Associated Engineering

CANADA BEST MANAGED COMPANIES Platinum member



Generating a Sustainable Financial Model for Solid Waste Management Facilities

From Cradle to Grave

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Overview

- Master Planning
- Revenues to Meet Your Future Needs
- Closure/Post Closure Template (AB)
  - What it Does Well
  - What it Does Not Do Well
- Tools to Plan for the Future
  - Closure/Post Closure
  - Monte Carlo Simulation

Master Planning

Beginning with the End in Mind

The earlier you know where you're going, the straighter the path will be.

Review of reserves and liabilities to know where revenues should be placed.

Revenues to Meet Your Future Needs:

- Airspace vs Tonnage
- What are your Capital Projects?
  - Cell Construction/Future Lateral Expansions
  - Equipment Capital Costs
  - Temporary Capping/Capping
  - Gas Collection
  - Closure and Post-Closure
- The Right Fund for the Right Expenses

Closure and Post Closure

- Estimating the Right Time Frame
- Estimating the Right Costs
- Ensuring the Funds Are Protected

Alberta Closure/Post Closure Template

What it Does Well

- Snapshot in Time
- Provides Rough Costs
- A Guideline for the Basics

Landfill Template

Enter site-specific information into the highlighted area to calculate the total cost of each line item.

Item Description	Units	Unit Rate		Total Quantity			Total Cost
Closure Capital Cost							
Waste grading and surface preparation	m^2	6	$/ m^2	150000	m^2	$	900,000.00
Cap cover soil layer	m^2	9	$/ m^2	150000	m^2	$	1,350,000.00
Cap subsoil layer	m^2	7.5	$/ m^2	150000	m^2	$	1,125,000.00
Cap topsoil layer	m^2	5	$/ m^2	150000	m^2	$	750,000.00
Cap vegetation	m^2	2	$/ m^2	150000	m^2	$	300,000.00
Removal of site infrastructure	Lump sum	25000	$	1	1	$	25,000.00
General site restoration	Lump sum	40000	$	1	1	$	40,000.00
					Sub-total	$	4,490,000.00
					Engineering and Contingency @ 20%	$	898,000.00
					Estimated Closure Cost	$	5,388,000.00
Post-Closure (ongoing annual costs)							
Leachate management	m^3 /year	5000	$/ m^3	45	m^3/year	$	225,000.00
Environmental monitoring	$/year	5000	$	1	1	$	5,000.00
Landfill cap maintenance	$/year	4000	$	1	1	$	4,000.00
General site maintenance	$/year	1500	$	1	1	$	1,500.00
					Sub-total	$	235,500.00
					Engineering and Contingency @ 20%	$	47,100.00
					Annual Post Closure Costs	$	282,600.00
					Total Post Closure Period Costs (multiple by 25 years)	$	7,065,000.00
					Average Rate of Return (per cent)		2.50%
					Average Inflation Rate (per cent)		3.50%
					Net Present Value For Post-Closure Costs	$	8,035,081.83
					Financial Security Obligation (Post-Closure + Closure)	$	13,423,081.83

