

Carver County Residential Organics Project

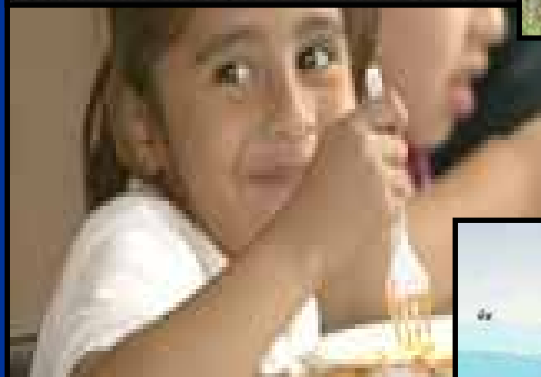


Co-mingling Organics With Yard Waste

Organics Management

Solid Waste Coordinating Board Region

- Livestock Feed Manufacturing - 60,000 tons
- Livestock Feeding - 30,000 tons
- Backyard Composting - 3,500 tons
- Food Rescue - 1,000 tons
- RRT for Composting - 600 tons
- Landfill - 200,000 tons residential and 180,000 tons commercial

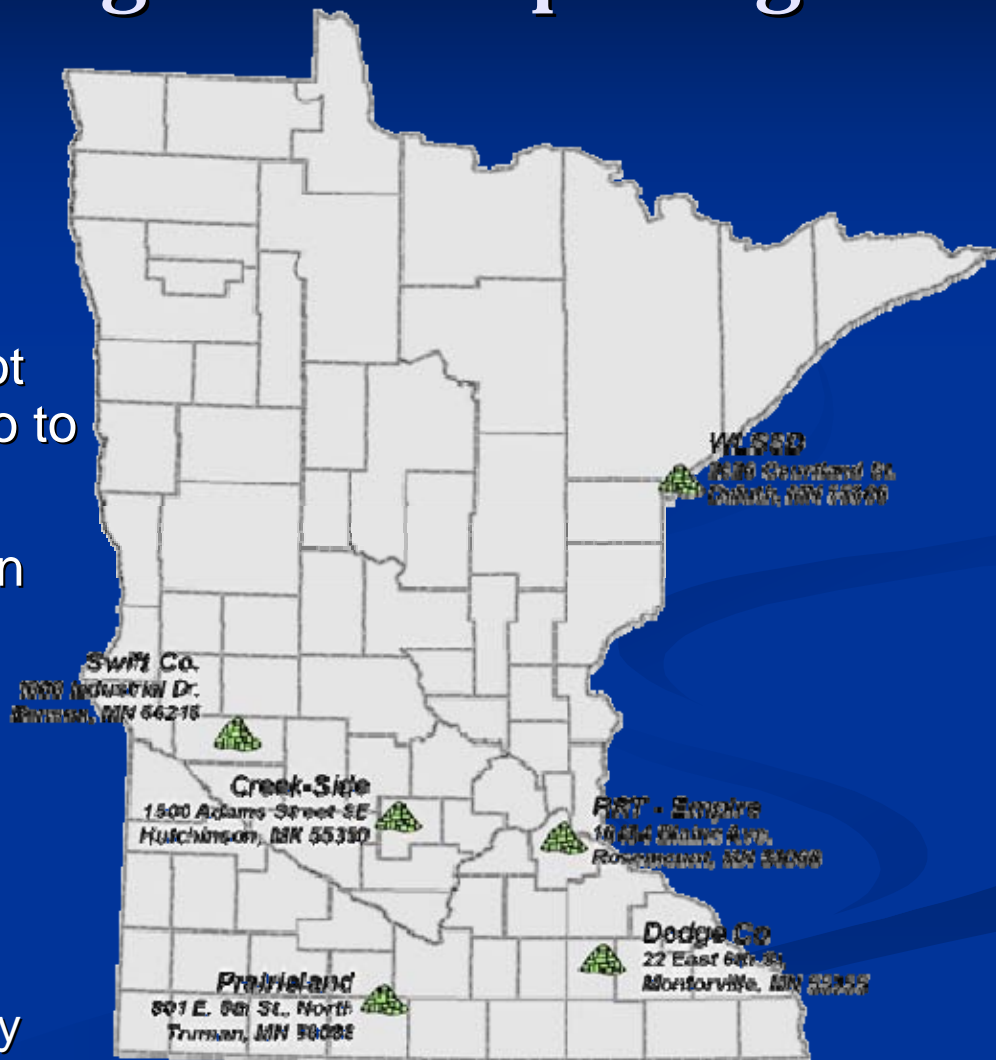


Minnesota Regulatory Impediments to Source-Separated Organics Composting

- Co-collection of yard waste and MSW is not allowed in most situations.
 - Minnesota Statute 115A – yard waste cannot be placed in mixed municipal solid waste.
 - Minnesota Statute 115A.13 (subd.21) – definition of mixed municipal solid waste specifically includes source-separated compostable materials.
- Therefore, co-collection of yard waste and source-separated organics (SSO) is not allowed in most situations.
- Yard waste and MSW (or SSO) can be co-collected if it is approved by the State for delivery to an MSW composting facility.

Minnesota Regulatory Impediments to Source-Separated Organics Composting

- Composting facility types in Minnesota
 - Yard Waste Composting
 - MSW Composting
- Yard waste composting sites not allowed to accept SSO (must go to an MSW composting facility).
- Six MSW composting facilities in Minnesota
 - Creek-Side
 - Dodge County
 - Prairieland
 - RRT Empire
 - Swift County
 - Western Lake Superior Sanitary District



Project Goals

- Question: How can SSO composting programs overcome the regulatory and economic hurdles to become a more feasible alternative for Minnesota communities and businesses?
- In 2006, Carver County applied for and received \$55,000 in grant monies from the Minnesota Pollution Control Agency (MPCA) for a demonstration project.
- Project is to demonstrate that:
 - Co-collection of SSO with yard waste is more efficient and improves collection economics.
 - Processing of co-collected SSO/yard waste at a yard waste composting site can be done without any significant environmental impacts and with only minimal site design and operation changes.
 - Commingled collection and processing of these materials will improve the overall economics and viability of SSO management in Minnesota.

