Construction & Demolition (C&D) Landfills in Indian Country: Federal Regulations and Best Practices

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Introduction

This guide is intended to help Tribal Governments and others involved in the decision to site or continue the operation of a construction and demolition (C&D) landfill in Indian country answer the following questions:

1. Are we making this decision based on our responsibility as stewards of the land, human health, wildlife, and natural resources?
2. Are we making this decision based on current and verified information about current and future waste generation and waste management options with a focus on waste prevention and reduction?
3. Based on this information, should we build a C&D landfill, continue to operate our existing landfill, or use landfills outside the reservation?

How this guide is organized

This guide is organized around common questions that the U.S. Environmental Protection Agency (EPA) hears from Tribal Governments. Its goal is to offer a comprehensive resource for siting, operating, and closing a tribal C&D landfill.

- **Section 1** answers questions that can help Tribal Governments decide whether to open, continue operating, or close a C&D landfill.
- **Section 2** describes the federal requirements for C&D landfills on tribal lands and offers best practice approaches to complying with them. **Appendix C** gives further guidance and resources related to these federal requirements.
- **Section 3** has information to help Tribal Governments regulate and oversee C&D landfills within their jurisdictions during siting, operations, and closure.
- **Appendix A** collects definitions of key terms in the regulations.
- **Appendix B** is a list of further resources, organized by topic.
- **Appendix D** is derived from an earlier EPA Region 5 study on best practices for closure and post-closure of tribal C&D landfills.

The EPA Non-Hazardous Materials and Waste Management Hierarchy prioritizes waste reduction, reuse, recycling, and composting over energy recovery and landfill disposal.

Source: U.S. EPA, *https://www.epa.gov/smm/sustainable-materials-management-non-hazardous-materials-and-waste-management-hierarchy#*

EPA developed this guide in consultation with the following tribes:

Blackfeet Nation

Grand Portage Band of Lake Superior Chippewa

Keweenaw Bay Indian Community

Lac du Flambeau Band of Lake Superior Chippewa

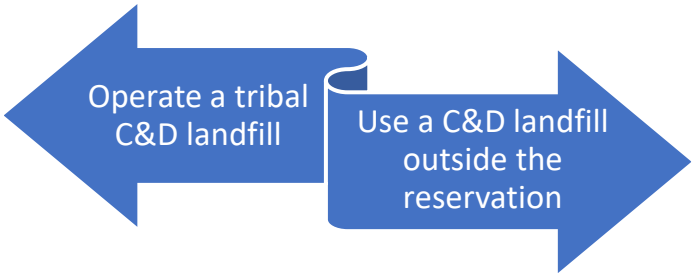
Prairie Band Potawatomi Nation

White Earth Band of Chippewa

1 C&D Landfill Decision and Operations Overview

1.1 Do We Need a C&D Landfill?

The decision to site or continue the operation of a construction and demolition (C&D) landfill in Indian country[1] needs input from many parties, including the Tribal Government, the natural resources/environmental department, building or facilities department, and entities that will generate C&D debris on the reservation.



How do we begin considering this question?

Start the decision process by gathering basic background information such as:

- ✓ Does the tribe have a solid waste management plan?
  - If yes, is managing C&D debris included in the plan? If no, a solid waste management plan should be developed.
- ✓ What are the three biggest problems the tribe faces for C&D debris management?
- ✓ What are three C&D debris goals for the tribe?
- ✓ Does the tribe have green building policies to reduce C&D debris?
- ✓ How much C&D debris does the tribe generate or receive from outside the facility?
  - How much of this material can be safely reclaimed (deconstructed, salvaged, and reused), recycled, or composted?
  - Do markets for salvaged C&D materials and/or C&D recycling centers already exist on tribal lands or within a feasible shipping distance?
  - If not, is creating these operations (such as a C&D recycling center) a reasonable alternative to building a C&D landfill?
- ✓ Who currently bears the costs of ensuring proper disposal of C&D debris?
- ✓ Does burning or illegal dumping of C&D debris occur?
  - If yes, what are the barriers to proper disposal? Lack of education on proper waste handling? Is proper disposal too expensive or too complicated?

(this checklist continues on the next page)

[1] For purposes of this guide, "Indian country" is defined consistent with 18 U.S.C. 1151 and includes all lands within the exterior boundaries of federally recognized Indian reservations and tribally held trust lands, whether located inside or outside reservation boundaries. Appendix A for definitions of terms.

- ✓ Does the tribe have an existing operational C&D landfill?
  - If yes, has the facility been constructed, operated, and maintained in a manner consistent with the tribe's values for environmental stewardship and protecting human health?
  - If no, what are the current disposal options for C&D debris and what are the costs and difficulties (such as distance, paperwork, fees) associated with those locations?
- ✓ What are the costs associated with development, construction, operation, and closure of a C&D landfill within the tribal lands? How much of this cost is or can be offset by user fees?
- ✓ Can a suitable site be identified within tribal lands *(refer to Section 1.3)* with institutional controls to prevent illegal or unwanted activities with such a landfill?
- ✓ Is a wastewater treatment facility located close enough to the proposed landfill site to make it cost effective to operate?
- ✓ Does the tribe have funding sources to support long-term landfill closure, monitoring, and management costs?

Each tribe will have a different set of answers to these questions and a different set of C&D debris management goals. While cost comparisons are often the most obvious consideration when making this type of decision, tribes should also consider human behavior and the C&D debris generators' capacity for change. For example, if generators perceive the barriers to proper disposal (such as cost, difficulty) to be too high, they may resort to waste burning or illegal dumping.

⇒ *Decisionmaking tip:* Before estimating the types and quantities of C&D materials likely to need a landfill (whether onsite of offsite), Tribal Governments may want to consider how much the tribe can reduce, reuse, recycle, or compost C&D materials instead of putting them in a landfill *(refer to Section 1.2 and U.S. Environmental Protection Agency [EPA] guidance: https://www.epa.gov/smm/sustainable-management-construction-and-demolition-materials)*.

⇒ *Decisionmaking tip:* The decision to construct, close, or continue the operation of a C&D landfill needs to reflect the balance with the land, water, air, and living beings inside and outside the landfill. This balance is necessary to adequately protect human health and the environment.

⇒ *Decisionmaking tip:* Tribal decisionmakers should consider the likelihood of unintended consequences such as an increase in waste burning or illegal dumping when weighing the decision to construct, close, or continue the operation of a C&D landfill.

1.2 Reducing Impacts through C&D Debris Reduction, Reuse, Recycling, and Composting

C&D debris can be reduced through green building practices such as designing buildings that can be easily adapted and repaired and using materials that are durable and easy to reuse, recycle, and compost. Tribes worked with EPA to develop the *Tribal Green Building Toolkit* (*https://www.epa.gov/green-building-tools-tribes/tribal-green-building-toolkit*) with information on building materials and resource conservation.

Some C&D materials can be directly reused (salvaged), recycled, or composted into secondary and reclaimed materials:

Asphalt, concrete, rubble
- Commonly recycled into aggregate or concrete and asphalt products

Scrap wood
- Reused, composted, or recycled into mulch, furniture, chipboard, fuel, etc.

Scrap metal
- Recycled into manufacturing of new appliances, furniture, building materials

Copper wiring, aluminum gutters, wooden beams, windows, doors, etc.
- Salvaged for reuse on another project

Management Options for Common Building Materials

Safe Reuse	Recycling	Disposal	Hazardous Materials
•Clean wood •Wood flooring •Doors & windows •Cabinets •Furniture •Bricks & pavers •Appliances •Fixtures •Metals •Tile	•Scrap metal •Wiring •Concrete (ground) •Appliances (not to code) •Ceiling tiles	•Insulation •Wallboard	•Asbestos (remove before demolition or deconstruction) •Treated wood •Lead-based painted materials

The advantages of C&D debris reduction, reuse, recycling, and composting include:

- ✓ Conservation of land
- ✓ Extension of landfill lifespans
- ✓ Cost reduction on recycled materials
- ✓ Reduction of pollution (minimization of resource consumption)
- ✓ Reduction of greenhouse gas emissions
- ✓ Creation of jobs

⇒ *Implementation tip: Zero Waste.* Educate construction and demolition project managers and workers to recognize materials that can be salvaged and about waste minimization strategies that can be implemented at the job site. Find examples of green construction purchasing, contract language, policies, and more ways to reduce construction debris at *Managing and Transforming Waste Streams: A Tool for Communities* (*https://www.epa.gov/transforming-waste-tool*).

⇒ *Implementation tip:* Assess whether to deconstruct a building before demolishing it in order to better salvage reusable materials. Use the *Deconstruction Rapid Assessment Tool* at *https://www.epa.gov/large-scale-residential-demolition/deconstruction-rapid-assessment-tool*.

⇒ *Implementation tip:* Implement separation plans and screening at the C&D landfill to minimize the amount of debris going into the landfill. *(Refer to Section 1.7.)*

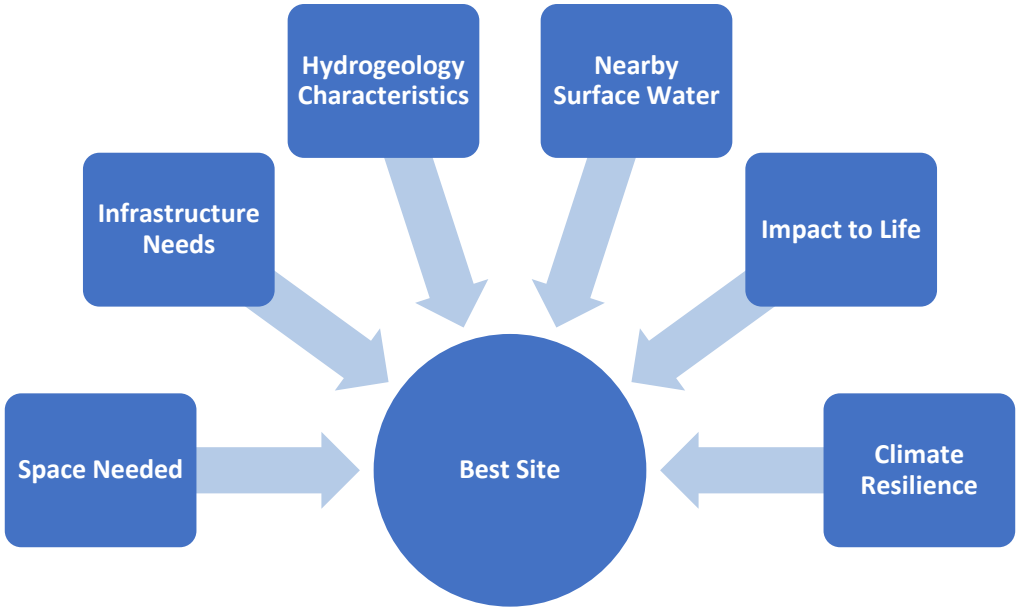
⇒ *Implementation tip:* It may be feasible to operate a reuse center at or near the C&D landfill site to encourage reusing and recycling C&D materials and minimize landfilling. For more information, For more information, go to: *https://wlssd.com/wp-content/uploads/2020/07/WLSSD_ReuseGuidanceDoc_2017_final.pdf*.

⇒ *Implementation tip:* Organizations such as the Solid Waste Association of North America (SWANA) *(https://swana.org/training-certification)* offer courses on Zero Waste and Landfill Operations.

Find more information and examples of C&D debris reduction, reuse, and recycling in Appendix B.1.

1.3 What Is the Best Site for a C&D Landfill?

This section presents general considerations for identifying and evaluating potential C&D landfill sites, in no particular order. Each tribe will need to prioritize and potentially expand the considerations to match tribal values of environmental stewardship. This section summarizes the federal regulations for siting a C&D landfill; refer to Section 2.2 for the specific parts of Resource Conservation and Recovery Act (RCRA) regulations at 10 CFR 257.3 that state these requirements.



1. **Space needed for landfill operations:** Calculate based on estimated annual C&D debris generation (type and volume) and desired landfill operating lifetime.

   ⇒ *Sizing tip:* Most landfill designs incorporate individual landfill cells that are constructed with a 1-to-5-year life expectancy for each cell. This may or may not be appropriate for a C&D landfill on a reservation with relatively low waste generation.

   ⇒ *Sizing tip:* Determine whether there will be any material that requires special management or daily cover, such as asbestos. If this is the case, a separate cell may need to be constructed for this material.

2. **Space needed for soil stockpile:** Soil excavated during landfill construction is commonly reused on site as daily or interim cover and can be used when constructing the final cap. The landfill site will need to include sufficient space to stockpile the soil for later use.

(Siting list continues on next page.)

3. **Space needed for buffer area:** The size of a suitable buffer area will vary between locations based on surrounding land uses, wind and rainfall characteristics, and existing wind and noise breaks/barriers. C&D landfills do not generally create strong odors, but they can be noise and dust nuisances.

4. **Infrastructure and equipment needs:** Is the proposed site connected to debris-generating areas by existing suitable roadways? If no, is building or improving the road feasible? Are connections to local utilities feasible if necessary or desired? Are sufficient equipment and storage units available or obtainable given budget considerations? Is a publicly owned treatment works (POTW) facility nearby for potential wastewater discharges?

5. **Hydrogeology characteristics:** C&D landfills can impact the local subsurface, including groundwater, if contaminants from the C&D debris leach into the ground. Identify any local uses for groundwater and use site-specific hydrogeologic information to evaluate the potential risks to groundwater. This is especially important if the local groundwater is used for drinking water. *(Refer to Section 2.2.4 and groundwater requirements under 40 CFR 257.3-4.)*

6. **Nearby surface water bodies:** Runoff from landfill operations can negatively impact the health of nearby surface waters (such as lakes, rivers, streams, wetlands). Consider the distance to any downstream surface water bodies in the context of any populations that rely on those waters and any natural or artificial features between the landfill and surface water body that might mitigate impacts from the landfill. This is especially important if the local population relies on the surface water for drinking water or if endangered or otherwise protected species rely on the surface water. Be aware of special rules around floodplains and wetlands. *(Refer to Section 2.2.3 and 40 CFR 257.3-3.)*

   ⇒ *Siting tip:* Be sure to site the landfill outside of floodplain and wetland areas to avoid triggering additional regulatory requirements. *(Refer to Section 2.2.1 and 40 CFR 257.3-1.)*

(Siting list continues on next page.)

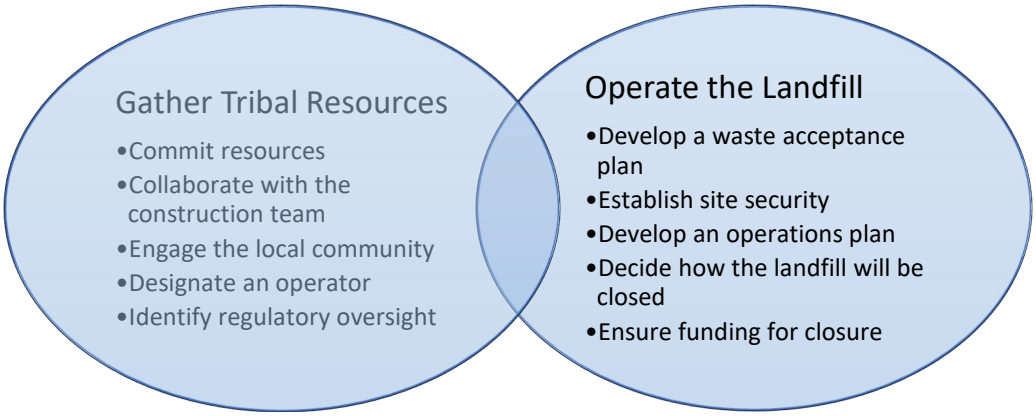
7. **Potential impacts to living things:** Landfill construction and operation are disruptive processes. Tribes should have a full understanding of the plants, animals, and human communities that may be impacted or displaced during landfill construction and operation and attempt to find a site that minimizes these impacts. It is especially important to consider impacts to vulnerable populations, sensitive habitats, and/or endangered species. Use the EJScreen screening tool to assess the environmental and demographic indicators of an area before siting a C&D landfill (*https://www.epa.gov/ejscreen*). Sites to avoid may also include areas on or near historical/cultural land, prime agricultural land, parks and preserves, schools, residences, or public facilities. *(Refer to Section 2.2.2 and endangered species requirements under 40 CFR 257.3-2.)*

8. **Climate change resilience:** A location that is naturally more resilient to climate change *(refer to Section 1.5)* will reduce the risk of adverse environmental impacts and likely cost less to operate over the landfill's lifetime.

1.4 What Does It Take to Operate a C&D Landfill?

If the tribe decides to build or continue to operate a C&D landfill, 10 actions are key to ensure the landfill is operated in a way that protects human health and the environment.

Tribal Actions to Protect Human Health and the Environment in the C&D Landfill



Gather Tribal Resources

Federal regulations do not specify C&D landfill requirements for the following five actions, but tribes should consider using the tools in this guide to implement these actions to help ensure the right resources are in place to design, construct, operate, and close the landfill.

1. **Commit short- and long-term resources:** Ensure that funds and personnel are available throughout and potentially beyond the planned landfill life to design, construct, operate, and close the landfill. The Tribal Solid Waste Costing Tool can be used to evaluate the financial feasibility of operating a C&D landfill (*https://www.epa.gov/tribal-lands/training-resources-tribal-waste-management*).

2. **Collaborate with the construction team:** The Tribal Government and designated entities should work closely with those siting, designing, and constructing the landfill to make sure the landfill meets the tribe's needs, is designed in a resilient fashion, and complies with environmental regulations.

3. **Engage the local community:** C&D landfills can affect everyone in the community, from people who live near the site, to workers who operate the landfill, to generators of all kinds of waste, including C&D debris. Tribes should engage with these stakeholders when planning, operating, and closing a C&D landfill to ensure fair siting and safe operations and to reduce the likelihood to illegal dumping. EPA's *Community Engagement Strategy* (*https://www.epa.gov/sites/default/files/2017-03/documents/tribalswcommunityengagementstrategy508.pdf*) handbook for tribal waste management offers strategies and tips for conducting effective community engagement.

(Resources list continues on next page.)

4. **Designate a landfill operator:** The tribe should designate one entity, such as a tribal department or contractor, to operate the landfill.
5. **Identify regulatory oversite:** The tribe should designate a separate entity, such as a tribal department, to monitor landfill operations to confirm the operator is complying with tribal and federal laws and regulations. *(Refer to Section 3.)*

Operate the Landfill

Federal regulations applicable to C&D landfills (40 CFR Part 257) specify requirements for site security and do not explicitly require the other four actions listed here, but they include requirements that can affect some of these recommended actions. Tribes should consider using the tools in this guide to implement all five of these actions to help ensure landfill operations adequately protect human health and the environment.

1. **Develop a waste acceptance plan:** What kind of waste can a C&D landfill accept? *(Refer to Section 1.7 and Section 2.2.8 [40 CFR 257.3-8] on restricting putrescible wastes and wastes that generate explosive gases.)*
2. **Establish site security:** This federal requirement that applies to C&D landfills prevents unapproved wastes from being disposed and prevents "undesired" entry. *(Refer to Section 1.8.)*
3. **Develop an operations plan:** To ensure C&D debris is properly managed. *(Refer to Section 1.6 and Section 2.2 [40 CFR 257.3-1 through 3-8] best practices and corresponding regulations to ensure C&D landfill operations do not cause adverse effects on health or the environment.)*
4. **Decide how the landfill will be closed:** Should the landfill be closed in place (with a cover)? Or should the disposed material be removed and the landfill confirmed clean and backfilled or graded for future use? *(Refer to Section 1.9.)*
5. **Establish a budget line item or other method to ensure sufficient funds are available to properly close and monitor the landfill.** After the closure method is decided, the tribe should estimate the future costs of closing the landfill and any post-closure maintenance. The tribe will need to establish a way to meet those future costs. *(Refer to Section 1.10.)*

1.5 How Do We Consider Climate Change When Siting, Designing, Constructing, and Operating a C&D Landfill?

No federal regulations require C&D landfills to consider climate change when siting, designing, constructing, and operating such a landfill, but EPA recommends doing so as a best practice.

It is important to consider climate change when siting, designing, and constructing a C&D landfill because this consideration should reduce the overall costs of operating and closing the landfill and will also be more protective of human health and the environment.

1.5.1 How Can Climate Change Affect C&D Landfills?

Climate change may alter a site's:

- Temperature
- Rainfall/snowfall
- Sunlight
- Frequency of extreme weather
- Volume of debris brought to the site after an extreme weather event
- Soil/cover condition

These changes can create hazards:

- Flooding from too much rain or snow melt
- Soil washout on slopes
- Unexpected changes in the water table
- Dried-out soil from drought
- Thawing permafrost

1.5.2 Planning for Climate Resilience

Climate Resilience = A capability to anticipate, prepare for, respond to, and recover from significant multi-hazard threats with minimum damage to social well-being, the economy, and the environment.

Climate resilience planning for a landfill generally involves these actions:

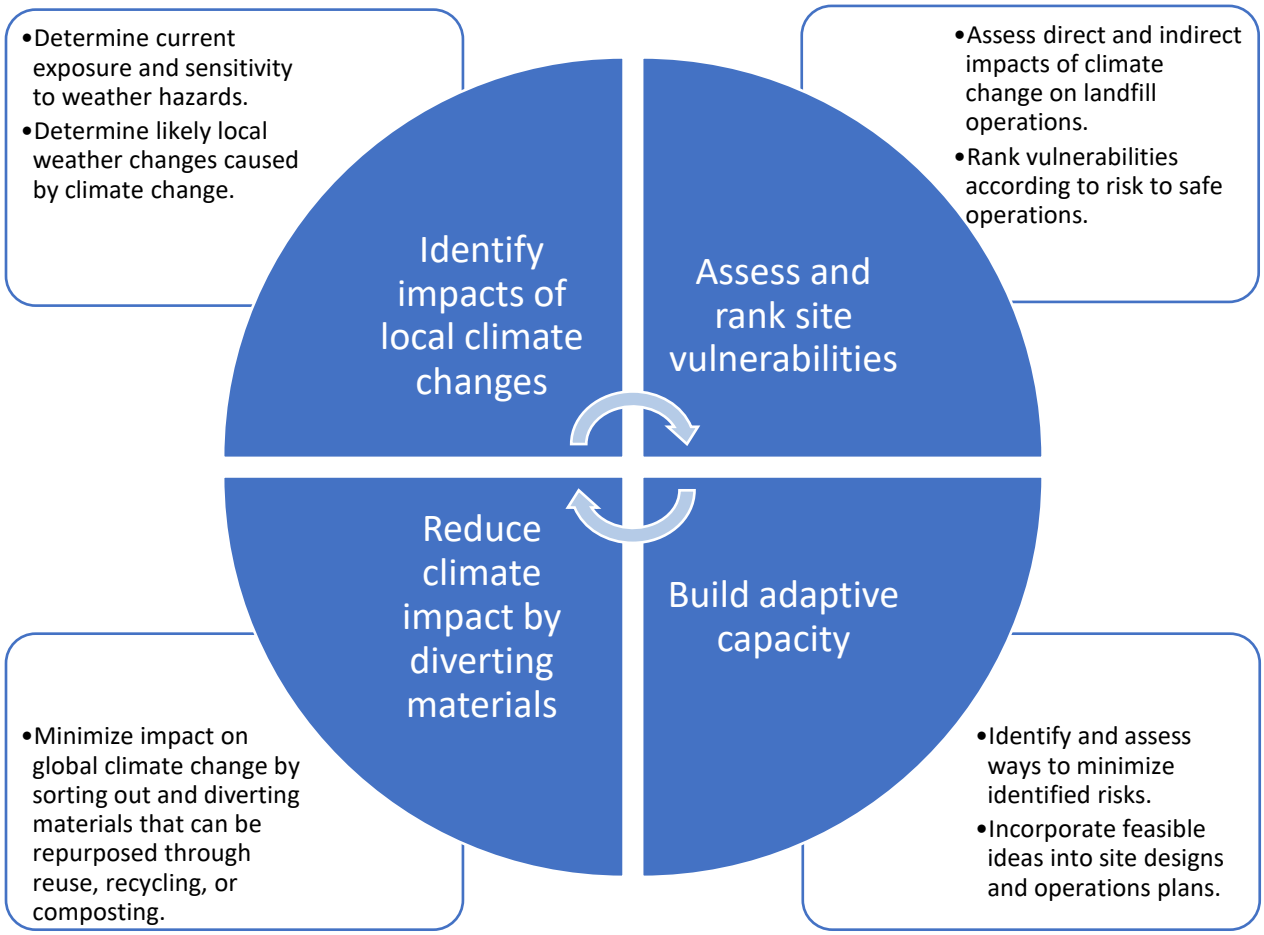
1. **Identify impacts of local climate changes:** Identify the site's current exposure to climate or weather hazards and which conditions may change. Consider the conditions listed in Section 1.5.1.
2. **Assess and rank site vulnerabilities:** Identify direct and indirect impacts of the local climate change scenarios, including the hazards identified in Section 1.5.1. Analyze impacts to the landfill's workforce, facilities, critical infrastructure, and volume of waste generation during storm cleanup. Rank these vulnerabilities according to their risk to safe operations.
3. **Build in the capacity to adapt:** Identify ways to site, design, and operate the landfill facility that will increase the site's resilience to the identified risks. Assess these adaptation opportunities for costs, feasibility, and overall improvement to vulnerability risk assessment. Design and build the landfill system

and operating procedures, incorporating as many of the feasible adaptation opportunities as possible. The end goal is to ensure that landfill operations can continue to protect human health and the environment through the changing climate.

