colorado Revised Statutes (C.R.S.) § 30-20-102 (7.5) (a) states:

On or after August 8, 2012, a governing body having jurisdiction shall not require a certificate of designation for waste impoundments or other solid wastes disposal operations of drinking water treatment residuals generated on-site at a drinking water treatment facility. A certificate of designation for waste impoundments or other solid wastes disposal operations of drinking water treatment residuals generated on-site at a drinking water treatment facility issued before August 8, 2012, is voidable at the option of the facility.

A drinking water treatment plant disposing of drinking water treatment residuals off site, or disposing of other waste streams on site, may still be required to obtain a certificate of designation.

19. How will exemptions determined on a case-by-case basis be handled by the division under Section 9.1.2 (A) (18) of the regulations?

Procedurally, the Division will evaluate a request from a solid waste site and facility based on the demonstration provided in the request and whether or not the demonstration indicates (1) an unanticipated situation that presents minimal potential for environmental threat, and (2) protection of the human health and environment in accordance with the applicable sections of the Solid Wastes Disposal Sites and Facilities Act, C.R.S. Title 30, Article 20, Parts 1 and 10 (solid waste act) and the regulations. In addition, the demonstration should comply with Section 1.5 - Waiver Processes and Procedures of the regulations.

20. What requirements are there for a pad area where trucks off-load?

Pad areas should be sloped toward the impoundment. During off-loading, some solid waste might drip onto the pad, and the solid waste site and facility should evaluate this potential and mitigate it appropriately to protect public health and the environment.

21. Will there be guidelines for Action Leakage Rates for waste impoundments?

Action Leakage Rates would be applicable to double-liner systems only, and the division would review a proposed Action Leakage Rate on a case-by-case basis.

22. What is “Significant Change” and how does it apply to Section 9?

Section 9.1.6 (C) of the regulations recognizes that changes in waste stream characteristics might result in changes to the classification of impoundments at a solid waste site and facility. Toward that end, whenever there are significant changes to the process generating the waste stream, the solid waste site and facility should view this as a trigger for performing additional characterization on the waste stream, to verify that the original classification still holds.

As an example, adding or subtracting a process or constituent might be sufficient enough to change impoundment classification (whether from Type A to Type B, or from Type B to Type A).

Therefore, what defines “Significant Change” is a site-specific determination made on a case-by-case basis.

23. How do I determine whether solids or semi-solids removed from an exempt impoundment are solid waste or environmental media in accordance with Section 8.5.3 (C) of the regulations?

Solids or semi-solids that are not environmental media in accordance with Section 8.5.3 (C) of the regulations and are removed from an impoundment that is exempt in accordance with Section 9.1.2 (A) (1) of the regulations must be evaluated to determine whether they constitute solid waste. This can be determined through site or process knowledge or through sampling and testing of the solids or semi-solids. In accordance with Section 1.2 of the regulations, environmental media are earth materials including soil, sand, silt, gravel, rock, stone, sediment and other naturally occurring solids.

One option for management of such solids or semi-solids is beneficial use in accordance with Section 8.6 of the regulations. The division has seen data from golf course storm water pond sediment that contains nitrates from fertilizers and pesticides that exceed the unrestricted use values for Colorado Ground Water Protection Values or the EPA’s Regional Screening Levels, and such an example would not be classified as environmental media.

24. Under Section 9 of the regulations, how should we manage storm water that makes incidental contact with solid waste?

Section 9.1.2 (A) (1) of the regulations exempts impoundments whose design and primary function is retaining or detaining storm water for water quality or flood control purposes. It is possible that storm water occasionally will make incidental contact with small amounts of solid waste such as a disposable beverage cup or a food wrapper. In such cases it is not the division’s intent to regulate the storm water as solid waste.

25. What is “major precipitation” in accordance with Section 9.3.5 (I) of the regulations?

This is a site-specific determination made on a case-by-case basis. For example, for one site in June of a relatively wet year, 2 inches of precipitation in 24 hours might be enough to cause a violation of the approved operations plan, whereas for the same site in June of a relatively dry year, 6 inches of precipitation in 24 hours might be enough to cause a violation of the approved operations plan. The key point here is what, on a case-by-case basis, would cause a violation of the approved operations plan for a given site.

26. Does the impoundment owner and operator or the division make the determination whether a Section 9.1.2 (A) exemption applies?

The owner or operator (i.e., the solid waste site and facility) makes the determination, but if upon inspection the division determines the exemption does not apply, the solid waste site and facility might be subject to enforcement. Although not required, the division encourages solid waste sites and facilities to include exempt impoundments in the inventory and preliminary classification reports (as noted in the sample inventory and preliminary classification report—see Appendix B).

27. Under Section 9 of the regulations, what does the division require for “clean closure”?

Clean closure as used in this guidance means the removal of all solid waste as defined by the regulations. Once the solid waste has been removed, the solid waste site and facility must provide a demonstration that the remaining soils meet (1) the residential maximum-allowable contaminant levels in accordance with the Colorado Ground Water Protection Values or the EPA Regional Screening Levels or (2) the natural background concentrations.

This demonstration is necessary to achieve unrestricted use, clean closure status.

The Colorado Ground Water Protection Values and the EPA Regional Screening Levels can be found on the division’s web site.

For the EPA Regional Screening Levels, look under the Traditional Tables column and Summary Table row. Sampling should be based on source materials historically contained in the impoundment.

The most effective method to achieve unrestricted use, clean closure status includes the removal of all piping, impoundment structures, sludge, liner and any impacted soils; thus returning the land to its prior state.

On a case-by-case basis the division also might approve a modified clean closure that allows for some infrastructure, such as piping, to be left in place. For example, if piping were proposed to be left in place, the solid waste site and facility would be required to expel all waste from the piping, demonstrate that the piping was not leaking (e.g., perform an integrity test such as a pressure test) and cap both ends of the piping. Any materials left in place should be identified on a figure and the material type (e.g., high-density polyethylene pipe, polyvinyl chloride pipe, asbestos pipe) and size noted. Sampling should be conducted beneath any failing points identified during integrity tests to demonstrate the soils beneath

**Appendix A: Answers to Frequently Asked Questions
Section 9 Waste Impoundments / November 2014**

meet the residential maximum-allowable contaminant levels or natural background in accordance with the Colorado Ground Water Protection Values or the EPA Regional Screening Levels. Environmental covenants might be required for modified clean closure sites as determined on a case by case basis. For example, if asbestos pipe were proposed to be left in place, an environmental covenant likely would be required but post-closure care likely would not be required.

28. For impoundments, such as pre-classified Type B waste impoundments that receive materials with the potential for accumulation of certain radionuclides, what are the radioactivity level requirements for clean closure?

Regarding Technologically Enhanced Naturally Occurring Radioactive Materials (TENORM) the division has developed an Interim Policy and Guidance, which is being used and can be found on the division's web site. Please see Section 3, "Management of Solid Waste Treatment Residuals." The exempt levels for combined radium, natural uranium, and natural thorium found in Table 3-1 of this section shall serve as the limits for clean closure. It is the preference of the division that solid waste sites and facilities use the statewide background concentration levels found in Table 3-2 of the TENORM Interim Policy and Guidance and do not instead develop their own background concentrations.

Additionally, the division is undertaking a stakeholder process to update the current TENORM Interim Policy and Guidance. Once finalized, any applicable changes in the new document will supersede the current document.