Economic Incentives

- Collection cost savings by eliminating a second cart for organics, eliminating the cost for a second truck. (**\$85.00 per hour to operate a truck**)
- Decrease transportation costs and infrastructure losses by utilizing local sites and eliminating long hauls and transferring material. (**Transferring cost is \$15.00 ton**)
- Haulers gain a competitive edge by offering organics collection.
- MSW composting facilities tipping fees are comparable to landfill tipping fees.



And So We Began!

■ Project Partners

- Project Lead (Carver County)
- Hauler (Waste Management)
- Facility Owner (Minnesota Landscape Arboretum)
- Facility Operator (RW Farms)
- Host City (Chanhassen)
- Grant Provider (Minnesota Pollution Control Agency)
- Project Consultant (Tim Goodman & Associates)



SSO & Yard Waste Collection

- Targeted Participants
 - Over 600 Waste Management residential accounts in the cities of Chanhassen, Chaska, Waconia, and Watertown.
- Pre-Program Participant Survey
 - 38% response rate
 - 89% residential SSO program good way to recycle more waste



Starter Kit



- Kitchen Pail - \$5.50
- 3, 15 and 33 gallon bag packs - \$1.19, \$1.24, \$4.18
- Kitchen magnet - \$1.84
- Program Brochure - \$.72
- Total cost of starter kit - \$12.11

SSO & Yard Waste Collection

■ Acceptable Materials

- All food leftovers
- Coffee grounds, filters, tea bags
- All food-soiled paper



■ Unacceptable Materials

- Diapers or sanitary napkins
- Cans & bottles
- Plastics including bags, containers, and Styrofoam
- Glass
- Other solid waste



■ Acceptable Compostable Bags (available in local stores)

- Bag-to-Nature
- Husky Eco-Guard
- Kraft lawn & leaf bags



■ Plastic bags are not acceptable

SSO & Yard Waste Collection

- Three step process for household
 - Collect food scraps and food-soiled paper in kitchen pail or other container.
 - Empty kitchen pail and yard waste in cart.
 - Set out yard waste cart at curb along side trash and recycling.
- Residents offered additional 90 gal. carts or other volume preference.
- Waste Management services yard waste carts with a dedicated truck and delivers materials to compost site.