4. **Reduce climate impact by diverting materials:** Increase the tribe's environmental stewardship and reduce the tribe's impact on global climate change through green building practices to reduce C&D by diverting C&D debris from the landfill. Reducing the amount of C&D debris put in landfills would reduce resource consumption, since waste that would otherwise be lost to landfills would be reclaimed and new materials would not need to be created from new resources. This type of recycling could significantly reduce greenhouse gas emissions. *(Refer to Section 1.2.)*

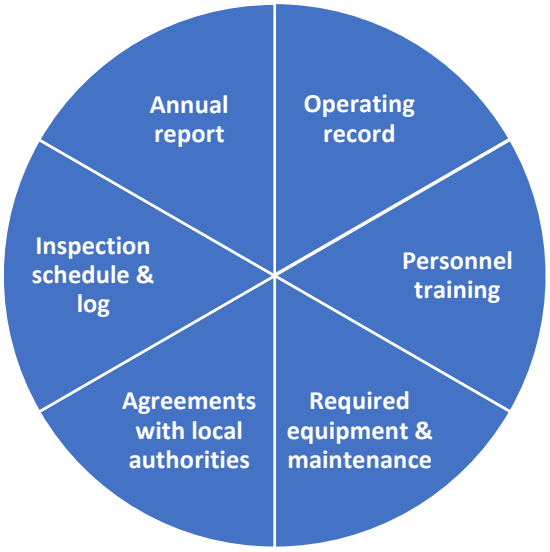
⇒ *Resiliency tip:* EPA's WARM Model can be used to calculate the greenhouse gas emissions impacts of many C&D materials' source reduction, recycling, composting, incineration, and landfill disposal (*https://www.epa.gov/WARM)*.

⇒ *Resiliency tip:* Every site is unique, so the vulnerabilities, resilience measures, and adaptive capacity will be different for each C&D landfill.



1.6 Why Should a C&D Landfill Consider Having an Operations Plan?

- No federal regulations require C&D landfills to have an Operations Plan, but EPA recommends it as a best practice.
- The Operations Plan could incorporate applicable best practices and corresponding federal requirements to ensure operations do not cause adverse effects on human health or the environment.
- An Operations Plan consolidates the federal requirements *(refer to Section 2)* and applicable best practices described throughout this guide into a useful plan for the actions landfill operators need to take to ensure waste is correctly admitted and controlled. Refer to the Section 2.2 subsections of this guide (40 CFR 257.3-1 through 3-8) to address:
  - Floodplains (40 CFR 257.3-1) – *Section 2.2.1*
  - Endangered Species (40 CFR 257.3-2) – *Section 2.2.2*
  - Surface Water (40 CFR 257.3-3) – *Section 2.2.3*
  - Groundwater (40 CFR 257.3-4) – *Section 2.2.4*
  - Food-Chain Crops (40 CFR 257.3-5) – *Section 2.2.5*
  - Disease Vector Controls, such as periodic cover (40 CFR 257.3-6) – *Section 2.2.6*
  - Air, such as open burning (40 CFR 257.3-7) – *Section 2.2.7*
  - Safety, such as explosive gases, fires, bird hazards, and access (40 CFR 257.3-8) – *Section 2.2.8*
- Tribes may also want to consider voluntarily adopting the following six Operations Plan elements that are recommended as best practices by the federal hazardous treatment, storage, and disposal facility (TSDF) waste regulations (refer to 40 CFR Part 264) but are not required for C&D landfills:



All CFR references in this list are to the hazardous TSDF requirements.

1. **Operating record:** Maintain an inventory of the type, volume, weight, and number of items being placed in the C&D landfill, the entity that had the items delivered to the landfill, and the disposal location within the landfill. *(Refer to 40 CFR 264.73.)*
2. **Personnel training:** List any specific training that is required of personnel involved with the landfill, whether it is equipment operation, material movement, or maintenance of the landfill or related infrastructure. *(Refer to 40 CFR 264.16.)*

3. **Required equipment & maintenance:** Keep an inventory of the equipment needed to operate the landfill, including a schedule for their maintenance. *(Refer to 40 CFR 264.32 & 264.33.)*
4. **Agreements with local authorities:** All personnel involved with the landfill should know who to contact if there is an event at the landfill they cannot control, such as a material spill, fire, or unapproved material. *(Refer to 40 CFR 264.37.)*
5. **Inspection schedule & log:** Develop an inspection schedule so that someone familiar with the landfill operation visits the landfill regularly, such as every week or other appropriate time frame, to check for issues with aspects such as cover maintenance (including malfunctions and deterioration) and discharges. Record these inspections in a logbook. *(Refer to 40 CFR 264.15 and Section 3.5 of this guide.)*
6. **Biennial Report:** Prepare a biennial report that lists the type, volume, weight, or number of items that were placed in the landfill during the previous year. *(Refer to 40 CFR 264.75.)*

1.7 What Kind of Waste Can a C&D Landfill Accept? – The Waste Acceptance Plan

No federal regulations require C&D landfills to have a Waste Acceptance Plan, but a Waste Acceptance Plan is a best practice and critical to ensuring that only C&D eligible waste is sent to a C&D landfill. This will help ensure that debris is not sent to the landfill that could be recycled, could harm the integrity of the landfill, or could present a threat to human health or the environment. Tribes can craft stricter local ordinances to prevent unwanted debris going to the landfill.

1.7.1 Acceptable and Unacceptable Wastes Best Practices

Federal Requirements

1. C&D landfills can receive construction and demolition debris: roadwork material, excavated material, demolition waste, construction and renovation waste, and site clearance waste (40 CFR 257.2).
2. C&D landfills do not receive hazardous waste (40 CFR 257.2) or industrial solid waste (40 CFR 257.2).

General Acceptability Best Practices for Waste Types

Acceptable	Not Acceptable †
• Non-treated wood, including untreated plywood and dimensional lumber • Concrete and masonry, including bricks, mortar, and stone • Drywall, including sheetrock, gypsum, and plaster • Roofing materials such as wood, clay, and asphalt shingles • Metals such as ferrous metals, aluminum, and copper • Paper and cardboard products • Plastic, such as wraps, containers, and pipes • Other materials such as carpeting, windows, mirrors, ceramic and linoleum tile, light fixtures (excluding fixtures that would be defined as hazardous waste lamps), and insulation • Land-clearing debris such as rocks, trees, and soil	• Liquid wastes (e.g., cleaning products, pesticides, used oil and petroleum products) • Hazardous waste, including household hazardous waste • Municipal solid waste (household trash) • Polychlorinated biphenyls (PCBs), including fluorescent light ballasts containing PCBs • Asbestos • Medical or infectious waste • Animal carcasses • Sewage or sewage sludge • Scrap tires • Batteries • Mercury and mercury-containing wastes • All treated wood, including arsenic-treated wood (chromated copper arsenate [CCA]-treated wood) • Appliances (white goods) • Septic tank pumpings • Hot (on fire or smoldering) loads • Paint and paint wastes • Site-specific restrictions on wastes generally considered acceptable

† Some wastes in the Not Acceptable list may be acceptable after screening to be sure they do not contain the hazardous elements described in 40 CFR Part 261, which are not allowed in C&D landfills. Refer to Appendix C.1.1.2 for examples of common wastes that need to be screened for hazardous constituents before they can be accepted into a C&D landfill.

1.7.2 Why Should a Landfill Screen the Waste It Receives?

- Screening out materials that can be segregated for reuse or recycling can extend the life of the landfill, significantly reduce tribal greenhouse gas emissions and lifecycle environmental impacts associated with sourcing raw materials, and provide a better return on the landfill investment. *(Refer to Section 1.2.)*
- Tribes are responsible for ensuring that the landfill only accepts waste that is allowed for disposal. *(Refer to Section 1.7.1.)*
- Screening out unacceptable wastes can protect human health and the environment by reducing the potential for explosions, fire, contaminant releases, and disease. *(Refer to 40 CFR 257.3-3, 3-4, 3-6, and 3-8.)*

⇒ *Screening tip:* Individual C&D landfills may need to implement acceptance criteria that are more stringent than the generic list here to ensure good environmental stewardship. For example, a C&D landfill in a floodplain should strongly consider banning the disposal of drywall/gypsum to avoid risking adverse environmental and ecologic impacts due to production of hydrogen sulfide (H_2S) gas.

⇒ *Screening tip:* A C&D landfill should consider not accepting hazardous wastes from very small quantity generators (VSQGs) even though allowed by regulation, since these wastes could have adverse environmental impacts and trigger groundwater monitoring requirements.

⇒ *Screening tip:* Educate generators on waste acceptance by posting lists of acceptable and unacceptable wastes in multiple locations, such as on the facility's website and at the facility entrance.

⇒ *Screening tip:* A **Waste Acceptance Plan** can help landfill operators develop procedures to screen waste consistently. *(Refer to Section 1.7.3.)*

1.7.3 Developing a Waste Acceptance Plan Can Help to Screen Waste

Elements of a Waste Acceptance Plan:

- A list of wastes that will not be accepted
- The reasons for accepting or rejecting certain wastes
- The procedure to evaluate a waste
- How to inspect incoming waste and record violations
- A procedure to safely remove any unacceptable waste that does enter the facility (by accident or illegally) – who to call, how to handle it, and where to place it

  ⇒ *Planning tip:* Include a plan to train any landfill personnel in the procedures of the Waste Acceptance Plan.

  ⇒ *Planning tip:* Document implementation of a Waste Acceptance Plan by tracking accepted and rejected loads of waste. This can be as simple as a Microsoft Excel spreadsheet or a Word table, such as the sample form on the next page:

Sample Form to Track Accepted and Rejected Loads of Waste

Generator Name and Location	Hauler Name & ID or License Plate	Waste Type	Quantity	Date/Time of Arrival	Ongoing/One-Time	Screening Method(s)	Accepted or Rejected (if rejected, note reason)	Person Accepting or Rejecting the Load	Comments

1.8 Why Is a C&D Landfill Required to Have Site Security?

Federal Requirement

from 40 CFR 257.3-8(d):

A facility or practice shall not allow uncontrolled public access so as to expose the public to potential health and safety hazards at the disposal site.

Approach for Compliance

- *Prevent unauthorized access:* C&D landfills on reservations are usually too small to have regular onsite staff. But landfill operators still have to protect human health and the environment by preventing unacceptable wastes and unauthorized access.
  - Site security is important to prevent unapproved dumping or members of the public entering the landfill.

⇒ *Security tip:* Tribes can consider using security methods like those required for municipal landfills, although these specific methods are not required for C&D landfills: artificial barriers, natural barriers, or both. *(Refer to 40 CFR 258.25.)*

⇒ *Security tip:* Tribes can consider using security methods like those required for hazardous waste landfills, although these specific methods are not required for C&D landfills: 24-hour surveillance, an artificial or natural barrier surrounding the facility, and controlled entry, such as a locked gate. *(Refer to 40 CFR 264.14.)*

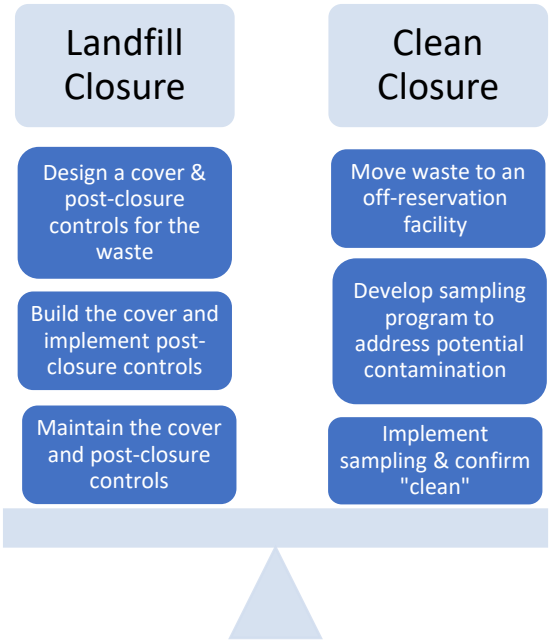
⇒ *Security tip:* Many commercial landfills have a 6-foot chain-link fence with three strands of barbed wire around the facility. This can also catch lightweight materials from being blown out of the landfill and littering land and waterways.

1.9 Closing the Landfill: "Landfill Closure" or "Clean Closure"?

No federal regulations require C&D landfills to have a closure plan, but EPA recommends it as a best practice.

Tribes should consider developing a closure plan to ensure that staffing and technical and financial resources are available to close the landfill in a way most protective of human health and the environment.

There are no federal requirements for C&D landfill closure, but regulations for other landfill programs may provide useful guidance if adopted on a voluntary basis. *(Refer to Appendix D for recommended best practices.)*



There are two ways to permanently close a C&D landfill:

1. **"Landfill Closure":** Cover the waste and implement plans to maintain the cover over time.
2. **"Clean Closure":** Remove the waste from the landfill and confirm no hazardous constituents remain.

This section outlines the recommended key elements of the two approaches (Appendix B.7.5 has full details). For financing either closure method, refer to Section 1.10. For more information on closure practices, refer to Appendix D.

Landfill Closure

- Commit tribal resources for cover design, water/erosion management, construction, and ongoing inspection and maintenance.
- Design a long-term cover for the waste.
- Construct the cover and water/erosion management controls.
- Set up an inspection and maintenance plan to ensure the cover continues to contain the waste.
- Appendix B.10 has guidance from other regulatory programs that tribes may want to consider adopting on a voluntary basis for closing a C&D landfill in place. *(Refer to 40 CFR Part 258.)*

Clean Closure

- Transport the waste to an approved facility (landfill or recycling facility outside the reservation).
- Set up an investigation program to confirm that no hazardous contamination remains at the landfill site. EPA recommends the following steps:

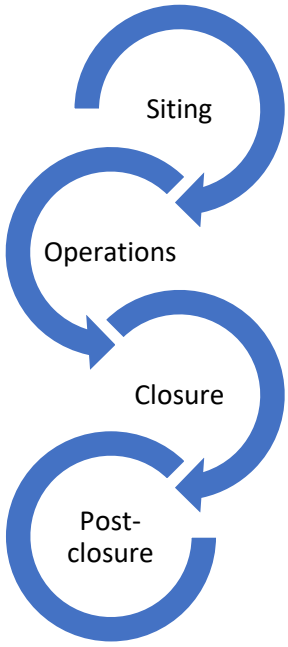
(Clean Closure list continues on next page.)

- Develop a sampling and analysis plan and a quality assurance project plan. *(Refer to EPA's webpage on assuring quality in federal cleanups at https://www.epa.gov/fedfac/assuring-quality-federal-cleanups for guidance and worksheets.)*
- As appropriate, prepare a health and safety plan. *(Refer to the Occupational Safety and Health Administration's guidance at https://www.osha.gov/hazardous-waste/7-steps or https://www.osha.gov/sites/default/files/SHPM_guidelines.pdf.)*
- Sample the soil, surface water, and groundwater. *(Refer to 40 CFR 258.61(a)(3).)*
- Clean up any contamination found by the sampling and re-sample the area.
- Prepare a written report documenting the removal and/or absence of contamination at the site. *(Refer to 40 CFR 258.58(e)(2).)*

1.10 What Is Financial Assurance?

No federal regulations require C&D landfills to have financial assurance, but EPA recommends it as a best practice.

A key part of planning to open a C&D landfill is planning how to pay for closing it. As part of closure planning, tribes should develop a cost estimate for all future closure and post-closure activities and demonstrate how the tribe will be able to meet each of these expenses. *Financial assurance* is the set of financial instruments and mechanisms that a tribe uses to demonstrate it will be able to pay for closing the landfill sometime in the future.



There are two types of post-operations costs: closure and post-closure.

Closure Costs

Closure costs cover the immediate activities needed to stop operating the landfill. They apply to both types of closure described in Section 1.9. They include the costs of:

- Safely closing the unit
- Cleaning up contamination
- *Clean Closure* removal of all wastes and contaminated soils (Section 1.9)

Post-closure Costs

Post-closure costs cover the long-term activities needed for the *Landfill Closure* option described in Section 1.9. They include the costs of:

- Long-term maintenance
- Monitoring
- Recordkeeping

Units that will be landfill or clean closed (tanks, surface impoundments, or waste piles where all wastes and contaminated soils and equipment are removed) are not subject to post-closure care financial assurance requirements.

Estimating Future Costs

Base the cost estimates on the cost of paying a third party to perform the activities outlined in the facility's closure and, if applicable, post-closure plans. *(Refer to 40 CFR 264.142, for example.)*

- Adjust cost estimates annually throughout the operational life of the facility to account for inflation. *(Refer to 40 CFR 264.142, for example.)*
- As a reference, facility owners should either recalculate these costs each year, or use the U.S. Department of Commerce Implicit Price Deflator (IPD) to calculate the inflation factor and adjust the initial cost estimate. *(Refer to 40 CFR 264.142(b) or 265.142(b), for example, for instructions on using the IPD.)*

1.10.1 Financial Assurance Methods

Tribes are not subject to financial assurance requirements for C&D landfills but should establish a budget for the closure and, if applicable, post-closure of the landfill. These funds should not be able to be used for any other purpose.

Tribes needing to assure closure and post-closure funds may find good models in the financial assurance mechanisms that hazardous waste management facilities can use to meet their regulatory requirements for assurance. This section gives examples of these, including the relevant regulations for each option. More resources are available at EPA's webpage, *Financial Assurance Requirements for Hazardous Waste Treatment, Storage and Disposal Facilities (https://www.epa.gov/hwpermitting/financial-assurance-requirements-hazardous-waste-treatment-storage-and-disposal)*.

- **Trust fund:** Established to deposit money specifically earmarked for closure and/or post-closure. The tribe pays into the trust fund for a specified period of time such that at the time of closure, there are sufficient funds to cover closure and/or post-closure care costs. *(40 CFR 264.143(a) or 265.143(a), for example)*
- **Surety bond:** A guarantee from a surety company (in the form of a bond) that all closure and post-closure care requirements will be fulfilled. If the tribe fails to meet the requirements specified in the bond, the surety company is liable for the costs. If using a surety bond, the tribe should also establish a standby trust fund into which the surety company will make payments if the tribe fails to comply with its financial responsibilities. This money deposited into the standby trust fund can then be used to pay a third party to perform closure/post-closure. *(40 CFR 264.143(b)–(c) and 265.143(b), for example)*
- **Letter of credit:** Issued by an institution that has the authority to issue them. The letter of credit must be equal to the amount of the cost estimate and must be increased whenever the closure cost estimate increases (either annually or when the facility is expanded). The tribe should also establish a standby trust fund into which the letter of credit-issuing institution will pay if the tribe fails to meet its closure/post-closure care obligations. *(40 CFR 264.143(d) and 265.143(c), for example)*
- **Insurance policy:** At least equal to the cost estimate for closure and post-closure expenses. The amount the insurer is obligated to pay under the policy should be increased annually and any other time the cost estimate increases. The insurer should be licensed by a state (offshore insurers not allowed) and may not cancel, terminate, or fail to renew the policy unless the tribe fails to pay the premiums. *(40 CFR 264.143(e) and 265.143(d), for example)*
- **Financial test:** Met by the tribe by passing one of the two tests specified in the regulations. These tests demonstrate and document that the tribe has sufficient assets located within the United States to cover closure and post-closure care costs. *(40 CFR 264.143(f) and 265.143(e), for example)*

2 Federal Requirements Applicable to C&D Landfills in Indian Country

2.1 Overview of Federal Requirements

All C&D landfills must comply with the federal requirements outlined in this chapter.

The EPA is responsible for implementing and enforcing most federal environmental requirements in Indian country.

EPA recognizes **Tribal Governments** as sovereign entities with primary authority and responsibility for reservation populations. EPA's 1984 Indian Policy commits to working with tribes on a government-to-government basis in making decisions to carry out program responsibilities in Indian country.

The primary federal environmental requirements applicable to C&D landfills in Indian country come from five U.S. laws:

Resource Conservation and Recovery Act (RCRA)

- The primary federal law associated with C&D landfills.

Clean Water Act (CWA)

- Addresses stormwater and water discharges associated with the landfill.

Clean Air Act (CAA)

- Any significant air emissions or dust could be regulated under the CAA and asbestos managment.

Toxic Substances Control Act (TSCA)

- The disposal of PCBs (insulating oils in electrical equipment such as capacitors and ballasts) is addressed in TSCA.

Occupational Safety & Health Administration (OSHA)

- OSHA does not have regulations specifically addressing workers at C&D landfills. However, there are regulations in 29 CFR Part 1910 that could apply to staff working at the landfill.

The rest of this chapter outlines the **key requirements** under each law and suggests **best management practices** for complying with these laws and protecting human health and the environment.

2.2 Resource Conservation and Recovery Act (RCRA)

The following RCRA regulations apply to owners/operators of C&D landfills:

40 CFR 257.3-1	Floodplains	(Section 2.2.1)
40 CFR 257.3-2	Endangered Species	(Section 2.2.2)
40 CFR 257.3-3	Surface Water	(Section 2.2.3)
40 CFR 257.3-4	Groundwater	(Section 2.2.4)
40 CFR 257.3-4	Food-Chain Crops	(Section 2.2.5)
40 CFR 257.3-6	Disease Vector Controls – such as periodic cover	(Section 2.2.6)
40 CFR 257.3-7	Air – such as open burning	(Section 2.2.7)
40 CFR 257.3-8	Safety – such as explosive gases, fires, bird hazards, and access	(Section 2.2.8)

2.2.1 Floodplain Requirements

Federal Requirements
Generally, 40 CFR 257.3-1 provides:

1. The facility or its practices cannot be located so that it restricts the flow of the base flood.
2. The facility or its practices cannot be located so that it significantly reduces the temporary storage capacity of the floodplain.
3. The facility or its practices must ensure that solid waste cannot wash out during the base flood.

These regulations prevent the landfill from affecting floods in a way that poses a hazard to human life, wildlife, or land or water resources.

Key terms: EPA defines *floodplain* as the lowland and relatively flat areas adjoining inland and coastal waters, including flood-prone areas of offshore islands, which are inundated by the base flood. *Base flood* is defined as a flood that has a 1% or greater chance of recurring in any year or a flood of a magnitude equaled or exceeded once in 100 years. *(Refer to 40 CFR 257.3-1(b)(1)&(2).)*

Approaches for Compliance

- *Avoid locating a C&D landfill in the floodplain if possible:* Tribes can ban the location of new C&D landfills in floodplains. State regulations may provide models, including Minnesota, Wisconsin, Ohio, and Kansas. *(For example regulations, refer to Appendix B.10.)*

  ⇒ *Siting tip:* To help determine the location of floodplains in your area, the Federal Emergency Management Agency (FEMA) provides 100-year floodplain maps. *(Available at https://msc.fema.gov/portal/home.)*

  ⇒ *Siting tip*: Before relying only on FEMA's floodplain maps, note that EPA's Office of Research and Development found that in recent years, the frequency and severity of extreme flooding has increased, and over 50% of historical extreme floods have occurred outside of FEMA-designated flood zones. *(Refer to Tang, C., & V. Garcia, How Does Flooding Impact Superfund Sites Now and in the Future? AMS 2022, Virtual, TX January 23–27, 2022. https://cfpub.epa.gov/si/si_public_record_Report.cfm?dirEntryId=354071&Lab=CEMM)*

- *If a landfill must be located within a floodplain, assess how the landfill will affect the floodplain's water flow and water storage capacity:* The assessment should estimate the flow velocity and volume of floodplain storage in the vicinity of the landfill unit during the base flood. It should consider existing floodplain and floodwater characteristics and how waste disposal within the floodplain impacts and changes those characteristics. These changes may lead to flooding and washout of solid waste without water management features in the landfill. *(Refer to 40 CFR 258.11 for municipal solid waste landfill facility requirements.)*

  ⇒ *Assessment tip:* The U.S. Army Corps of Engineers (USACE) has developed several numerical models to aid in floodplain assessments. *(Refer to EPA Solid Waste Disposal Facility Criteria: Technical Manual, Document No. EPA-530-R-930-007, pages 28–29.)*

(Compliance approaches continue on next page.)

- *Design embankments to protect the landfill from flood damage:* Embankment designs with rip-rap, geo-textiles, or other materials can be effective. Embankment designs will require an estimate of river flow velocities, flow profiles, and wave activity. It is good practice to prevent run-on from entering the active landfill site even if it is located outside the floodplain.

