

North Country MRF Feasibility Study

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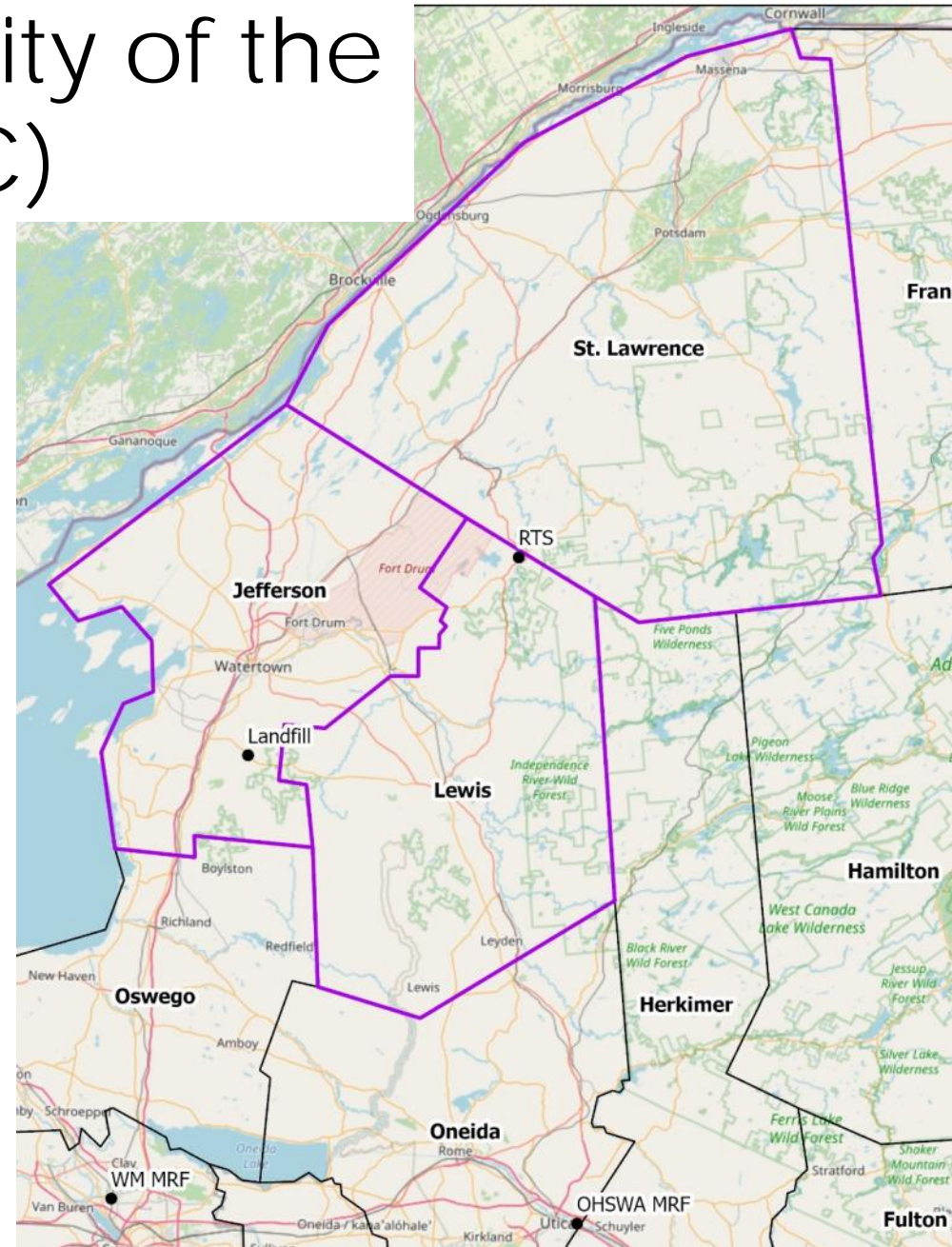
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Overview and Acknowledgements

- Overview
 - Historical configuration
 - MRF scenarios
 - Findings
- Acknowledgements
 - DANC: Patti Pastella, Carrie Tuttle, Carl Farone
 - SCS: Ryan Duckett and Betsy Powers

Development Authority of the North Country (DANC)

- Created in 1985 to support development
- 3 counties: Jefferson, Lewis, St. Lawrence
- 250,000 Residents
- 5,250 square miles