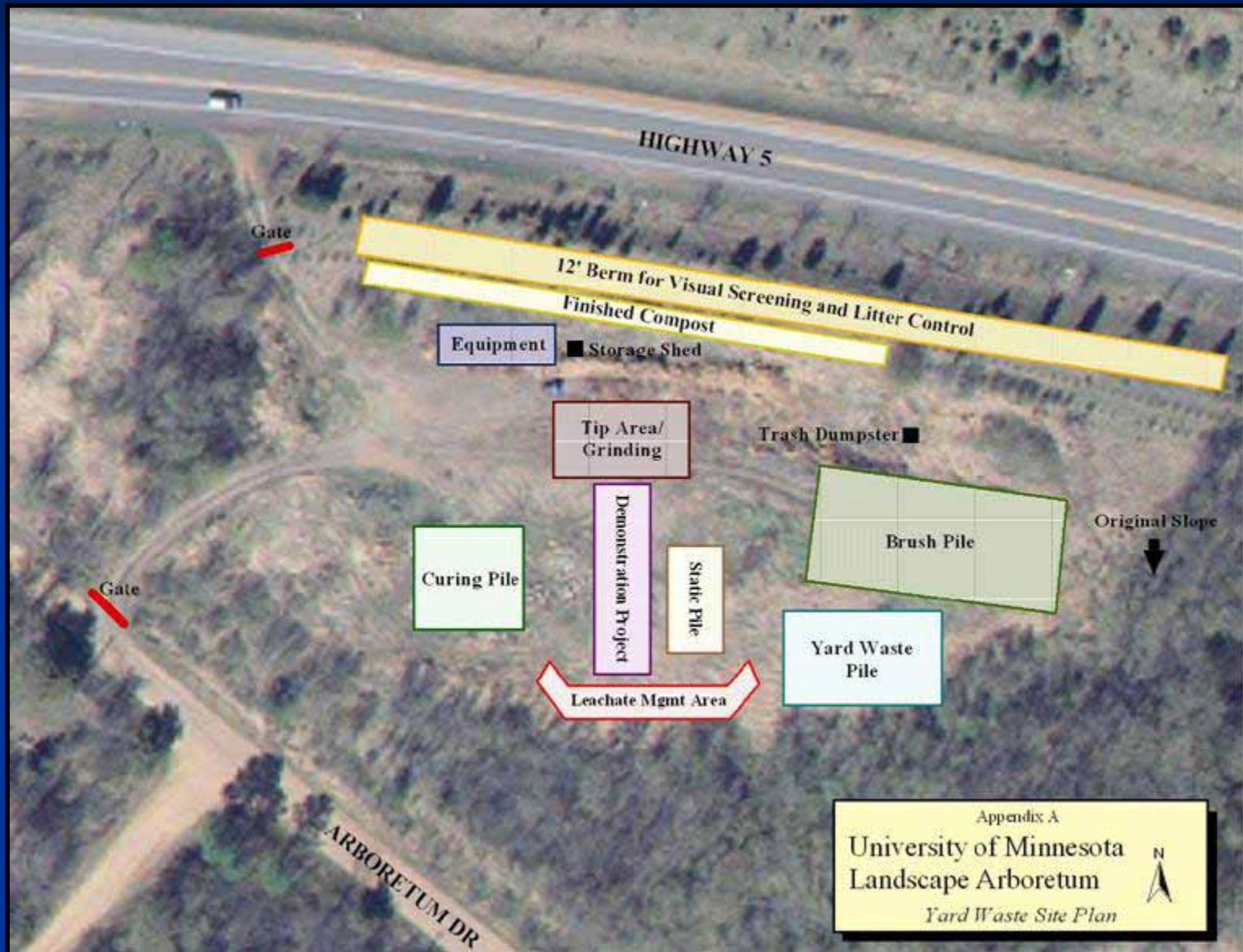


Organics Composting Facility

- Yard waste compost site is located at the Minnesota Landscape Arboretum.
- Several other sites were considered before settling on this one.
- Advantages of this site included:
 - Established yard waste compost site in the County
 - Willing site owner and operator
 - Short haul distance from a majority of the program routes
 - Support of the host community (Chanhassen)
- Site Capacity: Up to 20,000 yds³ of material may be actively composting or stored at site at any given time.



Organics Composting Facility



Site Preparation



- Installation of Visual Screening
 - This berm is located on the north side to screen the site from HWY 5
 - Trees were planted for added height

Site Preparation



- Installation of Ceramic Collection Tubes

Worked with U of M professor Thomas Halbach on leachate collection system design and installation

Site Preparation



Leachate & storm water runoff is managed by a 2X2 compost berm on the south end of the site to collect and filter any water leaving the site.