2.2.2 Endangered Species Requirements

Federal Requirements

Generally, 40 CFR 257.3-2 provides:

1. The facility or practices by the facility shall not cause or contribute to the taking of any endangered species of plants, fish, or wildlife;
2. or result in the destruction or adverse modification of critical habitat of endangered or threatened species.

Key terms: *Endangered or threatened species* means any species listed under the Endangered Species Act. *Destruction or adverse modification* means a direct or indirect alteration of critical habitat which appreciably diminishes the likelihood of the survival and recovery of threatened or endangered species using that habitat.

Approach for Compliance

- *Consult the U.S. Fish and Wildlife Service (USFWS) Endangered Species Program:* The Endangered Species Act provides a program for the conservation of threatened and endangered plants and animals and the habitats in which they are found. USFWS maintains and regularly updates the lists of endangered and threatened species. Species include birds, insects, fish, reptiles, mammals, crustaceans, flowers, grasses, and trees. Anyone can petition USFWS to include a species on this list or to prevent some activity, such as logging, mining, or dam building. EPA recommends that tribes consult with the USFWS liaison to ensure compliance with 40 CFR 257.3-2 and the Endangered Species Act (implemented in 50 CFR Part 17).

  ⇒ *Management tip:* More information on American Indian tribal rights, federal-tribal trust responsibilities, and the Endangered Species Act is available on the USFWS website at https://fws.gov/program/endangered-species.

2.2.3 Surface Water Requirements

Federal Requirements

Generally, 40 CFR 257.3-3 provides:

Facilities may not discharge pollutants or dredged and fill materials into waters of the United States in violation of the requirements of the Clean Water Act.

Approaches for Compliance

- Refer to Section 2.3 for approaches to complying with the Clean Water Act.

2.2.4 Groundwater Protection Requirements

Federal Requirements

Generally, 40 CFR 257.3-4 provides:

Facilities shall not contaminate an underground drinking water source beyond the boundary of the facility.

Generally, 40 CFR 257.22 to 257.28 provides:

Facilities that accept and dispose of hazardous waste from very small quantity generators (VSQGs) must implement a groundwater monitoring, assessment, and corrective action program.

Key terms: *Solid Waste Boundary* means the outermost perimeter of the solid waste (projected in the horizontal plane) as it would exist at completion of the C&D landfill. *Leachate* is liquid that has passed through or emerged from solid waste and contains materials from those wastes.

Approaches for Compliance

- *Do not accept hazardous waste, including waste generated by VSQGs:* Accepting hazardous waste from VSQGs triggers regulatory requirements that would otherwise not apply, including groundwater monitoring.
- *Groundwater monitoring:* Groundwater contamination at C&D landfills typically occurs when contaminants in the C&D debris are transported to groundwater through leachate. If groundwater monitoring is required, wells should be placed and tested just "upgradient" (at least one) and "downgradient" (typically at least three) of the landfill boundary. Siting the wells will need to be determined by installing temporary piezometers to establish the direction of the groundwater flow.

  ⇒ *Management tip:* Appendix C.1.3 has information on the installation and monitoring of groundwater monitoring wells. A tribe's present and future underground drinking water sources may be found through the tribes' source water protection program.

2.2.5 Placement of Waste Near Food-Chain Crops

Federal Requirements

Generally, 40 CFR 257.3-5 provides:

Facilities should not apply solid waste within one meter of the surface of land used for the production of food-chain crops unless certain requirements are met.

In addition, solid wastes with greater than 10 mg/kg of PCBs should not be incorporated into the soil when land is used for producing animal feed unless certain requirements are met.

Key terms: *Food-chain crops* include tobacco, crops grown for human consumption, and animal feed for animals whose products are consumed by humans.

Approach for Compliance

- *Do not site landfill near food-chain crops:* Facilities should not site or operate a C&D landfill near the production of food-chain crops.
- *Do not incorporate PCB solid waste:* Facilities should not incorporate solid wastes with greater than 10 milligrams per kilogram (mg/kg) of PCBs into the soil.

2.2.6 Disease (Vector Controls) Requirements

Federal Requirements

Generally, 40 CFR 257.3-6 provides:

Facilities shall minimize the onsite population of disease vectors through the periodic application of cover material or other techniques as appropriate so as to protect public health.

Key terms: *Disease vectors* include flies, mosquitoes, and rodents.

Approach for Compliance

- *Cover the waste:* The operators of the C&D landfill will need to determine if and how frequently cover material is placed on the waste. This decision should be documented to indicate how access to the waste by disease vectors is being minimized.

  ⇒ *Management tip:* Six inches of compacted soil on the waste is generally enough to prevent access by animals that are disease vectors. *(Refer to Appendix C.1.4 for more guidance.)*

2.2.7 Air Requirements

Federal Requirements

Generally, 40 CFR 257.3-7 provides:

Facilities shall not engage in open burning of residential, commercial, institutional, or industrial solid waste.

Approach for Compliance

- *Do not allow any open waste burning at the landfill facility.*

2.2.8 Safety Requirements

Federal Requirements

Generally, 40 CFR 257.3-8 provides:

1. Prevent explosive gases from forming.
2. Minimize the potential for fires.
3. Do not accept putrescible wastes that could attract birds if the landfill is located near an airport runway.
4. Do not allow uncontrolled public access.

Key terms: ***Putrescible wastes*** means solid waste which contains organic matter capable of being decomposed by microorganisms and of such a character and proportion as to be capable of attracting or providing food for birds.

Approaches for Compliance

- *Have strict waste acceptance requirements:* Do not accept waste that could generate explosive gases, be a fire hazard, or attract birds.
- *Know the lower explosive limits for gases in the facility structure and for gases at the property boundary:* Per 40 CFR 257.3-8(a), the concentration of explosive gases generated by the C&D landfill shall not exceed 25% of these lower explosive limits.
- *Know the landfill's distance from runways and airports:* The landfill should not accept putrescible waste that could attract birds if the landfill is located within 10,000 feet (3,048 meters) of any airport used by turbojet aircraft or within 5,000 feet (1,524 meters) of any runway used by only piston-type aircraft.
- *Cover the waste and avoid open burning:* To prevent fires, comply with the open burning requirements in 40 CFR 257.3-7 *(refer to Section 2.2.7)* and apply appropriate cover material or use other techniques to minimize fires.
- *Secure the landfill:* To prevent uncontrolled access, establish site security as described in Section 1.8 of this guide.

2.3 Clean Water Act (CWA)

The following CWA regulations apply to owners/operators of C&D landfills:

40 CFR 445.3 & Part 403	Wastewater Pretreatment	(Section 2.3.1)
40 CFR Part 445, Part 136, & Part 122	National Pollutant Discharge Elimination System (NPDES) Permit	(Section 2.3.2)
Section 404 of the CWA	Permit for Wetland Construction	(Section 2.3.3)
40 CFR Part 112	Oil Pollution Prevention	(Section 2.3.4)

2.3.1 Wastewater Pretreatment

Federal Requirements

Generally, 40 CFR 445.3 provides:

Sources of wastewater must comply with 40 CFR Part 403, "General Pretreatment Regulations for Existing and New Sources of Pollution."

Generally, 40 CFR Part 403 provides:

Landfills must manage their wastewater discharges that might be discharged or transported to a publicly owned treatment works (tribal or outside the reservation). This includes following federal, state, and local pretreatment standards.

Landfills must follow the rules for prohibited wastewater discharges in 40 CFR 403.5.

Key terms: A *publicly owned treatment works (POTW)* is a wastewater treatment plant that receives wastewaters from domestic or industrial sources and treats the wastewaters to less harmful byproducts.

Approaches for Compliance

- *Determine the effluent criteria for the POTW and design a treatment system to meet the criteria:* Landfill-generated wastewater that is collected and discharged to a POTW is subject to 40 CFR Part 403 pretreatment requirements.
- *Follow EPA guidance for wastewater pretreatment:*
  - ⇒ EPA *Local Limits Development Guidance* at https://www3.epa.gov/npdes/pubs/final_local_limits_guidance.pdf
  - ⇒ EPA's national pretreatment program at https://www.epa.gov/npdes/national-pretreatment-program

2.3.2 National Pollutant Discharge Elimination System (NPDES) Permit

Federal Requirements

Generally, 40 CFR Part 445 provides:

Use specified technologies in the treatment of the wastewater before discharge to a surface water.

Generally, 40 CFR Part 122 provides:

- Landfills that have discharges to waters of the United States must follow the requirements of the NPDES permit program in this part.
- Establish monitoring and reporting conditions for NPDES permits. (40 CFR 122.44(i) and 122.48)
- Monitor pollutant mass (or other applicable unit of measure) and effluent volume and provide other measurements (as appropriate) using the test methods given in 10 CFR Part 136. (40 CFR 122.44(i))
- NPDES permit holders (with certain specific exceptions) must monitor for all limited pollutants and report data at least once per year. (10 CFR 122.44)

Key terms: *Landfill wastewater* means all wastewater associated with, or produced by, landfilling activities except for sanitary wastewater, non-contaminated storm water, contaminated groundwater, and wastewater from recovery pumping wells. *(Refer to 10 CFR 445.2(f) for a partial list of types of landfill wastewater.)*

The *National Pollutant Discharge Elimination System (NPDES)* is an EPA program that establishes the effluent criteria for wastewater discharges to waters of the United States as defined by 33 CFR Part 328.

Approaches for Compliance

- *Obtain an NPDES permit and manage direct discharges in compliance with the permit:* The NPDES program requires permits for wastewater discharges to waters of the U.S. NPDES permit conditions are described in 40 CFR Part 136, "Test Procedures for the Analysis of Pollutants," and 40 CFR Part 445, "Landfills Point Source Category."
  - ⇒ *EPA resources:* To find the parties responsible for administering the NPDES permitting program in Indian country: *https://www.epa.gov/npdes/authorization-status-epas-construction-and-industrial-stormwater-programs*
  - ⇒ To determine whether you will need an NPDES Construction General Permit for your site: *https://www.epa.gov/sites/default/files/2017-07/documents/cgp_flow_chart_do_i_need_a_permit2.pdf*
- *Monitor, record, and report pollutant effluent concentrations*
- *Develop, implement, and maintain storm water pollution prevention plans and obtain necessary permits*
  - ⇒ EPA's landfill effluent guidelines would apply to C&D landfills in Indian country if the facility collects and discharges landfill-generated wastewater to surface waters of the U.S. *(40 CFR 445.20-23, guidelines available at https://www.epa.gov/eg/landfills-effluent-guidelines).*

2.3.3 Permit for Wetland Construction

Federal Requirement

Generally, Section 404 of the Clean Water Act provides:

- Section 404 requires a permit before dredged or fill material may be discharged into waters of the United States unless the activity is exempt from Section 404 regulation.
- No discharge of dredged or fill material may be permitted if: (1) a practicable alternative exists that is less damaging to the aquatic environment or (2) the nation's waters would be significantly degraded.
- Individual permits are required for potentially significant impacts and are reviewed by the U.S Army Corps of Engineers.
- For most discharges that will only have minimal adverse effects, a general permit may be suitable. General permits are issued on a nationwide, regional, or state basis for categories of activities.
- Tribes may have a role in Section 404 decisions, through:
  (1) Water Quality Certification at *https://www.epa.gov/cwa-401*
  (2) Program Assumption at *https://www.epa.gov/cwa404g*

Approaches for Compliance

- *Avoid siting in a water of the U.S. Confirm the landfill is not sited in a water of the U.S:* The initial siting and expansion of a C&D landfill should confirm that land designated for the landfill or where the excavated material will be placed is not defined as a wetland.
- *USACE or tribal permit for construction within waters of the U.S.:* EPA requires that locating a new landfill in wetlands should be done only where there are no less damaging practicable alternatives available. If a water is impacted by landfill construction or operation, authorization from the U.S. Army Corps of Engineers (USACE, the Corps) will be needed unless the tribe has assumed responsibility for this permitting activity. The Corps authorizes activities by issuing individual and general permits (*https://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/Obtain-a-Permit/*).

2.3.4 Oil Pollution Prevention

Federal Requirements

Generally, 40 CFR Part 112 provides:

Landfills with stored oil that meets the regulation's minimum conditions must develop and implement spill prevention, control, and countermeasure plans.

Key terms: EPA defines *navigable waters* as the waters of the United States, including the territorial seas, as defined by 33 CFR Part 328.

Approaches for Compliance

- *Determine if this regulation applies to the landfill:* This regulation applies to tribal C&D landfills if both of these conditions apply:
  1. The landfill stores diesel fuel for equipment operations or other oil (including animal fats and vegetable oils) in tanks or containers with an aggregate capacity greater than 1,320 gallons. *(Refer to 40 CFR 112.1(d)(2)(ii) and 40 CFR 112.2.)*
  2. A release from a tank or container could potentially reach navigable waters or other areas defined by 40 CFR 112.1(b).
- *Follow EPA guidance for Spill Prevention Control and Countermeasure (SPCC) Rule Applicability* at *https://www.epa.gov/sites/default/files/2014-04/documents/2_applicability_2014.pdf*.

2.4 Clean Air Act (CAA)

The CAA has no specific requirements for C&D landfills, but landfills must comply with the Act's requirements for the disposal of asbestos-containing materials.

The CAA requirements for disposal of asbestos in waste disposal sites are at 40 CFR 61.154 and are part of the National Emission Standards for Hazardous Air Pollutants (NESHAPs) (40 CFR Part 61).

Federal Requirements

Generally, 40 CFR 61.154 provides:

In general, active asbestos disposal sites must:

1. Have no visible emissions to the outside air from any active disposal site where asbestos-containing material has been deposited; or
   - be properly covered with non-asbestos-containing material every 24 hours; or
   - be covered with an effective dust suppression agent that binds dust and controls wind erosion; or
   - use an alternative emission control method that has been approved by the Administrator.
2. Deter access through a natural barrier or install warning signs and fencing.
3. Maintain operational records, including generator and transporter information plus location, depth, area, and amount on a diagram or map.
4. Comply with applicable closure requirements in 40 CFR 61.151.

Materials that may contain asbestos:

- Exterior walls
- Ceiling insulation
- Floor coverings
- Interior surfaces
- Electrical equipment
- Appliances

Approach for Compliance

- *Follow EPA guidelines:* EPA's summary of Clean Air Act Guidelines and Standards for Waste Management is at *https://www.epa.gov/stationary-sources-air-pollution/clean-air-act-guidelines-and-standards-waste-management*.
- *Optional best practice – Check the regulations for municipal landfills for ideas:* Tribal C&D landfills do not need to comply with the regulations for municipal landfills, but they are often a source of ideas for good management practices. Regulations developed under the CAA for municipal waste landfills include 40 CFR Part 60, Subparts Cf, WWW, XXX, and AAAA. *(Refer to Appendix C.)*

2.5 Toxic Substances Control Act (TSCA)

The Toxic Substances Control Act (TSCA) addresses the disposal of PCBs. The TSCA regulations at 40 CFR Part 761 are administered by EPA.

Federal Requirement

Generally, 40 CFR Part 761 provides:

C&D landfills must not accept PCB-contaminated electrical equipment and PCB items (defined in 40 CFR 761.1).

Key terms: *PCB-contaminated electrical equipment* means any electrical equipment including, but not limited to, transformers (including those used in railway locomotives and self-propelled cars), capacitors, circuit breakers, reclosers, voltage regulators, switches (including sectionalizers and motor starters), electromagnets, and cable, that contains PCBs at concentrations of ≥50 parts per million (ppm) and <500 ppm in the contaminating fluid. In the absence of liquids, electrical equipment is PCB-contaminated if it has PCBs at >10 micrograms per 100 square centimeters (µg/100 cm^2) and <100 µg/100 cm^2 as measured by a standard wipe test (as defined in 40 CFR 761.123) of a non-porous surface. *(Refer to 40 CFR 761.3.)*

Approach for Compliance

- *Do not accept most electrical equipment:* Tribes should consider any electrical equipment described in key terms on this page as containing PCBs and therefore not appropriate for disposal in a C&D landfill.

2.6 Occupational Safety and Health Administration (OSHA)

OSHA has developed regulations that may apply to workers at C&D landfills including the following:

29 CFR Part 1910, Subpart I	Personal Protective Equipment	(Section 2.6.1)
29 CFR Part 1910, Subpart O	Machinery and Machine Guarding	(Section 2.6.2)

2.6.1 Personal Protective Equipment

Federal Requirements

Generally, 29 CFR Part 1910, Subpart I, provides:

1. Landfill workers must wear hard hats if there is the potential for injury to the head from falling objects. (29 CFR 1910.135(a)(1))
2. Employers need to provide eye and face protection in some instances. (29 CFR 1910.133)
3. For certain landfilled wastes, workers may need to wear respirators. (29 CFR 1910.134(a)(2))

Approaches for Compliance

- *Provide hard hats for all construction and waste movement operations.*
- *Identify wastes or working conditions that would require respirators or eye/face protection and keep this equipment at the landfill.*

2.6.2 Machinery and Machine Guarding

Federal Requirements

Generally, 29 CFR Part 1910, Subpart O, provides:

1. Provide one or more methods of machine guarding to protect the operator and other employees in the machine area from hazards such as those created by point of operation, ingoing nip points, rotating parts, flying chips, and sparks.
2. Examples of guarding methods are barrier guards, two-hand tripping devices, electronic safety devices, etc. (29 CFR 1910.212(a)(1))

Approaches for Compliance

- *Install guards on all affected machinery:* From shredders to compactors, much of the equipment workers use at the landfill must include guards according to this OSHA standard.
- *Optional best practice – fire protection:* Although not required for C&D landfills, OSHA has developed a regulation requiring the adoption of fire protection that could serve as a good management practice depending on the type of wastes received at the landfill. *(Refer to 29 CFR 1910.39.)*

3 Tribal Regulatory Oversight of C&D Landfills

3.1 What Is a Tribal Regulatory Oversight Program and Why Do We Need One?

What It Is

Tribes who develop a C&D landfill may choose to assign the operation of the landfill to an organizational entity of the tribe. This organizational entity would also regulate any other C&D landfill operating within the tribe's jurisdiction. It is important for the tribe to also set up a way to ensure the operating entity is complying with federal and tribal laws and regulations. This is the *regulatory oversight program*.

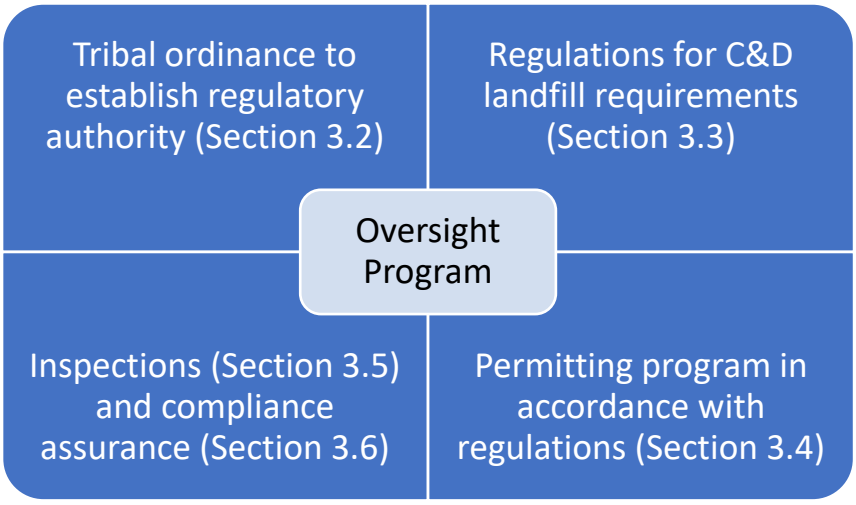
To set up this program, the tribe may wish to assign the oversight of the C&D landfill operator to a different entity within the tribe than the tribal entity who manages the C&D landfill. This *oversight entity* can be responsible for developing and implementing procedures to track and evaluate how the operating entity is running the landfill.

Why We Need It

An oversight program can be important in confirming that the entity responsible for operating the C&D landfill is performing all required duties, including, for example:

- Only "approved" C&D debris is going to the landfill.
- The security of the landfill is maintained.
- Proper operational plans and recordkeeping are maintained.
- C&D material is properly placed in the landfill.
- Operations and closure of the landfill comply with tribal and federal rules.

Best Practices for Elements of a Landfill Oversight Program



3.2 How Do We Establish the Authority to Regulate a C&D Landfill? – Tribal Ordinance

Tribes can establish the oversight entity's authority to regulate a C&D landfill by enacting a tribal ordinance (also called a tribal code or tribal law) based on the tribe's governmental authorities. This might be a stand-alone ordinance or part of a larger tribal waste code.

What to Include in the Ordinance

The tribal ordinance could explicitly give the oversight entity the authority to do the activities necessary to conduct a regulatory oversight program, such as:

- Write regulations for the landfill operator to implement federal and tribal waste laws.
- Set requirements for landfill siting, operation, and closure.
- Establish a permitting process to ensure operators meet requirements.
- Monitor and assure compliance with these regulations and permitting requirements.

Resources for Creating an Ordinance

- EPA's *Developing Tribal Waste Management Codes and Ordinances* webpage *(https://www.epa.gov/tribal-lands/developing-tribal-waste-management-codes-and-ordinances)* includes guidance on developing an ordinance and links to sample tribal codes.
- *Tribal Waste Journal* #12, "Developing and Implementing Codes and Ordinances on Tribal Land," includes tribal case studies and other resources *(https://www.epa.gov/system/files/documents/2021-10/twj-12-final-25oct2021-508.pdf)*.
- *Refer to the example solid waste management ordinance in Appendix E.*

3.3 Why Write Regulations for Landfill Requirements?

EPA sets the minimum C&D landfill operating standards in 40 CFR Part 257. As detailed throughout this guide, several aspects of C&D landfill operations are not covered by the federal minimum standards.

Tribes may choose to write rules and regulations that require implementation of additional standards for siting, operations, and closure to ensure that landfill operations comport with tribal values of environmental stewardship.

- 40 CFR Parts 258 and 264 contain examples of regulations tribes can consider in addition to those in 40 CFR Part 257.
- State regulations *(refer to Table D-1)* can also be considered for examples of more region-relevant regulations.

Examples of Requirements in Tribal Regulations

- Which, if any, of the siting considerations discussed in Section 1.3 must be considered before issuing a permit or during landfill siting
- Whether to require formal plans—such as an operations plan, waste acceptance plan, closure/post-closure plan—and the contents of those plans
- Whether to require periodic reporting of landfill activities to the oversight entity and the contents of these reports
- Which, if any, of the closure and post-closure best practices discussed in Section 1.9 and Appendix D must be implemented
- How and when notifications about landfill activities are to be made

3.4 How Can Permitting Support the Regulatory Oversight Program?

The regulations discussed in Section 3.3 form the basis for tribes to prepare a C&D landfill permit that identifies the regulations and other requirements the landfill will be required to address.

Benefits of a Permitting Program

- Permits with the proper requirements minimize the odds of the landfill operations harming the natural environment or the health of the people living or working near the landfill.
- A permit will provide the elements necessary for an inspection program.
- Permits can help the tribe identify problems in landfill operations because the permit can define what a facility needs to do to avoid enforcement actions.
- Permits can provide historical records of C&D landfill operators and management practices within the reservation.

Examples of Permitting Programs

Guidance on how to develop a permitting process created for U.S. states can also be useful to tribes:

- EPA guidance for states on hazardous waste permitting (*https://www.epa.gov/hwpermitting*) can serve as a model for developing a permitting process because the tribal government would have the same role as the state government in this guidance.
- 40 CFR Part 270 contains the federal regulations for permitting of waste management facilities. It can serve as an example of how tribes could adopt a similar permitting program.
- *Refer to the example permit language on this page and in the solid waste management ordinance in Appendix E.*

Excerpt from the Solid Waste Management Code of the Lac du Flambeau Band of Lake Superior Chippewa

24.104 Permitting of Solid Waste disposal facilities

(4) Construction and Demolition Site (C/D). The Tribal Natural Resource Department may issue a permit (after Tribal Council approval) for a construction and demolition site if the site meets 40 CFR Part 257 and is considered environmentally safe by the Tribal Natural Resource Department. An environmental assessment must be conducted prior to application, at the applicant's expense. The permit application shall be completed by the applicant and shall include legal description of the site, soil type, depth to ground water, proximity to wetlands, topography, and plans for operation and closure of the site (including remediation of pollution if present). Any existing demolition sites will need to comply and person(s) wishing to utilize such sites need a permit to dispose of such wastes at site.

3.5 What Are Best Practices for Inspections?

Purpose of Inspections

The landfill oversight program routinely inspects landfill operations and closure/post-closure to confirm that they comply with federal and tribal regulations, including:

- No unauthorized C&D debris is being placed in the landfill.
- Debris is being properly placed in the landfill with any required interim cover material.
- The landfill is secure from unwanted disposal.
- Closure/post-closure maintenance is ensuring that the cover continues to contain the waste.

Routine inspecting is achieved by reviewing submitted landfill operating reports, reviewing operations, and, if possible, remote monitoring.

