



2025 Nebraska Statewide Material Characterization Study

Recoverability Analysis

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The SCS Engineers (SCS) project team would like to thank the Nebraska Department of Water, Energy, and Environment (DWEE) staff who have provided necessary information and collaboration to assist with this project. Host facility staff were essential in performing activities necessary to create the 2025 Nebraska Statewide Material Characterization Study (Study). Staff at these facilities provided detailed information on waste acceptance data, allowed access to their site and waste receipts, and made available equipment and staff resources to aid in obtaining and sorting samples.

SCS acknowledges the support of the following sites and staff which have provided information and support for this Study:

- Bluff Road Solid Waste Management Facility
- Hastings Sanitary Landfill
- Lexington Area Solid Waste Agency Landfill
- Norfolk Transfer Station
- Pheasant Point Landfill – Waste Management
- Sidney Area Solid Waste Agency Landfill
- Solid Waste Agency of Northwest Nebraska Transfer Station
- Valentine Area Solid Waste Agency Landfill

1.0 EXECUTIVE SUMMARY

The Nebraska Department of Water, Energy, and Environment (DWEE) contracted with SCS Engineers (SCS) in September 2024 to conduct a 2025 Nebraska Statewide Material Characterization Study (Study) at eight landfills and transfer stations across the state over four seasons. The results from the Study informed an analysis on.

This report analyzed the following information for landfilled materials that could have been recovered for recycling, reuse, composting, and remanufacturing:

- **Recoverability** – The categorization of material components into compostable, recyclable, potentially recoverable, and non-marketable terms. This determines the number of materials that may be diverted from landfill disposal.

Exhibit 1 below displays the overall recoverability analysis for municipal solid waste (MSW) materials. The total divertible percentage of the MSW waste stream in fiscal year (FY) 2025 equaled 82.9 percent. Divertible includes recyclable, compostable, and potentially recoverable materials (materials that have the potential to be donated and reused in their original or similar form).

Note: Due to rounding, aggregated data presented throughout this report may not equal exact totals or percentages.

Exhibit 1. Overall MSW Recoverability Analysis

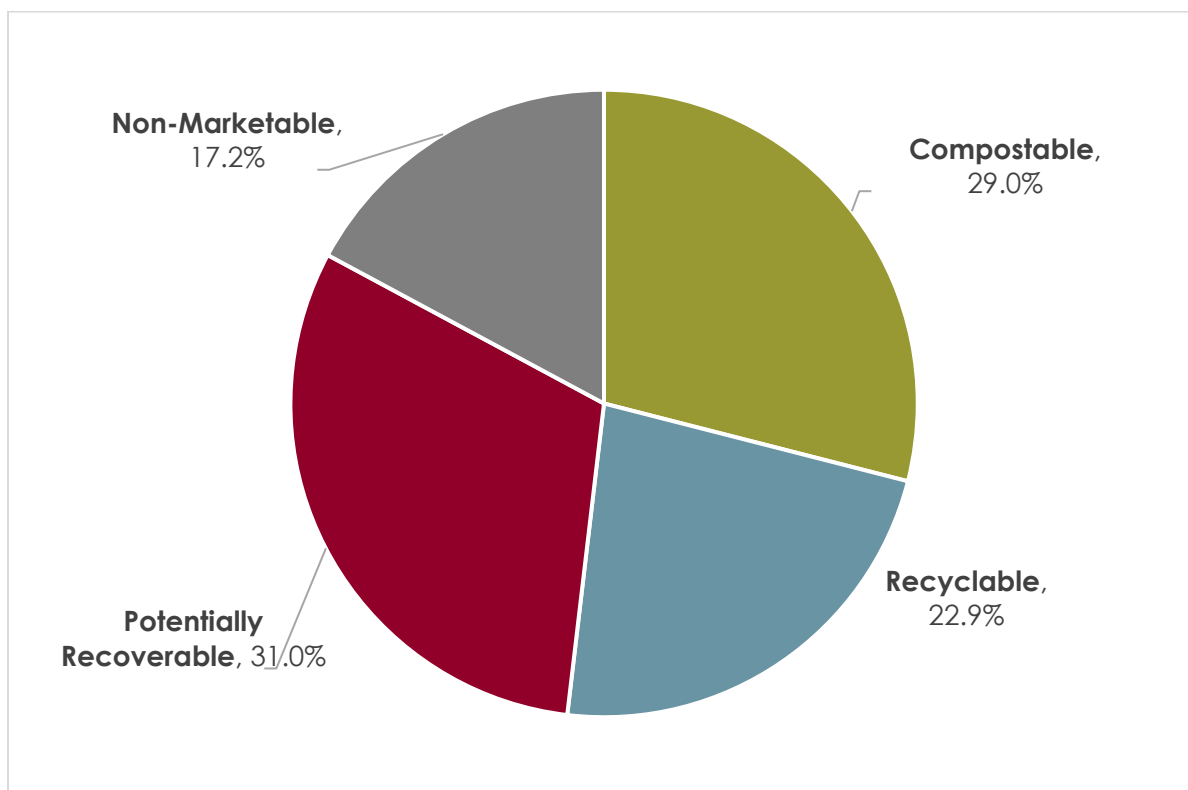
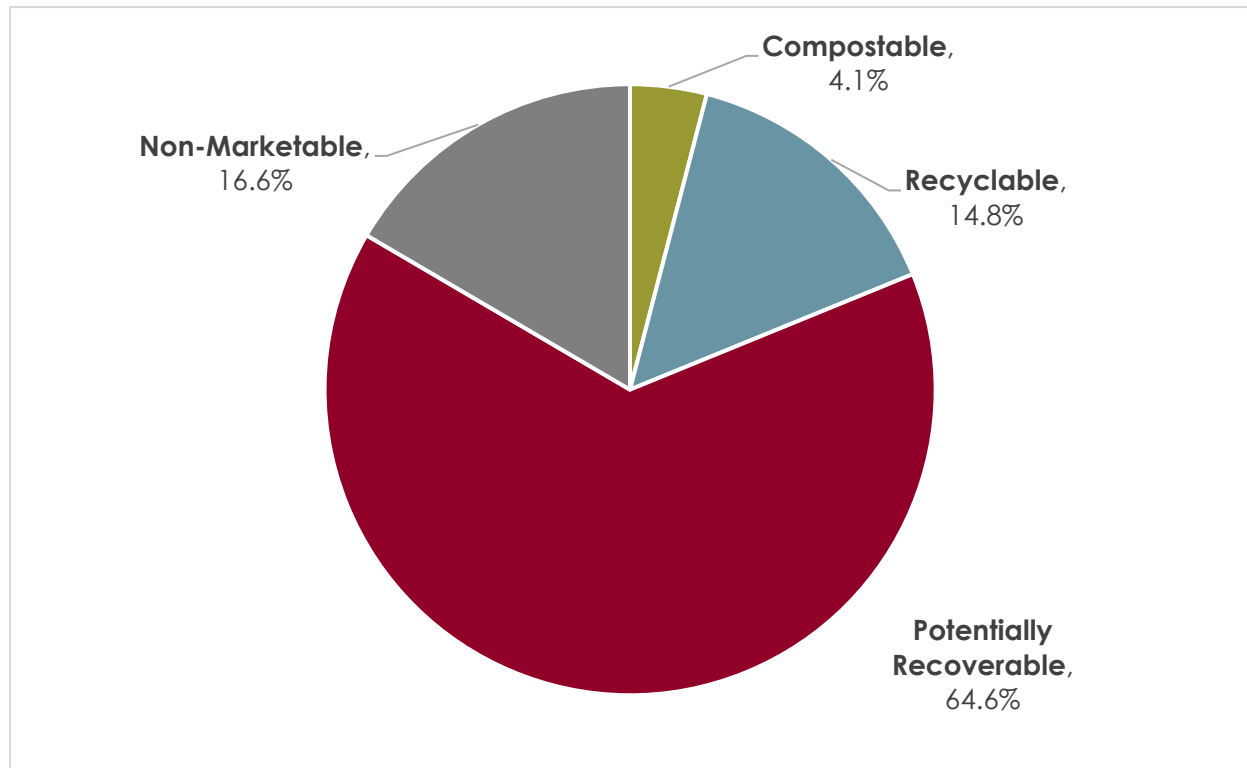