APPENDIX B

**SAMPLE INVENTORY AND
PRELIMINARY CLASSIFICATION REPORT**

APPENDIX B-1

**Inventory and Preliminary Classification Report
Cover Sheet**

SUBMIT TO:
comments.hmwmd@state.co.us
 CDPHE
 HMWMD-B2
 4300 Cherry Creek Drive South
 Denver, Colorado 80246-1530

Waste Impoundment IPCR Cover Sheet (to be submitted electronically with the IPCR) (6 C.C.R. 1007-2, Section 9.1.8)



COLORADO
 Department of Public
 Health & Environment

Solid Waste and Materials Management Program
 303-692-3320
 (888-569-1831, extension 3320, outside 303/720 area codes)

Sec. I – FACILITY INFORMATION				All Sites Complete	
Facility Name				Date	
Location Address with City & Zip <i>(Or Optional Property Description Below)</i>				County	
Township		Range		Section	
Latitude		Longitude		Operating/ Active?	__Yes __No
Government Facility	<input type="checkbox"/> Federal <input type="checkbox"/> State <input type="checkbox"/> County <input type="checkbox"/> Municipal <input type="checkbox"/> N/A			Commercial	__Yes __No
Facility Type					
Facility Notes					
Sec. II – CONTACT (AND BILLING) INFORMATION					
Contact Type	Please check all that apply for this person: <input type="checkbox"/> Primary Contact <input type="checkbox"/> Owner <input type="checkbox"/> Operator <input checked="" type="checkbox"/> Billing <input type="checkbox"/> Other: _____				
Full Name				Phone #	
Title				Cell #	
Organization Name				Fax #	
Mailing Address					
Email Address					
Contact Type	Please check all that apply for this person: <input type="checkbox"/> Primary Contact <input type="checkbox"/> Owner <input type="checkbox"/> Operator <input type="checkbox"/> Billing <input type="checkbox"/> Other: _____				
Full Name				Phone #	
Title				Cell #	
Organization Name				Fax #	
Mailing Address					
Email Address					
Contact Type	Please check all that apply for this person: <input type="checkbox"/> Primary Contact <input type="checkbox"/> Owner <input type="checkbox"/> Operator <input type="checkbox"/> Billing <input type="checkbox"/> Other: _____				
Full Name				Phone #	
Title				Cell #	
Organization Name				Fax #	
Mailing Address					
Email Address					

APPENDIX B-2

**Inventory and Preliminary Classification Report
Sample Text**

**INVENTORY AND PRELIMINARY
CLASSIFICATION REPORT**

WASTE IMPOUNDMENTS

SITE NAME

SITE LOCATION

Prepared For:

Prepared by:

Submitted: Date

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1.0 INTRODUCTION

The 6 CCR 1007-2, Section 9 regulations were first promulgated in 1984. The original Section 9 regulations were largely applied to commercial oil and gas produced water/brine evaporation facilities. Because the Section 9 regulations were limited in scope and outdated, the regulations were updated and revised in March 2012. Section 9 is implemented by the Colorado Department of Public Health and Environment (CDPHE) Hazardous Materials and Waste Management Division (HMWMD).

The revised 6 CCR 1007-2, Section 9 regulations require the development and submittal of an Inventory and Preliminary Classification Report (ICPR) for facilities with waste impoundments. This document is the ICPR for waste impoundments at Site and Location.

The objective of the ICPR is to establish a preliminary classification of all waste impoundments at facilities regulated under Section 9. The statutory deadline for the submission of all ICPR documents is March 30, 2013. The preliminary classification of each waste impoundment is subject to approval by CDPHE.

The Section 9 regulations govern the design and operating requirements of the waste impoundment to the waste stream characteristics and the local geologic and hydrologic setting, with the primary objective being the protection of groundwater. The regulations apply to waste impoundments where storage, treatment, utilization and processing, or deposit and final treatment of solid waste occurs. Although the revised Section 9 regulations incorporate a broader range of waste impoundments, some waste impoundments are exempt under these regulations. Exempt impoundments are identified in Section 9.1.2 of the regulations.

1.1 BACKGROUND

Site Name (the Site) is located approximately 2.5 miles southwest of XXXXX, Colorado (Figure 1-1). The land-surface elevations range from approximately XXXX feet above mean sea level (amsl) on the north to approximately XXXX ft amsl on the south. The primary site features and impoundment locations are shown on Figure 1-1.

Site Name was constructed between 19XX and 19XX, with operation commencing in December 19XX. Site Name is a zero discharge wastewater facility.

The Site uses an average of XXXX gallons per minute (gpm) of raw water as part of operations. The primary use is for _____, where approximately 98% of the raw water is used. The remaining raw water is used for other plant operations such as _____. Approximately XX % of the raw water used for _____, and the remainder is recirculated. Approximately XXX gpm of water is obtained from XXXXXX County for potable use. A water-flow diagram is provided in Figure 1-2.

1.2 ENVIRONMENTAL SETTING

1.2.1 HYDROGEOLOGY

There are two distinct hydrogeologic regimes at *Site Name*. The Site straddles a buried escarpment marking the boundary of the ancient XXXXX River floodplain. Alluvium is present north of the escarpment in the northeastern portion of the property, and is absent from the remaining southern portion of the property.

The stratigraphic units present at the Site include bedrock of the Pierre Shale, overlain by residual soil derived from in-situ weathering of the Pierre Shale. The residual soil is overlain by dune-sand deposits. The Pierre Shale consists of shale to sandy shale (claystones and siltstones), and is approximately 4,500 to 5,000 feet thick in this region of Colorado. The depth to the Pierre Shale at the Site ranges from approximately 40 to 80 feet in the southern portion of the Site to approximately 110 to 140 feet in the northeastern portion of the property. The residual soil consists of unconsolidated very fine sand, silt, and clay. The thickness of the residual soil ranges from approximately 8 feet to 125 feet. The thickness of the residual soil is greatest in the northeast portion of the property. The base of the residual soil is characterized by a transition from partially weathered bedrock to the underlying competent bedrock. The thickness of the transition zone bedrock is typically less than 5 feet. The dune-sand deposit is well-sorted fine sand and ranges from approximately 8 feet to 70 feet thick. The location of geologic sections A-A' and B-B' is shown on Figure 1-3a. Geologic sections A-A' (Figure 1-3b) and B-B' (Figure 1-3c) show the generalized stratigraphic units in the southwestern area of the site.

The dune-sand deposit is generally not saturated at the Site; however, perched water-table conditions can be present in areas underlain by low-permeability material. Saturated conditions have been encountered on Site in the transition zone bedrock at the base of the residual soil. Groundwater flow in the transition zone is generally to the northeast towards the _____ River. A bedrock high, trending northwest to southeast, is present resulting in radial flow away from this area (Figure 1-4). Groundwater elevations generally range from approximately XXXX ft amsl in the southwest area of the Site to XXXX ft amsl in the northeast corner of the Site.

Hydraulic-conductivity values were determined from single-well pumping tests in four wells completed in the transition zone bedrock and one well completed in the dune-sand where perched conditions were present. The hydraulic-conductivity values for the transition zone bedrock ranged from 4.5×10^{-5} to 1.6×10^{-4} cm/s (0.13 to 0.45 ft/day) and the hydraulic-conductivity value in the dune-sand was 2.0×10^{-5} cm/sec (0.057 ft/day).

