

Vernon County Solid Waste and Recycling Committee

July 15, 2020

Financial Analysis Update and Groundwater Environmental Risk Assessment

SCS Presentation

- SCS Engineers Introduction
- Financial Analysis Update
 - Betsy Powers, Christine Collier and Vita Quinn
- Groundwater Environmental Risk Assessment
 - Betsy Powers and Sherren Clark
- Questions



Financial Analysis Update

Vernon County Solid Waste and Recycling

SCS ENGINEERS

Vernon County Landfill

- Expected to reach capacity in 2024
- Evaluating future landfill and recycling services
- Financial analysis of three operational scenarios

Vernon County Landfill Options

1. Expand landfill and continue operations
2. Close landfill at end of current life and convert to a transfer station
3. Close landfill at end of current life and let private haulers determine where waste will go

Information Sources

- Solid Waste Management Options Analysis Report
 - Foth Infrastructure & Environment, LLC (Foth) dated February 1, 2009 (Appendices G through L were not available).
 - Evaluated 5 options, including expanding the landfill and converting to a transfer station.
- Current and historical reports, data, and schedules from Department staff

Information Sources (continued)

- Brian Kent of Short, Elliot, Hendrickson (SEH)
 - Remaining constructed life
 - Future site feasibility
 - Design
 - Schedule
 - Construction
 - Costs
- Conference calls with Department staff

Information Sources (continued)

- Southwest Sanitation
 - Southwest Sanitation recently built a nearby transfer station.
 - Approximately 95% of the waste collected by Southwest Sanitation goes to the Vernon County Landfill by contract.
 - Southwest Sanitation indicated it provides approximately 75-80% of the waste that the Vernon County Landfill receives.
 - If tipping fees increase, Southwest Sanitation may no longer take waste to the Vernon County Landfill.

Information Sources (continued)

- AA Dumpster Service:
 - AA Dumpster Service would like to see the landfill expand. They would continue to bring waste to the landfill.
 - The \$60 per ton tipping fee was not cost prohibitive to them.

Current Tip Fees

Category	Fee per Ton	FY2019 Tons	% Total FY 2019 Tonnage	Notes
Contracted MSW	\$49	18,470	91.3%	State licensed waste transporters contracted with the Department
Non-Contracted MSW	\$60	1,400	6.9%	Haulers that do not have a contract with the Department
Residential MSW	\$120	144	0.7%	Residents who directly haul waste to the landfill

Options

1. Landfill Expansion

2. Transfer Station

3. Close Landfill and Recycling Center

**Background
Results
Assumptions**

Common Assumptions

- Financial assumptions
- Department provided financial and operational information
- Current constructed airspace will be utilized to full extent
- Debt service for future capital improvements and vehicle replacements
- Closure and post closure funds will be utilized to close the landfill and perform post-closure care/maintenance
- Excess funds stay with landfill for future costs

Option 1: Landfill Expansion – 3 Scenarios Evaluated

Scenario Number	Contracted MSW Tip Fee per Ton	Contracted MSW Tip Fee Rebate per Ton	Non-Contracted MSW Tip Fee	Residential MSW
1	\$49 (same as current)	N/A	\$60 (same as current)	\$120 (same as current)
2	\$60	N/A	\$63	\$120
3	\$60	Up to 9% \$5.40 per ton (net \$54.60 per ton tip fee)	\$63	\$120

Notes:

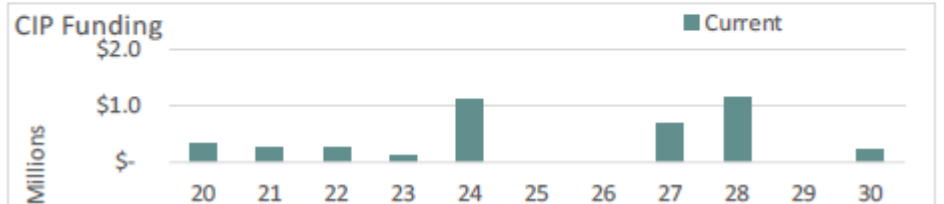
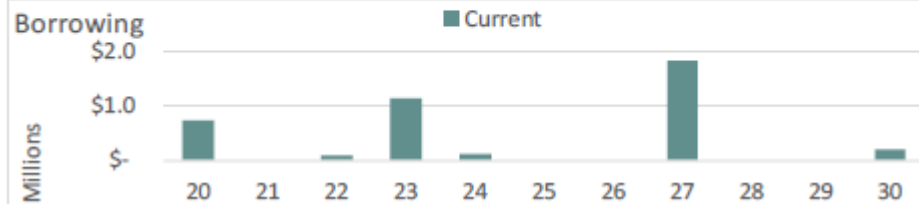
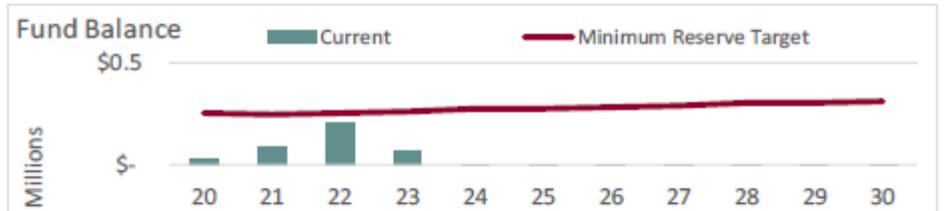
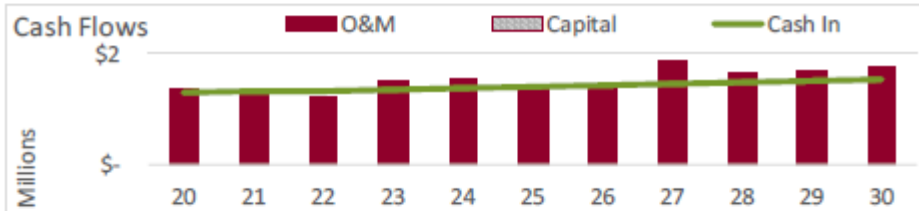
1. Non-Contracted MSW tip fee increase to \$63 = 5% increase.
2. Scenario 3 Contracted MSW tip fee rebate would be similar to La Crosse County Landfill with a sliding scale up to X% for waste delivery contracted for Y years.

Option 1, Scenario 1 Results

Vernon County, WI

Solid Waste Revenue Sufficiency Analysis

	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Fund Balance \$M	\$0.03	\$0.08	\$0.20	\$0.07	-\$0.10	-\$0.10	-\$0.11	-\$0.51	-\$0.70	-\$0.87	-\$1.09
Residential MSW	\$120.00	\$120.00	\$120.00	\$120.00	\$120.00	\$120.00	\$120.00	\$120.00	\$120.00	\$120.00	\$120.00
Contracted MSW	\$49.00	\$49.00	\$49.00	\$49.00	\$49.00	\$49.00	\$49.00	\$49.00	\$49.00	\$49.00	\$49.00
Non-Contracted MSW	\$60.00	\$60.00	\$60.00	\$60.00	\$60.00	\$60.00	\$60.00	\$60.00	\$60.00	\$60.00	\$60.00