Exhibit 2 below displays the overall recoverability analysis for C&D materials. The total divertible percentage of the C&D waste stream in FY 2025 equaled 83.5 percent. Divertible includes recyclable, compostable, and potentially recoverable materials (materials that have the potential to be donated and reused in their original or similar form).

Exhibit 2. Overall C&D Recoverability Analysis



2.0 INTRODUCTION

This report provides the methods used to analyze the disposed of materials and the findings of the analyses utilizing data from the 2025 Nebraska Statewide Material Characterization Study (Study).

The report is organized in the following sections:

- Background
- Methodology
- Results
- Conclusion

3.0 BACKGROUND

In 2024, the Nebraska Department of Water, Energy, and Environment (DWEE) contracted with SCS Engineers (SCS) to perform an analysis on the results of the 2025 Nebraska Statewide Material Composition Study (2025 Study). The purpose of this report is to determine the recoverability of materials that were disposed of in Nebraska solid waste management facilities.

4.0 METHODOLOGY

This section provides the methodology of the recoverability analysis.

4.1 RECOVERABILITY

The 65 material components of MSW and 40 components of construction and demolition (C&D) from the 2025 Study were classified as compostable, recyclable, potentially recoverable, or non-marketable. Appendix A and Appendix B list the combinations used to determine recoverability for MSW and C&D material components. The definitions of these terms can be seen in **Table 1** below. SCS classified the definitions based on current industry standards and program availability within Nebraska. It is important to note that it was assumed that 100 percent of the materials classified as recoverable could be composted or recycled. This includes potential contaminated recoverable materials as the Study did not differentiate between contamination caused by collection or handling of materials.

Table 1. Recoverability Terms

Term	Definition
Compostable	Encompasses materials that could be diverted for composting operations and includes materials such as food waste, yard waste, and compostable paper.
Recyclable	Includes materials traditionally accepted in curbside or drop-off recycling programs such as aluminum cans, plastic bottles, glass containers, corrugated cardboard, and mixed paper.
Potentially Recoverable	Materials that have the potential to be donated, reused, or recovered in their original or similar form; includes construction/demolition debris and textiles and leather.
Non-Marketable	Includes materials that are typically not easily recyclable, markets are extremely limited, or are incapable of being recycled at this time including expanded polystyrene, household hazardous waste, medical waste, and diapers.

5.0 RESULTS

This section includes the methodology and results of the recoverability analysis.

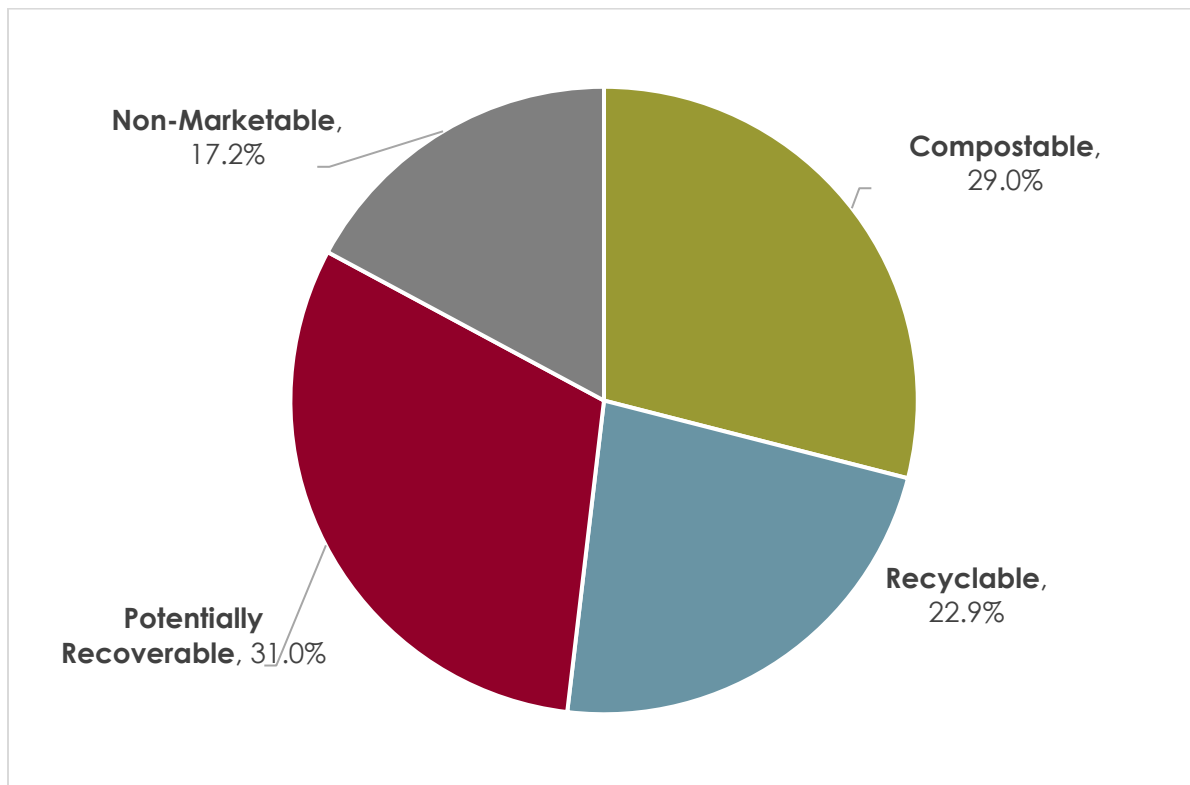
5.1 RECOVERABILITY ANALYSIS

This section analyzes the recoverability of materials found in the Study for MSW and C&D.