A 3 inch seed compost blanket installed on the north and south side of the berm absorbs runoff before it leaves the site.

Site Operations

- Vehicles dump the commingled yard waste/SSO in the tipping area.
- Obvious contaminants (mostly plastic bags) are removed.



Site Operations

- As a load is delivered, the front-end loaders spreads out the material.
- Processing site staff separate loads with the objective of a three tiered separation into contaminants, organics and yard waste.



Site Operations-Processing

- After sorting, the organics are fed into the Supreme 300 mixer to blend the feedstock.
- Organic materials are also weighed in the mixer before the feedstock is added.
- The organics are thoroughly blended prior to adding them to a stockpile.



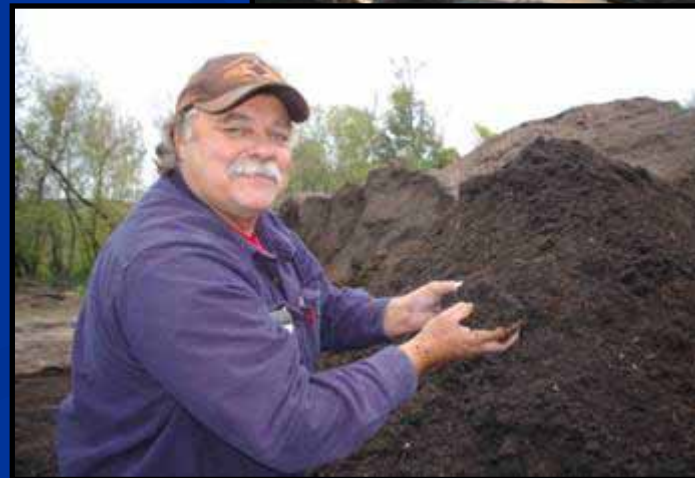
Site Operations-Processing

- Blended materials placed in static piles for monitoring with each pile being that week's collected materials.
- Temperatures of each pile are taken daily.
- Piles must meet Process to Further Reduce Pathogens (PFRP).
- PFRP = 131^o F for 7 days
- Time in static piles: ~ 10 to 14 days
- Once PFRP has been met materials are screened to remove contaminants.



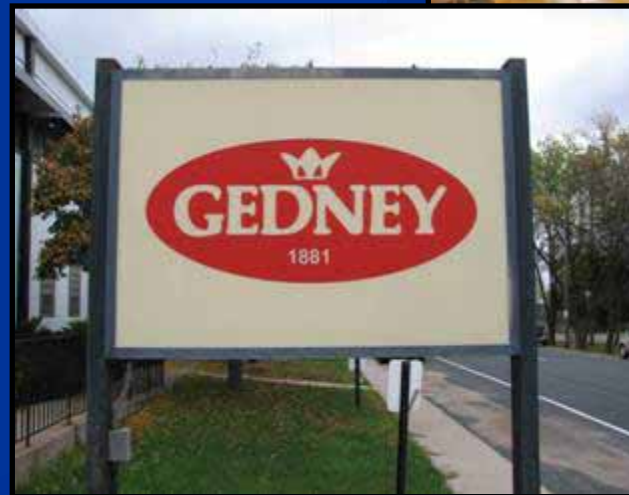
Site Operations

- After screening, compost is placed in a larger static pile where it undergoes further cooking and curing.
- Typically stays in this pile for 60 to 90 days being turned a couple times during this period.
- Finished compost is screened and tested following the criteria outlined in Minnesota Rules (7035.2836, subp. 6.).
- Markets include the Arboretum, landscaping operations, and farmland application.



Additional Feedstock Sources

- Yard waste from Carver County's Environmental Center.
- Cafeteria waste from the Minnesota Landscape Arboretum.
- Cafeteria waste from the Oak Ridge Conference Center in Chaska.
- Waste cucumbers from Gedney.



Additional Feedstock Loads

- Test loads from Hennepin County's SSO collection program (Four 40-yd³ loads).
- Organics originated from:
 - Wayzata and Minnetonka residential SSO programs (SSO only; no yard waste).
 - Eight public school districts within Hennepin County (cafeteria and kitchen organics).
- Half the loads went through the normal processing method while half were put through a shredder first before going into the Supreme 300 mixer for blending.