Feasibility Study Goals

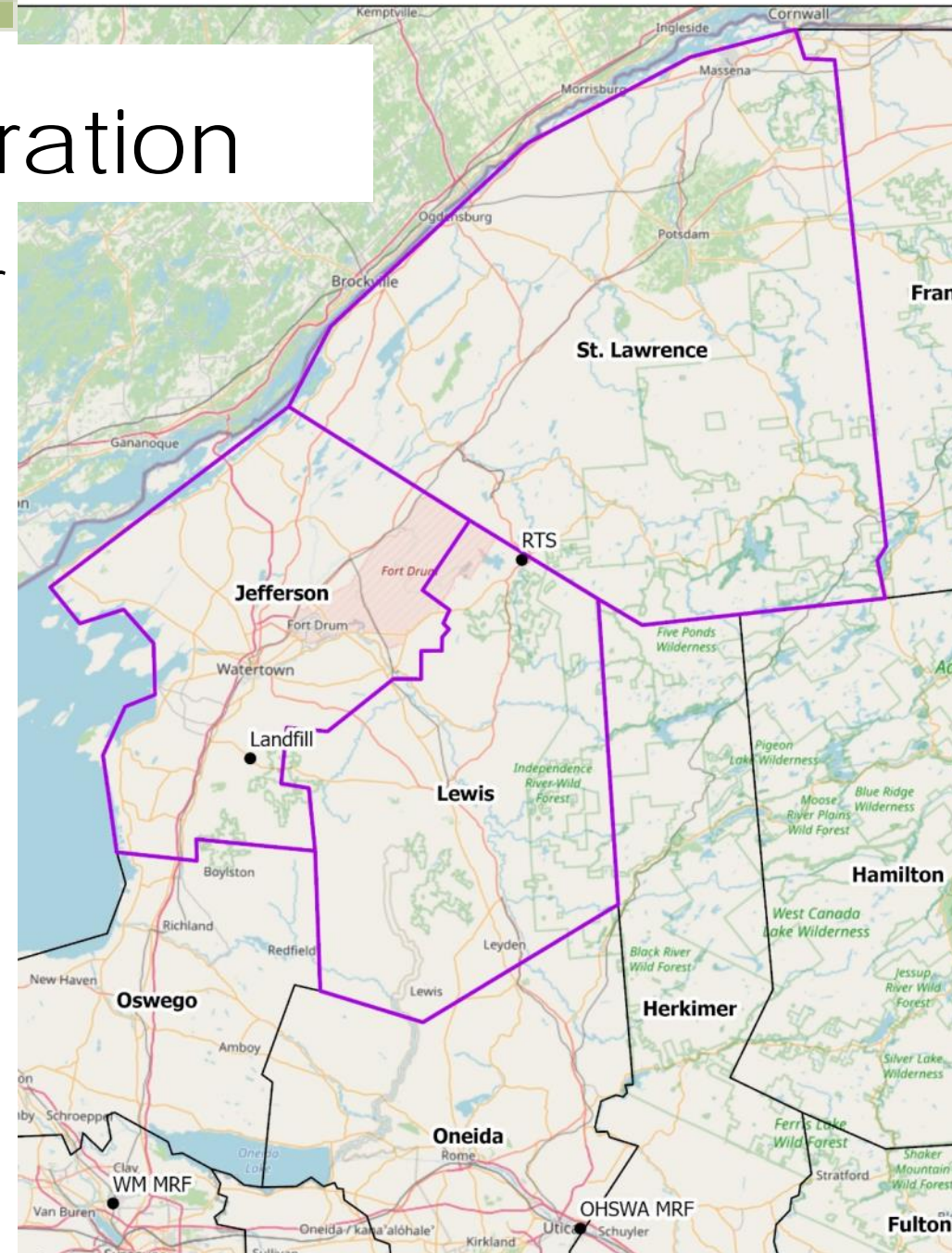
- Increase the quantity of recyclables
- Distribute recycling benefits fairly among member counties
- Incentivize recycling in the most cost-effective manner possible

Two Main Scenarios

- Scenario A, the “Status Quo”
- Scenario B, the “MRF Alternative”
 - Authority constructs and operates its own MRF
 - Three potential sites