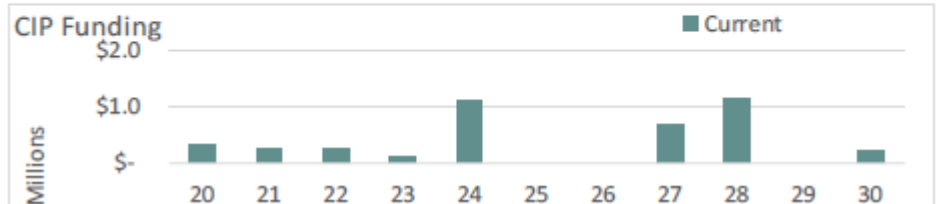
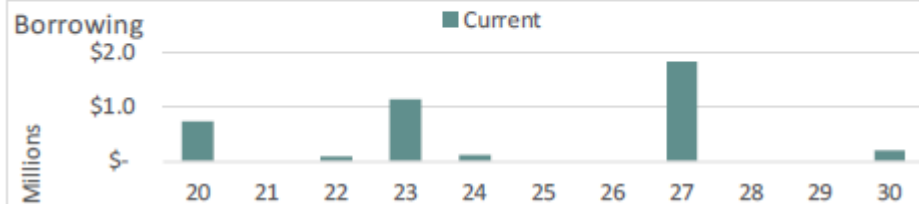
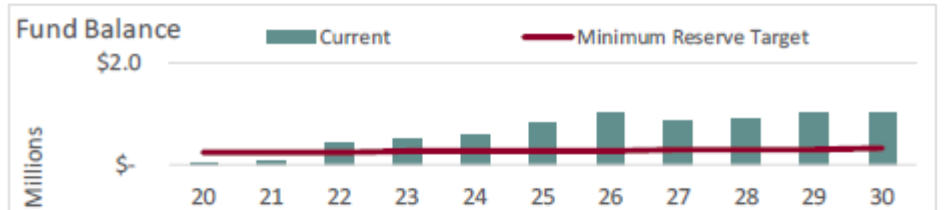
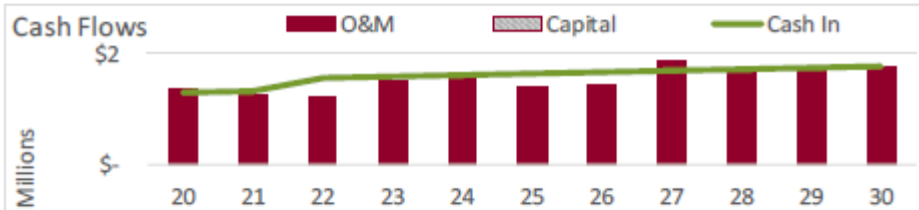


Option 1, Scenario 2 Results

Vernon County, WI

Solid Waste Revenue Sufficiency Analysis

	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Fund Balance \$M	\$0.03	\$0.08	\$0.42	\$0.51	\$0.56	\$0.79	\$1.02	\$0.86	\$0.91	\$0.99	\$1.03
Residential MSW	\$120.00	\$120.00	\$120.00	\$120.00	\$120.00	\$120.00	\$120.00	\$120.00	\$120.00	\$120.00	\$120.00
Contracted MSW	\$49.00	\$49.00	\$60.00	\$60.00	\$60.00	\$60.00	\$60.00	\$60.00	\$60.00	\$60.00	\$60.00
Non-Contracted MSW	\$60.00	\$60.00	\$63.00	\$63.00	\$63.00	\$63.00	\$63.00	\$63.00	\$63.00	\$63.00	\$63.00

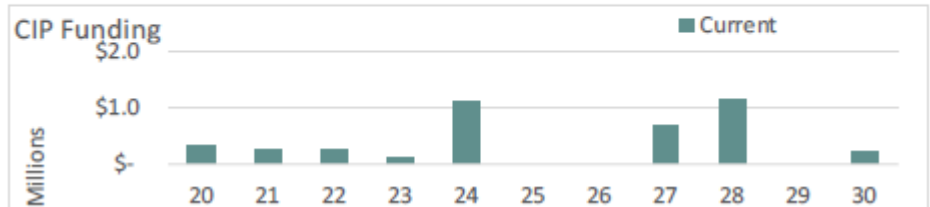
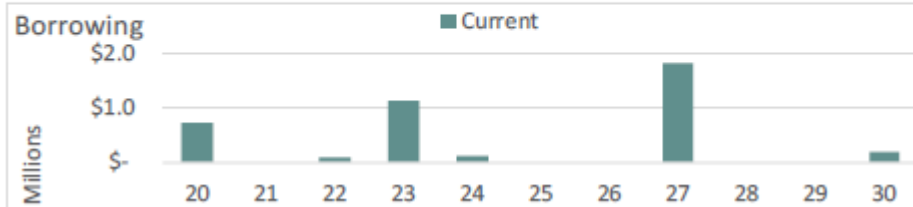
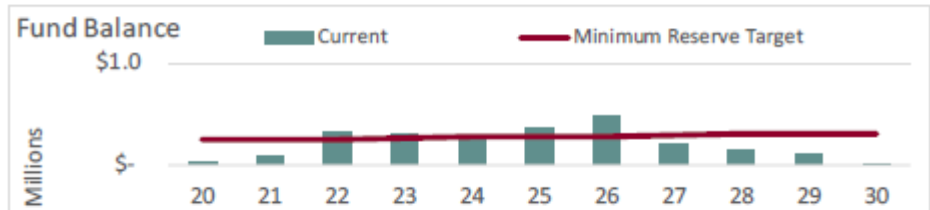
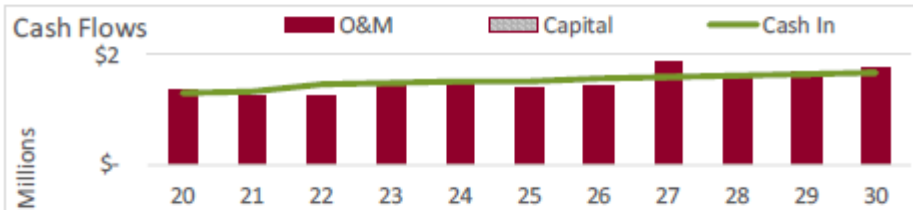