In this region of Colorado, the _____ Formation underlies the Pierre Shale, and ranges from approximately 200 to 400 feet thick. The _____ Formation is underlain by other Upper Cretaceous Age shale and limestone units with a total thickness that ranges from approximately XXX to XXX feet. The XXXXX Aquifer is present beneath the Upper Cretaceous Age units; however, its use is limited in this region due to its greater than 5,000 foot depth. Domestic and irrigation wells in this area are primarily present in the alluvium and terrace deposits in the _____ River valley. The alluvial valley extends approximately 3 miles south of the river, but the Site is approximately XXXX feet above and outside the present river floodplain. Although the Pierre Shale is generally considered a poor source of water, some

domestic and irrigation wells in this area are completed in the upper portions of this unit. Regionally, shallow groundwater flow is towards the _____ River.

1.2.2 SURFACE WATER

The _____ River is the closest major surface-water feature located approximately 3.5 miles north of the Site. The _____ Canal crosses the northeast portion of the Site, and the _____ Canal crosses the central portion of the Site and is contained within a concrete channel across the majority of the property. Canal water flows through several manmade augmentation ponds adjacent to the Site to offset water that is pumped from area wells for agricultural use. The _____ Canal and the associated augmentation ponds are operated by _____.

1.3 POND Y

The Pond Y collects runoff from XXXXX; the sources for the runoff include precipitation and raw water. XXXXX is a product in use and is not a solid waste. No solid waste is discharged to the Pond Y. Therefore, this pond is not regulated under Section 9 of 6 CCR 1007-2.

2.0 INDIVIDUAL WASTE IMPOUNDMENT INVENTORY

The Section 9 regulations classify waste impoundments based on the potential for groundwater impacts, as determined by evaluating the waste stream characteristics and the site setting of the facility. Regulated waste impoundments contain waste streams with the potential of impacting groundwater, whereas exempt surface impoundments either do not contain waste streams or are regulated under other State programs.

2.1 OVERVIEW OF SECTION 9 EXEMPT AND REGULATED IMPOUNDMENTS

Exempt Surface Impoundments

Surface impoundments that are exempt under the regulations are discussed in Section 9.1.2 of CCR 1007-2 Part 1. There are a number of exemptions that range from raw water storage to impoundments used to store stormwater.

Regulated Waste Impoundments

Section 9.1.6 establishes guidelines for classifying waste impoundments into two categories: 1) Type A Waste Impoundments; and 2) Type B Waste Impoundments. Type A Waste Impoundments have little to no potential of impacting groundwater, and therefore require no additional engineered liner systems. Type B Waste Impoundments contain fluids/sludges that have the potential to impact groundwater and require engineered liner systems to ensure that fluids are isolated from groundwater systems. The determination of whether an impoundment is Type A or Type B is primarily based on constituent concentrations in the impoundment. The waste-stream characteristics are compared against the Basic Standards for Groundwater (BSGW) as defined in Regulation 41 (5 CCR 1002-41) and Appendix B Solid Waste Regulations. If constituent concentrations for fluid and/or sludges are less than the BSGW then the impoundment is classified as a Type A Waste Impoundment. If constituent concentrations exceed BSGW then the impoundment is classified as a Type B Waste Impoundment.

The Section 9 regulations also allow for the consideration of the natural hydrogeologic setting of the facility when classifying waste impoundments. If the hydrogeologic setting provides protection of groundwater then the impoundment can be classified as a Type A Waste Impoundment, even though constituent concentrations may exceed the BSGW. The Statement of Basis for CCR 1007-2 Part 1 – Deletion and Replacement of Section 9, Waste Impoundments states:

“Solid waste disposal sites and facilities are, in accordance with 6 CCR 1007-2, Sections 2.1.4, 2.1.15, and Appendix B, required to protect ground water. This new Section 9 protects ground water by tying the design and operating requirements to the waste stream characteristics and the local geologic and hydrologic setting. If the waste stream meets all groundwater standards at the influent to the impoundment and/or the local geology and hydrology contribute to ensuring that ground water standards can be met at points of compliance, then robust impoundment design may not be necessary to protect ground water quality.”

2.2 SITE NAME IMPOUNDMENTS

Table 2-1. Impoundment Classifications

Impoundment Name	Classification

The Site has a total of eight waste impoundments that potentially are regulated under Section 9 regulations (Table 2-1). The waste impoundments fall within two categories, as documented under Section 9.1 of 6 CCR 1007-2: Exempt from regulations governing solid waste impoundments, or covered under those regulations. Three of the waste impoundments are classified as Exempt, and five waste impoundments are regulated under Section 9. Of the five waste impoundments regulated under Section 9, three are currently not in use and their closure will be addressed as part of the Engineering Design and Operations Plan (EDOP) for the Site. An additional impoundment was previously closed under an update to a Design and Operations Plan.

Four impoundments were included in the original site construction: 1) Raw Water Reservoir; 2) Treated Water Reservoir; 3) Pond B; and 4) Pond C. Three additional impoundments were constructed between 20XX and 20XX: 1) Pond D; 2) Pond E; and 3) Pond F. The locations of the impoundments are shown on Figure 1-1. Pond F used to permanently store/dispose of sludge was subsequently closed in 20XX in accordance with a 20XX update to the Design and Operations Plan, which was approved by CDPHE. Design of XXXXX includes a 60 mil HDPE double-liner with a HDPE geonet leachate-collection layer, a PVC liner/cap, and a vegetated soil cover. Pond F continues to function as designed, generating approximately XX gallons per day from the leachate collection system, which is pumped to Pond D.

2.2.1 EXEMPT IMPOUNDMENTS

Three impoundments have been identified as Exempt at this site (Table 2-2).

Table 2-2. Exempt Impoundments and Basis for Classification

Impoundment Name	Section 9.1.2 Waste Impoundment Exemptions							
	Storm Water (A)(1)	Raw Water (A)(3)	Tanks/Sumps (A)(5)	Water Treatment Process (A)(6)	No Solid Waste (A)(7)	Temporary or Emergency Storage < 30 days (A)(15)	CCR (B)	

Raw Water Reservoir

The Raw Water Reservoir was constructed in 19XX and encompasses XXX acres. The reservoir is approximately XXXX feet long by XXXX feet wide and has a maximum depth of XX feet. The reservoir is clay lined, with clay thickness of approximately 3 feet on the reservoir bottom and approximately 4 feet on the sides. The clay liner was installed when the reservoir was constructed in 19XX to conserve the water resource by minimizing losses through the pond bottom.

Raw water is pumped approximately X miles from groundwater wells to the Raw Water Reservoir. Raw water is treated prior to use in the cooling system.

The Raw Water Reservoir is exempt under Section 9.1.2(A)(3) – Raw water impoundments.

Treated Water Reservoir

The Treated Water Reservoir was constructed in 19XX to hold treated raw water to be used at the site. It has a surface area of approximate XX acres. The reservoir is lined with a 100 mil HDPE liner underlain by 4 feet of clay on the sides and 2 feet of clay on the bottom. The liners were installed when the reservoir was constructed in 19XX to conserve the water resource by minimizing losses through the pond bottom.

The treated water is used primarily in the _____ process. The primary purpose of the Treated Water Reservoir is storage of treated water.

The Treated Water Reservoir is exempt under Section 9.1.2(A)(6) – Water Treatment Process.

Pond A

Pond A was originally constructed in 19XX and encompasses XX acres. The impoundment is lined with an 80 mil HDPE liner underlain by 4 feet of compacted clay on the sides and 2 feet of compacted clay on the bottom. The liner system was installed in 20XX, primarily to conserve the water resource by minimizing losses through the pond bottom.