Environmental Management Program

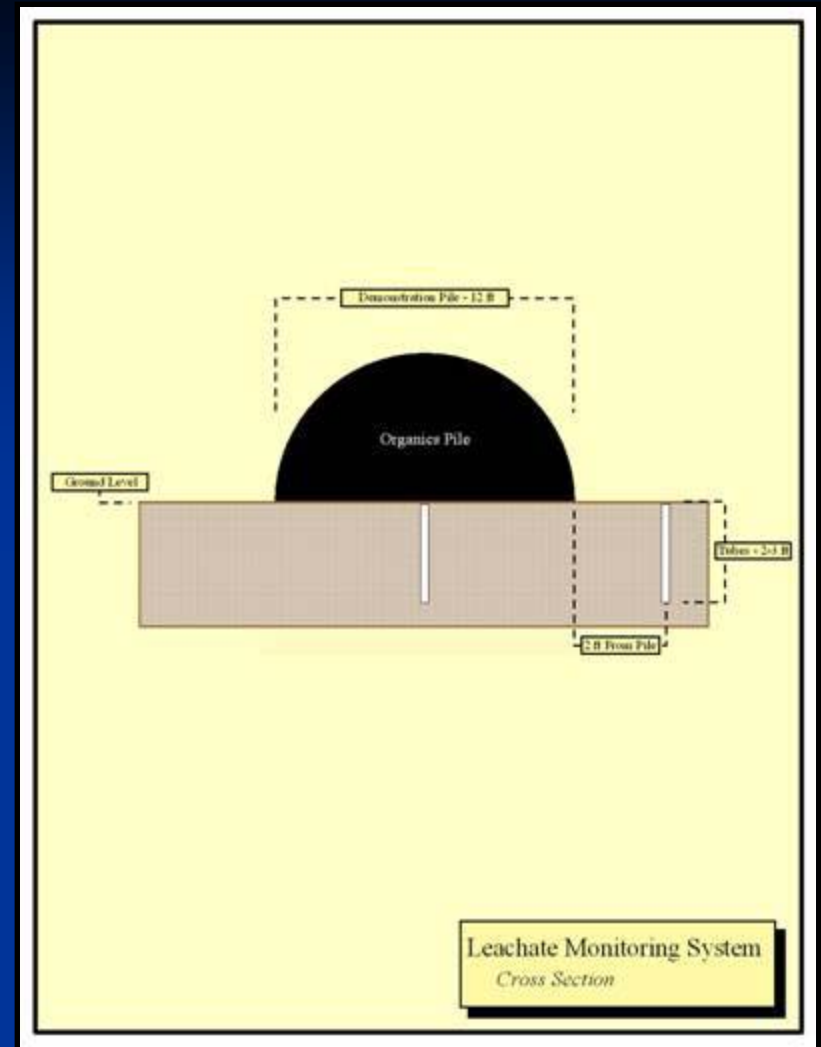
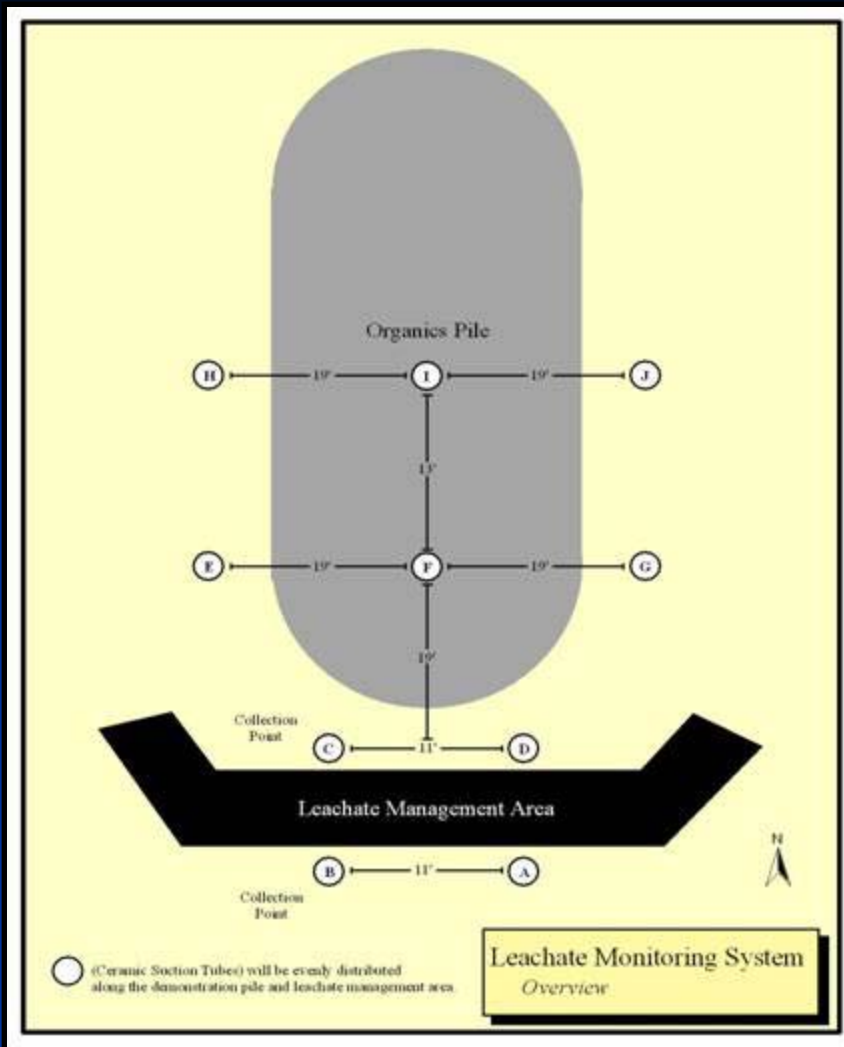
- Weather and rainfall are recorded.
- Leachate samples taken after a major storm event.
- Solvita maturity testing conducted
- Compost Composite samples analyzed for contaminants



