



LANDFILL MINING: REQUIREMENTS FOR RECOVERING MATERIALS AND LAND FROM CLOSED OR ACTIVE LANDFILLS

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AGENDA:

Definitions

Establishing a Landfill Mining Operation

Applicable Statutes and Rules, and Authorization Mechanism

Pre-Application Submittals: Test-pit Plan/ Evaluation Report

Contents of a Landfill Mining Application

Landfill Mining Project Summaries and Case Studies

Benefits of Landfill Mining

DEFINITIONS

Landfill Mining is the physical procedure associated with the **excavation** of buried municipal solid waste and **processing** of the material **to recover material for beneficial use**, per 30 TAC §330.3(77).

Closed Landfill a facility that stopped receiving waste and completed closure activities.

Active Landfill a facility that is receiving solid waste.

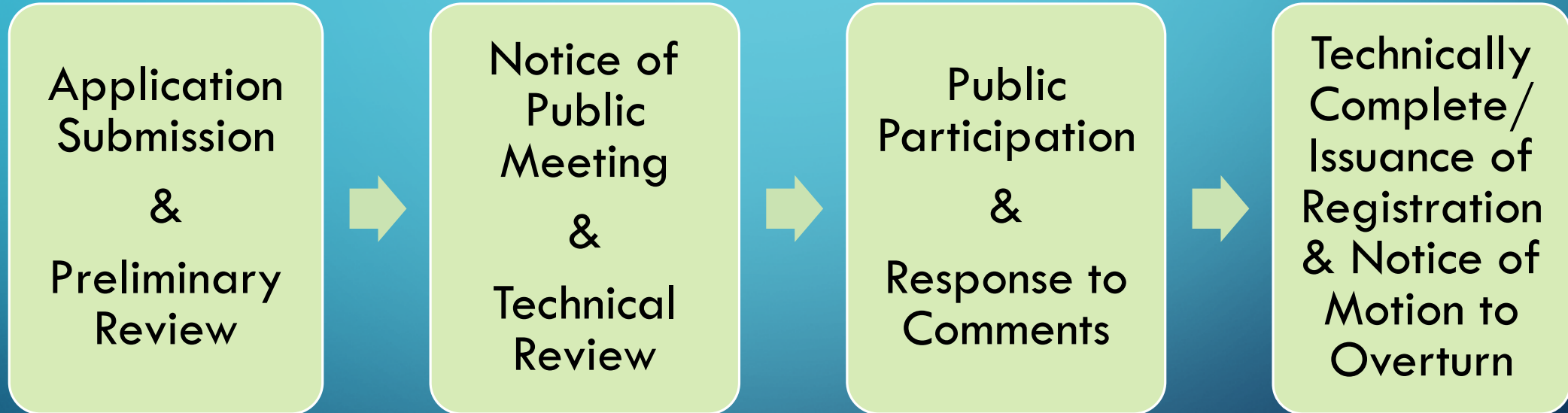
ESTABLISHING A LANDFILL MINING OPERATION



APPLICABLE STATUTES AND RULES

Statutes and Rules	Applicability
Health and Safety Code, Sec. 361.092(a)	Policy directions for materials and energy recovery
30 TAC §330.5(a)(7)	Facility classification, and major rule sections that apply
30 TAC §330.63(d)(7)	Test-pit plan/ evaluation report, & process descriptions
30 TAC Subchapter N	• General Requirements, Variances, Relationships with Operating Landfills, and Air Quality Requirements • Operational Requirements and Design Criteria • Reporting Requirements, Sampling and Analysis for Final Soil Product, Grades and Uses • Closure and Closure Cost Estimates Requirements

AUTHORIZATION MECHANISM FOR TYPE IX LANDFILL MINING REGISTRATION



Note: A permit modification is allowed if permittee of an active and operating landfill owns the landfill mining activity.

PRE-APPLICATION SUBMITTAL

Test Pit Plan

A plan view map;

Number of test pits, locations, depth, design, and size;

Backfilling descriptions; and

Waste disposal descriptions.

Test Pit Evaluation Report

Characteristics of waste, including test results;

Landfill cross-sections;

The location and extent of the waste unit; and

Historical records of operations.