5.1.1 MSW Overall Recoverability

Exhibit 3 below displays the comparison of the four recoverability classifications of the Study's 65 MSW material components. Nearly 83 percent of disposed material in FY 2025 has been classified as divertible by being recyclable, compostable, or potentially recoverable.

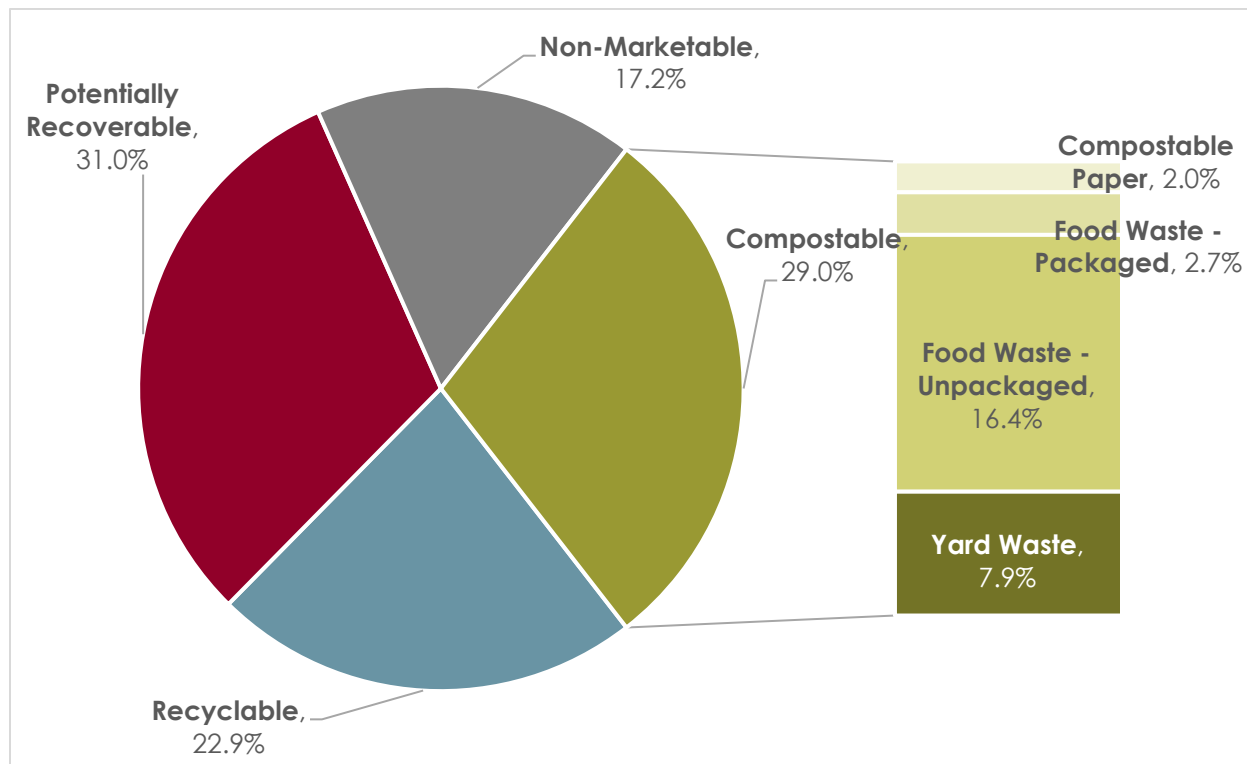
Exhibit 3. Overall MSW Recoverability Analysis



5.1.2 MSW Compostable Materials

Exhibit 4 (next page) displays the MSW material components that comprise the compostable classification of the Study. Compostable materials equal 29 percent of the overall composition of the disposed materials and are the second largest grouping of materials found in the MSW waste stream. Within this classification, the largest material component is Food Waste – Unpackaged at 16.4 percent. Food in general (packaged and unpackaged) makes up nearly 20 percent of the compostable materials disposed. The second largest individual material component is Yard Waste at 7.9 percent.

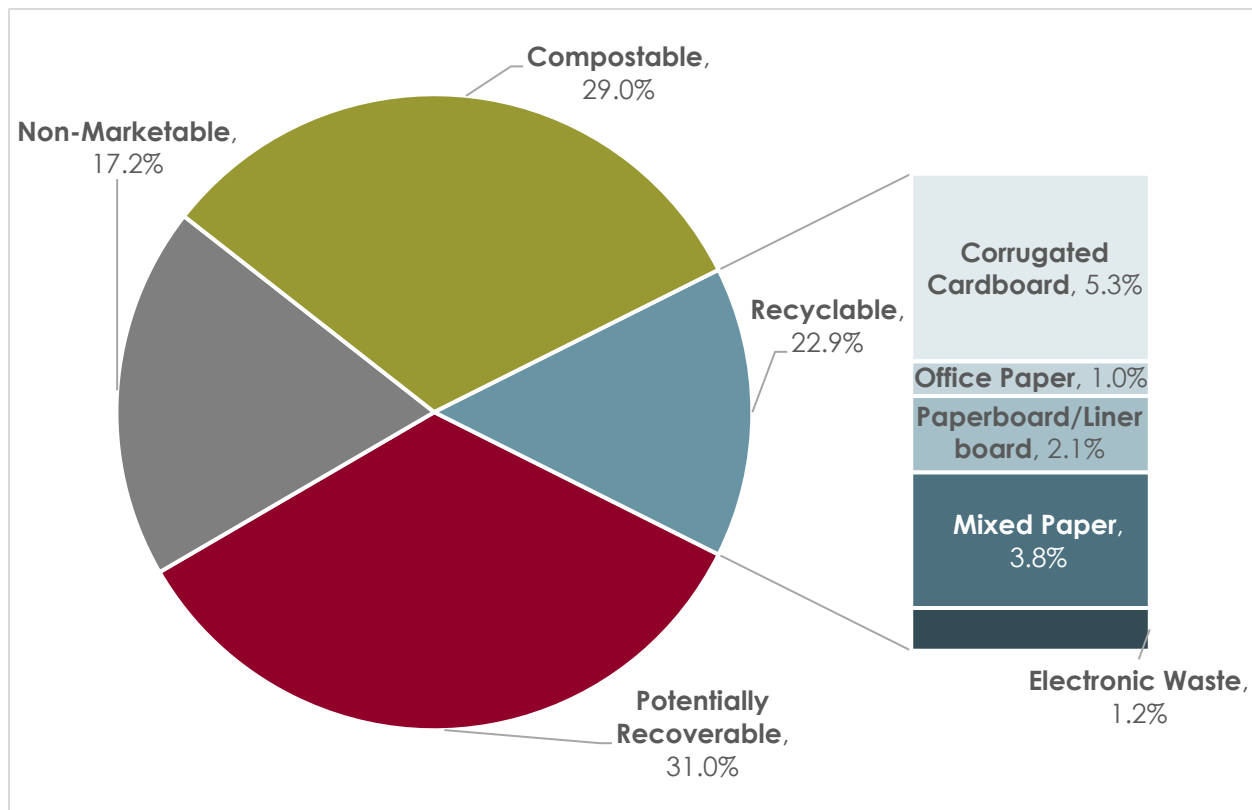
Exhibit 4. 2025 MSW Compostable Composition