Best Practices for Onsite Inspections

The oversight entity should develop an inspection checklist *(refer to the sample checklist on page 3-7)* and a plan for how often inspections should take place.

Onsite inspectors should have the following resources with them during the inspection, either on an electronic device or on a clipboard:

- An inspection checklist
- Guidance on what to look for

Completed inspection checklists should be maintained for a set period of time (typically at least 5 years, or until post-closure is complete).

Example Inspection Items

- Barrier system
- Security system
- Types of debris accepted
- Debris placement
- Interim cover

Best Practices for Remote Monitoring

The best-operated landfills have surveillance systems to confirm that only approved disposal is taking place.

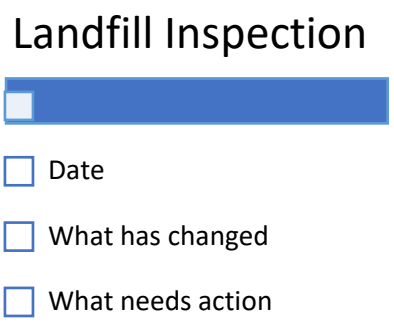
The surveillance system should focus on the facility entrance, the landfill, and the barrier systems preventing unwanted entry to the landfill.

Inspection Checklist

It is helpful to have a checklist of information to collect when conducting landfill inspections.

Information collection should enable you to:

- Tell what has changed since the last inspection
- Identify potential problems or changing conditions that need to be addressed.



Sample Inspection Checklist

Initial inspections: A comprehensive initial inspection when the landfill starts operation helps to set a baseline of plans, policies, and site conditions for monitoring future changes that might require action.

The sample checklist that begins on the next page is for an initial landfill inspection. It can be adapted for a tribe's specific location and landfill laws, plans, and policies.

Regular oversight inspections: For regular oversight inspections, it may be useful to create a shorter version of the initial checklist that does not include the information you only need to gather once at the start.

- For example, if the tribe only has one C&D landfill, you will not need to record its address, latitude, and longitude every time you inspect it, so the regular oversight checklist will not need to have Question A.2 from the sample initial checklist.

Example Initial C&D Landfill Site Visit Checklist

A. Basic Facility Information

A.1. Facility Name:

A.2. Facility Mailing and Street Address *(and longitude/latitude if possible)*:

A.3. Facility Contact and Manager *(name, address, email, telephone, fax)*:

A.4. Tribal Environmental Contact Person *(name, address, email, telephone, fax)*:

A.5. Facility Description/Diagram *(Please provide a sketch or attached map copy of the facility with compass directions and scale if possible. Please show the cells if waste is segregated.)*

A.6. What is the total disposal capacity of the landfill and how much has been disposed of at the landfill?

A.6.a. How long is the landfill's remaining service life?

A.7. Is there a tribal environmental permit (or equivalent) for the landfill?

A.7.a.If so, please provide a copy of the document if possible.

B. Waste Stream

B.1. Describe the specific C&D debris streams & amount per day disposed of at the landfill. The waste streams can include but are not limited to:

- concrete
- wood (from buildings)
- asphalt (from roads and roofing shingles)
- gypsum (the main component of drywall)
- metals
- bricks
- glass
- plastics
- salvaged building components (doors, windows, and plumbing fixtures)
- trees, stumps, earth, and rock from clearing sites

B.2. Are any of the following materials disposed of in the landfill (please specify): paints, paint thinners, materials containing lead-based paint, adhesives and glues, roofing tar ("black jack"), fuels and oils, pool chemicals, or cleaning chemicals?

B.2.a. If yes, how much?

B.2.b. If they are prohibited, please indicate how they are screened:

B.3. Are the waste streams separated?

B.3.a. If yes, please indicate which streams are separated and explain how they are separated. Please indicate where the different streams are located on the facility diagram/map.

C. Floodplain

C.1. Is the facility located in a floodplain?

CI.1.a. If yes, does the facility have a flood control plan to prevent washouts and prevent hazards to human life, wildlife, and land or water resources? *(Please describe or attach the plan.)*

D. Endangered Species

D.1. Are there any endangered species or habitat that could be destroyed or adversely affected by the facility?

D.1.a. If yes, please explain the facility's endangered species protection plan *(or attach a copy)*:

E. Surface Water

E.1. Where are the closest waters of the United States?

E.2. Are there any wetlands close to the landfill?

E.2.a. If yes, please specify direction and distance:

E.3. Does the facility cause a discharge of pollutants or dredged materials into the waters of the United States that is in violation of the Clean Water Act?

E.3.a. If yes, please indicate how:

E.4. Is there a surface water control system?

V.4.a. If yes, please describe the controls that are in place to keep surface water from being contaminated:

F. Groundwater

F.1. Is there an underground (present or future) drinking water source underneath or close to the facility?

F.1.a. If yes, how close is the drinking water source?

F.2. Is the groundwater at the site being monitored?

F.2.a. If yes, how is it being monitored?

F.2.b. Please provide a copy of the groundwater monitoring plan.

G. Disease Vectors

G.1. What practices are in place to minimize onsite population of disease vectors?

G.2. Are sewage sludge and septic tank pumping disposed of at the site?

G.2.a. If yes, what controls are in place to reduce the pathogens?

H. Air

H.1. Is the facility conducting open burning?

H.2. Does the facility have an asbestos disposal area?

H.2.a. If yes, please describe and provide a copy of its compliance status with the Clean Air Act.

I. Safety

I.1. Is there a site safety plan?

I.2. Are the workers trained for health and safety?

I.3. What fire prevention practices are implemented at the facility?

I.4. Is there a fire prevention plan?

I.4.a. What does the facility do in case of a fire?

I.5. Is the facility monitoring for explosive gases?

I.6. Is there a gas collection system/treatment system at the facility?

I.6.a. If yes, please describe:

I.7. Has anyone smelled rotten eggs (hydrogen sulfide) at the site or off site?

I.7.a. If yes, what was done to address the odor?

I.8. Is there a plan to control odors?

J. Landfill Operations/Maintenance

J.1. Are the workers properly trained to operate/maintain the landfill?

J.1.a. If yes, please describe the training:

J.2. How is the C&D debris measured as it enters the facility (weight or volume)?

J.3. How many tons of C&D debris does the landfill accept per day?

J.4. Is the C&D debris separated and disposed into monofill cells?

J.4.a. If yes, please describe separation procedures:

J.5. Is there a person who screens the C&D debris for municipal solid waste, hazardous substances, and hazardous waste as the waste is brought to the facility?

J.5.a. If yes, explain the screening procedures:

J.5.b. Please describe how the municipal solid waste, hazardous substances, and hazardous waste are separated, stored, and sent off site for proper disposal:

J.6. Is there screening for hot loads that can cause a fire?

J.7. How is the C&D debris disposed on a daily basis?

J.7.a. Is there one working face?

J.8. Is there daily cover for the C&D debris?

J.8.a. What type of daily cover is used?

J.8.b. Is the daily cover effective in controlling disease vectors, odors, fire, and surface water? Please explain:

J.9. What type of equipment is used at the landfill?

J.9.a. Is the equipment maintained properly?

J.10. Is there a closure and post-closure plan for the Landfill?

J.10.a. If yes, please describe:

K. Landfill Design

K.1. Is there a liner beneath the landfill?

K.1.a. If yes, please describe:

K.2. Is there a closed portion of the landfill?

K.2.a. If yes, please describe the cover system:

K.3. Is there a leachate treatment and collection system?

K.3.a. If yes, please describe:

K.4. Is there a gas collection and treatment system?

XI.4.a. If yes, please describe:

L. Community Issues & Security

L.1. How close and where are the closest residents to the landfill?

L.2. What kinds of complaints and how many complaints are taken about the landfill (for example, per month, quarter, or year)?

L.3. Are the community complaints and concerns about the landfill being addressed adequately?

L.4. Does the landfill have a community representative?

L.4.a. If yes, please provide name and contact information:

L.5. Does the landfill have a problem with scavengers or vandals?

L.6. What kind of security against trespassers and vandalism is provided at the landfill?

M. Recycling

M.1. Are there any recycling activities going on at the C&D landfill facility?

M.1.a. If yes, please describe these activities:

M.2. Is the tribe interested in recycling C&D debris it currently is disposing?

M.2.a. If yes, please describe needs to make recycling more effective or successful:

3.6 What Compliance Assurance Actions Are Needed to Ensure Sustainable Compliance?

The form of a tribal compliance assurance program for C&D landfill permit compliance will depend on the culture of the tribe and the relationships among the tribal organization entities.

Best Practices for a Permit Enforcement Program

- *Align with illegal dumping enforcement mechanisms:* A tribe's solid waste ordinance that prohibits illegal dumping and includes penalty schedules should also apply to C&D illegal dumping and noncompliant C&D landfills that have turned into illegal dumps.
- *Use a graded series of enforcement actions:* Depending on the severity or duration of the noncompliance, enforcement actions can range from a simple notification to the C&D landfill operator, to a more widely publicized communication on the noncompliance, to the removal and replacement of the landfill operator.
- *Build in consideration of human error and intent:* The level of enforcement action can also be driven by whether the noncompliance was knowingly or unknowingly done and whether the landfill operator had a record of repeat violations.
- *Refer to the example enforcement language in the solid waste management ordinance in Appendix E.*

Appendix A – Definitions

Term	Definition
Base flood	A flood that has a 1% or greater chance of recurring in any year. *(Executive Order 11988, May 24, 1977, 42 FR 26951)*
Boundary	The outermost perimeter of the solid waste (projected in the horizontal plane) as it would exist at completion of the C&D landfill.
Climate resilience	A capability to anticipate, prepare for, respond to, and recover from significant multi-hazard threats with minimum damage to social well-being, the economy, and the environment.
Construction and demolition (C&D) landfill	A C&D landfill is a solid waste disposal facility that receives construction and demolition waste and does not receive hazardous waste (defined in 40 CFR 261.3) or industrial solid waste (defined in 40 CFR 258.2). A C&D landfill typically receives any one or more of the following types of solid wastes: Roadwork material, excavated material, demolition waste, construction/renovation waste, and site clearance waste. *(40 CFR 257.2)*
Destruction or adverse modification	A direct or indirect alteration of critical habitat which appreciably diminishes the likelihood of the survival and recovery of threatened or endangered species using that habitat.
Detection, monitoring, and control program	A program to detect unwanted contaminants in air or water through sampling and analysis, monitor the levels of contaminants over time, and implement any necessary control actions to prevent additional release of contaminants and/or decrease the observed contamination.
Disease vectors	Birds, flies, and rodents that can transmit diseases.
Endangered or threatened species	Any species listed under the Endangered Species Act.
Financial assurance	The set of financial instruments and mechanisms that a tribe uses to demonstrate it will be able to pay for closing the landfill sometime in the future.
Floodplain	The lowland and relatively flat areas adjoining inland and coastal waters including flood-prone areas of offshore islands, including at a minimum, that area subject to a 1% or greater chance of flooding in any given year. *(Executive Order 11988, May 24, 1977, 42 FR 26951)*

Term	Definition
Food-chain crops	Tobacco, crops grown for human consumption, and animal feed for animals whose products are consumed by humans.
Friable	Term used to describe material that can be crumbled or crushed with hand pressure and is therefore likely to emit fibers. It is frequently used to describe asbestos-containing materials as friable or **nonfriable**, which determines the applicable regulations. Friable asbestos-containing materials create an unsafe breathing environment and require special handling procedures.
Hydrogen sulfide (H_2S)	An extremely toxic gas with a low odor threshold and a pungent (rotten egg) odor. This gas also is a flammability hazard, with a flammable range of 4% (lower explosive limit) to 45% (upper explosive limit). The vapor density of H_2S is greater than air, which means it may accumulate in low-lying areas and may travel a considerable distance to an ignition source.
Indian country	All lands within the exterior boundaries of federally recognized Indian reservations and tribally held trust lands, whether located inside or outside reservation boundaries.
Landfill wastewater	All wastewater associated with, or produced by, landfilling activities except for sanitary wastewater, non-contaminated storm water, contaminated groundwater, and wastewater from recovery pumping wells. **Leachate** is an example of landfill wastewater. *(Refer to 10 CFR 445.2(f) for a partial list of types of landfill wastewater.)*
Leachate	Liquid that has passed through or emerged from solid waste and contains materials from those wastes. An example of **landfill wastewater**.
Methane (CH_4)	The primary component of landfill gas. Methane is considered an asphyxiant at extremely high concentrations and can displace oxygen in the blood. The Occupational Safety and Health Administration has no permissible exposure limit for methane, but the National Institute for Occupational Safety and Health's maximum recommended safe methane concentration for workers during an 8-hour period is 1,000 parts per million (ppm) (0.1%).
National Pollutant Discharge Elimination System (NPDES)	An EPA program that establishes the effluent criteria for wastewater discharges to waters of the United States as defined by 33 CFR Part 328.
Navigable waters	Waters of the United States, including the territorial seas, as defined by 33 CFR Part 328.

Term	Definition
Nonfriable	Term used to describe material that cannot be crumbled or crushed with hand pressure and is therefore not likely to emit fibers. It is frequently used to describe asbestos-containing materials as **friable** or nonfriable, which determines the applicable regulations. Nonfriable asbestos-containing materials should present no health and safety problems as long as they are left alone and maintained in good condition
Nonpoint source assessment report	Report describing existing and potential nonpoint-source-related water quality problems on tribal lands, using existing water quality data. The report identifies the nature, extent, and effect of **nonpoint source pollution** and the causes of such pollution. It should also describe existing programs and methods used for controlling the pollution. Tribes receiving grants under Section 319(h) of the Clean Water Act must write this report and have it approved by the appropriate EPA Region.
Nonpoint source management plan	Plan describing the management program that the tribe intends to implement to correct and/or prevent the existing and potential nonpoint source problems identified in the **nonpoint source assessment report** over the 4 fiscal years following submission of the plan. The management program must be approved by the appropriate EPA Region.
Nonpoint source pollution	Pollution generally resulting from land runoff, precipitation, atmospheric deposition, drainage, seepage, or hydrologic modification. As the runoff moves, it picks up and carries away natural and human-made pollutants, finally depositing them into lakes, rivers, wetlands, coastal waters, and groundwaters.
Oversight entity	The entity authorized by the tribe to oversee the C&D landfill. This oversight entity can be responsible for developing and implementing procedures to track and evaluate how the operating entity is running the landfill.

Term	Definition
PCB-contaminated electrical equipment	Any electrical equipment including, but not limited to, transformers (including those used in railway locomotives and self-propelled cars), capacitors, circuit breakers, reclosers, voltage regulators, switches (including sectionalizers and motor starters), electromagnets, and cable, that contains PCBs at concentrations of ≥50 ppm and <500 ppm in the contaminating fluid. In the absence of liquids, electrical equipment is PCB-contaminated if it has PCBs at >10 µg/100 cm^2 and <100 µg/100 cm^2 as measured by a standard wipe test (as defined in 40 CFR 761.123) of a non-porous surface. *(40 CFR 761.3)*
Point source	Any single identifiable source of pollution from which pollutants are discharged, such as pipes or artificial ditches.
Point source pollution	Pollution discharged from a **point source**.
Publicly owned treatment works (POTW)	Wastewater treatment plant that receives wastewaters from domestic or industrial sources and treats the wastewaters to less harmful byproducts.
Putrescible wastes	Solid waste which contains organic matter capable of being decomposed by microorganisms and of such a character and proportion as to be capable of attracting or providing food for birds. *(40 CFR 257.3-8(e)(7))*
Regulatory oversight program	Program implemented by the oversight entity to ensure the landfill operator is complying with federal and tribal laws and regulations.
Residential lead-based paint (LBP) waste	Waste containing lead-based paint, which is generated as a result of activities such as abatement, rehabilitation, renovation, and remodeling in homes and other residences. Residential LBP waste includes lead-based paint debris, chips, dust, and sludges.
Resilience	A capability to anticipate, prepare for, respond to, and recover from significant multi-hazard threats with minimum damage to social well-being, the economy, and the environment.
Very Small Quantity Generator (VSQG)	Entity generating 100 kilograms or less per month of hazardous waste and 1 kilogram or less per month of acutely hazardous waste. *(40 CFR 260.10)*
Zero waste	A strategy to avoid generation of waste through redesigning how materials flow through society. The goal of the movement is to avoid sending trash to landfills, incinerators, or the ocean.

Appendix B – Resources

This section includes references associated with each of the potential appliable environmental laws and media and other relevant areas. The specific topics covered include:

- C&D Debris Reduction and Recycling *(Section B.1)*
- Clean Air Act and Air Emissions *(Section B.2)*
- Clean Water Act and Water Quality *(Section B.3)*
- Climate Change/Resilience *(Section B.4)*
- Endangered Species *(Section B.5)*
- OSHA and Health and Safety *(Section B.6)*
- Resource Conservation and Recovery Act and Waste Management *(Section B.7)*
- Roles and Policy *(Section B.8)*
- Siting *(Section B.9)*
- State Resources (as examples of management practices) *(Section B.10)*
- Toxic Substances Control Act of 1976 *(Section B.11)*

B.1 C&D Debris Reduction, Reuse, and Recycling

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EPA *Disaster Debris Recovery Tool* to find C&D debris recyclers: https://www.epa.gov/large-scale-residential-demolition/disaster-debris-recovery-tool (last checked 08/14/2023)

EPA *Managing and Transforming Waste Streams: A Tool for Communities*: https://www.epa.gov/transforming-waste-tool (last checked 08/14/2023)

EPA webpage: *Organizations Working to Reduce the Disposal of Construction and Demolition (C&D) Materials*: https://www.epa.gov/smm/organizations-working-reduce-disposal-construction-and-demolition-cd-materials (last checked 08/14/2023)

EPA *Residential Demolition Bid Specification Development Tool*: https://www.epa.gov/large-scale-residential-demolition/road-reuse-residential-demolition-bid-specification-development (last checked 08/14/2023)

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Reuse Wood. Directory for wood reuse and recycling: https://reusewood.org/ (last checked 08/14/2023)

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40 CFR Part 136. *Code of Federal Regulations*, Title 40, "Protection of Environment," Part 136, "Landfills Point Source Category."

40 CFR Part 445. *Code of Federal Regulations*, Title 40, "Protection of Environment," Part 445, "Test Procedures for the Analysis of Pollutants."

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EPA webpage: *Tribal Nonpoint Source Program* [grants and technical assistance to support Tribal nonpoint source pollution programs under CWA Section 319]. https://www.epa.gov/nps/Tribal-nonpoint-source-program (last checked 02/23/2023).

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B.7.1 Regulations

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40 CFR Part 258. *Code of Federal Regulations*, Title 40, "Protection of Environment," Part 258, "Criteria for Municipal Solid Waste Landfills."

40 CFR Part 261. *Code of Federal Regulations*, Title 40, "Protection of Environment," Part 261, "Identification and Listing of Hazardous Waste."

40 CFR Part 264. *Code of Federal Regulations*, Title 40, "Protection of Environment," Part 264, "Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities."

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Kansas Department of Health and Environment solid waste program: https://www.kdhe.ks.gov/596/Solid-Waste-Program; Construction and Demolition Wastes and Clean Rubble technical guidance document: https://www.kdhe.ks.gov/DocumentCenter/View/5450/Construction-and-Demolition-Wastes-and-Clean-Rubble-SW-1994-G2-PDF; Waste Screening and General Operations at Construction & Demolition Landfills technical guidance document: https://www.kdhe.ks.gov/DocumentCenter/View/5444/Waste-Screening-and-General-Operations-at-Construction-and-Demolition-Landfills-G---PDF?bidId=; solid waste statutes and regulations: https://www.kdhe.ks.gov/660/Statutes-Regulations (last checked 04/11/2023)

Michigan Department of Environment, Great Lakes, and Energy solid waste programs: https://www.michigan.gov/egle/0,9429,7-135-3312_4123---,00.html; solid waste statutes and rules: https://www.michigan.gov/egle/0,9429,7-135-3312_4123-9861--,00.html (last checked 07/20/2023)

Minnesota Pollution Control Agency waste planning and recycling: https://www.pca.state.mn.us/air-water-land-climate/waste-planning-and-recycling; permits and regulations for waste and recycling: https://www.pca.state.mn.us/business-with-us/waste-and-recycling; materials and waste management: https://www.pca.state.mn.us/business-with-us/materials-and-waste-management (last checked 02/23/2023)

Ohio Environmental Protection Agency Construction and Demolition Debris website: https://www.epa.ohio.gov/dmwm/Home/C-DD; construction and demolition debris (C&DD) disposal: https://epa.ohio.gov/divisions-and-offices/materials-and-waste-management/dmwm-programs/construction-and-demolition-debris; Ohio Laws & Administrative Rules for C&D debris: https://codes.ohio.gov/ohio-revised-code/chapter-3714 (last checked 02/23/2023)

Virginia Department of Environmental Quality solid waste facility requirements and guidance: https://www.deq.virginia.gov/land-waste/solid-hazardous-waste/solid-waste/solid-waste-facility-requirements-and-guidance (last checked 02/23/2023)

Wisconsin Department of Natural Resources landfills website: https://dnr.wisconsin.gov/topic/Landfills; solid waste rules and statutes: https://dnr.wisconsin.gov/topic/Waste/Laws.html (last checked 07/20/2023)

B.11 Toxic Substances Control Act of 1976 (TSCA)

40 CFR Part 761. *Code of Federal Regulations*, Title 40, "Protection of Environment," Part 761, "Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions."

Appendix C – Additional Guidance

This section provides additional guidance on operating the landfill in compliance with applicable laws and regulations and in a manner that is protective of human health and the environment.

The information in this section follows the order the same topics are discussed in Sections 1 and 2 of this guide.

C.1 RCRA

This section has supplemental material for ***Section 2.2*** of this guide.

All construction and demolition (C&D) landfills located in Indian country are subject to enforcement in accordance with applicable provisions of the federal Resource Conservation and Recovery Act (RCRA).

C.1.1 Hazardous Waste

C.1.1.1 Hazardous Wastes Unacceptable in a C&D Landfill

This section has supplemental material for ***Section 1.7*** of this guide.

One of the most important considerations in determining whether a C&D landfill should be built and how it needs to be operated is the waste types that will be placed in the landfill.

Under RCRA, hazardous waste constituents, including those listed here, should not be accepted for disposal at C&D landfills *(40 CFR 261.3)*:

Examples of Hazardous Waste

- Ignitable wastes, such as paint thinners, paints, paint, and varnish strippers, epoxy resins, adhesive degreasers, and spent cleaning solvents
- Corrosive wastes, including acids pH <2 or bases pH >12.5, such as rust removers, cleaning fluids, and battery acids
- Reactive wastes (can explode), such as cyanide, plating waste, bleaches, and waste oxidizers
- Certain concentrations of toxic wastes, such as materials containing metals (such as mercury, cadmium, or lead) or solvents (such as carbon tetrachloride or methyl ethyl ketone)
- Spent solvents listed under RCRA (hazardous waste codes F001, F002, F003, F004, & F005).
- Discarded commercial chemical products containing listed chemicals under RCRA (hazardous waste codes P & U).
- Mercury-containing wastes, such as fluorescent bulbs, broken mercury switches, batteries, or thermostats
- Lead-based paints
- Used oil and hydraulic fluid
- Soil contaminated with toxic or hazardous pollutants
- PCBs (polychlorinated biphenyls)
- Asbestos-containing material

C.1.1.2 Wastes that Need Screening for Hazardous Constituents

To help tribes model and develop screening lists for their C&D landfills, this section gives examples of items often brought to C&D landfills that need to be screened for possible hazardous constituents before being accepted.

1. **Electrical items** – U.S. Environmental Protection Agency (EPA) policy recommends against disposing of individual small PCB capacitors, small PCB capacitors contained in fluorescent light ballasts, or untested fluorescent light ballast potting compounds as municipal solid waste.

   ⇒ Used, nonleaking ballasts may be recycled even if they contain PCBs. Recycling reclaims valuable metals, reduces the volume of solid waste sent to landfills, and prevents toxic substances from being burned in an incinerator or buried in a landfill.

   ⇒ If the items cannot be recycled, EPA encourages disposal of non-leaking fluorescent light ballasts and small PCB capacitors at a Toxic Substances Control Act (TSCA)-approved facility. These facilities include recyclers, landfills, and incinerators that have EPA approvals to dispose of PCBs.

2. **Asbestos-Containing Materials** – The primary concern about asbestos-containing material is when it exists in friable form. *Friable* means that the material can be crumbled or crushed with hand pressure and is therefore likely to emit fibers. Asbestos-containing material existing in nonfriable form and in good (undamaged) condition should present no problems as long as it is left alone and maintained in good condition.

   ⇒ *Relation to demolition:* In addition to considering disposal options for asbestos-containing materials, Tribes should be aware that they need to notify applicable tribal agencies and/or EPA Regional Offices before all demolitions, or before renovations of buildings that contain a certain threshold amount of asbestos, per 40 CFR 61.145, the standard for demolition and renovation.