CONTENTS OF A LANDFILL MINING APPLICATION

- ❑ Parts I – IV, and Form 0650;
- ❑ Test-pit Evaluation Report;
- ❑ Process Descriptions;
- ❑ General Requirements, Variances, Relationships with Operating Landfills, and Air Quality Requirements
- ❑ Operational Requirements and Design Criteria;
- ❑ Reporting, Sampling and Analysis for Soil Product, Grades and Uses; and
- ❑ Closure and Closure Cost Estimates Requirements.

CONTENTS OF A LANDFILL MINING APPLICATION

CONTINUED – PROCESS DESCRIPTIONS

- ☐ Provide a process diagram;
- ☐ List materials intended for processing;
- ☐ Describe excavation methods;
- ☐ Identify reusable/recyclable items;
- ☐ Provide narrative on product distribution;
- ☐ Describe process water handling methods;
- ☐ Provide plans for odor management, vector control, landfill cover, and for ponded water.

CONTENTS OF A LANDFILL MINING APPLICATION

CONTINUED – CONCEPTUAL PROCESS DIAGRAM



CONTENTS OF A LANDFILL MINING APPLICATION

CONTINUED – AIR QUALITY, AND OTHER REQUIREMENTS

- ☐ Do not disrupt landfill operations;
- ☐ Dispose leachate properly;
- ☐ Request variances in writing;
- ☐ Modify permit to include the mining facility/ activities; and
- ☐ Contact Air Permits Division of the TCEQ for air quality requirements.

CONTENTS OF A LANDFILL MINING APPLICATION

CONTINUED - OPERATIONAL REQUIREMENTS AND DESIGN CRITERIA

- ☐ Protect groundwater/ use proper liner system;
- ☐ Watch out for prohibited materials;
- ☐ Do not excavate waste slopes < 34 Degrees;
- ☐ Maintain Soil end-product standards;
- ☐ Employ Certified Operator, and Health and Safety Coordinator;
- ☐ Practice health and safety plan, and use personal protection equipment; and
- ☐ Use covered trucks.

CONTENTS OF A LANDFILL MINING APPLICATION

CONTINUED – PRODUCT SAMPLING

- ☐ Address Sampling, Analysis, and Reporting Requirements;
- ☐ Submit annual report;
- ☐ Submit final soil product testing report semi-annually; and
- ☐ Provide product classification and usage:
 - ☐ Grade 1 Soil,
 - ☐ Grade 2 Soil, and
 - ☐ Waste Grade Soil.

CONTENTS OF A LANDFILL MINING APPLICATION

CONTINUED – CLOSURE PLAN

- ☐ Provide Closure Requirements;
- ☐ Address Certification of Final Facility Closure Requirements;
- ☐ Provide Closure Cost Estimates; and
- ☐ Address Financial Assurance Requirements.

LANDFILL MINING PROJECT SUMMARIES

Landfills	Year of Start/ Area of Excavation	Objectives
Naples Landfill (Collier County, FL)	April 1986/ 10 acres	Decrease liability, and recover soil
Edinburg Landfill (Edinburg, NY)	Dec. 1990 / 2.6 Acres	Reduce footprint/ closure cost
Frey Farm Landfill (Lancaster County, PA)	Jan. 1991 300,000 to 400,000 cu. yd.	Recover fuel and landfill capacity

(Source : EPA530-F-97-001, July 1997/ Based on: Dickinson, 1995)