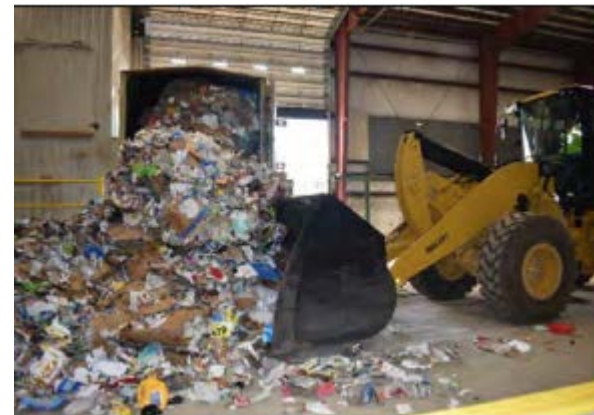
Status Quo Configuration

- DANC Recycling Transfer Station (RTS) in Harrisville, Lewis County
- St. Lawrence: uses RTS, haul to WM Liverpool
- Lewis: direct haul to Oneida-Herkimer MRF
- Jefferson: manages source-separated recyclables, sell direct to commodity markets



RTS

- 41-ac site
- 4 buildings
 - 31,250 sf process building
 - 8,000 sf storage (2)
 - 6,200 sf office/shop



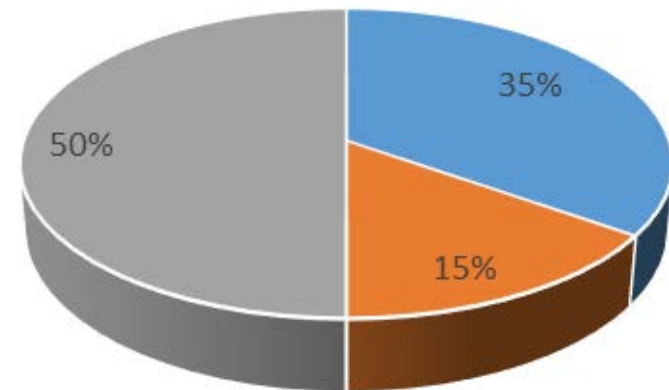
Materials: Composition and Quantity

- Composition

- Based on WM audit of St. Lawrence recyclables
- Assumed 13% residual, based on OHSWA rate

- Quantity

- St. Lawrence: 5,700 tpy
- Lewis: 2,500 tpy
- Jefferson: 8,200 tpy
- Total: 16,400 tpy



■ St. Lawrence ■ Lewis ■ Jefferson

MRF Sensitivity Cases

- Three potential sites
 - RTS
 - Materials management facility (i.e., landfill)
 - Ft. Drum location



MRF Sensitivity Cases

- Variable quantity
 - Low: 8,200 tpy
 - Medium: 10,100 tpy
 - High: 16,400 tpy
- 9 scenarios in total

Sub-Scenarios (MRF)								
Low Tonnage			High Tonnage			Medium Tonnage		
Harrisville (RTS)	Rodman (MMF)	Fort Drum	Harrisville (RTS)	Rodman (MMF)	Fort Drum	Harrisville (RTS)	Rodman (MMF)	Fort Drum
1	2	3	4	5	6	7	8	9