5.1.3 MSW Recyclable Materials

Exhibit 5 (next page) displays the MSW material components that comprise the recyclable classification of the Study. Recyclable is the third largest grouping of materials found in the waste stream at 22.9 percent. The Paper material category is the largest within this group at 13.2 percent. The two components that contribute most to the 13.2 percent recyclable paper are Corrugated Cardboard (5.3 percent) and Mixed Paper (3.8 percent).

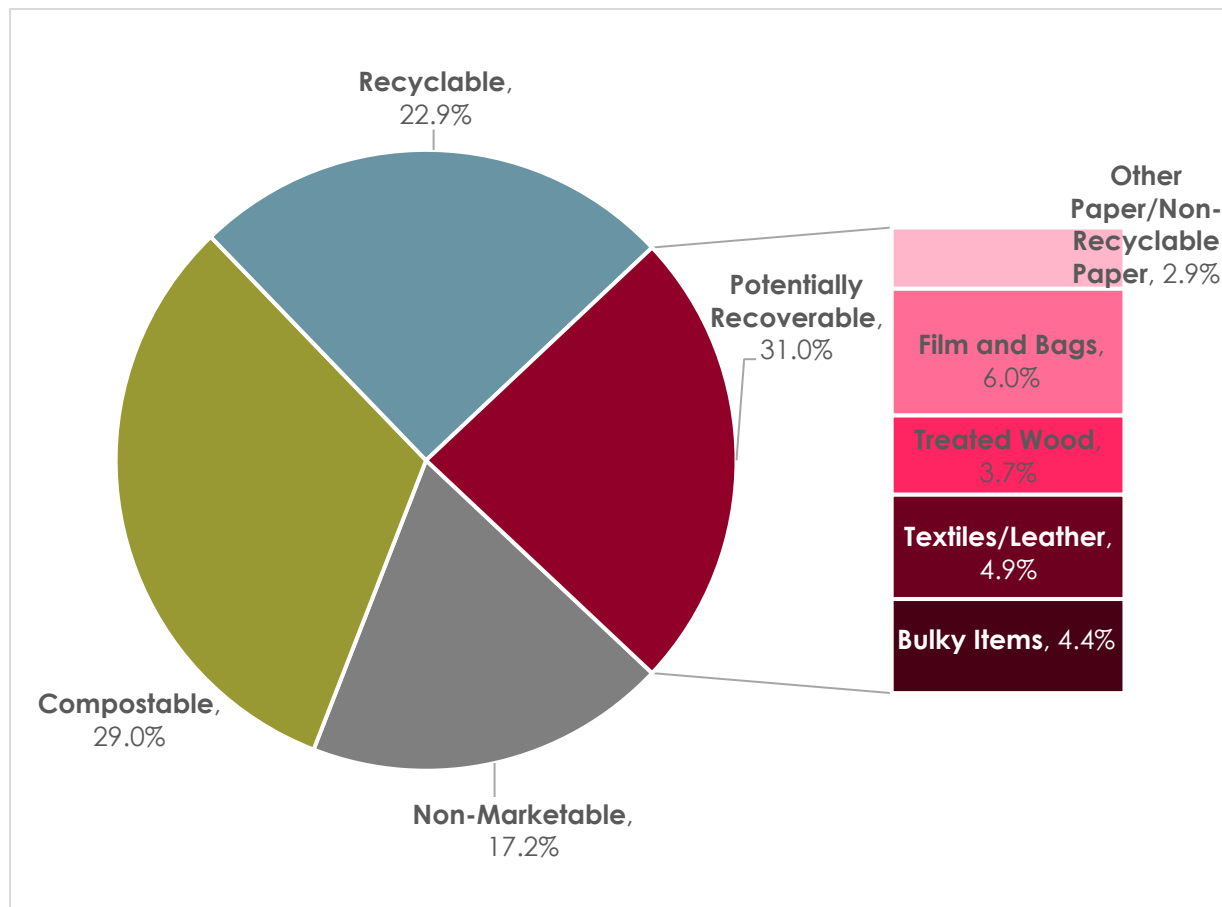
Exhibit 5. 2025 MSW Recyclable Composition



5.1.4 MSW Potentially Recoverable Materials

Exhibit 6 (next page) displays the potentially recoverable MSW materials in the Study. Potentially recyclable materials are the largest recoverability category, which account for 31.0 percent of MSW. C&D materials found in the MSW waste stream make up the largest percentage of this category with 11.2 percent, with Treated Wood being the most common (3.7 percent). Other components with high percentages include Film and bags (6.0 percent) and Textiles/Leather (4.9 percent).