Pond A primarily accepts water from XXXXX . Water from Pond A is used as XXXXX. Overflow from this impoundment is conveyed to Pond B. The primary purpose of Pond A is storage and recirculation of water for use.

Pond A is exempt under Section 9.1.2 (A) (7) because it does not contain solid waste, as defined in CRS 30-20-101. All influent fluids to this pond are recycled for use in the process.

2.2.2 TYPE A WASTE IMPOUNDMENTS

No waste impoundments at the Site are proposed for a Type A Waste Impoundment classification.

2.2.3 TYPE B WASTE IMPOUNDMENTS

Two of the eight surface impoundments at the Site are for managing wastewater, and have been classified as Type B Waste Impoundments. The two waste impoundments include: 1) Pond B; and 2) Pond C (Figure 1-1). A description of the influent and effluent waters to these waste impoundments is provided in Table 2-3.

Table 2-3. Type B Waste Impoundment Influent and Effluent Sources

Impoundment Name	Influent Water	Effluent Water

The following discussion includes the two impoundments at the Site that are classified as Type B impoundments under Section 9.1.6(B) of 6 CCR 1007-2. All of the impoundments contain liner systems.

Pond B

Pond B was originally constructed in 19XX and encompasses XX acres. Design details for this impoundment are provided in Table 2-4. Solids were removed from the pond in 20XX, and a double-liner with a leachate-collection system was installed in 20XX, per the approved Site Name Wastewater Disposal Ponds Design and Operation Plan, 20XX. The double-liner system includes two 60-mil HDPE liners with a geonet drainage layer between the two liners. Two sumps collect leachate from the drainage layer. Any leachate collected in the sumps via the drainage layer is pumped back into the pond. The typical flow rate from the sumps is approximately XX to XX gallons per day (gpd).

Pond B accepts water that is _____. The impoundment also accepts overflow water from Pond A. Historically, the impoundment also accepted overflow water from Pond G, which was emptied and removed from service in 20XX. The water in Pond B is not reused. The impoundment is designed as an evaporation pond with zero discharge. Any excess water for the impoundment overflows into Pond C or is pumped to Pond D.

Water samples have been collected from this impoundment on an annual basis since 19XX. Based on the influent waste streams to this impoundment, and the XX years of water sample analyses, the water contained in this impoundment meets the Section 9 standards for a Type B Waste Impoundment.

Table 2-4. Type B Impoundments Design Details

Impoundment Name	Type	Date Constructed	Liner Details				Pond Dimensions		
			Liner Type	Liner Thickness	Liner Install Date	As-Build Drawings	Length (ft)	Width (ft)	Surface Area (acres)

Pond C

Pond C was originally constructed in 19XX and encompasses XX acres. Design details for this impoundment are provided in Table 2-4. Solids were removed from the pond in 20XX, and a double-liner with leachate-collection system was installed in 20XX, per the approved Site Name Wastewater Disposal Ponds Design and Operation Plan, 20XX. The double-liner system includes two 60-mil HDPE liners with a geonet drainage layer between the two liners. One sump collects leachate from the drainage layer. Approximately XX to XX gpd of leachate accumulates in the sump and is pumped back into the pond.

Pond C receives overflow from Pond B. The impoundment is designed as an evaporation pond with zero discharge.

Water samples have been collected from this impoundment on an annual basis since 19XX. Based on the influent waste streams to this impoundment, and the XX years of water sample analyses, the water contained in this impoundment meets the Section 9 standards for a Type B Waste Impoundment.

2.2.4 INACTIVE WASTE IMPOUNDMENTS

Three of the eight waste impoundments at the Site are inactive. The three inactive waste impoundments include: 1) Pond D; 2) Pond E; and 3) Pond F (Figure 1-1). The Site does not plan to use these impoundments in the future, and will address closure of these impoundments as part of the EDOP. A description of the influent and effluent waters to these impoundments is provided in Table 2-5.

Table 2-5. Inactive Waste Impoundment Historical Influent and Effluent Sources

Impoundment Name	Influent Water	Effluent Water

Pond D

The Pond D was constructed in 19XX and encompasses XX acres. The pond is approximately XXX feet long by XXX feet wide and has a maximum depth of XX feet. The

pond is lined with a 100 mil HDPE liner underlain by 2 feet of clay. The liner is also overlain by 1 foot of sand as a protective layer. The liner system was installed in 19XX. The Pond D was taken out of service with the construction of Pond A in 20XX.

Pond E

The Pond E was constructed in 19XX and encompasses XX acres. The pond is approximately XXX feet long by XXX feet wide and has a maximum depth of XX feet. The pond is lined with a 100 mil HDPE liner underlain by 2 feet of clay. The liner is also overlain by 1 foot of sand as a protective layer. The liner system was installed in 19XX.

The Pond E was taken out of service with the construction of the Pond A in 20XX.

Pond F

Pond F was constructed in 19XX and encompasses XX acres. The pond is approximately XXX feet long by XXX feet wide and has a maximum depth of XX feet. The pond was constructed with a 100 mil HDPE liner over a 2-foot thick engineered clay base layer. The pond was taken out of service in 20XX, the solids were excavated, and the synthetic liner was removed. The original clay liner still remains in the base of this pond and was not removed along with the synthetic liner.

2.3 INSUFFICIENT INFORMATION FOR CLASSIFICATION

No impoundment at the Site requires additional data collection in order to determine impoundment classification as part of the IPCR.

3.0 SUMMARY OF CLASSIFICATIONS

3.1 EXEMPT WASTE IMPOUNDMENTS

The following XX impoundments at the Site are classified as Exempt under Section 9.1 of 6 CCR 1007-2:

- Pond A;
- Raw Water Reservoir; and
- Treated Water Reservoir.

No further action is required for these impoundments.

3.2 TYPE B WASTE IMPOUNDMENTS

The following XX impoundments at the Site are classified as Type B under Section 9.1 of 6 CCR 1007-2:

- Pond B; and
- Pond C.

An EDOP will be developed for these impoundments.