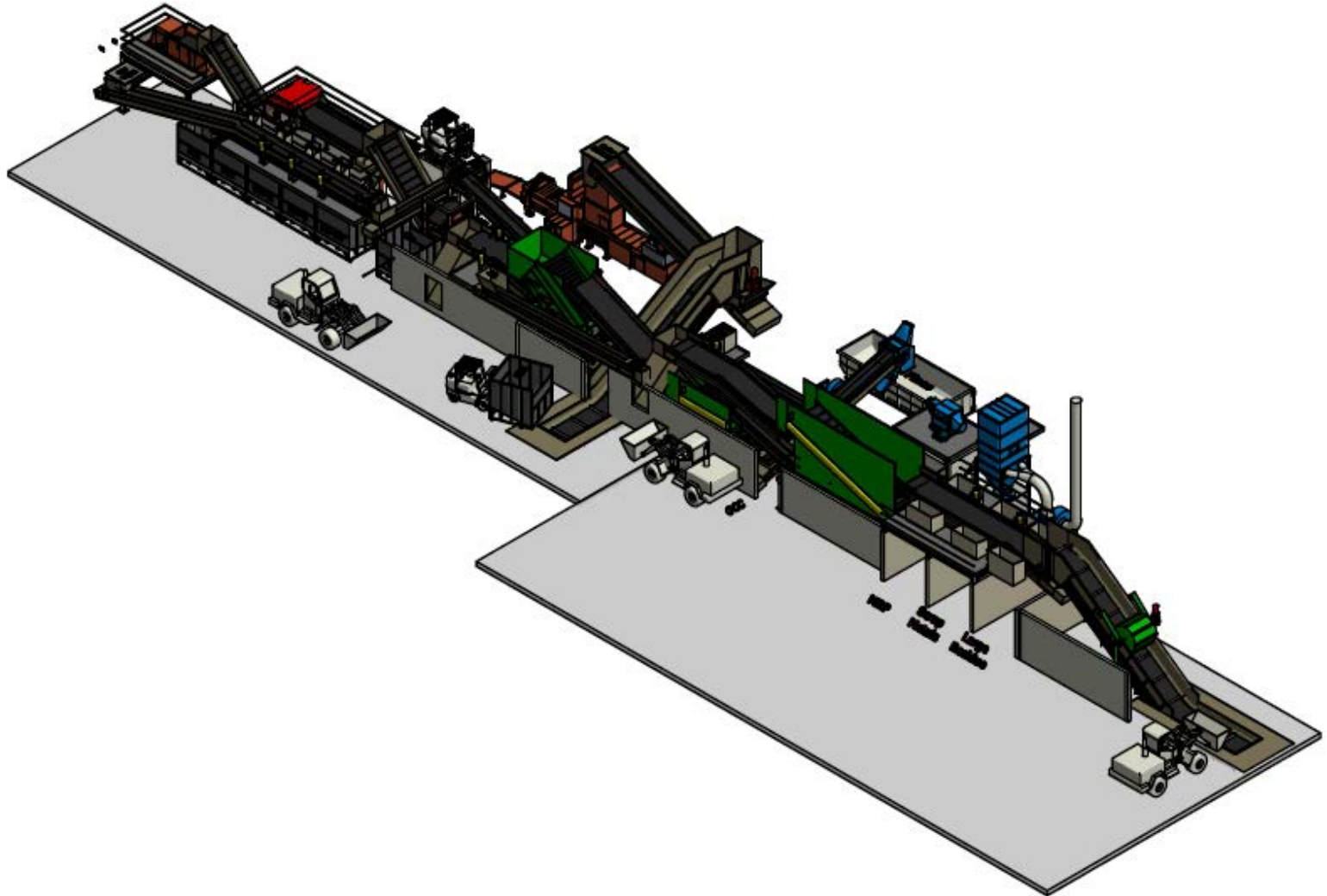
MRF Concept

- Single shift of operation, 8 hours of run time, 5 days per week, 50 weeks per year.
- 10 tons per hour; MRF equipment design
- System: up to 20,000 tpy
- Building: 165 ft x 200 ft

MRF Automated Sorting

- Old corrugated cardboard (OCC)
- Fiber (paper) separate from the OCC
- PET #1 containers
- Ferrous (metal)
- Non-ferrous (used beverage containers [UBCs])
- Glass