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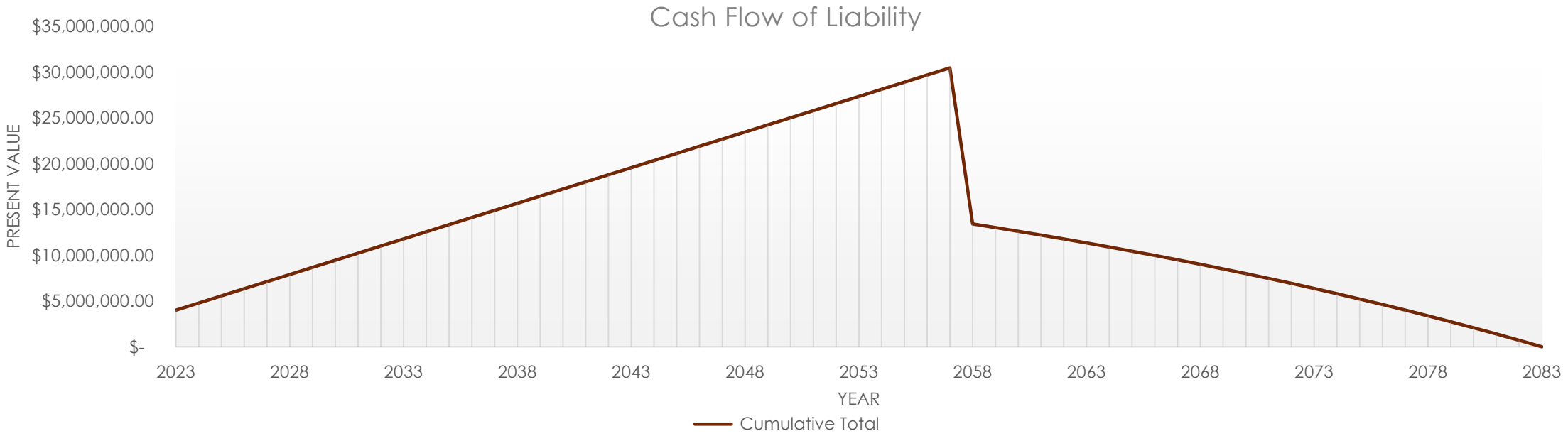
What it Lacks

- Glimpse into the Future
- Accurate Leachate Volumes Post-Closure
- Landfill Gas Integration

Tools to Plan for the Future

Closure/Post Closure

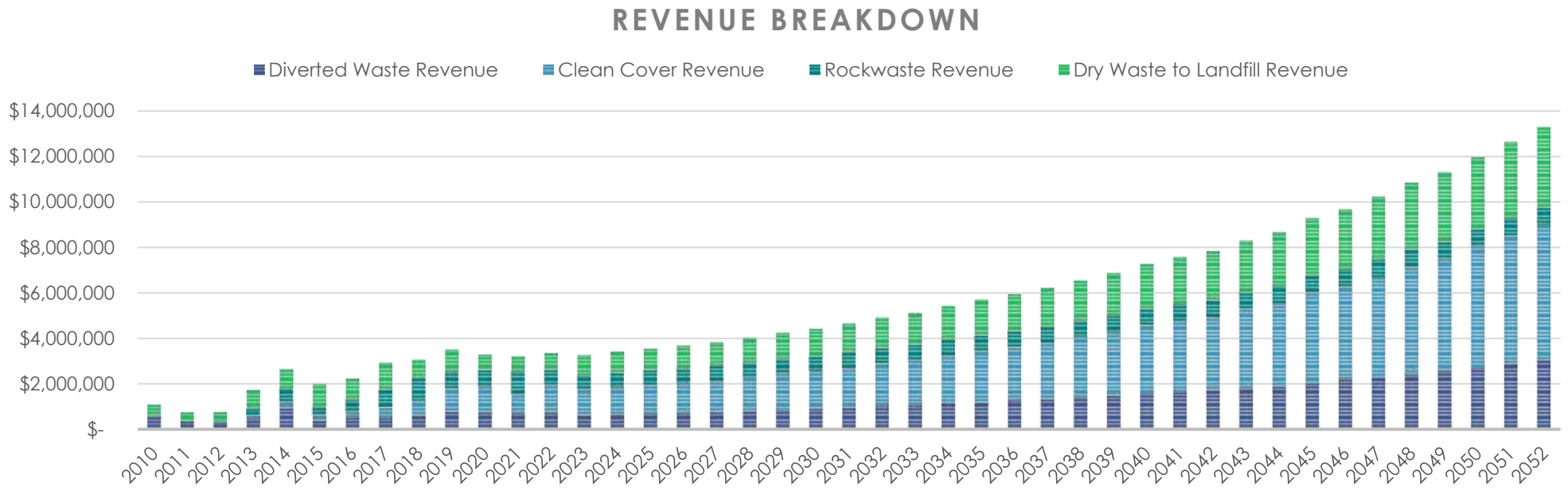
- Calculate Future Costs
- Incorporate Landfill Gas
- Water Balance Method for Leachate Reduction Over Time



Tools to Plan for the Future

Monte Carlo Simulation

- 1,000 Permutations of Analysis
- Input for What if Scenarios
- Quick Manipulation Once Setup is Complete



Questions?

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