CASE STUDY I: TYPE IV LANDFILL

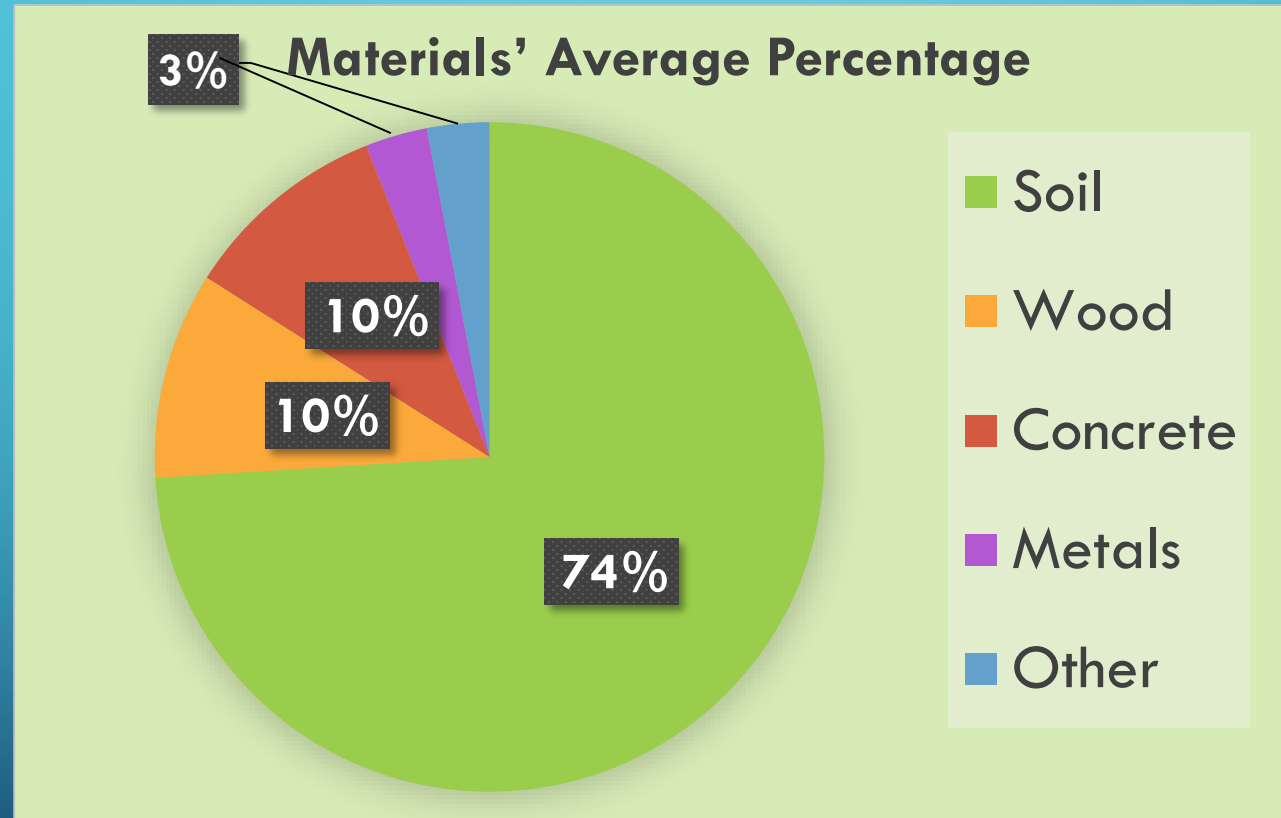
Objectives:

- ⑩ To recover material for beneficial use, and removal of waste materials to other authorized facilities.

Features:

- ⑩ Type IV Landfill – Closed Site
- ⑩ 18.11 Acres of Excavation
- ⑩ Volume: 420,000 Cubic Yards
- ⑩ Type IX Registration Issued: April 26, 2016
- ⑩ Status: Not implemented yet

CASE STUDY I: COMPOSITION OF THE WASTE IN TYPE IV LANDFILL



(Source: Registration Application Dated August 18, 2015)