3.3 INACTIVE IMPOUNDMENTS

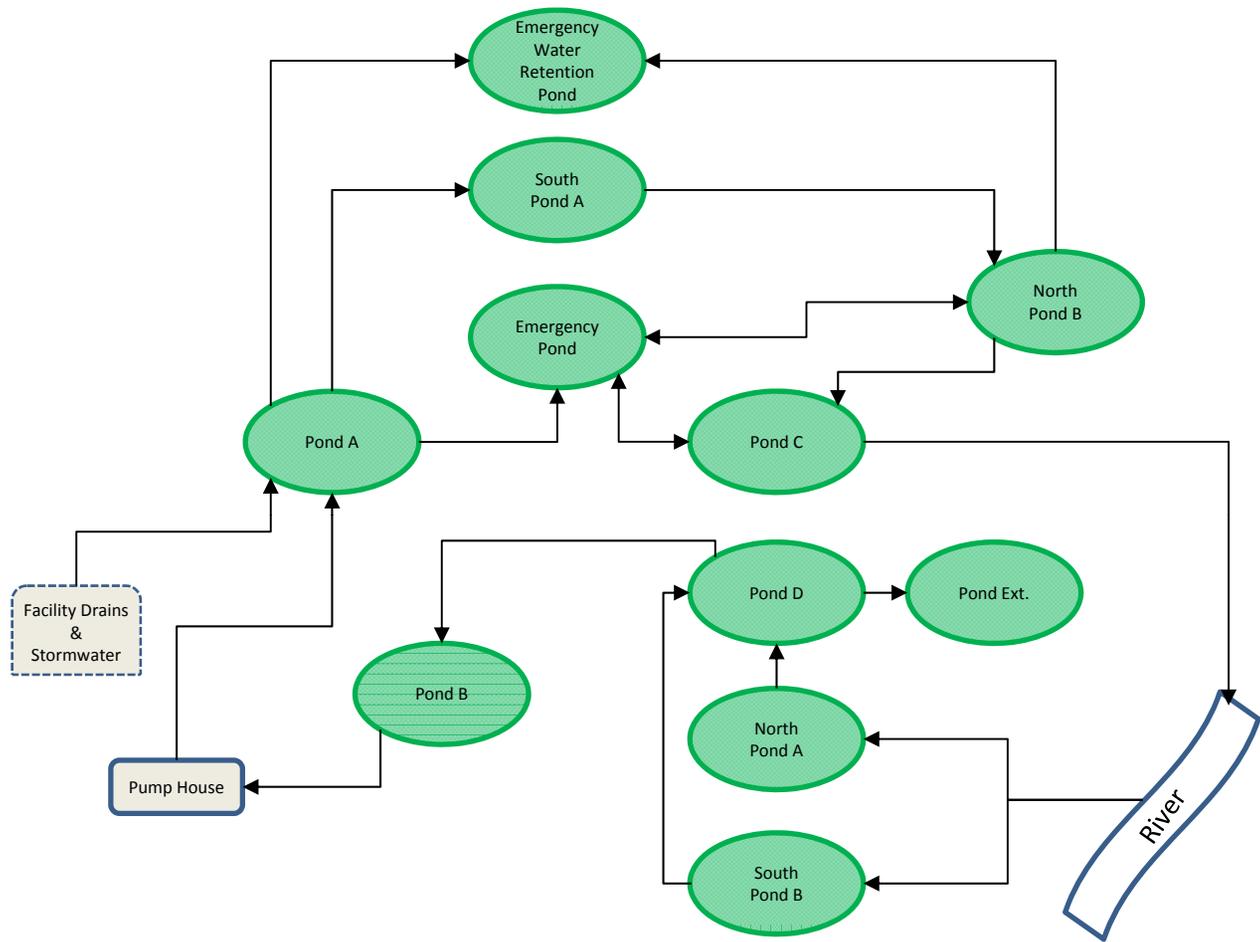
The following three impoundments at the Site are inactive and their closure will be addressed as part of the EDOP for the Site:

- Pond D;
- Pond E; and
- Pond F.

FIGURES

APPENDIX B-3

**Inventory and Preliminary Classification Report
Sample Flow Diagram**



APPENDIX C

**TYPE B WASTE IMPOUNDMENT
ENGINEERING DESIGN AND OPERATIONS PLAN
SUBMITTAL CHECK LIST**

Section 9 – Type B Waste Impoundments: Engineering Design and Operation Plan (EDOP)
(Content Check List and Suggested Outline for Table of Contents)

AMENDMENTS / MODIFICATIONS / REVISIONS TRACKING PAGE

Include title, date of approval, and section or appendix numbers associated with the changes.

SECTION 1: INTRODUCTION

Not all of the requirements listed below will apply to all facilities. Such facilities may note in the EDOP any of the requirements listed below that are not applicable and write “N/A” in the *Page, Plate, Appendix or N/A* column.

✓	Regulation Section	Information	Page, Plate, Appendix or N/A
	Reg. 9.3.4 (A)	General information	
	Reg. 9.3.4 (A)(1)	Owner/operator information, county and legal description	
	Reg. 9.3.4 (A)(2)	Map of facility property	
	Reg. 9.3.4 (A)(3)	Treatment types, disposal, storage and containment features, monitoring/operational practices	
	Reg. 9.3.4 (A)(4)	Facility service area including transportation corridors and access	
	Reg. 9.3.4 (A)(5)	Names, qualifications and addresses of operational personnel and persons having authority to take corrective actions in the event of non-compliance	
	Reg. 9.3.4 (A)(6)	Hours and days of operation	
	Reg. 9.3.4 (A)(7)	Listing of waste stream types to be approved for routine receipt and anticipated volumes (in barrels or gallons per day) of wastes to be received	
	Reg. 9.3.4 (A)(8)	Expected life of the site	
	Reg. 9.3.4 (A)(9)	Number and job descriptions of projected personnel when operating	
	Reg. 9.3.4 (A)(10)	Equipment types projected to be used in waste impoundment operations	
	Reg. 9.3.4 (A)(11)	Size (surface area and volume) and types of impoundments or processing areas	
	Reg. 9.3.4 (A)(12)	Provisions against nuisance conditions on-site and off-site	
	Reg. 9.3.4 (A)(13)	Fire protection provisions including volumes and sources of on-site water available for fire suppression	
	Reg. 9.3.4 (A)(14)	Facility inspections including frequency by the owner/operator and associated written documentation of impoundment and ancillary equipment conditions	

This guidance provides the minimum requirements of an Engineering Design and Operation Plan (EDOP) along with a suggested outline of a table of contents. The Solid Waste Regulations (6 CCR 1007-2, Part 1) should be referenced while preparing any EDOP. The relevant sections of the Solid Waste Regulations are provided.

SECTION 2: LOCATION RESTRICTIONS

Minimum standards apply to all solid waste sites and facilities.

✓	Regulation Section	Information	Page, Plate, Appendix or N/A
	Reg. 2.1.17	Solid waste disposal sites and facilities shall not place wastes below or into surface water or groundwater	

SECTION 3: GEOLOGIC AND HYDROGEOLOGIC CONDITIONS

Regional and Local Geologic Conditions (Section 3)

✓	Regulation Section	Information	Page, Plate, Appendix or N/A
	Reg. 9.3.4 (B)(1)	As applicable, include the following:	
	Reg. 9.3.4 (B)(1)(a)	Types and regional thicknesses of unconsolidated soils and materials	
	Reg. 9.3.4 (B)(1)(b)	Types and regional thickness of consolidated bedrock materials	
	Reg. 9.3.4 (B)(1)(c)	Regional and local geologic information including but not limited to: bedrock strike and dip, fracture patterns, slope stability, faulting, folding, rock fall, landslides and subsidence or erosion potential that might affect design and operation of the facility for solid waste disposal	

Regional and Local Hydrogeologic Conditions (Section 3)

✓	Regulation Section	Information	Page, Plate, Appendix or N/A
	Reg. 9.3.4 (B)(2)	As applicable, include the following:	
	Reg. 9.3.4 (B)(2)(a)	Lakes, rivers, streams, springs or bogs on-site and within two miles	
	Reg. 9.3.4 (B)(2)(b)	Depth to and thickness of any perched groundwater and uppermost aquifers	
	Reg. 9.3.4 (B)(2)(c)	For groundwater wells within one mile of the Point of Compliance (POC), include well depth, depth to water, screened intervals, yields and the aquifers tapped if such information is available in the public records of the Division of Water Resources in the Department of Natural Resources	
	Reg. 9.3.4 (B)(2)(d)	Hydrologic properties of perched zones and uppermost aquifer; include flow directions, flow rates, porosity, coefficient of storage, permeability and potentiometric surface	
	Reg. 9.3.4 (B)(2)(e)	Site location in relation to base flood plain of nearby drainages	