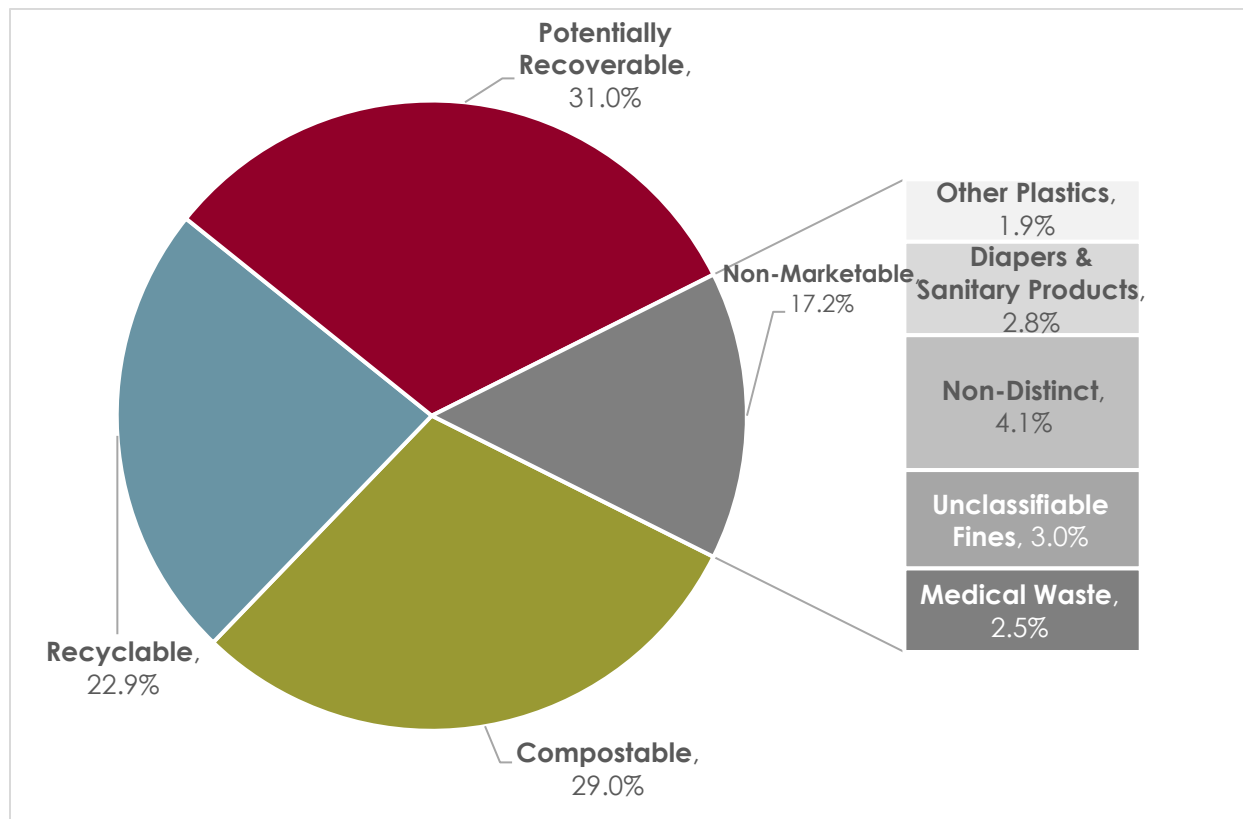
Exhibit 6. 2025 MSW Potentially Recoverable Composition



5.1.5 MSW Non-Marketable Materials

Exhibit 7 (next page) shows the non-marketable classified MSW material components in the Study. Non-marketable materials comprise the smallest group total at 17.2 percent. The Other material category is the largest contributor to this total with a percentage of 13.2, which includes Non-Distinct (4.1 percent), Unclassifiable Fines (3.0 percent), Diapers & Sanitary Products (2.8 percent), and Medical Waste (2.5 percent).

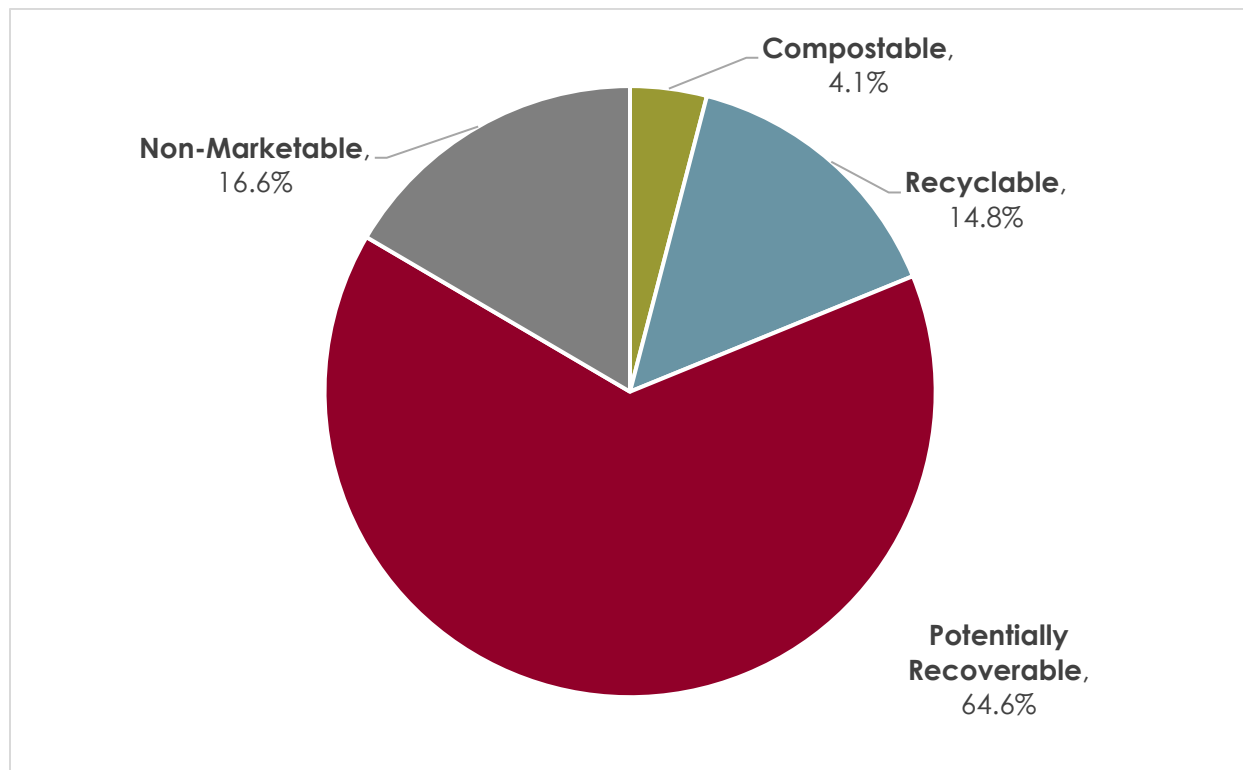
Exhibit 7. 2025 MSW Non-Marketable Composition



5.1.6 C&D Overall Recoverability

Exhibit 8 next page displays the comparison of the four recoverability classifications of the Study's 40 C&D material components. Over 83 percent of disposed C&D material in FY 2025 has been classified as divertible by being recyclable, compostable, or potentially recoverable.