Option 1, Scenario 3 Results

Vernon County, WI

Solid Waste Revenue Sufficiency Analysis

	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Fund Balance \$M	\$0.03	\$0.08	\$0.31	\$0.30	\$0.24	\$0.36	\$0.48	\$0.20	\$0.14	\$0.09	\$0.00
Residential MSW	\$120.00	\$120.00	\$120.00	\$120.00	\$120.00	\$120.00	\$120.00	\$120.00	\$120.00	\$120.00	\$120.00
Contracted MSW	\$49.00	\$49.00	\$54.60	\$54.60	\$54.60	\$54.60	\$54.60	\$54.60	\$54.60	\$54.60	\$54.60
Non-Contracted MSW	\$60.00	\$60.00	\$63.00	\$63.00	\$63.00	\$63.00	\$63.00	\$63.00	\$63.00	\$63.00	\$63.00



Option 1: Results Summary

Scenario Number	Fund Balance End FY2030	Year Fund Balance Goes Negative	Financially Viable?
1	(\$1.09M)	2024	No
2	\$1.03M	N/A	Yes
3	\$0.00M	N/A	Yes

Notes:

1. M denotes Million.

Option 1 Assumptions

- Feasibility and permitting occurring in FY2020 – FY2022
- Construction in 2024 and 2028
- Vehicle replacement includes the scale, loader, compactor, and day cab
- Staffing does not change

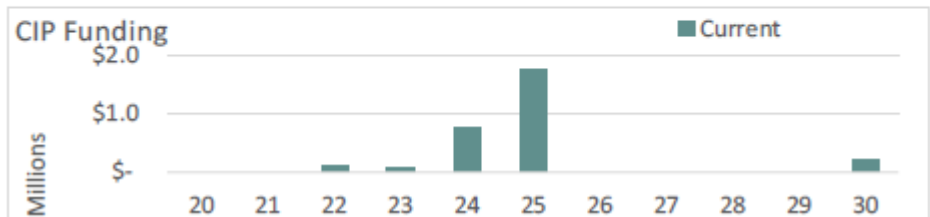
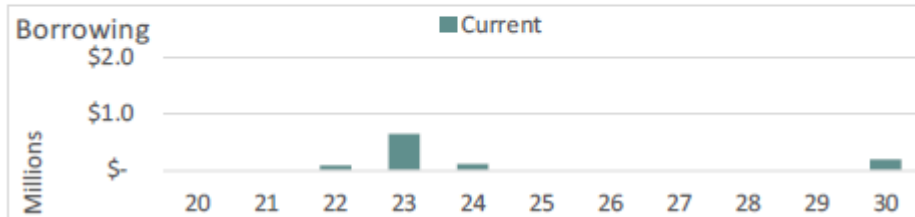
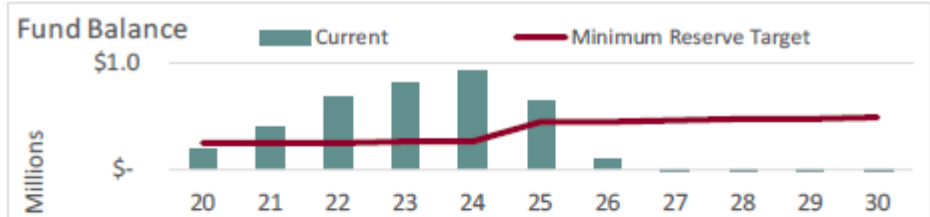
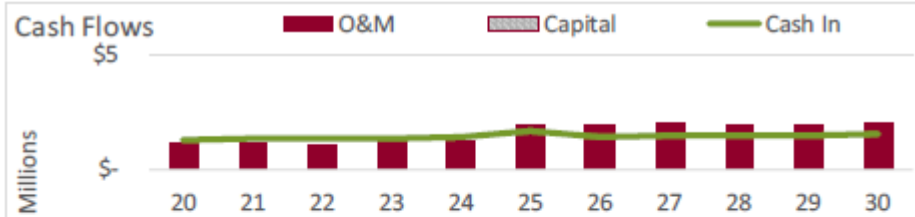
Option 2: Transfer Station