   EPA is responsible for verifying compliance with activities related to operators and owners of demolition activity. EPA inspectors may coordinate enforcement with credentialed /trained tribal staff as appropriate. Owners and operators must:

   - Thoroughly inspect the affected facility for the presence of asbestos before starting the demolition or renovation operation.
   - Submit to EPA a notification of demolition and renovation before starting the demolition or renovation operation
   - Comply with all applicable procedures for asbestos emission control.

   ⇒ *Where asbestos is found:* The following are examples of places in buildings where asbestos might be found. Keep in mind that this list is not exhaustive, and that the age of buildings is not a valid way to determine the presence of asbestos.

- **Exterior Surfaces** – exterior walls and closed decks built with fire retardant sheeting that looks like gray cardboard, cement asbestos board (usually light gray in color) used as sheets for straight and lap siding or shaped to substitute for wood shingles, roof felt or window putty
- **Wall and Ceiling Insulation** – loose blown-in (e.g., Zonolite) and batt insulation (especially in homes built or remodeled between 1930 and 1950) found where interior spaces need to be protected from outside temperatures, such as outside walls and floor or roof/attic spaces between structural joists and rafters
- **Floor Coverings** – sheet vinyl (including the backing or underlayment), vinyl tile, and adhesive
- **Furnaces, Boilers, Heaters, and Piping** – insulation blankets (the outside covering or shell), door gaskets, duct insulation, and tape at duct connections of furnaces and boilers; furnaces with asbestos-containing insulation and cement (the material is white or gray in color and resembles plaster) generally installed in older homes between 1920 and 1972; on and inside furnace ducts; insulation or asbestos paper (which looks like corrugated cardboard) around steam and water pipes, particularly at elbows, tees, and valves; cement sheets, millboard, and paper frequently used as thermal insulation for protection of floors and walls around woodstoves
- **Interior Surfaces** – sprayed-on or troweled-on surface material on wall and ceiling surfaces acoustical tiles, textured paint, or heat reflectors (woodstoves)
- **Electrical Equipment** – materials in older lamp socket collars, electric switch and receptacle boxes, liners for recessed lighting, backing for switchboard panels, fuse boxes, and old-fashioned “knob & tube” wiring.
- **Built-in Equipment** – oven or dishwasher (in cabinet) units were often wrapped in insulation blankets or sheets until the mid-1970s, water heaters, range hoods, or clothes dryers
- **Appliances** – parts with asbestos-containing materials in refrigerators, freezers, portable dishwashers, or ovens

3. **Mercury-Containing Devices** – Environmental exposures to mercury, particularly in its highly toxic organic form, methylmercury, can result in harm to human beings and wildlife. Mercury-containing devices that can be found in demolished structures include the following:

    - Fluorescent lamps
    - Mercury lamps
    - Metal halide lamps
    - High pressure sodium lamps
    - Thermostats and thermometers
    - Mercury switches and relays

- Neon lamps
- Float control switches

4. **Chromated Copper Arsenate (CCA or Arsenic)-Treated Wood** – Do not dispose of CCA-treated wood in places where it may come into direct or indirect contact with drinking water. Studies conducted by the University of Florida indicated the CCA-treated wood has the potential to contaminate groundwater when disposed of in unlined landfills. Studies are ongoing, and Florida is considering banning CCA treated wood from unlined landfills. Likewise, CCA-treated wood should not be used to build tribal sweat houses or boats for children or put in the mouth of a tribal member in the traditional process of using wood strips to make baskets.

   ⇒ For additional information, refer to EPA's CCA webpage *(https://www.epa.gov/ingredients-used-pesticide-products/chromated-arsenicals-cca)*.

   ⇒ Random tests conducted by the Environmental Working Group in Washington, DC, concluded that the amount of arsenic found on the surface of pressure-treated lumber used widely for decks and play sets exceeds safe levels even after years of wear. On February 12, 2002, lumber companies, in an agreement with EPA, said that after December 2003 they no longer would use CCA, a powerful pesticide, to protect lumber from decay and insect damage in residential settings. As part of the agreement, EPA said it did not believe there was any reason for people to replace the CCA-treated wood, which is used in an estimated 90% of outdoor wooden structures such as decks, play sets, and picnic tables. CCA-treated wood may primarily be disposed of in C&D landfills. However, state or local laws may be stricter than federal requirements.

5. **Lead and Lead Paint –** According to the EPA, approximately three-quarters of the nation's houses built before 1978 (approximately 64 million dwellings) contain some *lead-based paint (LBP)*, although lead-based paint is not used in new residential construction. Lead is also a common component in C&D debris, found in roofs, cornices, tank linings, and electrical conduits. Ongoing exposures to lead in the environment present a health risk to too many people nationwide. Very low levels of lead in children's blood have been linked to adverse effects on intellect, concentration, and academic achievement *(Refer to EPA's Fact Sheet: Draft Strategy to Reduce Lead Exposures and Disparities in U.S. Communities, https://www.epa.gov/system/files/documents/2021-11/final_508_fact-sheet-draft-strategy-to-reduce-lead-exposutre-and-disparities-in-u.s.-communities-november-2021.pdf)*. These materials may leach lead into the environment if not properly managed. Soft solder, an alloy of lead and tin, is used in plumbing for soldering joints, and has been banned from many uses in the United States.

   ⇒ EPA defines *residential LBP waste* as waste containing lead-based paint, which is generated as a result of activities such as abatement, rehabilitation, renovation and

remodeling in homes and other residences. *Residential lead-based paint waste* includes lead-based paint debris, chips, dust, and sludges.

⇒ Due to the high cost of LBP disposal, and to help accelerate its removal from residences, EPA allows the disposal of *residential* LBP debris in C&D landfills. See definitions of a municipal solid waste landfill unit in 40 CFR 257.2 and 40 CFR 258.2.

⇒ Landfill workers need to be protected from the hazards of working with lead paint. The Occupational Health and Safety Administration (OSHA) webpage on controlling and evaluating employee exposure to lead *(https://www.osha.gov/lead/evaluating-controlling-exposure)* has information and links to OSHA fact sheets. The National Institute for Occupational Safety and Health (NIOSH) report, *Protecting Workers Exposed to Lead-Based Paint Hazards*, summarizes best practices for controlling worker exposure and sampling for lead in the environment *(https://www.cdc.gov/niosh/docs/98-112/)*.

⇒ *What kinds of lead-based paint waste can C&D landfills accept?*

Can Accept	Cannot Accept
Generated from a residence because of abatements, rehabilitation, renovations, or remodeling	Generated because of demolition or deconstruction of a residence or is a waste generated by the renovation or remodeling of a commercial building

C.1.2 Surface Water Protection Requirements

This section has supplemental material for ***Section 2.2.3*** of this guide.

Surface Water Regulations at 40 CFR 257.3-3 require compliance with certain provisions of the Clean Water Act (CWA):

1. **CWA Section 402:** A facility shall not cause a discharge of pollutants into waters of the United States that is in violation of the requirements of the National Pollutant Discharge Elimination System (NPDES) under section 402 of the Clean Water Act, as amended.
2. **CWA Section 404:** A facility shall not cause a discharge of dredged material or fill material to waters of the United States that is in violation of the requirements under section 404 of the Clean Water Act, as amended.
3. **CWA Section 208:** A facility or practice shall not cause nonpoint source pollution of waters of the United States that violates applicable legal requirements implementing an areawide or statewide water quality management plan that has been approved by the EPA Administrator under section 208 of the Clean Water Act, as amended.

C.1.3 Groundwater Protection Requirements

C.1.3.1 Compliance Management Practices for Groundwater Protection

This section has supplemental material for ***Section 2.2.4*** of this guide.

C&D landfill owner/operators may implement several practices to protect groundwater under RCRA. These practices can be implemented individually or in combination depending on site-specific conditions:

1. **Siting the Landfill** – Tribes may comply with the federal requirements by locating their C&D landfill in an area that does not present a threat to their underground drinking water resources.

   ⇒ *Tribal source water protection program:* The location of the tribe's present and future underground drinking water sources may be found through the tribes' source water protection program. The source water protection program is authorized under the amendments to the Safe Drinking Water Act and outlines source water protection plans to protect public health through protection of drinking water sources. For more information about EPA's source water protection program in Indian country, please visit *https://www.epa.gov/tribalwater*.

   ⇒ *State regulations as models:* Wisconsin and other states have location restrictions that do not allow C&D landfills within 1,200 feet of any public or private water supply well. Minnesota does not allow C&D landfills in areas with active karst features and where the topography, geology, or soil is inadequate for protection of groundwater.

2. **Control of Stormwater to Prevent Ponding** – Elimination or reduction of ponding reduces the possibility that contaminants will be transported to the groundwater through leachate.

3. **Identification and Screening of Hazardous Waste** – Reducing the amount of hazardous waste in the C&D debris stream reduces the amount of hazardous constituents in the leachate, thus reducing the risk of groundwater contamination.

4. **Groundwater Monitoring and Corrective Action Program** – Required by 40 CFR 257, Subpart B, for C&D landfills that accept and dispose of hazardous waste from very small quantity generators, which should be considered in light of these additional requirements and potential adverse environmental impacts. *(Refer to Section C.1.3.2.)*

C.1.3.2 Groundwater Monitoring and Corrective Action Program Requirements

EPA has specific requirements for implementing a groundwater monitoring, assessment, and corrective action program for C&D landfills that accept and dispose of hazardous waste from

very small quantity generators. These requirements are documented in detail under 40 CFR 257.22 to 257.28. In general:

- Groundwater monitoring requirements include testing groundwater wells to determine whether waste materials have escaped from the landfill.
- Corrective action provisions control and clean up landfill releases and achieve groundwater protection standards.

C&D landfills that do not accept and dispose of hazardous waste do not have to comply with these requirements. However, these regulations provide the minimum criteria for protection of groundwater, so tribes may want to implement these requirements to ensure protection of their underground drinking water resources.

C.1.4 Disease (Vector Controls) Requirements

This section has supplemental material for ***Section 2.2.6*** of this guide.

EPA has many recommendations for compliance management practices to meet the RCRA requirements to control disease vectors. Some of these include:

1. **Cover the Landfill** – EPA recommends that application of cover reduces access to waste by most disease vectors. Application of six inches of compacted soil on the water generally is sufficient to control vectors. The frequency of application varies depending on requirements from each state and site-specific conditions.
2. **Control Mosquito Exposure** – Mosquitoes thrive in warm, protected, stagnant water. In addition to tires, sources of stagnant water include low points and drainage ditches. Mosquitoes serve as vectors for potentially fatal diseases in humans, such as West Nile virus, eastern equine encephalitis, and dengue fever. Measures should be taken to control worker exposure to mosquitoes, especially during active breeding seasons in areas prone to these diseases. Recommended exposure control measures include:
    - Wear long-sleeved shirts and pants, minimize exposed skin.
    - Use insect repellant.
    - Spray sites to control adult and larvae populations.
    - Require workers to wear boots and gloves.
    - Avoid accumulation of rainwater in tire piles by shredding tires.
    - Identify medical facilities capable of treating bites and injuries.

C.1.5 Explosive Gases

This section has supplemental material for ***Section 2.2.8*** of this guide.

Explosive Gas Requirements in 40 CFR 257.3-8(a): Federal regulations state that the concentration of explosive gases generated by the C&D landfill shall not exceed 25% of the lower explosive limit for the gases in facility structures (excluding gas control and recovery components) and the lower explosive limit for the gases at the property boundary.

Owner/operators of C&D landfills should be aware of the potential problems with explosive gases at their facility so they may act as appropriate.

C.1.5.1 Gases Common in C&D landfills.

C&D landfill gas composition consists largely of:

- *Hydrogen sulfide (H_2S)*
- *Methane (CH_4)*
- Carbon dioxide
- Nitrogen
- Oxygen

Of these, *hydrogen sulfide* and *methane* pose the greatest potential health threat to onsite workers and residents in surrounding areas.

The amount of landfill gas generated and its characteristics will depend on the amount of organic material (wood, vegetative debris, etc.) present.

A landfill gas problem unique to C&D landfills is odor problems from hydrogen sulfide due to decomposition of gypsum wallboard under moist and anaerobic conditions.

C.1.5.2 Sources of Gases in C&D Landfills

1. **Hydrogen sulfide (H_2S)** – H_2S gas is an extremely toxic gas with a low odor threshold and a pungent (rotten egg) odor. This gas also is a flammability hazard, with a flammable range of 4% (lower explosive limit) to 45% (upper explosive limit). The vapor density of H_2S is greater than air, which means it may accumulate in low-lying areas and may travel a considerable distance to an ignition source.

   Pulverized gypsum drywall has been identified as the major contributor for H_2S gas production and emission in landfill environments. Gypsum is composed of calcium sulfate dehydrate (CaSO4•2H2O) and is the major component of drywall. Drywall consists of 90% gypsum and 10% paper. When wetted, the sulfate in the drywall dissolves into solution. H_2S gas is generated because of a series of reactions that biologically reduce the sulfate leached from pulverized gypsum board under anaerobic (absence of air) conditions like those prevalent at many C&D landfill sites. Under these anaerobic conditions, sulfate-reducing bacteria produce H_2S gas from the sulfate (SO_4^{-2}) in pulverized gypsum and the organic carbon waste materials.

2. **Methane (CH_4)** – Methane is considered an asphyxiant at extremely high concentrations and can displace oxygen in the blood. OSHA has no permissible exposure limit for methane, but NIOSH's maximum recommended safe methane concentration for workers during an 8-hour period is 1,000 parts per million (ppm) (0.1%).

   Landfills are the largest human-related source of methane in the U.S., accounting for 34% of all methane emissions. CH_4 is generated in landfills and open dumps as organic waste decomposes under anaerobic (without oxygen) conditions. The amount of methane

created depends on the quantity and moisture content of the waste and the design and management practices at the site. C&D landfills generally have less organic waste than municipal solid waste landfills and produce less methane.

C.1.5.3 Compliance Management Practices to Prevent Odors and Explosive Levels of Explosive Gases

The following are considerations for best management practices for site safety when dealing with such material.

Prevention and control of H_2S and methane gas may be achieved through implementation of an effective ***detection, monitoring, and control program*** at the facility boundary and to protect onsite workers, with a focus on H_2S gas and methane. For detection of these gases, especially methane (since it is odorless), the best methods to identify and quantify them use:

- **Direct-Reading Instruments:** There are several combustible gas meters on the market that are suitable for this application. The standard instruments will measure %Oxygen, percent lower explosive limit (%LEL), and %Toxicology. The lower explosive limit represents the lowest concentration a combustible gas can be before it explodes when it meets fire. A fire needs at least 16% oxygen in the air before igniting. Percent toxicology measures the presence of a toxic substance.
- **Human Sense of Smell (for H_2S gas):** Humans' sense of smell can be used as an early detection method for H_2S gas because of its strong odor.

Onsite workers should be trained to:

⇒ Be familiar with explosive gases such as hydrogen sulfide and methane.

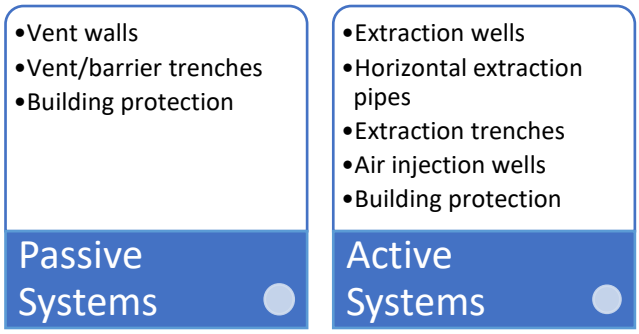
⇒ Operate direct-reading instruments.

⇒ Recognize operational conditions that may produce explosive levels.

Once detected, H_2S gas and methane may be controlled as follows:

⇒ In general, ***H_2S gas*** can be effectively controlled if the C&D debris containing gypsum wallboard debris is kept dry and covered. This can be achieved by implementing surface and stormwater management practices and the application of intermediate cover.

⇒ Once detected, ***methane*** may be controlled by the installation of passive and/or active gas collection and treatment systems:



⇒ Active gas collection and recovery systems, if properly designed, can collect and treat the effluent gas and effectively reduce H_2S gas and methane emissions at C&D debris landfills. However, due to the high capital, operations, and maintenance costs, active gas collection systems may be considered as one of the last control options to be implemented at a given site. (Note: If such a system is put into place, the owner and operator may want to consult a qualified professional engineer to design and construct the system.)

C.1.6 Fires

This section has supplemental material for ***Section 2.2.8*** of this guide.

Fire Requirements in 40 CFR 257.3-8 (b): Federal requirements state that a C&D landfill shall not pose a hazard to the safety of persons or property from fires. Landfill fires are complex and present an immediate threat to public health and the environment. Preparations against them must be taken. Landfill fires can be caused by hot (on fire, smoldering, toxic) loads, equipment, smokers, etc. Components of a C&D landfill that include wood, plastic, or dry vegetation are highly flammable.

There are two types of landfill fires:

1. **Surface fires** in general involve recently buried or uncompacted waste generally surface to 1 foot in depth. These fires generally burn at low temperatures and emit dense, white smoke that can have irritating agents such as organic acids. The burning zone temperature can be high if tires or plastics are burning. High temperatures cause breakdown of volatile compounds that emit dense black smoke. These can be caused by accidental hot (on fire, smoldering, toxic) loads or discarded cigarettes.
2. **Subsurface fires** occur deep below the landfill surface (i.e., 40 feet) and involve materials months or years old. They are more difficult to extinguish than surface fires and are often detected by smoke or a smoldering odor emanating from a portion of the landfill. Subsurface fires produce flammable and toxic gases (such as carbon monoxide (CO)) at levels more than 1,000 ppm. Their most common cause is increased oxygen content of the landfill, which increases bacterial activity and raises temperature. Subsurface landfill fires can create many types of life-threatening conditions. These

conditions must be communicated to all site personnel and anyone who is involved in the project.

Site hazards associated with landfill fires may include slips, trips, falls, confined space issues, carbon monoxide, toxic gas exposures, possible cave-ins due to void spaces, and burns from the elevated temperatures.

Workers should be careful when approaching burn sites. If the area has been burning for a while, the subsurface burn zone can undercut the surface. Under such a condition, vehicles and people may fall into these holes. Safety protocols and considerations related to subsurface landfill fires should be implemented for site workers.

C.1.6.1 Best Management Practices to Prevent and Respond to Landfill Fires

EPA recommends the following best management practices to prevent and respond to landfill fires:

1. **Prevention** – The facility may adopt following recommended practices for the prevention of landfill fires:

   ⇒ Enforce the ban on the practice of open burning, as required under EPA regulations, 40 CFR 257.3-7(a).

   ⇒ Exercise good compaction practices (daily or as needed).

   ⇒ Apply intermediate (daily, weekly, etc.) cover.

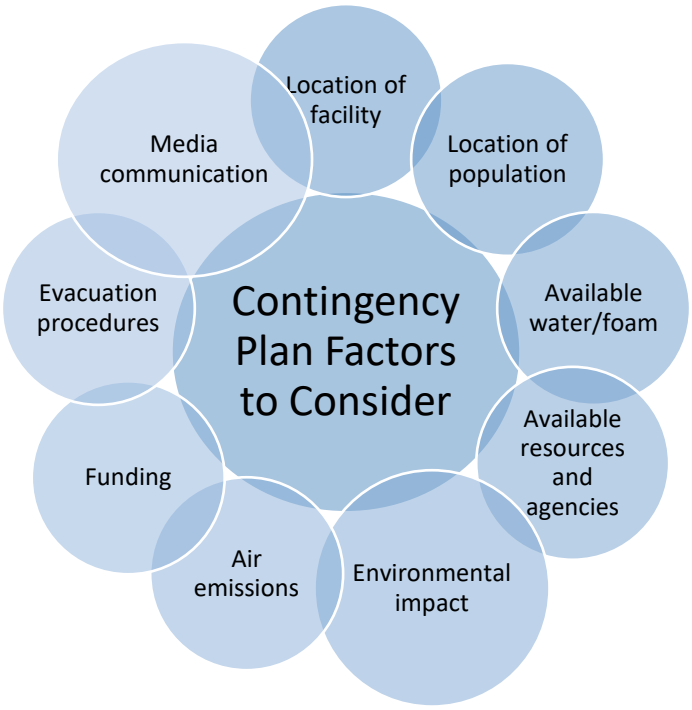
   ⇒ Implement good procedures for screening hot (on fire, smoldering, toxic) loads.

   ⇒ Have access to fire extinguishers and other firefighting equipment on site to control accidental fires and make arrangements with the local fire protection agency to acquire its services when needed.

   ⇒ Prepare a Contingency/Emergency Plan. This document sets out an organized, planned, and coordinated course of action to be followed in case of a fire, explosion, or other accidents that releases toxic chemicals, hazardous wastes, or materials that threaten human health and the environment.

2. **Response** – The facility may adopt the following recommended practices for the response to landfill fires and other hazards:

   ⇒ *Contingency/Emergency Plan* – The following factors should be considered and addressed in the plan:



   ⇒ The Plan should also include contact information for:
   - The Fire Department
   - Other landfills
   - Local and state Health Department
   - State EPA
   - U.S. EPA
   - Private consultants

   ⇒ In case of an emergency, to request assistance from the EPA please contact:

   US EPA Emergency Response, National Response Center: 1-800-424-8802

3. **Resource –** The California Department of Resources Recycling and Recovery (CalRecycle) has published guidance on how to prevent and respond to landfill fires:

   ⇒ *https://www.calrecycle.ca.gov/swfacilities/fires/lffiresguide*

   ⇒ The information in this guidance is relevant to C&D landfills except for references to gas collection systems, which are not typically found in C&D landfills.

C.1.7 Bird Hazards to Aircraft Requirements

This section has supplemental material for ***Section 2.2.8*** of this guide.

Bird Hazard Requirements in 40 CFR 257.3-8(c): According the federal regulations, a C&D landfill that disposes of putrescible wastes that may attract birds and that is located within 10,000 feet of any airport runway used by only piston-type aircraft shall not pose a bird hazard to aircraft. This requirement only applies if the facility is disposing of putrescible waste such as waste able to rot quickly enough to cause odors and attract flies, such as kitchen wastes or dead animals. Such wastes are decomposed by microorganisms with sufficient speed to create nuisance odors and/or gases.

To comply with this requirement, owner/operators may consider locating a C&D landfill that dispose of putrescible wastes beyond 10,000 feet from any airport runway.

C&D landfills that do not accept putrescible wastes do not have to comply with this requirement.

C.1.8 Access (Site Security) Requirements

This section has supplemental material for ***Section 2.2.8*** of this guide.

Access Requirements in 40 C.F.R. Part 257.3-8(d): According to federal regulations, a C&D landfill shall not allow uncontrolled public access so as not to expose the public to potential health and safety hazards at the disposal site.

States have regulations to comply with this requirement. Tribes might consider these as examples of how states have complied with the federal requirements.

- For example, Wisconsin requires that access be restricted using fencing, natural barriers, or other approved methods. In addition, a gate is required at the entrance to the operation and is to remain locked when the operator is not on duty.

EPA recommends the following measures to limit access of unauthorized persons to disposal facilities:

1. **Gates** – Access to facilities may be controlled through gates that can be locked when the site is unsupervised. Gates may be the only additional measure needed at remote facilities.
2. **Fences, trees, hedges, berms, ditches, and embankments** – Chain link, barbed wire added to chain link, and open farm-type fencing are examples of fencing than may be used.

C.2 Clean Water Act (CWA)

RCRA requires C&D landfills to comply with some provisions of the Clean Water Act (CWA). This section has supplemental information about complying with the CWA for ***Sections 2.2.3 and 2.3*** of this guide.

C.2.1 National Pollutant Discharge Elimination System and Stormwater Management

Under RCRA, C&D landfills shall not cause:

- a discharge of pollutants into waters of the United States that is in violation of the requirements of the National Pollutant Discharge Elimination System (NPDES) under Section 402 of the CWA
- nonpoint source pollution of waters of the U.S. that violates applicable legal requirements implementing an area-wide EPA-approved water quality management plan under Section 208 of the CWA

This section has information about complying with CWA Sections 402 and 208, especially related to stormwater management.

1. **NPDES Permits (CWA Section 402) –** The NPDES permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. Since its introduction in 1972, the NPDES permit program is responsible for significant improvements to our nation's water quality.

   ⇒ *Point sources* are discrete conveyances, such as pipes or artificial ditches.

   ⇒ Industrial, municipal, and other facilities, such as C&D landfills, must obtain permits if their discharges go directly to U.S. surface waters.

      - Individual homes that are connected to a municipal system, use a septic system, or do not have a surface discharge do not need an NPDES permit.

   ⇒ The EPA works with tribal governments to develop and issue NPDES permits to applicable facilities, including landfills.