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	Reg. 9.3.4 (B)(2)(f)	Separation between impounded wastes and upper-most water-bearing zone, perched or otherwise	
	Reg. 9.3.4 (B)(2)(g)	Evaluation of potential impacts to existing surface water and groundwater quality from each proposed impoundment if more than one, or the facility (if only one impoundment)	
	Reg. 9.3.4 (B)(2)(h)	Quality of existing groundwater beneath the proposed facility	
	Reg. 9.3.4 (B)(2)(i)	Any associated information related to travel time from the mid-point of each cell to the POC	
	Reg. 9.3.4 (B)(2)(j)	Climatic information	
	Reg. 9.3.4 (B)(2)(k)	Estimated waste volume, and physical and chemical characteristics	
	Reg. 9.3.4 (B)(2)(l)	Distance groundwater beneath the site would flow during the facility's operating life and post-closure care period	
	Reg. 9.3.4 (B)(2)(m)	Distance to existing domestic wells or springs	

SECTION 4: DESIGN REQUIREMENTS

✓	Regulation Section	Information	Page, Plate, Appendix or N/A
	Reg. 9.3.4 (C)(1)	As applicable, include the following:	
	Reg. 9.3.4 (C)(1)(a)	Types and quantity of material(s) that will be used in the different components of the liner system	
	Reg. 9.3.4 (C)(1)(b)	Liner design, liner materials and specifications, liner installation requirements and procedures, and liner quality assurance and quality control (QA/QC) procedures after installation	
	Reg. 9.3.4 (C)(1)(c)	Maps and plans drawn to a commonly-recognized engineering scale that show the following:	
	Reg. 9.3.4 (C)(1)(c)(1)	Location and depth of cut or fill for liners	
	Reg. 9.3.4 (C)(1)(c)(2)	Location, dimensions and grades of all surface water control structures	
	Reg. 9.3.4 (C)(1)(c)(3)	Location and dimensions of all surface water and groundwater containment structures including those designed to impound contaminated runoff, sludge or liquids for treatment	
	Reg. 9.3.4 (C)(1)(c)(4)	Spatial distribution of engineering, geologic and hydrologic data, and the relationship to the proposed facility and each individual impoundment unit	
	Reg. 9.3.4 (C)(1)(c)(5)	Location of all proposed facility structures and access roads	
	Reg. 9.3.4 (C)(1)(c)(6)	Locations of all proposed monitoring points for surface water and groundwater quality	
	Reg. 9.3.4 (C)(1)(c)(7)	Final contours and grades of the reclaimed site after closure	

This guidance provides the minimum requirements of an Engineering Design and Operation Plan (EDOP) along with a suggested outline of a table of contents. The Solid Waste Regulations (6 CCR 1007-2, Part 1) should be referenced while preparing any EDOP. The relevant sections of the Solid Waste Regulations are provided.

	Reg. 9.3.4 (C)(1)(c)(8)	Location of fencing or other access-control features to be placed on site	
	Reg. 9.3.4 (C)(1)(c)(9)	Location of each proposed phase of development	
	Reg. 9.3.4 (C)(1)(c)(10)	Design details of the impoundment including size and total volume at capacity	
	Reg. 9.3.4 (C)(1)(d)	All designated ancillary equipment associated with each impoundment	
	Reg. 9.3.4 (C)(2) Appendix B	<u>Demonstration of Performance</u> : Reasonably demonstrate that the liner system in combination with waste characteristics and site setting will result in concentrations at the POC that are below the Basic Standards for Groundwater (BSGW) included in Appendix B of the Solid Waste Regulations	
	Reg. 9.3.4 (C)(3)	<u>Leak Detection Monitoring</u> : If applicable, describe the leak detection monitoring system installed at each impoundment	
	Reg. 9.3.4 (C)(4)	<u>Monitoring and Measuring Systems</u> : Include design specifications for all proposed monitoring points for surface water and groundwater quality, and the monitoring system used to make volume and freeboard determinations; for waste impoundment facilities or units equipped with freeboard monitoring, design details shall be provided in the EDOP	
	Reg. 9.3.4 (C)(5)	<u>Access Control</u> : Describe the facility's access controls	
	Reg. 9.3.4 (C)(6)	<u>Storm Water Control</u> : Provide design details for storm water control features	
	Reg. 9.3.4 (C)(7)	<u>Embankment Durability</u> : Describe how each Type B Waste Impoundment shall be maintained	
	Reg. 9.3.4 (C)(8) Appendix B	<u>Groundwater Monitoring System</u> : Include design details for the groundwater monitoring system and include a plan describing how the facility will comply with each requirement in Appendix B of the Solid Waste Regulations	
	Reg. 9.3.4 (D)	<u>Construction</u> : For any new waste impoundments or existing impoundments requiring upgrade of engineered features in order to comply with Section 9, include a QA/QC plan for all engineered structures and appurtenances	

SECTION 5: OPERATIONS

✓	Regulation Section	Information	Page, Plate, Appendix or N/A
	Reg. 9.3.4 (E)(1)	Include in the EDOP specific operational details for each waste impoundment	

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	Reg. 9.3.4 (E)(2)	<u>Site-Wide Monitoring Plan</u> : Include monitoring of groundwater monitoring, surface water monitoring, leak detection monitoring, fluid-level monitoring and inspections	
	Reg. 9.3.4 (E)(3)	<u>Contingency Plan</u> : The EDOP shall contain a Contingency Plan for the facility	
	Reg. 9.3.4 (E)(4) Reg. 2.1.2	<u>Waste Characterization Plan</u> : For each facility receiving waste from off-site and for each facility receiving waste from on-site, include in the EDOP a Waste Characterization Plan, which shall describe how procedures employed at the facility demonstrate compliance with Section 2.1.2 of the Solid Waste Regulations and ensure that only approved wastes are disposed of at the facility	
	Reg. 9.3.4 (E)(5)	<u>Personnel Training Plan</u> : Include a Personnel Training Plan that includes the following provisions:	
	Reg. 9.3.4 (E)(5)(a)	Annual training on the facility's EDOP, all attachments to the EDOP and all documents referenced in the EDOP that are relevant to operational compliance	
	Reg. 9.3.4 (E)(5)(b)	Annual training in the recognition and exclusion of hazardous and prohibited wastes	

Operational Records (Section 5)

✓	Regulation Section	Information	Page, Plate, Appendix or N/A
	Reg. 9.3.5	<u>Recordkeeping and Reporting Requirements</u> : Not all of the requirements listed below will apply to facilities disposing of or managing their own waste on their own properties:	
	Reg. 9.3.5 (A)	<u>Record Availability</u> : For facilities with waste impoundments, all records required by Section 9.3.5 of the Solid Waste Regulations shall be maintained on-site for a minimum of three (3) years unless otherwise approved by the Division and shall be available for inspection by representatives of the Division during regular business hours	
	Reg. 9.3.5 (B)	<u>Incoming Shipments</u> : For facilities receiving third-party wastes, each shipment of solid waste being disposed of in a waste impoundment shall be registered with the following information entered on a single receipt or manifest:	
	Reg. 9.3.5 (B)(1)	Date and time	
	Reg. 9.3.5 (B)(2)	Receiving impoundment identification	
	Reg. 9.3.5 (B)(3)	Quantity	
	Reg. 9.3.5 (B)(4)	Type of waste	
	Reg. 9.3.5 (B)(5)	Location produced	
	Reg. 9.3.5 (B)(6)	Waste generator	
	Reg. 9.3.5 (B)(7)	Hauler and truck number	
	Reg. 9.3.5 (B)(8)	Driver's name and signature	

This guidance provides the minimum requirements of an Engineering Design and Operation Plan (EDOP) along with a suggested outline of a table of contents. The Solid Waste Regulations (6 CCR 1007-2, Part 1) should be referenced while preparing any EDOP. The relevant sections of the Solid Waste Regulations are provided.