CASE STUDY II: TYPE I LANDFILL

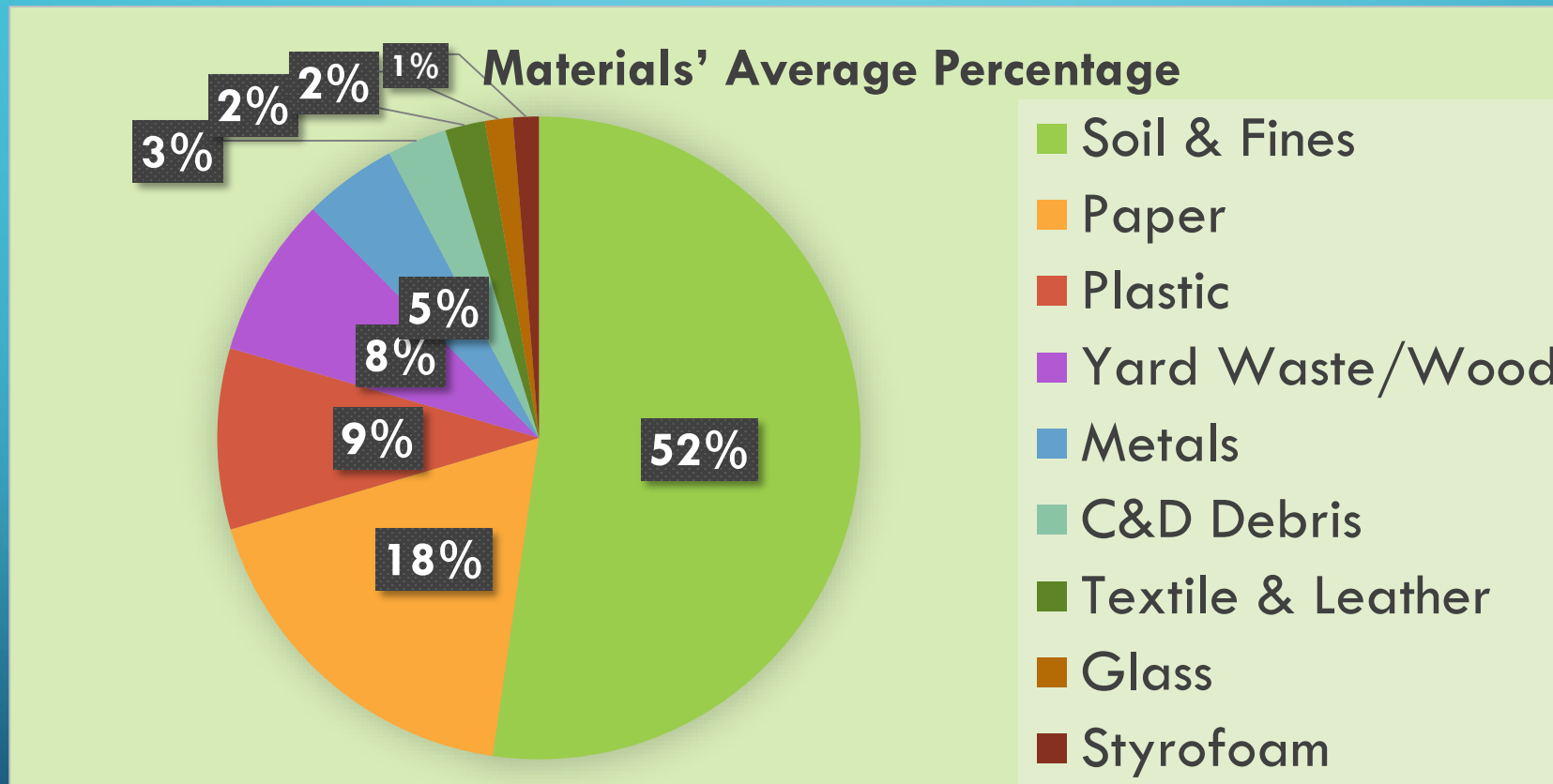
Objective

- ⑩ To reclaim recyclable materials and excess soil, with the ultimate goal to improve the liner system at the existing Pre-subtitle D waste cell.

Features

- ⑩ Active Type I Landfill
- ⑩ Area: 31 Acres of Excavation
- ⑩ Volume: 2,610,000 Cubic Yards
- ⑩ Permit Modification: Aug. 10, 2016
- ⑩ Status: Not yet implemented

CASE STUDY II: COMPOSITION OF THE WASTE IN TYPE I LANDFILL



(Source: Modification Application Dated October 12, 2015)

BENEFITS OF LANDFILL MINING

Increases landfill capacity

Generates revenues

Decreases operating costs

Produces energy

Reduces closure costs

Removes hazardous materials

Helps retrofit liners

QUESTIONS?

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