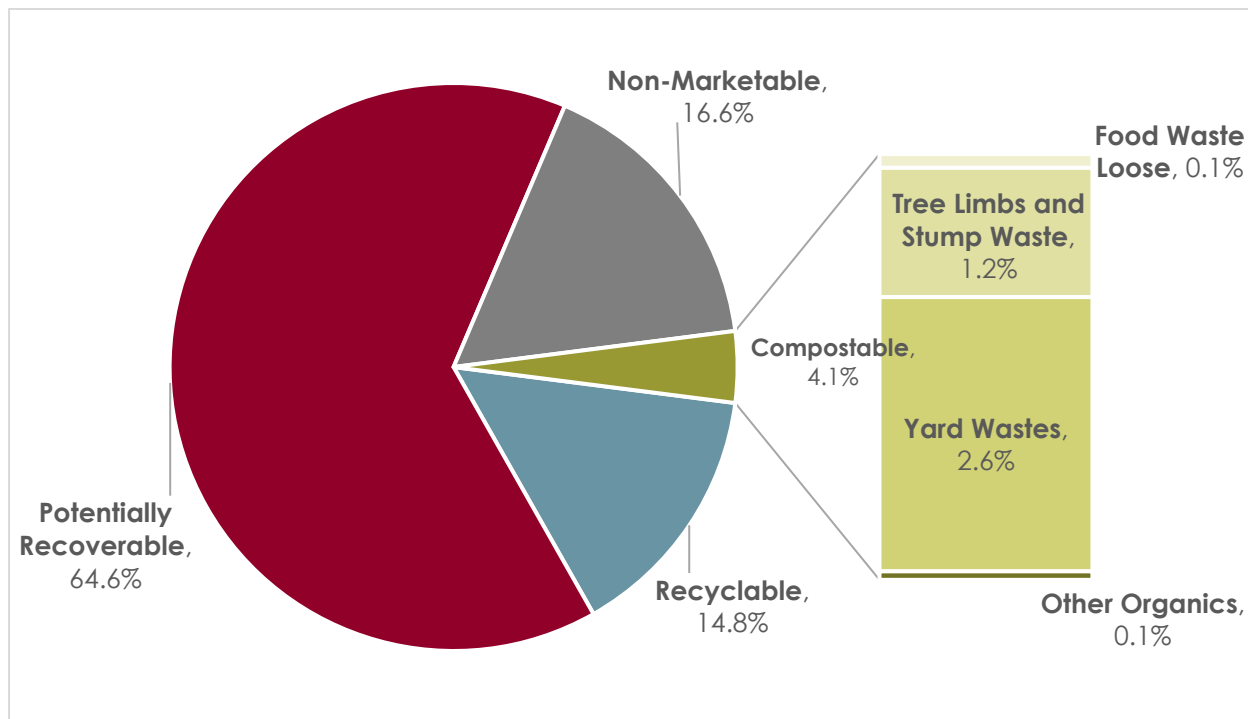
Exhibit 8. Overall C&D Recoverability Analysis



5.1.7 C&D Compostable Materials

Exhibit 9 (next page) displays the C&D material components that comprise the compostable classification of the Study. Compostable materials account for 4.1 percent of the overall composition of disposed C&D materials and are the smallest grouping of materials found in the C&D waste stream. Within this classification, the largest material component is Yard Waste at 2.6 percent. The second largest individual material component is Tree Limbs and Stump Waste at 1.2 percent. Food Waste Loose and Other Organics contribute 0.1 percent each to the compostable materials total.

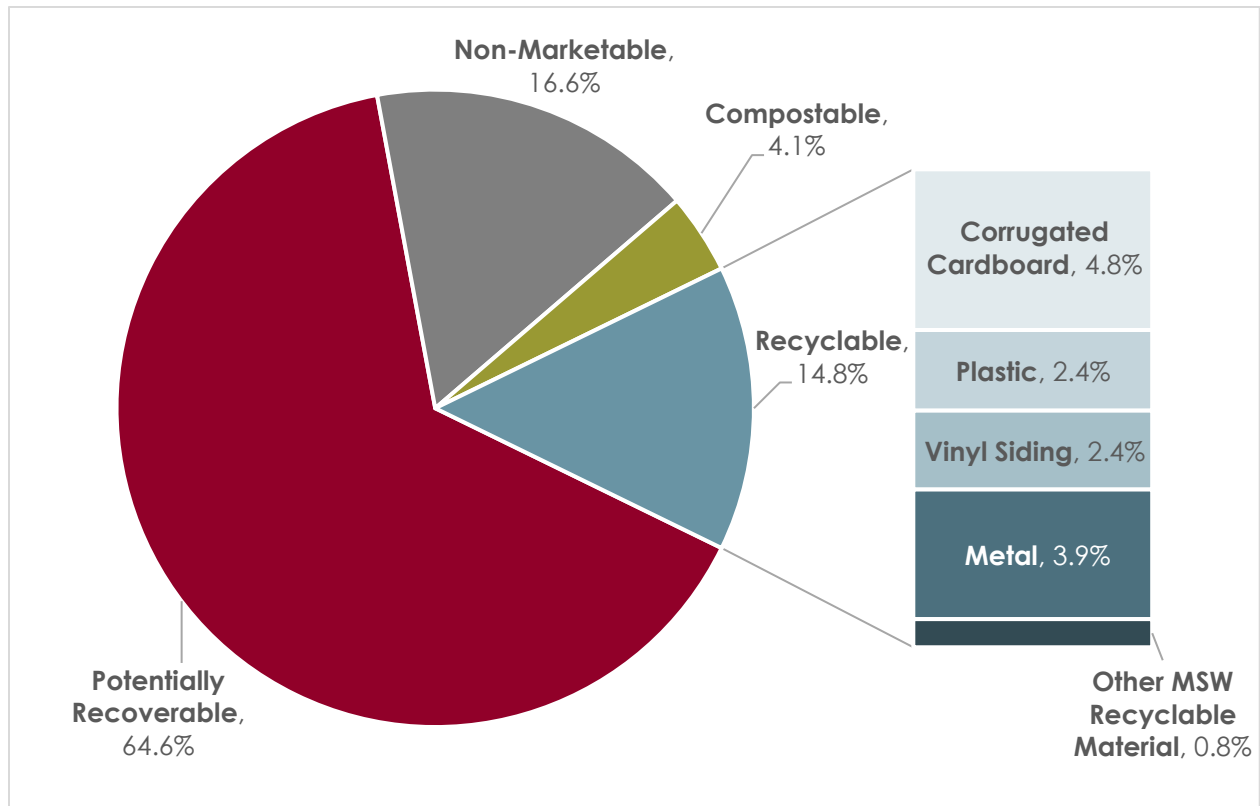
Exhibit 9. 2025 C&D Compostable Composition



5.1.8 C&D Recyclable Materials

Exhibit 10 (next page) displays the C&D material components that comprise the recyclable classification of the Study. Recyclable materials are the third largest grouping of materials found in the waste stream at 14.8 percent. The Paper and Plastic categories are tied for the most prevalent recyclable material at 4.8 percent. Corrugated Cardboard is the largest and only material component within the Paper category (4.8 percent). The Plastic category is comprised of two components, Plastic and Vinyl Siding, both of which are 2.4 percent of the C&D recyclable materials. Metal is the third largest category with 3.9 percent.