   ⇒ In most cases, the NPDES permit program is administered by authorized states. *(Refer to EPA's NPDES State Program Authority webpage at https://www.epa.gov/npdes/npdes-state-program-authority.)*

   ⇒ EPA's NPDES website: *https://www.epa.gov/npdes*

2. **Nonpoint Source Pollution (CWA Section 208):** CWA Section 208 requires tribes to assess damages to water quality from nonpoint source pollution and to develop and implement programs to control them.

   ⇒ *Nonpoint source pollution* generally results from land runoff, precipitation, atmospheric deposition, drainage, seepage, or hydrologic modification. As the runoff

moves, it picks up and carries away natural and human-made pollutants, finally depositing them into lakes, rivers, wetlands, coastal waters, and ground waters.

⇒ *Requirements for tribes* – In establishing nonregulatory nonpoint source pollution programs as required under Section 208, tribes were required to develop best management practices for the major land uses. In 1987, Congress added Section 319 to the CWA to enable tribes to address the problems caused by nonpoint source pollution. This established baseline requirements for state and territorial nonpoint source management programs and authorized national funding to support implementation of approved management programs.

⇒ *319 Grants* – Grants under Section 319(h) of the Clean Water Act are the principal source of EPA funding dedicated to nonpoint source control. Tribes who receive 319 Grants *(https://www.epa.gov/nps/319-grant-reports-and-project-summaries)* must write a nonpoint source assessment report and a nonpoint source management plan.

- *The nonpoint source assessment report* describes existing and potential nonpoint-source-related water quality problems on tribal lands, using existing water quality data. The report identifies the nature, extent, and effect of nonpoint source pollution and the causes of such pollution. It should also describe existing programs and methods used for controlling the pollution. This report must be approved by the appropriate EPA Region.
- *The nonpoint source management plan* describes how the tribe intends to correct and/or prevent the existing and potential nonpoint source problems identified in the assessment report over the four fiscal years following submission of the program. The management program must also be approved by the appropriate EPA Region.

⇒ Owners and operators of C&D landfills should be aware of their tribe's nonpoint source management plan and implement actions as appropriate.

⇒ For more information about EPA's and tribes' nonpoint source programs:

- *Handbook for Developing and Managing Tribal Nonpoint Source Pollution Programs*: *https://www.epa.gov/tribal/handbook-developing-and-managing-tribal-nonpoint-source-pollution-programs-under-section-319*
- EPA Regional contacts for nonpoint source pollution programs: *https://www.epa.gov/nps/contacts-nonpoint-source-nps-pollution-programs*
- EPA website on nonpoint source pollution: *https://www.epa.gov/nps/basic-information-about-nonpoint-source-nps-pollution*

3. **Stormwater Management for NPDES Permits and Nonpoint Sources –** Stormwater may leave a C&D landfill from either or both human-made conveyances (such as pipes or ditches) and runoff. Therefore, stormwater management can help a tribal C&D landfill meet the requirements of CWA Sections 402 and 208.

⇒ *NPDES Permits:* Stormwater discharges for C&D landfills may be regulated under an NPDES storm water general permit associated with industrial activity. These permits require the use of best management practices. A storm water pollution prevention plan (SWPPP), incorporating those best management practices, must be developed and implemented. SWPPPs typically focus on identifying and implementing appropriate measures to reduce pollutants in stormwater discharges from the facility and to ensure compliance with the terms and conditions of the general permit. For more information, please refer to:

- Authorization status for EPA's construction and industrial stormwater programs: *https://www.epa.gov/npdes/authorization-status-epas-construction-and-industrial-stormwater-programs*
- *NPDES and Sewage Sludge Program Authority Program: A Handbook for Federally Recognized Indian Tribes*: *https://www3.epa.gov/npdes/pubs/owm0253.pdf*

⇒ *Setbacks:* State agencies such as Minnesota Pollution Control Agency do not allow C&D landfills within 1,000 feet from a lake and 300 feet from a river, stream, or creek. Wisconsin does not allow C&D disposal activities within 1,000 feet of any navigable lake or pond. Tribes may consider these types of setbacks to help gain compliance with the federal surface water requirements and/or reduce their costs for controlling storm water at their C&D landfill.

⇒ *Best Management Practices:* The following list offers recommendations for best management practices for stormwater management in C&D landfills, from design to operations. These recommendations are from the State of Ohio's C&D training resources. *(Refer to https://epa.ohio.gov/divisions-and-offices/materials-and-waste-management/guides-and-manuals/construction-demolition-debris-guidance.)*

- Provide appropriate drainage and site grading:
  - Convey water to slope benches and terraces.
  - Use slope let-downs (pipe or channel slope drains).
  - Use perimeter collection ditches and swales.
  - Maintain consistent slopes.
  - Ensure minimum infiltration or water through cover soils and cap.
  - Keep drainage structures in good repair.
- Provide erosion and sediment controls to preserve existing natural conditions as feasible and provide cover over disturbed soils and achieve stabilization:
  - Temporary/permanent seeding to put vegetative cover over inactive areas
  - Mulching, matting, buffer strips
  - Construction phasing to minimize disturbed areas
  - Prevention of erosive flows using rock check dams, erosion control matting, riprap lining, slope drains

    - Control of sheet flow run-off with silt fencing and/or diversions
- Reduce run-on from adjacent lands and control run-off from landfill.
- Control sediments in stormwater by using controls such as sedimentation basins.
- Eliminate standing/ponding water and depressions.

C.2.2 Landfill Construction and Wetlands

Under RCRA, C&D landfills shall not cause:

- discharge of dredged or fill material to waters of the United States that is in violation of the requirements under Section 404 of the CWA.

This section has information about complying with CWA Section 404, especially related to wetlands.

1. **Section 404 Permits** – CWA Section 404 requires a permit before dredged of fill material may be discharged into waters of the United States, including wetlands. For tribes that have not assumed Section 404 of the CWA, the U.S. Army Corps of Engineers (USACE, the Corps) is the federal permitting authority. EPA is responsible for reviewing proposed permits.

    ⇒ Under Section 404 of the CWA, individual permits include Standard Individual Permits, and general permits include Nationwide Permits and Regional General Permits. The Corps determines which type of permit is needed. A Department of the Army permit can include authorization under Section 10 and/or Section 404.

    ⇒ The Corps strongly recommends a pre-application meeting for major projects. During a pre-application meeting, tribes can discuss the project with the Corps and other regulatory and natural resource agencies.

    ⇒ EPA is responsible for reviewing and providing comments on the proposed Section 404 permits. EPA and the Corps are responsible for ensuring that Section 404 permits are obtained where required and complied with.

    ⇒ EPA Regions will work with interested tribes to explore the feasibility of assisting with Section 404-related inspection activities.

2. **Wetlands** – Construction of a C&D landfill may cause dredged or fill material to be discharged into wetlands. EPA believes that locating a new landfill in wetlands should be done only where there are no less-damaging alternatives available.

    ⇒ Tribes should consider locating new C&D landfills in areas where wetlands will not be damaged.

⇒ As examples, several states have regulations that prohibit an owner or operator from establishing solid waste management facilities within a wetland (Florida, Minnesota, etc.).

⇒ For more information about wetlands and Section 404 of the CWA:

- EPA's Wetlands Protection and Restoration webpage: *http://www.epa.gov/owow/wetlands/*
- *Corps of Engineers Wetlands Delineation Manual*: *https://www.lrh.usace.army.mil/Portals/38/docs/USACE%2087%20Wetland%20Delineation%20Manual.pdf* (last checked 07/20/2023)
- USACE regulatory program and permits: *https://www.usace.army.mil/missions/civil-works/regulatory-program-and-permits/*
- EPA Wetlands fact sheet series: *https://www.epa.gov/wetlands/wetlands-factsheet-series*

C.3 Clean Air Act (CAA)

This section has supplemental information about complying with the CAA for ***Section 2.4*** of this guide. Tribes or owner/operators in Indian country interested in a C&D facility should be aware of the permit requirements under the Clean Air Act, which include:

- A Title V operating permit in accordance with 40 CFR Part 71
- A New Source Review Construction permit under 40 CFR 52.21 if emissions due to the construction of the facility will exceed significant thresholds

C.3.1 Compliance Management Practices for Air Requirements

Open burning of solid waste is banned at all permitted solid waste disposal facilities.

Compliance with this requirement in Indian country would be accomplished by establishing and implementing a ban on open burning of C&D debris at the facility (per 40 CFR 257.3-7).

Appendix D – Closure and Post-Closure Compliance Management Practices at Construction and Demolition (C&D) Landfills in Indian Country Region 5

D.1 Introduction

This appendix is derived from an earlier, separate study on best practices for construction and demolition (C&D) landfill closure in Indian country in EPA Region 5.

D.1.1 Background

Since 1984, it has been the U.S. Environmental Protection Agency's (EPA's) policy to strive to assure compliance with environmental statutes and regulations on Indian reservations. EPA's fundamental objective is to protect human health and the environment. One of the waste management practices conducted on Indian reservations is the use of C&D debris landfills (C&D landfills). These landfills are subject to the federal solid waste management regulations under Title 40 of the *Code of Federal Regulations* (40 CFR) Part 257, "Criteria for Classification of Solid Waste Disposal Facilities and Practices." Landfills that fail to meet these requirements would be considered "open dumps."

Best management practices described in this document are intended to help the owners/operators close their C&D landfills in a manner that protects human health and the environment in compliance with applicable federal regulations. Since closure and post-closure of C&D landfills are not covered in 40 CFR Part 257, this document describes best management practices that are drawn from the closure and post-closure requirements applicable to municipal landfills in 40 CFR 258.60 and 258.61. While these regulations are stricter than what would generally be required for C&D landfills, they provide a guide to actions owners/operators could take in closing a C&D landfill. As further reference material, this document also includes C&D landfill closure and post-closure regulations from EPA Region 5 states. While such state regulations generally do not apply in Indian country, these rules may also provide additional guidance to considerations applicable to C&D landfills. There are many similarities between federal municipal landfill closure and post-closure requirements and these state C&D closure and post-closure requirements. As such, this document provides, for informational purposes only, a guide to the closure and post-closure of C&D landfills.

Section D.8 (Attachment I) includes a working list of examples of C&D landfill closure and post-closure requirements established by the states in Region 5. There are very few examples of tribal regulations associated with the closure of landfills, and no examples could be found for the closure of C&D landfills. The Rosebud Sioux Tribe Law and Order Code, Title 19, "Environmental Protection," addresses the closure of landfills (Section 19-7-112), defined as "a disposal facility or part of a facility at which solid waste is permanently placed in or on land." The Cherokee Nation of Oklahoma (Cherokee Nation Administrative Procedure Act, Title 27, Chapter 6, Section 613) and Turtle Mountain Band of Chippewa Indians of North Dakota (Tribal

Code, Title 40, Chapter 40.13) address disposal site closure plans and reference 40 CFR Part 258, "Criteria for Municipal Solid Waste Landfills." In most cases, tribal regulations defer to 40 CFR Part 257 or Part 258 for landfill regulations. Tribes that do so include the Northern Cheyenne Tribe, Pit River Tribe, Sisseton Wahpeton Oyate of the Lake Traver Reservation, Suquamish Tribe of the Port Madison Reservation, the Poarch Band of Creek Indians, and Tohono O'Odham Nation.

D.1.2 Incorporating Resiliency into Closure and Post Closure Planning

Additional consideration should be given to climate adaptation (or resilience) in the operation and closure of C&D landfills. This document includes such considerations throughout. EPA issued its first policy statement on climate change adaptation in June 2011. Subsequently, EPA released the *U.S. Environmental Protection Agency Climate Change Adaptation Plan* (EPA Publication No. 231R21001, issued October 2021). In October 2019, EPA updated its *Climate Resilience Technical Fact Sheet: Contaminated Waste Containment Systems* (EPA 542-F-19-004). In the fact sheet, EPA has provided a useful definition of "resilience" (p. 1): "A capability to anticipate, prepare for, respond to, and recover from significant multi-hazard threats with minimum damage to social well-being, the economy, and the environment." As noted in the fact sheet, climate resilience planning for a waste containment system generally involves:

- assessing vulnerability of the system's elements and associated site infrastructure,
- evaluating measures potentially increasing the system's resilience to a changing climate, and
- assuring the system's capacity to adapt to a changing climate, which helps the cleanup remedy continue to be protective of human health and the environment.

Climate change can result in changes in precipitation, ambient temperatures, wind speeds, and solar radiation at a site. Examples of potential hazards related to climate change associated with C&D landfills include high floodwater, soil washout in sloped areas, and unexpected changes in the water table. Drought conditions could cause soils to dry out. Areas that historically accumulated seasonal snowpack could experience a shift from snow- to rain-dominated precipitation events and associated flooding. These hazards could arise due to extreme weather events or over a longer period.

As a result, the approach to climate change and resilience needs to be addressed on a site-by-site basis. A site's location and attributes, including the hydrogeologic characteristics of the site and the local or regional climate and weather regimes, will determine the impact of these hazards. Therefore, assessing a waste containment system's vulnerability to the effects of climate change involves (1) determining the system's exposure to climate or weather hazards (and which conditions may change at a site) and (2) determining the system's sensitivity to those hazards (and how the altered conditions may affect the system's design).

D.2 Closure Plan

There are no federal regulations prescribing that C&D landfills establish closure plans. However, federal regulations for municipal solid waste landfills require a written plan detailing how the owner or operator will carry out closure. These regulations may provide useful considerations if tribes and states wish to create such regulations for C&D landfills. For instance, not all EPA Region 5 states require a written plan, but those that do often specify this requirement as part of the facility's permit application and expect it to be kept updated. Wisconsin C&D regulations in *Wisconsin Administrative Code* Chapter NR 500 do not require written plans for small facilities, and Ohio C&D regulations (*Ohio Admin. Code* 3745-400 (2015)) require a written plan strictly for the final cap design. Minnesota C&D regulations (*Minnesota Administrative Rules* 7035.2825 (2006)) do not require plans for smaller facilities that fall in an automated permit category because they abut other similarly small facilities; however, all other facilities require a written plan (refer to Section D.8 – Attachment I).

D.2.1 How Unit Will Be Closed

The closure plan should describe the cover (refer to Section D.4 of this document for guidance on types of covers appropriate for C&D landfills) and how it should be installed over any units while the facility is active. It should include estimates of the (1) largest facility area covered while the facility was still operational; (2) types of debris and the maximum amounts of each type; and (3) schedule to carry out closure activities (40 CFR 258.60(c)).

State regulations provide useful considerations for elements to include in C&D closure plans, including (1) maps, (2) engineering drawings, (3) closure cost estimates, and (4) post-closure operation and maintenance plans.

D.2.2 How Final Closure Will Be Achieved

Tribal owners/operators may wish to consider the characteristics of their C&D landfill to develop appropriate methods and activities to achieve final closure. Final closure is accomplished when the landfill is no longer receiving waste and has been closed. The two approaches to performing closure are (1) to remove all contents of the landfill and achieve "clean closure" or (2) to leave the waste in place ("landfill closure") and provide a cover for the landfill as well as all the items necessary to manage and monitor the landfill during the post-closure period (a groundwater monitoring system, grading to minimize cover erosion, and any applicable leachate or gas management/monitoring systems). Careful consideration should be given to leaving the waste in place, and the environmental setting (e.g., location and quality of groundwater) should be considered in making this decision. Additional examples are the production of leachate when the landfill contains waste with hazardous constituents (e.g., petroleum products such as asphalt-related materials) or reactive anaerobic production of hydrogen sulfide from gypsum.

D.2.3 Description of Type and Volume of Waste

Municipal solid waste landfill closure plans include an estimate of the maximum inventory of waste over the landfill's active life (40 CFR 258.60(c)(3)). The specifics of this estimate, in

terms of how the inventory describes the contents of the site, is left to the discretion of the owner/operators. Therefore, tribal owners/operators may wish to consider current C&D landfill content and volume to determine potential impacts on future closure plans.

D.2.4 Closure Methods and Activities

Tribal owners/operators may wish to include in their C&D landfill closure plans information on all activities and methods to be employed in the closure process. For example, closure of a municipal landfill typically includes, but is not limited to, notifying users of the closure, constructing the final cover and associated resiliency controls, and placing a deed notice. Sections D.3 through D.5 of this document provide details on federal requirements and examples of state requirements for these activities in relation to both C&D and municipal waste landfills. For municipal solid waste landfills, federal regulations require owners/operators to provide the methods used to install the final cover and descriptions of other closure activities (actions required for closure) (40 CFR 258.60(c)(1)).

D.2.5 Closure Schedule

Tribes may wish to establish regulations requiring a timeline to complete C&D landfill closure activities. For example, federal regulations require municipal solid waste landfills to complete closure activities according to the closure plan within 180 days following the beginning of the closure, although this period may be extended based on demonstrated need (40 CFR 258.60(g)).

D.2.6 Emergency Debris

Tribal owners/operators may wish to include emergency debris management in the closure plan. For example, during the closure period, federal regulations allow municipal solid waste landfills to receive additional waste upon the approval of an approved state if the owner or operator has shown that the landfill has the capacity to receive those wastes and steps have and will be taken to prevent threats to human health and the environment (40 CFR 258.60(f)). As with normal operations, the characteristics of the debris should be evaluated before disposing of it to ensure it will not present a threat to human health or the environment.

Such emergencies may include destruction related to climate change, for example, from more flooding events of increased magnitude. Ensuring that there is room in the closing C&D landfill to accept emergency debris may support the surrounding community's efforts to improve its resiliency. It may also mitigate issues of illegal dumping sites or improper debris management. Additionally, preemptive planning for emergency debris in the closure plan may provide a viable foundation for addressing the issue during post-closure care.

D.3 Notification of Intent to Close

Tribes regulating C&D landfills may wish to consider whether to require owners/operators to provide a notification of an intent to close. Under federal requirements for municipal solid waste landfills, the first step to closure is a notice to the relevant state agency that a notice of closure has been placed in the operating record (40 CFR 258.60(e)). The timing of this notice is keyed

from the final receipt of waste and can vary from 30 days to a year or more. Such notice provides an important opportunity for planning for closure (40 CFR 258.60(f)).

For example, Illinois considers a facility to have completed filling 30 days after receiving its final load of debris or fill (or no later than 1 year after the most recent receipt of debris or fill) (35 *Illinois Administrative Rules* (IAC) 1100.208(a)) and then requires written notification within 30 days of that event (35 IAC 1100.412(a)). Minnesota and Ohio require C&D landfill owners/operators to provide written notice to the appropriate state director at least 90 days ahead of when the owners/operators expect to start closure activities (*Minnesota Administrative Rules* 7035.2825(5), *Ohio Administrative Code* 3745-400-12(C)). Accordingly, as tribes consider whether or how to set up closure notification procedures, they may wish to consider the types of issues, applicable ordinances and other requirements, and timing for preparing for closures that may be necessary to close C&D landfills on the tribe's lands.

D.4 Cover Guidance

D.4.1 Thickness and Material Considerations

Many states provide for C&D landfill cover requirements similar to those prescribed by federal cover requirements for municipal solid waste landfills. For municipal solid waste landfills, federal regulations require owners/operators to close their landfill with natural earthen subsoil material and liners to meet permeability, infiltration, and erosion minimization parameters. These regulations provide for a native vegetative cover rooted in at least 6 inches of vegetation-sustaining topsoil over at least 18 inches of compact, fine grain clay-or-silt-like soil over a liner (40 CFR 258.60(a)(1)–(3)).

Examples of such cover requirements may include specifying materials (clay, topsoil), appropriate plants, and preventing erosion. Other considerations are described below.

D.4.2 Permeability & Infiltration

Tribes that have not already established such regulations may wish to add permeability as a factor in C&D landfill regulation. Some states have prescribed liner requirements and have chosen to include thickness, soil compaction rates, and permeability considerations in their regulations for C&D landfills. For municipal solid waste landfills, federal regulations require owners/operators to choose liner material or well-compacted natural subsoil that has a permeability no greater than 1×10^{-5} centimeters per second and, if possible, is less than or matches the permeability of the bottom liner (40 CFR 258.60(a)(1)). Equivalent protection may be approved (40 CFR 258.60(b)(1)).

There are no C&D landfill regulations that cover infiltration minimization. Federal regulations for municipal solid waste landfills require owners/operators to establish an infiltration layer with at least 1.5 feet of earthen material (40 CFR 258.60(a)(2)) or a layer of equivalent infiltration (40 CFR 258.60 (b)(1)), with variations depending on size and complexity of the landfill.

D.4.3 Erosion Consideration

Erosion control for landfills is generally achieved by using vegetation to hold cover soils in place. Therefore, federal regulations require municipal solid waste landfill owners/operators to close their landfill with at least 6 inches of earthen material that can support native vegetation (40 CFR 258.60(a)(3)) or approved equivalent protection (40 CFR 258.60(b)(2)). This guideline may be a useful starting point for states and tribes seeking to establish erosion minimization requirements for C&D landfills.

For example, among EPA Region 5 states, Minnesota and Wisconsin have established a 2-foot minimum for soil cover at small C&D facilities (in Minnesota, such facilities have less than 15,000 cubic yards of C&D debris and have been operating for less than 12 months) (*Minnesota Administrative Rules* 7035.2825(5); *Wisconsin Administrative Code* NR 503.09(7)(a)). Indiana did the same for all C&D facilities, adding a deadline of 180 days (329 IAC 10-37-3). Soil used for this purpose in Minnesota should be able to sustain vegetation, but Wisconsin calls for such soil to be compact earth topped with an additional 6 inches of topsoil (Wisconsin Administrative Code NR 503.09(7)(c)) in which native vegetation compatible with the final use of the site can grow (*Wisconsin Administrative Code* NR 503.09(7)(d)).

D.4.4 Resilience

While discussed above, it should be emphasized that it is important when developing a plan for a cover to consider climate resiliency. Environmental changes brought about by climate change can impact the durability of the chosen cover and should be taken into consideration when designing it. Conventional covers use layers of material with low hydraulic conductivity, such as geomembranes, to serve as a barrier that minimizes percolation of water through the waste. Precipitation- or wind-generated erosion or abrupt washout of soil above a geomembrane could result in its exposure to ultraviolet radiation, which is a major contributor to the degradation of geosynthetic materials. In contrast, evapotranspiration (ET) covers minimize percolation by relying on the capability of multiple soil layers to store water until it evaporates or is transpired through vegetation. Sustained changes in onsite precipitation or temperatures could reduce viability of the assorted long-rooted plant species originally selected based on their expected survival under historic climate conditions (EPA 530-F-19-003).

Due to these concerns, tribal owners/operators may wish to perform a vulnerability assessment of the effects of climate change on the cover planned for the site. This process would consist of two assessments: (1) a climate change exposure assessment that would identify hazards of concern based on various scenarios related to climate and weather and (2) a climate change sensitivity assessment that would determine the likelihood that the previously identified hazards would impact the cover's effectiveness (EPA 530-F-19-003). This process allows for thorough consideration of the cover's function throughout its future, potentially providing opportunities to tribes to consider the area's future use when developing closure plans. An example of the importance of this assessment is the intensity of droughts that are interrupted by severe rainfall. The severe drought has the capacity to "crack" clays, increasing permeability that cannot be

healed by a sudden torrential rain. The result could possibly be significant water infiltration. Such infiltration could lead to leachate production or increased anaerobic activity.

As previously discussed, cover systems may be vulnerable to physical and water damage. Depending on the results of the vulnerability assessment, various resilience measures can be implemented to address the vulnerabilities of the highest priority. For example, if washout of the soil layer of a geomembrane system is a primary concern, then the installation of a dewatering system could improve the cover's resilience. Additionally, vegetative covers may be vulnerable to changing precipitation patterns, resulting in conditions atypical of the historical climate (EPA 530-F-19-003). Taking this into consideration may provide the opportunity to plan for the incorporation of drought- or flood-resistant species to accommodate the changing climate in the region. However, tribal owners/operators may wish to consider specific resiliency measures based on the vulnerabilities and priorities determined from assessments of tribal C&D landfill closure sites.

D.5 Deed Notification

While there is no federal requirement for owners/operators of C&D landfills to provide deed notifications, tribes may wish to consider whether such deed notices may be a helpful addition to the closure process. For example, federal regulations (40 CFR 258.60(i)(1)) require owners/operators of municipal landfills to record a notation on the deed to the landfill facility property or some other instrument that is normally examined during title search. Such notations serve to indicate that the land has been used as a landfill facility and that its use is restricted. Details regarding the acreage, exact location of the landfill, total depth of waste material, and information on the type of construction and demolition debris that was disposed at the site might be some of the factors to consider including in a deed notice. Deed notices, deed restrictions, environmental covenants, and other types of institutional control processes and recording options may vary widely in Indian country. EPA has provided more information about institutional controls in Indian country in the handbook, *Implementing Institutional Controls in Indian Country*.

D.6 Post-Closure Care

Post-closure care entails the maintenance and continued monitoring of a site after final closure. The following sections provide recommendations based on existing federal regulations and guidance for municipal solid waste landfills. As the content of municipal landfills and C&D landfills differ, tribal owners/operators may wish to consider how the following elements would pertain to their site closure plans.