Leachate Analysis



- Among the parameters tested
 - Nitrates
 - Potassium
 - Arsenic
 - Barium
 - Cadmium
 - Chromium
 - Lead
 - Selenium
 - Silver
- Cadmium, Lead and Silver showed no detects in all samples.
- Some early analyses were done on composite samples (A&B, C&D, and E&H).



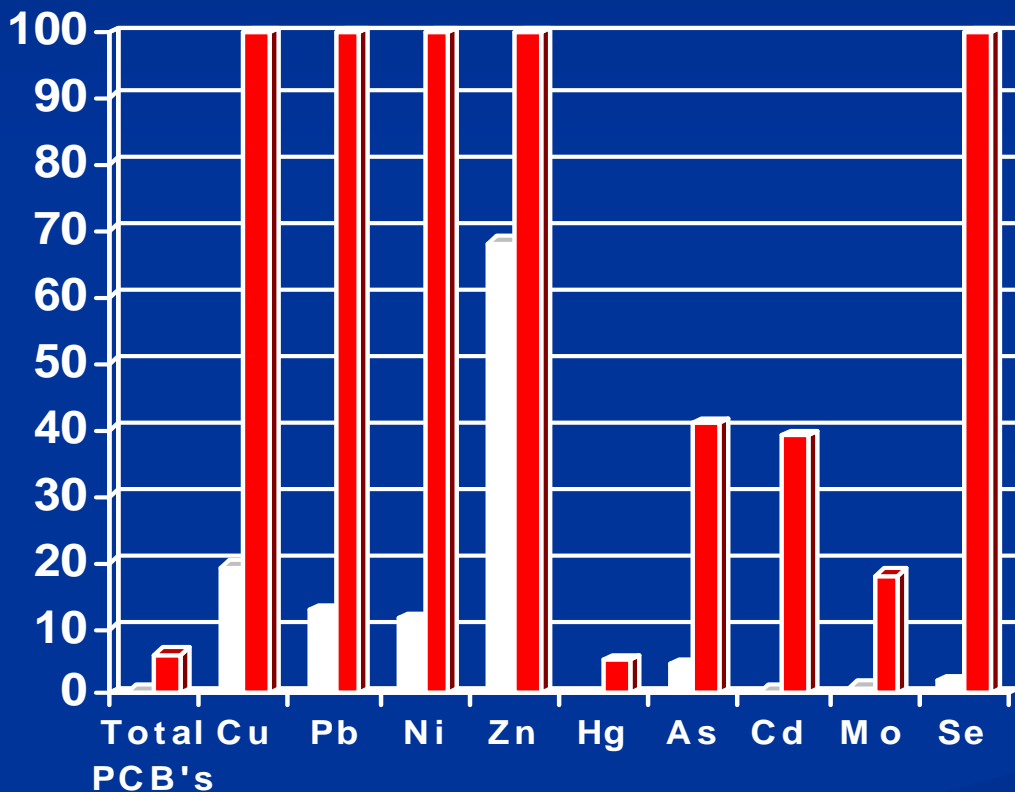
- These diagrams show the placement of collection tubes and a cross section of the monitoring system.
- 4 lysimeters two feet from the edge of static pile, 2 lysimeters on the north side of compost berm, 2 lysimeters on the south side of berm.