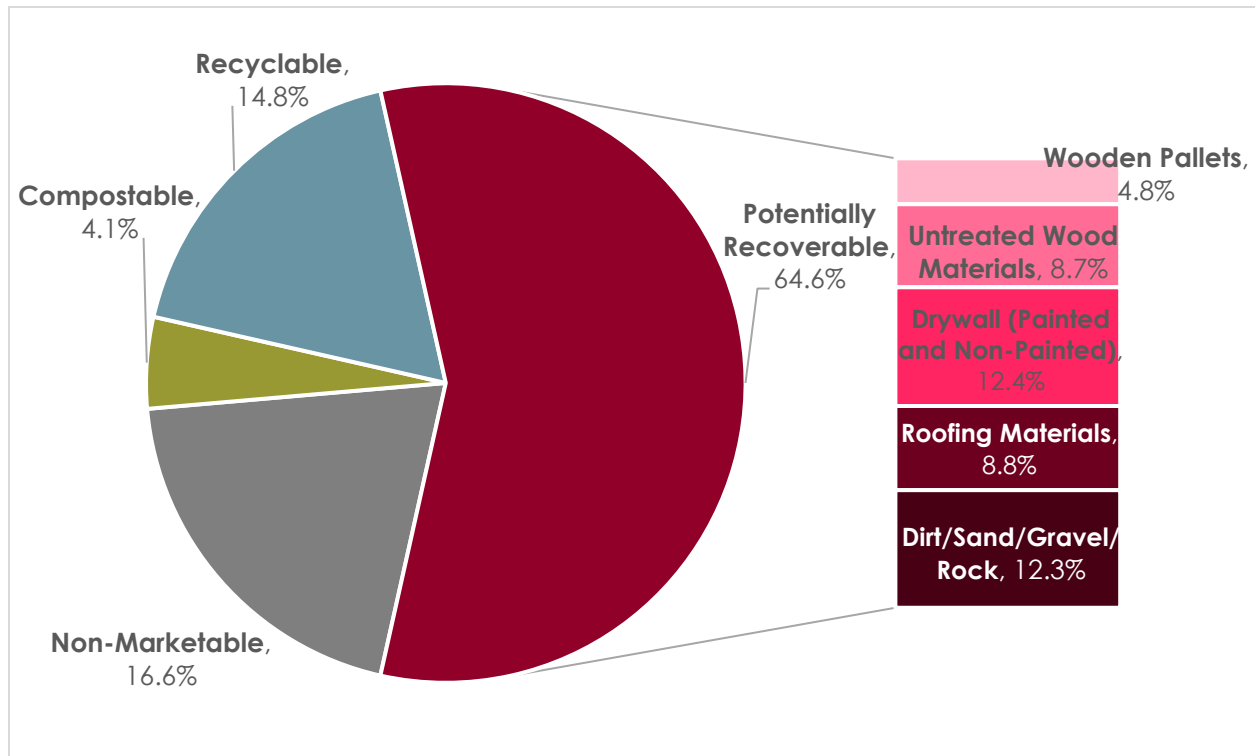
Exhibit 10. 2025 C&D Recyclable Composition



5.1.9 C&D Potentially Recoverable Materials

Exhibit 11 (next page) displays the potentially recoverable C&D materials in the Study. Potentially recoverable materials comprise the largest category for recoverability with 64.6 percent. Drywall (Painted and Non-Painted) is the largest component with 12.4 percent, followed closely by Dirt/Sand/Gravel/Rock at 12.3 percent. The next most prevalent potentially recoverable materials are Roofing Materials and Untreated Wood Materials with 8.8 percent and 8.7 percent, respectively.

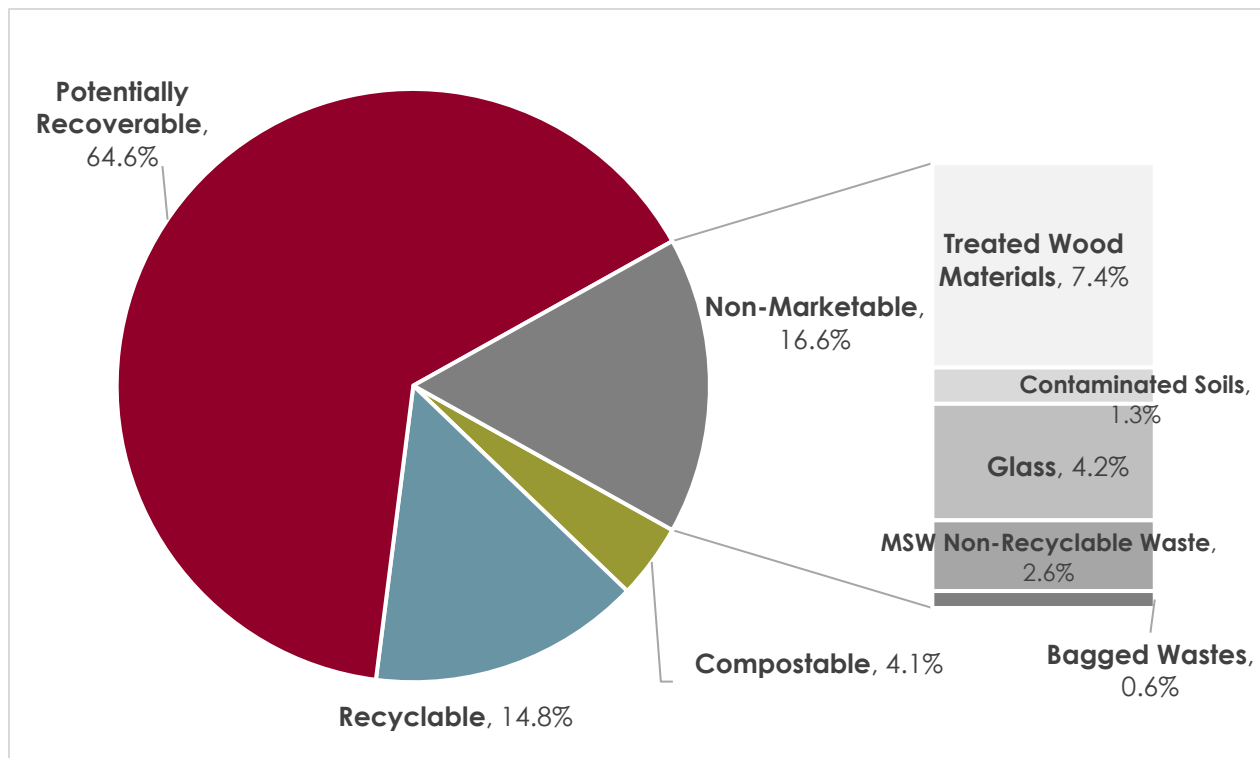
Exhibit 11. 2025 C&D Potentially Recoverable Composition



5.1.10 C&D Non-Marketable Materials

Exhibit 12 (next page) shows the non-marketable classified C&D material components in the Study. Non-marketable materials are the second largest group at 16.6 percent. The Construction & Demolition material category is the largest contributor to this total with a percentage of 13.4, which is comprised mostly of Treated Wood Materials (7.4 percent) and Glass (4.2 percent).