- Alternative scenarios to modify tipping fee charges not analyzed.
- Key waste hauler, Southwest Sanitation, owns a nearby transfer station.
 - Model assumes all current waste goes to the Vernon County transfer station.

Option 2 Results

Vernon County, WI Solid Waste Revenue Sufficiency Analysis

	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Fund Balance \$M	\$0.18	\$0.40	\$0.68	\$0.81	\$0.92	\$0.64	\$0.10	-\$0.46	-\$0.90	-\$1.37	-\$1.90
Residential MSW	\$120.00	\$120.00	\$120.00	\$120.00	\$120.00	\$120.00	\$120.00	\$120.00	\$120.00	\$120.00	\$120.00
Contracted MSW	\$49.00	\$49.00	\$49.00	\$49.00	\$49.00	\$49.00	\$49.00	\$49.00	\$49.00	\$49.00	\$49.00
Non-Contracted MSW	\$60.00	\$60.00	\$60.00	\$60.00	\$60.00	\$60.00	\$60.00	\$60.00	\$60.00	\$60.00	\$60.00
Landfill Tip Fees \$M	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.62	\$0.63	\$0.64	\$0.65	\$0.67	\$0.68
Contract Haul \$M	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.53	\$0.54	\$0.55	\$0.56	\$0.57	\$0.58



Option 2 Assumptions

- Transfer station in the second half of FY2024
- Transfer station building modifications
- Department hauling
 - Tractors, trailers, staff, fuel, maintenance
- Contract hauling
 - Staff
- Receiving landfills

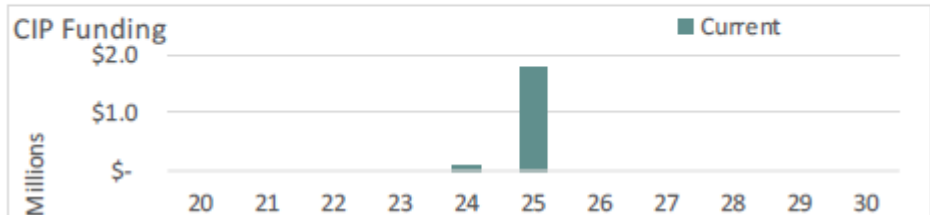
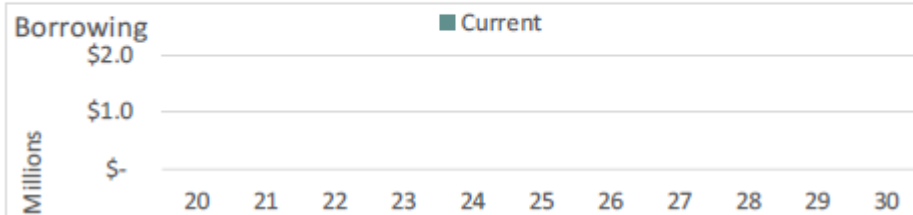
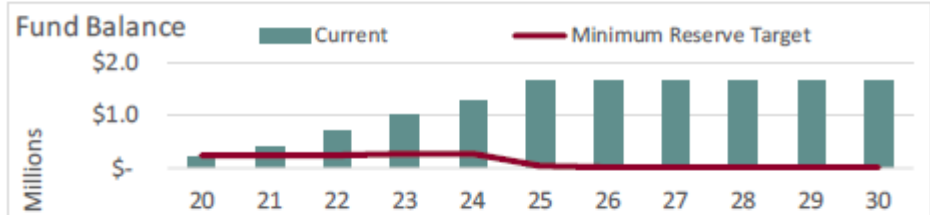
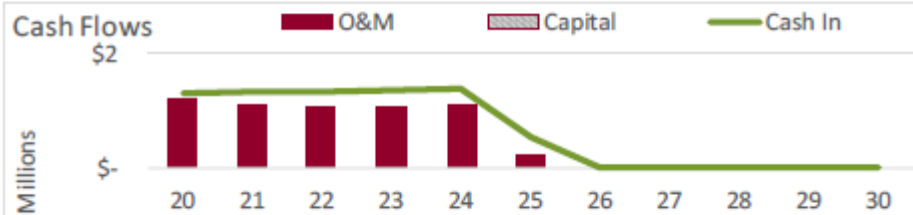
Option 3: Close Facility