Leachate Volumes

Collection Tube	Range (ml) ¹	Average (ml)	No. of Dry Samples
Tube A	0 – 475	187	5
Tube B	0 – 397	137	5
Tube C	0 – 505	268	2
Tube D	0 – 480	229	2
Tube E	73 – 320	162	0
Tube F	0 – 160	48	4
Tube G	0 – 30	6	9
Tube H	0 – 466 (0 – 262)	135 (109)	1
Tube I	0 – 280	111	2
Tube J	0 – 170	81	3

¹Based on 14 sampling events.

Finished Compost Contaminant Analysis Comparison



■ Contaminant Concentration for Finished Compost (PPM)

■ Contaminant Concentration Compost Limits per MN Rule 7035.286

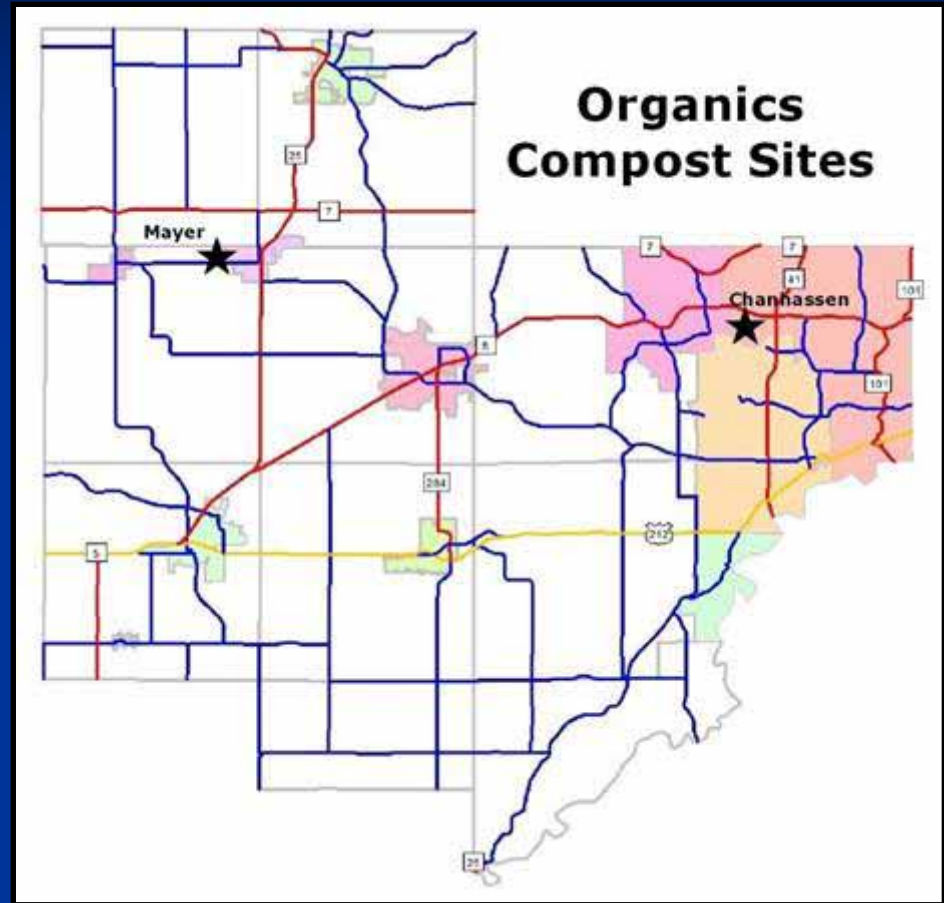
Project Extension/Expansion

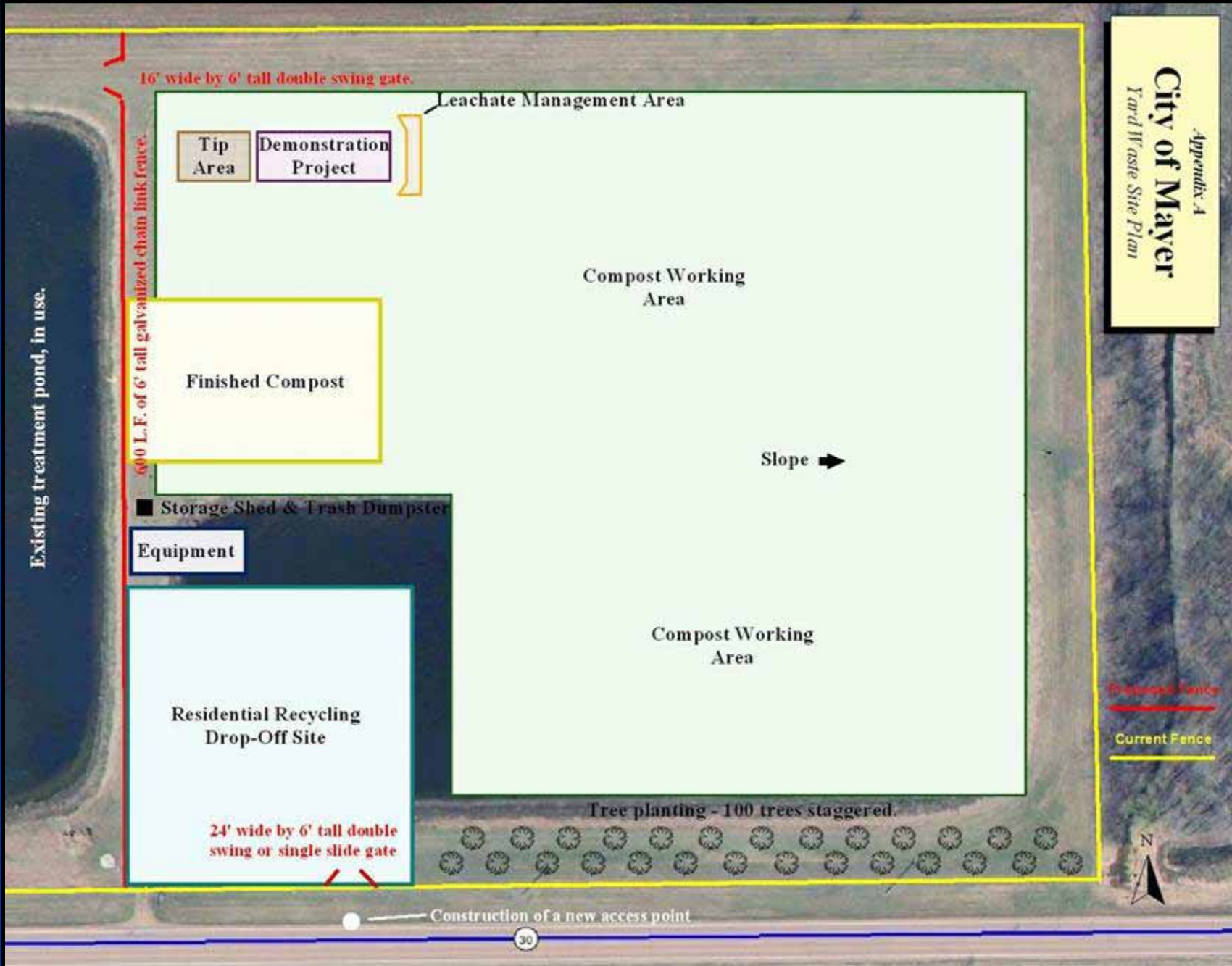
- MPCA has extended the demonstration project through 2008.
 - Measure any changes to participation and diversion rates during the winter months.
 - Expand participation of the program to other routes in the communities currently participating in the program.
 - Expand the program to other communities in western Carver County.
- Second site approved by MPCA as part of the demonstration project (City of Mayer).



Project Extension/Expansion

- Carver County is working with Waste Management to expand the program to the communities of Mayer and New Germany for delivery to the Mayer site.
- Material will be managed in the same manor as the Arboretum site.





Questions?

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