Exhibit 12. 2025 C&D Non-Marketable Composition



6.0 CONCLUSION

The recoverability analysis determined that 82.9 percent of MSW and 83.4 percent of C&D materials disposed in FY 2025 could have been diverted through recycling, composting, or specific diversion programs. This information encourages opportunities for diversion by providing evidence of materials available to expand and create recycling and composting programs. Applying these percentages to FY 2025 disposed MSW, it is estimated that 779,501 tons could have potentially been diverted from the waste stream. This increase in materials being processed would likely need to be supported by an increase in education, infrastructure, and labor.

The diversion of waste from disposal at landfills supports a circular system leading to a sustainable materials management (SMM) system. There are multiple benefits to recovering materials for recycling and reuse such as: increasing jobs for processing materials, adding revenue for the sale of recyclable materials, reducing metric tons of carbon dioxide equivalent emissions, and extending landfill life. Not only does this create a more sustainable system of materials management in Nebraska, but it also increases the general well-being of the public by protecting Nebraska's land, water, and air through reducing emissions.

Appendix A

MSW Material Component Combination for Recoverability Analysis

2025 Study MSW Components - Recoverability

COMPOSTABLE		
ORGANICS	Compostable Paper	2.0%
	Food Waste - Packaged	2.7%
	Food Waste - Unpackaged	16.4%
	Yard Waste	7.9%
	Total Compostable	29.0%
RECYCLABLE		
PAPER	Corrugated Cardboard	5.3%
	Office Paper	1.0%
	Newsprint	0.3%
	Magazines	0.8%
	Paperboard/Linerboard	2.1%
	Mixed Paper	3.8%
PLASTIC	PET #1	0.7%
	Natural HDPE #2	0.4%
	Colored HDPE #2	0.4%
	PP #5	0.8%
	Plastic Items Containing Lithium Batteries	0.0%
	Plastic Single-Use Beverage Containers	1.0%
GLASS	Clear Glass Containers	0.7%
	Brown Glass Containers	0.1%
	Green Glass Containers	0.2%
	Blue Glass Containers	0.0%
	Glass Single-Use Beverage Containers	0.7%
METAL	Aluminum Containers	0.2%
	Steel/Tin Containers	0.7%
	Other Ferrous Scrap	1.0%
	Other Non-Ferrous Scrap	0.4%
	Other Metals	0.1%
	Metal Single-Use Beverage Containers	0.7%
OTHER WASTE CATEGORIES	White Goods	0.1%
	Electronic Waste	1.2%
	Electronics Containing Lithium Batteries	0.0%
	Oil Filters	0.1%
	Waste Oil	0.1%
	Thermometers	0.0%
	Thermostats	0.0%
	Raw Mercury	0.0%
	Light-Up Shoes/Buttons	0.0%
	Fluorescent Bulbs	0.0%
	Lithium Batteries	0.0%
	Alkaline and Other Batteries	0.0%
	Empty Aerosol Cans	0.2%
	Total Recyclable	22.9%

2025 Study MSW Components - Recoverability

POTENTIALLY RECOVERABLE		
PAPER	Other Paper/Non-Recyclable Paper	2.9%
PLASTICS	Film and Bags	6.0%
	Retail Shopping Bags	0.7%
C&D Materials	Untreated Wood	2.8%
	Treated Wood	3.7%
	Roofing Materials	0.5%
	Bricks and Porcelain	0.5%
	Soil, Rock, Sand	1.6%
	Concrete	0.5%
	Misc. C/D Waste	1.6%
OTHER WASTE CATEGORIES	Textiles/Leather	4.9%
	Rubber	0.9%
	Bulky Items	4.4%
	Total Potentially Recoverable	31.0%
NON-MARKETABLE		
PLASTICS	Expanded Polystyrene	0.7%
	Other Numbered Plastics	0.7%
	Other Plastics	1.9%
GLASS	Other Glass	0.4%
METALS	Non-Recyclable Metals	0.1%
C&D Materials	Linoleum	0.1%
OTHER WASTE CATEGORIES	Diapers & Sanitary Products	2.8%
	Household Hazardous Waste	0.7%
	Non-Distinct	4.1%
	Unclassifiable Fines	3.0%
	Medical Waste	2.5%
	Sharps	0.0%
	Total Non-Marketable	17.2%

Total 100.0%

Appendix B

C&D Material Component Combination for Recoverability Analysis

2025 Study C&D Components - Recoverability

COMPOSTABLE		
ORGANICS	Food Waste Loose	0.1%
	Tree Limbs and Stump Waste	1.2%
	Yard Wastes	2.6%
	Other Organics	0.1%
	Total Compostable	4.1%
RECYCLABLE		
PAPER	Corrugated Cardboard	4.8%
PLASTIC	Plastic	2.4%
	Vinyl Siding	2.4%
METAL	Metal	3.9%
	Wires	0.1%
OTHER	Other MSW Recyclable Material	0.8%
	Appliances	0.1%
	Electronics	0.2%
	Total Recyclable	14.8%
POTENTIALLY RECOVERABLE		
CONSTRUCTION & DEMOLITION	Sawn Lumber	0.8%
	Engineered Wood/Manufactured Wood	1.3%
	Wooden Pallets	4.8%
	Untreated Wood Materials	8.7%
	Drywall (Painted and Non-Painted)	12.4%
	Ceramics	1.6%
	Concrete	2.7%
	Brick	4.6%
	Carpet/Carpet Pads	1.2%
	Roofing Materials	8.8%
	Dirt/Sand/Gravel/Rock	12.3%
	Other C&D Wastes	2.1%
OTHER	Mattresses and Box Springs	0.6%
	Furniture	2.5%
	Tires	0.1%
	Textiles	0.2%
	Total Potentially Recoverable	64.6%
NON-MARKETABLE		
CONSTRUCTION & DEMOLITION	Treated Wood Materials	7.4%
	Contaminated Soils	1.3%
	Fiberglass	0.0%
	Insulation	0.4%
	Glass	4.2%
OTHER	MSW Non-Recyclable Waste	2.6%
	Chemicals	0.0%
	Bagged Wastes	0.6%
	Total Non-Marketable	16.6%

Total 100.0%