- Vernon County residents and businesses contract or haul waste on their own
- Fees and services to residents and businesses determined by private entities
- Department ends recycling services
 - Assist municipalities in Vernon County with alternative recycling plans.

Option 3 Results

Vernon County, WI Solid Waste Revenue Sufficiency Analysis

	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Fund Balance \$M	\$0.18	\$0.40	\$0.69	\$0.99	\$1.29	\$1.62	\$1.62	\$1.62	\$1.63	\$1.63	\$1.64
Residential MSW	\$120.00	\$120.00	\$120.00	\$120.00	\$120.00	\$120.00	\$120.00	\$120.00	\$120.00	\$120.00	\$120.00
Contracted MSW	\$49.00	\$49.00	\$49.00	\$49.00	\$49.00	\$49.00	\$49.00	\$49.00	\$49.00	\$49.00	\$49.00
Non-Contracted MSW	\$60.00	\$60.00	\$60.00	\$60.00	\$60.00	\$60.00	\$60.00	\$60.00	\$60.00	\$60.00	\$60.00



Option 3 Assumptions

- No further vehicle replacement or major capital improvements will occur prior to closing
- Sale of existing capital (equipment) in FY2025
- Partial staffing in FY2025 to complete closure

Summary of Financially Viable Options

Option	Fund Balance End FY2030 ⁽¹⁾	Tip Fees (per ton) ⁽²⁾		Recycling Operations Continue?	Achieve Minimum 3-Month Operational Reserve?	In-County Landfill Available?
		Contracted MSW	Non-Contracted MSW			
1, Scenario 2	\$1.03M	\$60	\$63	Yes	Yes	Yes
1, Scenario 3	\$0.00M	\$54.60 ⁽³⁾	\$63	Yes	No	Yes
3	\$1.64M	\$49	\$60	No	Yes	No

Notes:

1. M denotes Million.
2. Residential MSW tip fee remains at current \$120 per ton for each option shown.
3. Reflects potential of offering rebate program similar to La Crosse County Landfill.



Groundwater Environmental Risk Assessment

Vernon County Solid Waste and Recycling

SCS ENGINEERS

Purpose

- Independent review of risk for groundwater contamination from the Vernon County Landfill
- Based on existing data and documents for existing landfill

Information Reviewed

- **Site geology** from existing boring logs and reports
- **Water table elevations** and groundwater flow directions from site monitoring wells
- **Landfill design** from site permitting documents
- **Leachate quality** from existing leachate monitoring and sampling results
- **Groundwater quality** from site monitoring well sampling data
- **Published scientific information** on the performance of Subtitle D landfill liners

Background

- Landfill designed in 1992; opened in 1993.
- Vertical expansion in 2005.
- Design and permitting included numerous soil borings and monitoring wells.
- Groundwater monitoring and reporting throughout site life.
- Additional evaluation and permitting would be required for an expansion.