MRF Major Equipment

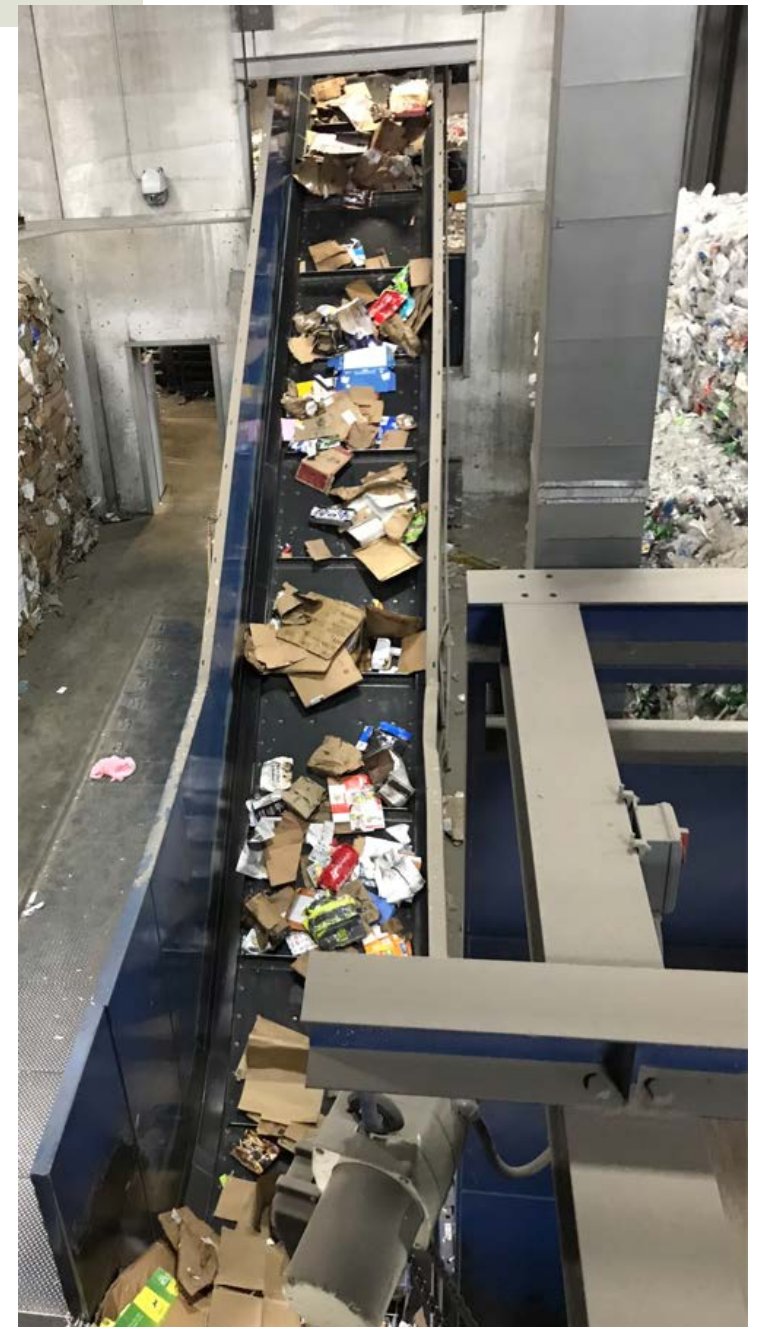


MRF Major Equipment

- In-floor infeed conveyor
- Pre-sort station (bulky item removal)
- OCC screen (OCC removal)
- Debris roll screen/glass breaker (remove glass and fines)
- Air classifier (density sorting/glass cleanup)
- Polishing screen (2D/3D screen) (fiber/container separation)
- Magnet (ferrous removal)
- Optical sorter (PET removal)
- Eddy current separator (non-ferrous removal)
- Baler

MRF Labor Force

- 1 facility manager
- 1 shift foreman
- 1 baler operator
- 2 mobile equipment operators
- 2 mechanics
- 9 manual sorters



Revenues

- Tipping fees
- Recovered material sales (weighted val. per ton):

METHOD 1: Forward Facing National Market Values

(4-month average: Jan - Apr 2021 Prices) ←~\$44→

METHOD 3: OHSWA/DANC Provided Information (12-month average: Jan - Dec 2020 Prices) -- **USED FOR MODEL**

METHOD 2: WM RA/DANC Provided Information (14-month average: Apr 2020 - May 2021 Prices) \$27

METHOD 4: NERC Report Prices
1Q 2020 -- \$45
1Q 2021 -- \$100

Recovered Materials and Value

Material	Adjusted to 0% Residual	OHSWA 2020 Avg. Price/Ton	Weighted Avg. Value/Ton
PPW OCC #11	21.1%	\$ 79.24	\$ 16.73
PPW Mix #54 ¹	53.7%	\$ 18.61	\$ 9.99
Aluminum Cans	0.1%	\$ 613.55	\$ 0.71
Steel Cans ¹	2.0%	\$ 131.51	\$ 2.62
PET	1.9%	\$ 153.22	\$ 2.87
Natural HDPE	1.0%	\$ 1,084.81	\$ 10.68
Colored HDPE	1.0%	\$ 232.59	\$ 2.29
Mixed Plastics	1.0%	\$ 10.02	\$ 0.10
Glass	18.2%	\$ (10.00)	\$ (1.82)
Residue	0.0%	NA	NA
Total	100.0%	NA	\$ 44.17

Expenses

- Capital costs
 - Site Development
 - MRF structure & equipment
- Operating costs
 - Facility operation
 - Hauling/tipping costs

Findings

- MRF sites
 - RTS location is preferred
 - MMF location provides operational savings but requires more capital
- Break-even Analysis for RTS, medium quantity
 - Need \$151.50 per ton
 - Or, throughput of 52,200 tpy
 - Or, \$7 per ton subsidy charge at landfill (216,000 tpy)

Thank You!

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