Reg. 9.3.5 (C)	<u>Monthly Summaries</u> : All facilities shall maintain monthly summaries including the total volume of each waste stream managed or disposed of in each waste impoundment	
Reg. 9.3.5 (D)	<u>Annual Report</u> : All facilities shall submit an annual report to the Division by March 1 of each year; annual report shall include:	
Reg. 9.3.5 (D)(1)	Total volume received of each waste type during the previous calendar year	
Reg. 9.3.5 (D)(2)	Waste removed from each impoundment during the previous calendar year (not including inter-basin transfers) with location details provided for final disposition of the waste	
Reg. 9.3.5 (D)(3)	Any unplanned releases from an impoundment unit at the facility during the previous calendar year	
Reg. 9.3.5 (D)(4) Reg. 2.1.2	For waste impoundments receiving third-party wastes: documentation proving that no hazardous or prohibited wastes have been received (per Section 2.1.2 of the Solid Waste Regulations), and documentation of random load screening results	
Reg. 9.3.5 (D)(5)	If required by the EDOP, an annual groundwater monitoring report	
Reg. 9.3.5 (E)	<u>Routine Monitoring</u> : All facilities with Type B waste impoundments shall maintain records of monitoring data including groundwater and fluid level monitoring data, leak detection, equipment and impoundment inspection log sheets and precipitation data	
Reg. 9.3.5 (H)	<u>Inspections</u> : Records shall be maintained by all facilities with Type B waste impoundments; records shall fully document all inspections, fluid level measurements, damage, repairs and repair verifications to impoundments, linear systems or ancillary equipment	
Reg. 9.3.5 (I)	<u>Reporting Requirements</u> : For facilities receiving third-party wastes: waste characterization results indicating excursions from the facility's approved plans, such as inadvertent receipt of unapproved wastes, shall trigger notification in writing to the Division within seven (7) calendar days after receipt of such results by the owner/operator	
Reg. 2.4.2 (I)	Information demonstrating compliance with waivers as required by Section 1.5	
Reg. 2.1.4, 2.1.5, 2.1.15, 2.1.18 Appendix B	Information and field records obtained as required by the Groundwater Sampling and Analysis Plan and, at a minimum, specify that the Division and local governing authority will be notified of any changes to the Groundwater Sampling and Analysis Plan	

This guidance provides the minimum requirements of an Engineering Design and Operation Plan (EDOP) along with a suggested outline of a table of contents. The Solid Waste Regulations (6 CCR 1007-2, Part 1) should be referenced while preparing any EDOP. The relevant sections of the Solid Waste Regulations are provided.

Reports and Plans (Section 5)

✓	Regulation Section	Information	Page, Plate, Appendix or N/A
	Reg. 2.1.4, 2.1.5, 2.1.15, 2.1.18, 2.2, Appendix B3	Prepare a Groundwater Sampling and Analysis Plan	
	Reg. 2.1.4, 2.1.5, 3.3.2 (L)	Prepare a Groundwater and Surface Water Impact Contingency Plan	
	Reg. 2.1.2	Prepare a Waste Characterization Plan that addresses how testing and detection of hazardous wastes will be conducted	
	Reg. 2.1.6, 2.5.7, 3.2.6	Prepare a Storm Water Management Plan to address how the facility will ensure run-on and run-off control	

SECTION 6: CLOSURE REQUIREMENTS

Closure Plan (Section 6)

✓	Regulation Section	Information	Page, Plate, Appendix or N/A
	Reg. 9.3.4 (F)	<u>Closure Plan</u> : Include in the EDOP a closure plan that describes necessary steps to close each impoundment at any point during its active life and at the end of the facility's active life; the facility may (1) close the waste in place as a solid waste landfill in accordance with the Solid Waste Regulations or (2) remove all solid waste and residual contamination to meet unrestricted use concentrations; Option 2 ("Clean Closure") may eliminate the need for post-closure care; Options 1 and 2 require the owner/operator of a waste impoundment to develop a closure plan	
	Reg. 9.3.4 (F)(1)	Consistent with Section 9.3.6 of the Solid Waste Regulations include the following:	
	Reg. 9.3.4 (F)(1)(a)	Provisions for removal of all solid waste at the site and decontamination of all ancillary equipment at the site, or closure of the waste impoundment with waste in place as a landfill	
	Reg. 9.3.4 (F)(1)(b)	Provisions for removing all liquid wastes from the impoundments	
	Reg. 9.3.4 (F)(1)(c)	Proposed plans and procedures for sampling and testing soil and groundwater at the site	
	Reg. 9.3.4 (F)(1)(d)	Provisions for sampling and testing of residual materials, such as sludge and soil, and provisions for final disposal	
	Reg. 9.3.4 (F)(1)(e)	Provisions for a background study for soil and groundwater that, at a minimum, must include:	
	Reg. 9.3.4 (F)(1)(e)(i)	Sampling Plan	

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	Reg. 9.3.4 (F)(1)(e)(ii)	Analysis Plan	
	Reg. 9.3.4 (F)(1)(e)(iii)	Data Evaluation Plan	
	Reg. 9.3.4 (F)(1)(e)(iv)	Determination of relevant background concentrations	
	Reg. 9.3.4 (F)(1)(f)	General description of the site post-closure, including:	
	Reg. 9.3.4 (F)(1)(f)(i)	Final property contours, material and procedures to be used to fill the impoundments	
	Reg. 9.3.4 (F)(1)(f)(ii)	Description of final soil placement and revegetation of site	
	Reg. 9.3.4 (F)(1)(f)(iii)	Description of anticipated land use	
	Reg. 9.3.4 (F)(1)(f)(iv)	Schedule for completing all activities necessary to satisfy these closure criteria	
	Reg. 9.3.4 (F)(1)(g) CRS § 25-15	Analysis of whether an environmental covenant – pursuant to Colorado Revised Statutes (CRS) Title 25, Article 15, as amended – will be necessary following closure	
	Reg. 9.3.4 (F)(1)(h) Reg. 9.3.7	Analysis of whether post-closure care will be necessary and if so, include in the EDOP a Post-Closure Plan consistent with the requirements of Section 9.3.7 (see Section 7 of this check list)	
	Reg. 9.3.4 (F)(1)(i) Reg. 1.8	Cost estimates for closure and post-closure, and proof of financial assurance equal to or greater than those cost estimates consistent with Section 1.8 of the Solid Waste Regulations will be required upon Division approval of the Closure and Post-Closure Care Plans (see Section 8 of this check list)	

Closure Requirements (Section 6)

✓	Regulation Section	Information	Page, Plate, Appendix or N/A
	Reg. 9.3.6 (A) Reg. 9.3.4 (F)	Close the impoundments in accordance with only the Division-approved Closure Plan, which is included in the facility's EDOP	
	Reg. 9.3.6 (B)	Individual impoundments at a facility may be closed independently of closure of the entire facility	
	Reg. 9.3.6 (C)	At least 60 days in advance of the proposed closure date, the owner/operator of a facility receiving third-party wastes open to the public must notify the Division and place signs of suitable size at the entrance to the site and facility	
	Reg. 9.3.6 (D) Reg. 9.3.4 (F)	The facility owner/operator must complete facility closure activities in accordance with the Division-approved closure plan and within 180 calendar days following the final receipt of waste or according to the implementation schedule in the Division-approved closure plan	