Site Geology

- Conditions:
 - Current landfill is located in area of low permeability (fine-grained) soils.
 - Bedrock is located approximately 16 to more than 50 feet below ground surface.
 - Bedrock is primarily fractured dolomite, but deeper zones are more heterogeneous.
 - Karst features have been observed in Vernon County. No evidence identified in previous geologic investigations.
- Groundwater Risk Implications:
 - Fine-grained soil below the landfill and above the bedrock provides additional natural containment for the landfill and limits surface infiltration to the aquifer.

Water Table Elevations and Groundwater Flow

- Conditions:
 - Two water tables
 - Lower **regional water table** at depth of 140 – 190 feet below ground surface.
 - Approximate 10-foot-thick **perched water table** at approximately 90 – 120 feet below ground surface.
 - WDNR requirement: 10 feet of separation to water table.
 - Horizontal velocity estimated at 1 – 2 feet per day for both, but can be variable.
- Groundwater Risk Implications:
 - Depth to groundwater provides separation.
 - Fractured bedrock can have variable flow velocities.

Landfill Site Design

- Conditions:
 - Liner design exceeds state and federal requirements.

Liner Component	Vernon County Landfill	Wisconsin Requirements (NR 500)	Federal Requirements (Subtitle D)
Geomembrane liner	Yes	Yes	Yes
Clay liner thickness	5 feet	≥ 4 feet	≥ 2 feet

- Landfill systems manage leachate and landfill gas.
- Groundwater Risk Implications:
 - Design meets or exceeds current standards established for protection of groundwater.

Leachate and Lysimeter Monitoring

- Leachate:
 - Leachate is collected at the base of the landfill, pumped to leachate storage tank adjacent to landfill, and hauled to Viroqua sewage treatment plant.
 - Leachate is sampled semiannually.
 - Leachate monitoring results are typical for a municipal solid waste landfill.
- Lysimeters:
 - Lysimeters located under landfill liner.
 - Lysimeter test results similar to groundwater quality, indicating the liner is effective in containing leachate and protecting groundwater.

Background Groundwater Quality

- Established as part of permitting
- Nitrate+nitrite (as Nitrogen), manganese, iron, and fluoride were reported at concentrations exceeding the Wisconsin groundwater standards .
- Background groundwater quality is associated with natural hydrogeologic conditions and/or human activities, such as agriculture.
- WDNR concluded that the proposed landfill was designed to achieve the lowest possible concentration of these substances in the groundwater that is technically and economically feasible.

Ongoing Groundwater Monitoring

- 21 groundwater monitoring wells installed near the existing landfill for the purpose of monitoring groundwater.
- 20 are sampled for quality.
 - 7 intersect perched water table.
 - 8 installed near regional water table.
 - 5 installed as piezometers below the regional water table.

Existing Groundwater Quality

- Sampled semi-annually
 - **Public health** parameters
 - Volatile organic compounds (VOCs)
 - **Public welfare** parameters (not health-related, but may affect taste or odor)
 - Chloride
 - Sulfate
 - **Indicator** parameters (general water quality, not affecting public health or welfare)
 - Total hardness
 - Alkalinity
- Results
 - Groundwater sampling results do not show impacts indicating a release from the landfill.

Published Information on Subtitle D Landfill Performance

- Reviewed two references published in scientific resources from 2002.
 - U.S. EPA document EPA/600/R-02/099 by Bonaparte, Daniel, and Koerner, “Assessment and Recommendations for Improving the Performance of Waste Containment Systems.”
 - Environmental Science & Technology article by Barlaz et al., “Critical Evaluation of Factors Required to Terminate the Postclosure Monitoring Period at Landfills.”
- 2010 report by Geosyntec Consultants, “Environmental Protection at the Managed Solid Waste Landfill.”

Published Information on Subtitle D Landfill Performance

- Published research indicates that environmental impacts have been negligible for landfills designed and constructed with composite liners meeting the federal Subtitle D requirements.

Summary

- Groundwater risk appears to be low based on:
 - Composite liner system exceeds state and federal requirements.
 - Published information documents good performance of composite liner systems.
 - Geology includes fine-grained soil above bedrock.
 - Depth to groundwater provides separation.
 - Monitoring results do not indicate contamination from the landfill.
- If expansion pursued, additional geologic investigation of expansion area will likely be required.

Questions?

- Betsy Powers
- Vita Quinn
- Christine Collier
- Sherren Clark