D.6.1 Post-Closure Care Plan

Tribal owners/operators may wish to consider elements for post-closure care plans similar to federal regulations (40 CFR 258.61(a)) that require owners/operators of municipal landfills to conduct post-closure care, including following a written post-closure care plan. The post-closure care plan may include instructions and procedures for:

- final cover maintenance,
- maintaining and operating a leachate collection system,
- groundwater monitoring, and
- maintaining and operating a gas monitoring system.

D.6.2 Cover Maintenance

Tribes may wish to consider including regulations for cover maintenance in developing or amending their C&D landfill regulations. For example, federal regulations for municipal solid waste landfills (40 CFR 258.61(a)(1)) require owners/operators to maintain the integrity and effectiveness of any final cover, including making repairs to the cover as necessary to correct the effects of settlement, subsidence, erosion, or other events and preventing run-on and run-off from eroding or otherwise damaging the final cover.

D.6.3 Leachate Collection System

There are no federal regulations regarding operations and maintenance requirements for leachate collection systems for C&D landfills. C&D landfills that obtained permit coverage for discharges to groundwater or surface water during operation should plan to conduct a post-closure review of any continuing discharges to ensure that permit requirements are met and to ensure that there are no violations of applicable surface water, groundwater, or drinking water standards. This includes runoff that may occur from leachate collection systems.

D.6.4 Groundwater Monitoring Considerations

While there are no federal regulations regarding groundwater monitoring requirements for post-closure C&D landfills, such landfills may be required to continue permit coverage for discharges to groundwater. The location, quality, and flow direction of the groundwater should be considered in establishing the groundwater monitoring system.

D.6.5 Considerations for Maintaining and Operating a Gas Monitoring System

While there are no federal regulations providing for post-closure operation of gas monitoring at C&D landfills, C&D landfill operators may wish to consider whether such systems are needed during post-closure. For example, are there any organic wastes present that could produce methane.

C&D landfills have a unique landfill gas problem. Releases of hydrogen sulfide (often leading to odor problems) can result from the decomposition of gypsum wallboard under moist and anaerobic conditions. Maintaining an engineered cover can prevent water infiltration into the landfill and will help ensure that hydrogen sulfide does not accumulate. C&D landfill operators should continue to monitor their landfills during post-closure to minimize the risk of hydrogen sulfide releases (EPA 600/R/14-039).

D.6.6 Post-Closure Duration Considerations

For municipal solid waste landfills, the typical length of post-closure care is 30 years (40 CFR 258.61(a)), but post-closure periods may vary based on the content, complexity, and management issues of a particular site.

The state regulations specific to C&D landfills, as well as the tribal regulations related to general landfill post-closure, vary in the duration of post closure maintenance. The timeframes range from 1 to 40 years (refer to Section D.8 – Attachment I).

D.6.7 Other Considerations

C&D landfill owners/operators may wish to consider other post-closure controls such as restricting access, securing and maintaining site fencing, and preventing vandalism. Signage indicating the presence of a closed landfill may be appropriate. Additionally, facility records should be maintained during the post-closure period.

D.6.8 Post-Closure Care Certification

While there are no certification regulations for C&D landfill closure, tribes may wish to consider whether such a certification program may be appropriate for such landfills. Examples of state and tribal regulations for post-closure care certifications are found in Section D.8 (Attachment I).

D.6.9 Post-Closure Resilience and Adaptive Capacity

In addition to resiliency considerations in the closure plan, operators may also consider adaptive capacity in the post-closure plan. Adaptive capacity is the ability to adjust to climate variability or potential damages, or to take advantage of new opportunities for land use.

Initial inclusion of resiliency in the closure plan may improve the adaptive capacity of the closure; however, the assurance of continued flexibility is an iterative process. Ensuring post-closure adaptive capacity would involve periodic reassessments of the cover's vulnerability and incorporation of new options or information. These reassessments may be established on set intervals or triggered by an extreme weather event as part of the post-closure maintenance activities. Through this process, tribes may be able to facilitate an adaptive post-closure paradigm that allows for greater opportunities for the closure site.

D.6.10 Post-Closure Emergency Debris

According to federal regulations, disturbance of the final cover, liners, or any components of the containment or monitoring systems of a municipal solid waste landfill can only occur if necessary to comply with closure requirements or if given permission by an approved state as long as the owner/operator demonstrates that disturbance of the final cover, liner, or other component will not increase the potential threat to human health or the environment (40 CFR 258.61(b)(3)). However, there are no similar requirements for C&D landfills. In the event of debris generated by an emergency during the post-closure period, it may be beneficial for tribes to have an emergency debris management plan in place to accommodate the status of the C&D

landfill. Owners/operators may wish to coordinate with the tribal government in establishing interim emergency debris sites so that debris can be transported to an alternative C&D landfill rather than disturb the post-closure site (EPA 530-F-19-003). As noted above, it is very important to properly characterize any waste stream that is being considered for disposal in a C&D landfill.

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D.8 Attachment I: Tables of Example State C&D Landfill Requirements

Table D-1. Closure requirements by state (federal requirements included for reference) as of June 2020

Entity	Regulatory citation	Date of citation	Plan required?	Cover permeability criteria	Cover infiltration minimization criteria	Soil cover erosion minimization criteria	Written closure plan
Federal RCRA	40 CFR 258	7/29/1997		Lesser of 1) <= that of any bottom liner system or natural subsoils present or 2) no greater than 1 × 10−5 cm/sec, or approved equivalent protection (258.60(a)(1), (b)(1))	Lining w/min. 18-in of earthen material, or approved equivalent protection; alt if <= 20 tons/day (per annual average) (258.60(a)(2), (b)(1,3))	Min. 6 in. native vegetation-sustaining earthen material, or approved equivalent protection (258.60(a)(3), (b)(2))	Cover description; install procedure; estimates: 1) largest area covered during active life, 2) max waste inventory, 3) schedule for completing activities to satisfy closure criteria. (258.60(c))
IL	35 IAC 1100	8/27/2012				1 ft w/in 30 days, or cover by road / structure (1100.208 (b)(1)); vegetation: compatible w/ (i.e., grow, survive under) local climatic conditions; apply, alone/in combination, mulch, straw, netting, chemical soil stabilizers while establishing vegetation (1100.208 (b)(2)(D)).	RCRA-like (1100.309(c, d, g)) but only estimate for year of closure; + incorporates map requirements (1100.309(a)); steps, schedule for temporary fill operations suspension in preparation for closure (1100.309(b, e)), schedules must include time required: to close facility, for closure activities (progress tracking), closure year estimate (1100.309(d)); how applicant will comply w/C&D (operations &) closure activities (e.g., drainage features to pass 100-yr, 24-hr event runoff w/out scouring/erosion; erosion-minimizing facility construction (1100.309(f), referencing 1100.208(b)(2))).

Entity	Regulatory citation	Date of citation	Plan required?	Cover permeability criteria	Cover infiltration minimization criteria	Soil cover erosion minimization criteria	Written closure plan
IN	329 IAC 10-37	6/14/2019				2 ft+ w/in 180 days; 2%<=Slope<=33%; max projected erosion rate 5 tons/acre/yr. (329 IAC 10-37-3)	Includes also: list of labor, materials, testing necessary to close facility (329 IAC 10-37-4(b)(2); schedule must include total time required to close facility (10-37-4(b)(3)(A), time required for completion of intervening closure activities (10-37-4(b)(3)(B); cost estimate specifications (10-37-4(b)(4-8)); incremental closure option: for each year after facility opened, specify max facility area into which solid waste will have been deposited through year end, delineate on final contour map. (10-37-4(b)(8))
MI	Michigan Administrative Code 299.4301-299.4319	1/1/2006			2 ft+ min compacted soil/flexible membrane liner in compliance w/R299.4915, 6 in+earthen material (R299.4913)	Cover design under Type III Landfill (R 299.4304) need to minimize erosion, ensure gases do not accumulate, 2%<=grade<=1:4 & so all stormwater runs off.	RCRA-like, except: "largest area" est. not required; final cover description requires engineering plans & specifications. [need cite - no Plan header in Type III landfills]
MN	Minnesota Administrative Rules Ch. 7035.2825	9/7/2006	Y (7035.2645) for permitted facilities.			“Permit-by-rule” facilities (< 15k yd^3; < 12mo operating; adjacent to another): 2ft+ vegetative growth-sustaining soil (7035.2825(5)); 2%<=final slope<=20% (7035.2825(3)(E)); final cover top 12” must sustain vegetative growth (7035.2825(3)(F))	Permitted facilities (7035.2825(14)->.2625(3)): RCRA-like (except “largest area...”) + 1) describe how, when comply w/notification (posted at entrance 60+ days out by close date, alternate facility signs; publish 30 days out in local newspaper, providing copy to commissioner w/in 10 days), provide MN-land-surveyor-prepared-certified survey plat to County Recorder & (state) Commissioner, record deed notation (7035.2625(3)(A); 2) cost estimate including an itemized breakdown for closure of each fill phase (7035.2625(3)(C))

Entity	Regulatory citation	Date of citation	Plan required?	Cover permeability criteria	Cover infiltration minimization criteria	Soil cover erosion minimization criteria	Written closure plan
OH	Ohio Administrative Code 3745-400	4/17/2015		1 x 10-6cm/sec max/ each lift of recompacted soil (for well compacted, cohesive soil w/18-inch+min recompacted thickness) unless 50%+ soil particles by weight pass No. 200 sieve. (3745-400-07 (G)(2)(i)(d))	Plasticity properties above the A-line in "Unified Soil Classification System" in ASTM D-2487; or 15%+ total soil dry mass comprised of <=0.002-in clay particles per ASTM D-422 (3745-400-07 (G)(2)(i)(e))	<=60 days post-final debris: 6-in+ recompacted soil, (3745-400-12 (E)(7)) 3%<grade<=25% (3745-400-07 (G)(2)(h)(iv)) to prevent ponding (3745-400-12) facilitate drainage (3745-400-07(G)(2)(b)(iii)); <=1 yr complete cap system (3745-400-12(E)(8)(a)) (incl. min 18-in recompacted soil in well compacted, cohesive soil layer (G)(2)(a)(i)), seeding to establish (dense, perennial (3745-400-07(G)(2)(b)(ii))) vegetation cover prior to final certification (300-400-12) Erosion rate: <=5 tons/acre/yr. ((3745-400-07 (G)(3))	Final cap design plan is part of C&D permit process. (3745-400-07(G)), see permeability, infiltration, erosion parameters; no additional plan required. [Schedule outlined in 3745-400-12 (E). Other closure activities: comply w/access, scavenging, fire control, financial assurance (E)(1), key employee disclosure(E)(2) rules; cease leachate recirculation by post-final debris acceptance and <=90 days closure mandatory (E)(3); <=7 days debris acceptance ceased: notify authority about it (E)(4), block access to facility (unless notified authority in writing re: other use) (E)(5); <=30 days debris acceptance ceased: post signs visible on access roads (E)(6); <=1 yr debris acceptance ceased, annually: update closure/post-closure financial assurance documentation.(E)(11)]
WI	Wisconsin Administrative Code Chapter NR 503.09(7)	Dec-18	May be required by state as part of "Approved Plan of Operation" (503.09(7)).		Small facility (<=50k yd^3 material): Fine grain soils required unless waived in writing by department (NR 503.09(7)(a))	Small facility (<=50k yd^3 material): 2 ft+ compacted earth sloped (top: >=2%; side: <=33%) for stormwater runoff. (NR 503.09(7)(a)) 6-in min topsoil (NR 503.09(7)(C) Seed (type), fertilize (amt), mulch surface in accordance w/final use, type/quality topsoil, compatible w/native vegetation (NR 503.09(7)(d))	

Table D-2. Closure schedule and notification requirements by state (federal requirements included for reference) as of June 2020

Entity	Notification schedule	Notification of intent to close	Closure start schedule	Closure duration	Post-closure certification notification	Deed notation recordation	Other (from states)
Federal RCRA	258.60(d)	258.60(e)	258.60(f)	258.60(g)	258.60 (h), 258.61	258.60(i)	
IL		w/in 30 days C&D fill operations end (1100.412.(a))	RCRA-like; also, agency must grant extension if owner / operator demonstrates capacity & has taken, will continue to take all steps necessary to prevent threats to human health & environment (1100.208(a)(2))		Owner / operator must submit to Agency: closed facility plans / diagrams, date closure completed; owner / operator's affidavit; PE / PG seal affirming closure per plan, requirements. (1100.412(b)(1))		Part 1100 applies to CCDD to the extent of fill operations. (When Agency determines facility has been closed per plan specifications, requirements, Agency must issue a certificate of closure, specify date post-closure begins. (1100.412(b)(2)).)
IN					(Meets RCRA)	Verification that RCRA-like notation (except re: use) was on deed; also must include: waste types, location (A); fill depth (B); plot plan(C), w/ surface contours @ 2-ft intervals indicating: (i) surface water run-off direction, (ii) surface water diversion structures, (iii) grading; (D) no excavation occur w/out commissioner approval statement (10-37-7(a)(2))	Closure approved unless Commissioner notifies owner / operator of deficiency w/in 150 days of receipt of closure certification documentation; partial closure certification option. (10-37-7(b))
MI			Cover <= 6 months after final layer. (R 299.4317(1))		[Meets RCRA except for notification?-: Final closure certification shall be placed in operating record, maintained by owner/ operator. (r299.4448)]		

Entity	Notification schedule	Notification of intent to close	Closure start schedule	Closure duration	Post-closure certification notification	Deed notation recordation	Other (from states)
MN	For permitted facilities: must be submitted w/the permit application (and as required by a closure doc (7001.3055)), to establish; financial assurance mechanisms, or by an enforcement action) (7035.2625(3))	For permitted facilities: 90+ days out (7035.2625(5))	“Permit-by-rule" facilities: each phase must be closed as it reaches final waste elevations. (7035.2858(5)); Permitted facilities: as all fill areas (see 7035.2825(8)(B)) reach permitted final grade (7035.2625(1)(B)		“Permit-by-rule” facilities: (Meets RCRA); (Permitted facilities: RCRA-like; certification must contain signed completed Site Closure Record; as-built plans showing changes from original; testing results showing compliance w/closure requirements (incl. for waste removal, equipment decontamination); other documentation (e.g., pictures showing closure techniques). Must include a copy of notation filed w/county recorder and carry recorder's seal.) 7035.2635(3)	“Permit-by-rule” facilities: Deed note must include site use, waste location. (7035.2825(5))	Permitted facilities: Final cover: compatible w/ intended end use; contain materials consistent w/overall site design; (7035.2825(11) -> 7035.2825(8); close to eliminate, minimize, control escape of pollutants to groundwater / surface waters / soils / atmosphere in postclosure; (7035.2825(2); a copy of approved closure plan, all revisions must be kept at facility until closure certified (7035.2625(3)); amend plan when closure yr changes. (7035.2625(4))
OH		Must provide written notice of intent and anticipated date of ceasing not later than 90 days prior (3745-400-12 C)			Final Closure Certification Report (3745-400-08 D) indicates: facility blocked by sturdy obstacles (D)(1), signs posted (D)(2); all capped areas shown on plan sheet, (D)(3) w/identified engineered components requiring construction certification (D)(4) (pursuant to 3745-400-07). Copy of plat filed with county recorder. ((D)(5), 3745-400-12(E)(9)) Copy of the notation on the deed to the facility property. (D)(6)	Include acreage, exact location, depth, volume, type of C&D disposed. (3745-400-12(E)(10))	There are financial assurance requirements. (3745-400-11(B)(6), 3745-400-11(S)(1))

Entity	Notification schedule	Notification of intent to close	Closure start schedule	Closure duration	Post-closure certification notification	Deed notation recordation	Other (from states)
WI			Small facility (<=50k yd^3): W/in earlier of: a) 90 days after disposal end, or b) design capacity reached, in accordance w/approved operating plan, items a-e this section. (NR 503.09(7))				Small facility (<=50k yd^3): Divert stormwater, incl. around previously filled areas where possible; if necessary to divert drainage over previously filled areas, dept may require clay lined swales min 2 ft thick. (NR 503.09(7)(b)); closure should occur in a nuisance-free manner (NR 503.09(4)(a))

Appendix E – Example Tribal Solid Waste Management Code

Starting on the next page is an example solid waste management code from the Lac du Flambeau Band of Lake Superior Chippewa.

TRIBAL CODE

CHAPTER 24

SOLID WASTE MANAGEMENT CODE

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24.209 Responsibilities of Owners or Designated Personnel of Non-Residential Facilities and Properties

HISTORY NOTE:

Current Ordinance:

Adopted May 29, 1994, Resolution No. 186(84). Effective immediately as to tribal members. Effective August 29, 1994, as to non-members.

Amendments:

Amended June 12, 1989, Resolution No. 187(89), to add 24.102(3) and (4) and 24.106(7) and amend 24.106(4).

Amended January 23, 1995, Resolution No. 25(95). Secs. 24.102-24.106 adding 24.107. Sec. 24.201-24.208.

Amended November 27, 1995, Resolution No. 483(95), amends 24.103(8), 24.106(1) and 24.208(2).

Amended April 25, 2000, Resolution No. 211(00), Chapter I & II.

TRIBAL CODE

CHAPTER 24

SOLID WASTE MANAGEMENT CODE

24.101 Scope and Purpose.

(1) The purpose of this code is to help ensure that efficient, nuisance free, and environmentally sound waste management procedures are practiced on the Lac du Flambeau Reservation.

(2) This code applies to the activities of tribal members and non-members within the exterior boundaries of the reservation including tribal and non-tribal facilities, operations and businesses.

24.102 Definitions.

(1) ***Collection and transportation service (disposal/"hauler")*** means a solid waste disposal operation which utilizes containers, vehicles or other means for the collection and transportation of solid waste. This may also include haulers that pickup of recyclables as part of their service and deliver items to a transfer site or Material Recovery Facility.

(2) ***Construction and Demolition (C/D) Waste*** is waste materials from demolition and new construction limited to the following materials: brick, mortar, concrete, clean wood, floor tile, ceramic tile, wallboard materials including gypsum board ("sheet rock"), plaster and paneling and small amounts of steel or aluminum that cannot be separated from the other - materials like concrete reinforcement rod and nail. C/D waste does not include any hazardous waste such as asbestos, waste paints, solvents, chemicals, sealants, etc. or any recyclable materials as defined in Chapter II, Tribal Solid Waste Codes.

(3) ***Construction and Demolition Site*** is a site that meets the requirements of 40 CFR Part 257 and shall require obtaining a permit from the Lac du Flambeau Tribal Natural Resource Department. Individuals will need to apply for a permit to operate a C/D Site or dispose of demolition material on the reservation, permit must be presented and Approved by Tribal Council.

(4) ***Critical Habitats*** means the area or type of environment that is essential for an organism or biological population to occur or live normally, including endangered and threatened species and plants.

(5) ***Disposal*** means the discharge, deposit, injection, dumping or placing of any solid waste into or on any land or water so that such solid waste or any constituent thereof may enter the environment or be emitted into the air or discharged into any waters, including groundwater.

(6) ***Earthen Materials*** means stumps, shrubbery, leaves, grass, hay, trees, sand, or organic matters which are naturally found on or growing on the earth.

(7) ***Garbage*** means discarded materials resulting from the handling, processing, storage and consumption of food including putrescible wastes.

(8) ***Hazardous Waste*** means any solid waste identified by the Tribal Natural Department as hazardous to human health or the environment or identified by 40 CFR part 261.3 as being hazardous or extremely hazardous. This includes but is not limited to petroleum products and hazardous sludge (example: sludge from the bottom of an underground storage tank), chlorine, anti-freeze, agricultural pesticides and fertilizers (in excess of household amounts) and hazardous industrial chemicals.

(9) ***Household Hazardous Waste (HHW)*** means household products that could be hazardous to the environment or human health including paints, solvents, cleaners, household batteries, household amounts—1 gallon or less—of petroleum products, insecticides, herbicides, anti-freeze, car batteries, TV Tubes/Screens-Computer Screens, fluorescent bulbs and PCB containing ballast's and any other product produced for consumer use that could be hazardous to the environment.

(10) ***Household Sewage*** is the liquid or solid material removed from a septic tank, sewage lagoon, holding tank, cesspool, portable toilet, type III marine sanitation device, sewage treatment facility or other treatment works that receive domestic sewage. This does not include liquid or solid material removed from a septic tank, cesspool, or similar treatment works that receives either commercial wastewater or industrial wastewater and does not include grease removed from grease trap at a restaurant. This definition is defined in 40 CFR 503 and will be complied with according to 40 CFR 503.9, 503.12, and 503.13 (c).

(11) ***Junk vehicles, snowmobiles, ATV's, or any other motorized equipment*** are defined as vehicles, snowmobiles, ATV's, or other motorized equipment rendered inoperable. Those junk vehicles, snowmobiles, ATV's or other motorized equipment without a current license registration will be deemed "Salvageable Material" as defined in subsection (19) herein.

(12) ***Landspreading*** means the process of discharging, depositing, placing or injecting in thin layers onto the land surface any wastes including solid, household sewage, hazardous, agricultural and silvicultural.

(13) ***Licensed Disposer*** means a person engaged in servicing under a license issued pursuant to Section 24.104(6) herein.

(14) ***Littering*** is the careless discarding of Garbage or Refuse of any type, including, but not limited to, to the discarding of such materials in areas or receptacles other than those designated for such materials.

(15) ***Medical or Infectious waste*** means wastes that are produced during the treatment of humans or animals. These materials include human blood/ blood products, tissue / organs, and sharps (hypodermic needles, syringes, scalpels, etc.).

(16) ***Mining Wastes*** any wastes associated with mining practices such as tailings, sludge, etc.

(17) ***Mobile HW Collection Facility*** means a temporary facility designed for short term operation—less than one month—for the collection and temporary storage of household hazardous waste.

(18) ***Municipal Solid Waste*** is garbage and refuse created by households and individuals and non-hazardous wastes, garbage and refuse created by businesses, tribal enterprises and government offices and facilities.

(19) ***Municipal Solid Waste Disposal Facility*** means a disposal facility that meets the standards in 40 CFR Part 258. A current example of such a facility is the Highway G Landfill in Eagle River.

(20) ***Open Burning*** means any fire wherein the products of combustion are emitted directly into the atmosphere and are not directed thereto through a stack or chimney, incinerator, or similar devices.

(21) **P*ermanent Collection Facility*** means a permanent structure designed to operate on a continual or periodic basis for the collection and temporary storage of household hazardous waste. It is not a disposal facility for these materials. Temporary in this case means only the length of time it takes to collect enough material to gain an economic advantage for cost of disposal.

(22) ***Person*** means an individual, both tribal and non-tribal, trust, firm, joint stock company, corporation (including a government operation) partnership, association, tribal, state, municipality, commission, political subdivision of a state or the Tribe, or any interstate body and shall include each department agency, and instrumentality of the United States.

(23) ***Plan of operation*** means a report submitted for a disposal site or facility that describes its location, design, construction, sanitation, operation, maintenance, closing and long term care.

(24) ***Putrescible*** means solid waste capable of being decomposed by microorganisms with sufficient rapidity as to cause nuisances from odors and gases, such as kitchen wastes, animal (wild or domestic) offal and carcasses.

(25) ***Radioactive Waste*** means any radioactive material.

(26) ***Refuse*** means all matters produced from industrial or community life, subject to decomposition, not defined as Household Sewage.

(27) ***Reservation*** shall mean the Lac du Flambeau Reservation.

(28) ***Salvageable Material*** means junk cars, machinery or equipment, scrap metal or other junk or scrap materials which are of further usefulness mainly as a raw material for reprocessing, or as imperfect stock from which replacement of spare parts can be extracted.

(29) ***Salvage yard*** is defined as a solid waste disposal site or facility at which salvageable materials are stored or sold or at which wrecking, dismantling or demolition of salvageable materials are conducted. Salvage yards do not include operations conducted by scrap metal, paper, fiber or plastic processors excluded from the definition of "solid waste disposal sites and facilities" in this section, nor do salvage yards include small storage for equipment such as normally found adjacent to industrial and commercial establishments.

(30) ***Solid Waste*** means garbage, refuse and any other waste material resulting from industrial, commercial, agricultural operations and community activities, not including household sewage.

(31) ***Solid Waste disposal sites and facilities*** means commercial and municipal establishments or operations such as, but not limited to, sanitary landfills, dumps, land disposal sites, incinerators, auto junk yards, scrap metal salvage yards, transfer stations, storage facilities, collection and transportation services and other establishments or operations for the storage, collection, transportation, transfer, processing, treatment, recovery or disposal of solid waste. Solid waste disposal sites and facilities does not include a site or facility for the processing of scrap iron, steel or nonferrous metal using large machines to produce a principal product of scrap metal for sale or use for remitting purposes: nor does the term include a site or facility which uses large machines to sort, grade, compact or bale clean wastepaper,

fibers or plastics, not mixed with other solid waste, or sale or use for recycling purposes.