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	Reg. 9.3.6 (E) CRS § 25-15-320 Reg. 9.3.7	Following closure of an impoundment facility, the owner/operator shall work with the Division to place an Environmental Covenant on the former impoundment area in compliance with CRS Title 25, Article 15, Sub-Part 320 if waste is left in place as part of the closure or the site is not suitable for unrestricted use; if waste is left in place, the site is not suitable for unrestricted use or both, the owner/operator shall comply with Section 9.3.7 of the Solid Waste Regulations	
	Reg. 9.3.6 (F)	<u>Closure Certification</u> : A Closure Certification Report shall be submitted within 60 calendar days of completion of closure activities; the report shall document that all requirements and conditions of the closure plan have been achieved; the report shall be properly sealed by a professional engineer registered in the State of Colorado; the report shall be subject to review and approval by the Division	
	Reg. 2.1.16	Upon being filled, sites and facilities where final disposal is performed shall be left in a condition of orderliness and good aesthetic appearance, and capable of blending with the surrounding area	

SECTION 7: POST-CLOSURE CARE AND MAINTENANCE REQUIREMENTS

✓	Regulation Section	Information	Page, Plate, Appendix or N/A
	Reg. 9.3.7 (A) Reg. 9.3.4 (F)(1)(h)	<u>Post-Closure Care Plan</u> : Pursuant to Section 9.3.4 (F)(1)(h) of the Solid Waste Regulations, a Post-Closure Care Plan must be included in the EDOP if, after analysis, the owner/operator determines that post-closure care will be necessary; at a minimum, the Post-Closure Care Plan will include the following:	
	Reg. 9.3.7 (A)(1)	Provisions to prevent nuisance conditions	
	Reg. 9.3.7 (A)(2)	Provisions to maintain the integrity and effectiveness of the final cover, should waste be closed in place, including making repairs to the cover and replanting vegetation as necessary	
	Reg. 9.3.7 (A)(3)	If applicable, provisions to monitor groundwater and maintain the groundwater monitoring system	
	Reg. 9.3.7 (A)(4)	The name, address and telephone number of the person or office to contact about the facility during the post-closure period	
	Reg. 9.3.7 (A)(5)	A description of the planned uses of the property during the post-closure period; post-closure use of the property shall not disturb the function of the cap and monitoring systems unless reviewed and approved by the Division	

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	Reg. 9.3.7 (A)(6)	Provisions to comply with the Environmental Covenant or Notice of Environmental Use Restriction	
	Reg. 9.3.7 (B) Reg. 9.3.6 (F)	The owner/operator must implement the approved Post-Closure Care Plan in accordance with the approved schedule; implementation includes placing an Environmental Covenant or Notice of Environmental Use Restriction on the waste impoundment areas and any other areas with remaining contamination in accordance with Section 9.3.6 (F) of the Solid Waste Regulations	
	Reg. 9.3.7 (C)	<u>Post-Closure Certification</u> : Following completion of the post-closure care period, the owner/operator must submit a Post-Closure Certification for Division review and approval; certification must (1) verify that post-closure care has been completed in accordance with the Post-Closure Plan and (2) be signed by an independent professional engineer registered in the State of Colorado	
	Reg. 9.3.7 (D)	<u>Post-Closure Duration</u> : Post-closure care shall be conducted for a minimum of 30 years; length of the post-closure period may be:	
	Reg. 9.3.7 (D)(1)	Decreased by the Division if the owner/operator demonstrates that the reduced period is sufficient to protect human health and the environment OR	
	Reg. 9.3.7 (D)(2)	Increased by the Division if determined that the lengthened period is necessary to protect human health and the environment	

SECTION 8: FINANCIAL ASSURANCE REQUIREMENTS

✓	Regulation Section	Information	Page, Plate, Appendix or N/A
	Reg. 9.3.3 (J) 2.4.2 (H) Reg. 1.8	Cost estimates for closure and post-closure care and financial assurance documentation required by Section 1.8 of the Solid Waste Regulations; cost estimates and financial assurance of documentation must be submitted to the Division within 60 calendar days of the Division's approval of the cost estimates	
	Reg. 9.3.1 (A)	<u>Facility Design Review by Professional Engineer</u> : All engineered features of the facility design shall be reviewed and properly sealed by a professional engineer registered in the State of Colorado	
	Reg. 9.3.2 (A)	<u>Facility Construction</u> : The facility must implement an approved QA/QC Plan during construction of all the facility's engineered structures and appurtenances; the Division shall review and approve the QA/QC Plan prior to starting construction of any waste management features at the facility; note : the Division has guidance on construction quality assurance and as-built documentation on the Division's website: http://www.cdphe.state.co.us/hm/sw/swpubs.htm	

This guidance provides the minimum requirements of an Engineering Design and Operation Plan (EDOP) along with a suggested outline of a table of contents. The Solid Waste Regulations (6 CCR 1007-2, Part 1) should be referenced while preparing any EDOP. The relevant sections of the Solid Waste Regulations are provided.

	Reg. 9.3.2 (B)	<p><u>Construction Certification Report:</u> At least 90 calendar days prior to the start of waste acceptance into the impoundment, the owner/operator of a new Type B waste impoundment shall submit a construction certification report to the Division for review and approval; for an existing facility, the facility may submit the report and resume waste disposal operations; if a problem comes to light during Division review and prior to approval of the construction certification report, a compliance schedule will have to be developed for implementation of any corrective actions needed; the construction certification report shall certify that the construction has been completed in accordance with the facility's approved EDOP and approved QA/QC Plan; the construction certification report shall be signed and properly sealed by a professional engineer registered in the State of Colorado; the Division must review and approve the report prior to the acceptance of waste; construction certification reports shall be developed, approved and implemented for all engineered structures and ancillary equipment used to manage solid waste at the facility</p>	
	Reg. 9.3.6 (F)	<p><u>Closure Certification:</u> A closure certification report shall be submitted within 60 calendar days of the completion of closure activities; the report shall document that all the requirements and conditions of the Closure Plan have been achieved; the report shall be signed and properly sealed by a professional engineer registered in the State of Colorado; the report is subject to review and approval by the Division</p>	
	Reg. 9.3.7 (C)	<p><u>Post-Closure Certification:</u> Following the completion of the Post-Closure Care Period the owner/operator shall submit a post-closure certification verifying that post-closure care has been completed in accordance with the Post-Closure Care Plan; the certification shall be signed by an independent professional engineer registered in the State of Colorado; the signed certification shall be submitted to the Division for review and approval</p>	

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APPENDIX TITLES

- A: Groundwater Sampling and Analysis Plan
- B: Groundwater and Surface Water Contingency Plan
- C: Waste Characterization Plan
- D: Storm Water Management Plan
- E: QA/QC Plan
- F: Waiver Requests and Supporting Information

Other (e.g. site investigations, supporting information, reports, permits, future EDOP amendments, etc.)

G: _____

H: _____

I: _____

J: _____

K: _____

L: _____

M: _____

N: _____

O: _____

P: _____

Q: _____

R: _____

S: _____

T: _____

U: _____

V: _____

W: _____

X: _____

Y: _____

Z: _____

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