(32) ***Solid Waste Management*** means the planning, organizing, financing and implementing programs to for the storage, collection, transporting, processing, recycling or final disposal of solid wastes in a sanitary, nuisance free, healthy and environmentally sound manner.

(33) ***Storage site or facility*** means solid waste disposal site or facility for the storage of solid waste, junk vehicles and recyclables on a temporarily basis in such a manner as not to constitute ultimate disposal of solid waste.

(34) ***Tribal Council*** shall mean the Lac du Flambeau Tribal Council, the duly elected governing body of the Lac du Flambeau Indian Reservation.

(35) ***Tribal Court*** shall mean the Lac du Flambeau Tribal Court.

(36) ***Tribe*** shall mean the Lac du Flambeau Band of Lake Superior Chippewa.

24.103 Solid Waste Management.

(1) All solid waste must be disposed of according to the appropriate method described in this section. Disposal of solid waste in any other manner including but not limited to open dumping, burying and littering are in violation of this code.

(2) Construction and demolition waste must be disposed of in a site specifically designed for such materials and having a permit issued by the Tribal Natural Resource Department (after approval by Tribal Council) pursuant to Tribal Code Chapter 24.104, or, at a site permitted as such outside the exterior boundary of the reservation and approved by the Wisconsin Department of Natural Resources or other appropriate jurisdiction.

(3) Earthen materials shall be disposed of in an environmentally safe manner. A plan of disposal or operation shall be submitted to the Tribal Natural Resources Department by the person authorized to conduct such disposal activities pursuant to this section. In the case of tree stump removal and burial, a plan of operation shall be submitted to, and must be approved by, the Tribal Council. Prior to conducting such activities, the appropriate Tribal Program Permits, such as Tribal Land Management Department, Tribal Historic Preservation, Forestry, etc., need to be obtained.

(4) Hazardous Wastes shall not be disposed of within the exterior boundaries of the Lac du Flambeau Reservation. Proper disposal at an approved hazardous waste disposal facility is required.

(5) Household hazardous waste shall be separated from municipal solid waste and disposed of at a mobile or permanent collection facility permitted by the Tribal Natural Resource Department or the Wisconsin Department of Natural Resources for the purposes of collection of these materials. Household hazardous waste may not be permanently disposed or stored of within the exterior boundaries of the Lac du Flambeau Reservation.

(6) Household sewage must be managed in accordance with recommendations of the Tribal Water & Sewer Department. Landspreading of household sewage shall be conducted in strict accordance with 40 CFR 503, and, shall be conducted only after prior approval by the Tribal Natural Resources Department, Land Management Department, Historic Preservation Department, and in accordance with this Chapter, final approval by the Tribal Council.

(7) Medical or Infectious (SHARPS) waste must be disposed of in accordance with policies and procedures established for such disposal for the reduction of the generation of such waste. All persons generating such waste shall properly tag such waste as medical waste and store in accordance with medical waste management procedures.

(8) Municipal solid waste/garbage must be separated from recyclable material and disposed of in a municipal solid waste disposal facility or materials recovery or composting facility permitted by the Tribal Natural Resource Department, or, hauled to such a facility by a solid waste hauler approved by the Tribal Natural Resource Department or Wisconsin Department of Natural Resources, or, recycled.

(9) No radioactive or mining wastes shall be collected, transported, stored, treated, processed, disposed of or reclaimed, within the exterior boundaries of the Lac du Flambeau Indian Reservation.

(10) Open burning of any material including leaves, grass, brush, etc., is prohibited without an authorized burning permit issued by the Tribe and/or Wisconsin Department of Natural Resources.

(11) Solid Waste Storage: The owner or occupant of any premise, business establishment or facility shall be responsible for the sanitary storage of all solid waste accumulated at that premise, business establishment or facility. Garbage or municipal solid waste shall be stored in:

(a) Durable rust resistant, nonabsorbent water tight, rodent/animal proof, and easily cleanable containers or similar type of receptacle, or,

(b) Other types of containers acceptable by haulers or disposal services and conforming to the intent of this section.

(c) All containers or storage receptacles of solid waste must be maintained in a manner as to prevent the creation of a nuisance or unsanitary condition. Unless otherwise provided for in a written rental or lease agreement the tenant or lessee of any single unit detached residence and the landlord of any multi-unit residence shall be responsible for the provision and maintenance of storage containers as specified as above.

(d) Garbage or municipal solid waste shall be disposed of in a timely manner as not to cause unsanitary or nuisance problems. Weekly or bi-weekly disposal of this type of wastes must be conducted. Unless otherwise specified in a lease or tenant (Chippewa Housing Authority) lease agreement.

(12) Salvageable Material must be stored accordingly: Free of all fluids, stored in a safe manner not to cause injury to person(s), must be used within 30 days unless a specified usage plan is documented and implemented. If no plan is specified the salvage material must be removed from site and disposed of in a proper manner according to the time frame given (in writing) by either/or Tribal Natural Resource Department, Tribal Land Management Department, Chippewa Housing Authority and therefore Law Enforcement Officials. Vehicles will be considered junk if it is not registered by the Tribe or State and including but not limited to collector's cars (antiques), snowmobiles, ATVs, and motorcycles.

(13) No person shall discard, abandon, leave or deposit any solid, recyclable, C/D, medical or other wastes, debris, trash, vehicles, or rubbish, nor have or permit another to discard, abandon, leave or deposit any such wastes (mentioned above), in a manner which violates the above section, 24.103. If the material discarded, abandoned, left or deposited contains items addressed to a person(s) or otherwise indicates ownership or possession in a person(s), it shall be reputably presumed that such person(s) did personally, or did permit another to, discard, abandon, leave or deposit the material.

(14) No transportation of hazardous, mining, or radioactive waste shall be permitted through the Lac du Flambeau Indian Reservation without complying first with the applicable state, tribal, and federal laws and regulations governing hazardous waste management. The transportation of such materials pursuant to said laws and regulations shall not include the authority to stop for any purpose, other than for

emergency purposes, within the exterior boundaries of the Lac du Flambeau Indian Reservation.

(15) No person shall dispose of any wastes generated outside the boundaries of the reservation on any lands or water bodies within the reservation boundaries.

24.104 Permitting of Solid Waste disposal facilities.

(1) The following permits may be denied or rescinded at any time by the Tribal Council. Each facility must develop a plan of operation. Each permittee will be responsible for compliance of all applicable Tribal rules, codes or ordinances which are applicable within the reservation boundaries.

(2) Municipal Solid Waste Facility. The Tribal Natural Resource Department may issue a permit (after Tribal Council Approval) for a municipal solid waste facility if such facility meets the requirements of 40 CFR Part 258 and develops a plan of operation. This facility must be proven to be environmentally safe by the tribal Natural Resource Department. An environmental assessment must be done prior to application, at the applicant's expense.

(3) Household Hazardous Waste Facility. The Tribal Natural Resource Department may issue a permit for a mobile or permanent collection facility if the facility meets federal standards for such a facility and is considered environmentally safe by the Tribal Natural Resource Department. A permit is not necessary for a mobile facility sponsored by the Tribal Natural Resource Department.

(4) Construction and Demolition Site (C/D). The Tribal Natural Resource Department may issue a permit (after Tribal Council approval) for a construction and demolition site if the site meets 40 CFR Part 257 and is considered environmentally safe by the Tribal Natural Resource Department. An environmental assessment must be conducted prior to application, at the applicant's expense. The permit application shall be completed by the applicant and shall include legal description of the site, soil type, depth to ground water, proximity to wetlands, topography, and plans for operation and closure of the site (including remediation of pollution if present). Any existing demolition sites will need to comply and person(s) wishing to utilize such sites need a permit to dispose of such wastes at site.

(5) Open burning of earthen materials only (no other materials allowed) or clean demolition wood products will require a Tribal burning permit or other appropriate permit if conducted within the reservation boundaries. Permittee must follow all rules of permit and will be held liable for any damages to property, resources or harm to individuals.

(6) Other Solid Waste Facilities. Facilities for handling of solid waste including materials recovery facilities and composting facilities must be approved by the Tribal Council. Land spreading of compost or any other material derived from solid waste must be proven environmentally safe and approved by the Tribal Council. Tribal Environmental Review Process and Form must be completed.

(7) Commercial haulers of municipal solid waste operating within the exterior boundaries must have initial and continued approval in writing by the Tribal Natural Resource Department. Approval will be contingent upon meeting requirements set forth by the Tribal Natural Resource Department. A specific requirement will be for the hauler to submit an annual report detailing amounts of waste collected from tribal households, businesses, offices, facilities and enterprises and the destination of the recyclables. These requirements may also include specific transportation requirements such as covering of open bins while transporting the items, specific procedures for handling non-compliance with hauler's materials preparation requirements, other reporting requirements and any other requirement that the Tribal Natural Resource Department feels necessary for the protection of the environment for sound solid waste management. The requirements may change at any time and continued approval is subject to meeting any new ordinances or regulations. If continued approval is denied the hauler may not operate as hauler of municipal solid waste within the exterior boundaries of the Lac du Flambeau Indian Reservation.

Commercial Haulers (collection and disposal service providers) must meet the following requirements for collecting the materials specified in chapter II, Sec. 24.203:

(a) Separate the materials from other solid waste prior to collection and maintain that separation during the collection process.

(b) Prohibit the compacting of glass containers with newspaper or with municipal solid waste during collection.

(c) Maintain the materials collected in marketable condition.

(d) Comply with Tribal and State hauling/disposal service requirements set forth in state solid waste regulations for use of state landfills.

(8) Salvage Yard Operation. No person (s) shall operate or maintain a salvage yard unless the person (s) completes the Tribal Environmental Review Process and form and obtains a permit from the Tribal Natural Resource Department with Tribal Council's Approval. The permit will require the following:

(a) Location Requirements: No person (s) shall establish, operate, maintain or permit the use of land for a salvage yard within the following areas:

(1) Within 10,000 feet of any navigable lake, pond or flowage.

(2) Within 300 feet of a navigable river or stream.

(3) Within a flood plain.

(4) Within an area from which the Tribal Natural Resource Department after investigation finds there is reasonable probability that solid waste or leaching therefrom may have a detrimental effect on any surface water and groundwater quality.

(5) Within 1,000 feet of the nearest edge of right-of-way of any interstate or federal aid primary highway or the boundary of any public park, or residence, unless the site is screened by natural objects, plantings, fences or other appropriate means so as to be visible form the highway, park or residence.

(6) Within cultural and/ or sacred site as are defined under Chapter 66: Protection and Management of Archaeological, Historical, and Cultural Resources, wetlands and Critical Habitats.

(b) Plan of operation. No person (s) shall establish a new salvage yard or expand an existing salvage yard until an approved permit is issued by the Tribal Natural Resource Department upon completion of a salvage yard operation application. The application includes: plot plans of site, inventory report (specifies type and quantity of materials, etc.), destination of materials, on-site storage plans of non-salvageable materials, procedures and types of emergency fire and planning control.

(c) Operational Requirements. No person (s) shall operate or maintain a salvage yard except in conformance with the approved plan of operation and the following practices:

(1) Garbage or solid waste materials shall not be present at a salvage yard.

(2) No open burning of solid waste or recyclable materials shall be conducted.

(3) The boundaries of the salvage yard shall be marked with a fence or other object (s) to clearly define the boundary of the permitted site.

(4) The yard shall be surrounded by a solid fence, trees, shrubbery or other appropriate means to screen it from the surrounding area. If trees are used, they shall be capable of screening the yard all year or other methods shall be used in combination with the trees to provide screening during all seasons.

(5) A sign, acceptable to the Tribal Natural Resource Department, shall be posted at the entrance which indicates the name and permit number of the operation.

(6) The operation shall be conducted in accordance with any other Tribal or Federal Regulations.

(d) Closure. Any person (s) who maintains or operates a salvage yard or who permits use of property for such purpose shall, when the yard is closed by the operator or property owner, or when the Tribal Natural Resource Department determines that closure is required, close the yard by removing all salvageable materials within a time period specified by the Tribal Natural Resource Department, which shall be no greater than 120 days and pursuant to standards for such closure developed by the Tribal Natural Resources Department. The operator or owner shall notify the Tribal Natural Resource Department, in writing, 60 days prior to the date of closing a salvage yard. If upon closing or anytime during operation the site has been determined to be contaminated the operator or owner shall be required to remediate or prove the site to be free of pollutants. Installation of groundwater wells may be required at the owners expense.

24.105 Jurisdiction and Procedure.

(1) Jurisdiction is hereby conferred upon the Lac Du Flambeau Tribal Court over actions brought for violations of this code.

(2) Proceedings for violation of this code shall be governed by chapters III and IV of the Tribal Court Code, Tribal Code Ch. 80, provided that proceedings may be instituted in tribal court by issuance of a citation.

24.106 Enforcement.

The provisions of this code shall be enforced by Tribal Conservation Law Enforcement Officers and designated employees of the Lac du Flambeau Department of Natural Resources, or, if they are not available, by Tribal Police Officers.

24.107 Penalties.

(1) Violations of the provisions of this Code, except 24.103 (4), hazardous waste, and 24.103 (3) household hazardous waste, shall be punishable by a civil remedial money penalty not to exceed $500.00 and community service not to exceed 100 hours. Each day of a violation may be treated as a separate violation under this provision.

(2) Violations of 24.103 (3), household hazardous waste shall be punishable by a civil remedial penalty not to exceed $1000 and community service not to exceed 100 hours.

(3) Violations of 24.103 (4), hazardous waste, shall be punishable in addition to any federal punishment with a civil remedial penalty not to exceed $1,000,000.

(4) In addition to a civil remedial money penalty, any personal property, including vehicles and other equipment, which has been used in connection with the violation of this Code may be seized and forfeited pursuant to Chapter IV of the Tribal Court Code, Tribal Code Ch. 80.

(5) In addition to the foregoing penalties, the court may suspend or revoke any permit issued under this code.

(6) Upon conviction, the court shall order payment of court costs of $20.00.

(7) Nothing herein shall prevent the Tribe from bringing suit against any violator of this code for money damages for harm to tribal resources caused by the violation.

(8) Any interested party may bring suit in tribal court to enjoin a violation of this Code.

(9) In addition to the foregoing penalties, the court shall order the responsible party to remove all materials improperly discarded, abandoned, left or deposited; clean up any other effects of the party's action; and ameliorate any other environmental harm caused by the action. In the event this material is not removed and all damaged repaired, the court shall order the work done and the cost shall be interim financed by the court and immediately reimbursed by the responsible party. Legitimate costs can include personnel time as well as other expenses.

RECYCLING, COMPOSTING, AND RESOURCE RECOVERY

24.201 Scope and Purpose.

(1) The purpose of this code is to promote recycling, composting and resource recovery beyond the voluntary efforts of many tribal households put forth in current recycling programs. While recycling is done by a majority of tribal members, the Tribal Council's position opposed to mining in the Ceded Territories necessitates 100% recycling. This code is in place to ensure that all persons on the reservation recycle. The Tribal Council also promotes using recyclables instead of raw materials for production of goods because it uses less energy, which decreases air pollution and decreases the world's reliance on fossil fuels.

(2) This code applies to the activities of tribal members and non-members on the reservation.

24.202 Definitions.

(1) *Bi-metal container* means a container that is made primarily of a combination of steel and aluminum (example: some canned goods cans that have fitted bottoms for stacking).

(2) *Container board* means corrugated paperboard used in the manufacture of shipping containers and related products.

(3) *HDPE* means high density polyethylene plastic containers marked by the SPI code No. 2.

(4) *LDPE* means low density polyethylene plastic containers marked by the SPI code No. 4.

(5) *Magazines* means magazines and other materials printed on similar paper.

(6) *Major appliance* means a residential or commercial air conditioner, dehumidifier, humidifier, furnace, water heater, clothes dryer, clothes washer, dishwasher, freezer, microwave oven, oven, refrigerator or stove.

(7) *Materials Recovery Facility* means a facility where 2 or more of the materials specified in Section 24.203, Tribal Solid Waste Codes Chapter II, not mixed with other solid waste, are processed for reuse or recycling by conversion into a consumer product which used as raw material in a commercial or industrial process. A materials recovery facility does not include a facility operated by a pulp or paper mill which utilizes source separated secondary fiber or paper fore use as a raw material in a commercial product.

(8) *Mixed or other plastic resin types* means plastic containers marked by the SPI code No.7

(9) *Multiple-family dwelling* means a property containing 5 or more residential units, including those which are occupied seasonally.

(10) *Municipal solid waste* is garbage and refuse created by households and individuals and non-hazardous wastes, garbage and refuse created by businesses, tribal enterprises and government offices and facilities.

(11) *Municipal solid waste disposal facility* means a disposal facility that meets the standards in 40 CFR Part 258 and is approved by the Tribal Natural Resource Department.

(12) *Newspaper* means a newspaper and other materials printed on newsprint.

(13) *Non-residential facilities and properties* means commercial, retail, industrial, institutional and governmental facilities and properties. This term includes tribal facilities, businesses, and enterprises. This term does not include multiple family dwellings.

(14) *Office paper* means high grade printing and writing papers from offices in non-residential facilities and properties. Printed white ledger and computer printout are examples of office paper generally accepted as high grade. This term does not include industrial process waste.

(15) *Person* means an individual, both tribal and non-tribal member, trust, firm, joint stock company, corporation (including a government operation), partnership, association, tribal, state, municipality, commission, political subdivision of a state or the Tribe, or any interstate body and shall include each department, agency, and instrumentality of the United States.

(16) *PETE* means polyethylene terephthalate plastic containers marked by the SPI code No.1 (examples: 2-liter soda bottles, milk bottles).

(17) *PP* means polypropylene plastic containers marked by the SPI code No. 5 (examples: plastic packaging, bubble pack, plastic wrap)

(18) *PS* means polystyrene plastic containers marked by the SPI code No. 6 (examples: "styrofoam" cups, other products commonly called "styrofoam").

(19) *PVC* means polyvinyl chloride plastic containers marked by the SPI code No. 3 (example: PVC plumber's pipe)

(20) *Recyclable materials* includes lead acid batteries; major appliances; waste oil; yard waste; aluminum containers; corrugated paper or other container board; foam polystyrene packaging; glass containers; magazines; newspapers; office paper; plastic containers, including those made of PETE, HDPE, PVC, LDPE, PP, PS, and mixed or other plastic resin types; steel containers; waste tires; and bi-metal containers.

(21) *Solid waste* means garbage, refuse and any other waste material resulting from industrial, commercial, agricultural operations and community activities, not including household sewage.

(22) *Transfer Facility Site* is a duly-licensed and authorized commercial and municipal establishment or operation.

(23) *Tribal Council* means the governing body of the Lac du Flambeau Band of Lake Superior Chippewa Indians, as that body is defined in the Tribe's Constitution.

(24) *Yard waste* means leaves, grass clippings, yard and garden debris and brush, including clean woody vegetative material no greater than 6 inches in diameter. This term does not include stumps, roots or shrubs with intact root balls.

24.203 Separation of Recyclable Materials.

(1) Occupants of single family and 2 to 4 unit residences, multiple family dwellings and non-residential facilities and properties shall separate the following materials from municipal solid waste:

a. Aluminum cans
b. Bi-metal containers
c. Corrugated paper or other container board
d. Glass containers

e. Lead acid (car) batteries
f. Magazines or other materials printed on similar paper
g. Major appliances
h. Newspapers or other materials printed on newsprint
I. Office paper
j. Plastic containers made of PETE (No. 1) or HDPE (No. 2).
k. Steel containers
l. Waste oil
m. Waste tires
n. Yard waste

(2) The following materials or any other materials may be included on the preceding list of recyclable materials to be separated from municipal solid waste by resolution of Tribal Council as markets for these materials become available (Meantime, these materials need to be processed as regular garbage, or other safe options of disposal may apply, these items may not be buried or burned at any time):

a. Foam polystyrene (No. 6) packaging
b. Plastic containers made of PVC, LDPE, PP, PS, or mixed or other plastic resin types (Nos. 3-7, respectively)

24.204 Management of Lead Acid Batteries, Major Appliances, Waste Oil and Yard Waste.

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Persons shall manage these materials as follows:

(1) Lead acid batteries and major appliances shall be taken to a site designated by the Tribal Natural Resource Department or any off-reservation site approved by Wisconsin Department of Natural Resources. Retailers of lead acid batteries often accept them and major appliances may be taken to the Town of Lac du Flambeau Highway H Transfer Site for a fee.

(2) Waste oil shall be taken to a site designated by the Tribal Natural Resource Department or any depository where oil is collected for recycling or burned for energy recovery, such as an auto repair shop. Oil is not to be disposed in any other manner, but can be burned, when deemed appropriate by the Tribal natural Resources Department and after prior approval has been obtained by such Department.

(3) Yard waste shall not be included with regular municipal solid waste that is meant for disposal in a landfill. Proper disposal options include composting and burning conducted in accordance with such permitting rules as developed by the Tribal Natural Resources Department.

24.205 Other Materials.

The list of materials deemed necessary by the Tribal Natural Resources Department to be separated from the solid waste stream and recycled or disposed of in a different manner than set forth herein may be amended by an adopting resolution of the Tribal Council.

24.206 Preparation and Collection of Recyclable Materials.

(1) Individuals must follow the preparation requirements of the Tribal Natural Resource Department, as per Materials Recovery Facilities acceptance procedures. Approved haulers will only accept recyclable materials prepared as needed for MRF or transfer site where their recyclables are collected. Hauler will not pickup unseparated or mixed recyclable garbage from any individual. The hauler shall notify any non-compliance party of improper disposal procedures and shall not accept the waste until prepared accordingly. This notification shall be reported (in writing) to the individual, Chippewa Housing Authority--if applicable, and Tribal Natural Resource Department. All recyclable items must be cleaned and prepared as to the hauler or transfer site's requirements in accordance with applicable rules and procedures adopted by the Tribal Natural Resource Department.

(2) Recyclable material will be,

(a) Placed out (by customer) for curbside pickup to be collected by an approved hauler, or;

(b) Taken to a transfer site facility such as the Lac du Flambeau Town Transfer Station, HWY H. Individual should maintain written verification of disposal service such as a bill or receipt.

24.207 Prohibitions on Disposal of Recyclable Materials

(1) No person may dispose of in a solid waste disposal facility or bag designated to go to such a facility or burn or bury any of the recyclable materials specified above in this chapter 24.203 (1) or (2).

(2) No Tribal Facilities shall be allowed to burn any recyclable materials.

24.208 Enforcement.

(1) Any authorized officer, employee or representative of the Lac du Flambeau Tribal Natural Resource Department may inspect recyclable materials separated for recycling, municipal solid waste intended for disposal, collection sites and facilities, collection vehicles or collection areas of multiple-family dwellings and

non-residential facilities and properties for the purpose of ascertaining compliance with the provisions of this ordinance. No person shall refuse access to any authorized officer, employee or representative of the Lac du Flambeau Tribal Natural Resource Department who requests access for purposes of inspection, and who presents appropriate credentials. No person may obstruct, hamper, or interfere with such an inspection.

(2) Any person who violates a provision of this ordinance may be issued a citation by the Lac du Flambeau Tribal Conservation Wardens, by designated employees of the Lac du Flambeau Department of Natural Resources or Lac du Flambeau Tribal Police to collect forfeitures. The issuance of a citation shall not preclude proceeding under any other ordinance or law relating to the same or any other matter. Proceeding under any other matter shall not preclude the issuance of a citation under this paragraph.

(3) Penalties for violating this ordinance may be assessed as follows:

(a) Any person who violates 24.207 shall be required to forfeit $100 for a first violation and complete community service hours in the area of solid waste or recycling not to exceed 10 hours, $200 for a second violation and/or community service in the area of solid waste or recycling not to exceed 40 hours and not more than $1000 for a third violation and/or community service in the area of solid waste or recycling not to exceed 100 hours.

(b) Any person who violates any other part of this ordinance shall forfeit not less than $100 nor more than $1000 and shall complete community service hours in the area of solid waste or recycling for not less than 2 hours nor more than 100 hours.

24.209 Responsibilities of Owners or Designated Personnel of Non-Residential Facilities and Properties

(1) Owners and/or facility managers of non-residential facilities and properties, including tribal offices, shall do all of the following for recycling materials specified in above in Chapter 24.203 (1), 1-15:

(a) Provide adequate, separate containers for the recyclable materials.

(b) Notify in writing. At least semi-annually, all users, tenants and occupants of the properties about the established recycling program.

(c) Provide for the collection of materials separated from the solid waste by the users, tenants, and occupants and the delivery of the materials to a recycling facility.

(d) Notify users, tenants and occupants of reasons to reduce, and recycle, which materials are collected, how to prepare materials in order to meet the processing requirements and collection methods or sites.

(e) Shall carry a contract with the hauler detailing disposal fee's name approved landfill and materials recovery facility, tonnage and report of recyclables and garbage which can be obtained by the landfill, MRF, or hauler themselves.

(2) Tribal Natural Resource Department shall maintain and conduct public information and education programs to inform individuals, businesses, and general public on recycling, waste reduction, reuse, solid waste issues, and general pollution prevention awareness.