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Closed Landfill Program

2013 Report to the Legislature

Minnesota Pollution Control Agency

December 2013

Legislative charge

Minn. Statutes § 115b.412, subd. 10 Report

By December 1 of each year, the commissioner shall report to the environment and natural resources committees and to the appropriate finance committees of the Senate and the House of Representatives on the commissioner's activities under sections 115B.39 to 115B.43 and the commissioner's anticipated activities during future fiscal years.

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Solar Flare at the Long Prairie Landfill,
Todd County

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Executive summary

The 1994 Landfill Cleanup Act (LCA) created Minnesota's Closed Landfill Program (CLP). The CLP is an alternative to Superfund for cleaning up and maintaining closed landfills and was the first such program in the nation. The CLP is unique because it is the only program that gives the Minnesota Pollution Control Agency (MPCA) the responsibility to "manage" up to 112 closed, state-permitted, mixed municipal solid waste landfills to mitigate risks to the public and the environment. The CLP manages these sites by:

- monitoring environmental impacts and site conditions associated with each landfill
- determining the risk each landfill poses to public health, safety and the environment
- implementing remedial response actions to help reduce site risks
- maintaining the landfill properties, the landfill covers, and operating any remedial systems that are necessary
- managing land issues on the land the CLP is responsible for
- working with local governments to incorporate land-use controls at and near the landfills to protect human health and safety, as well as the state's investment involving response actions taken and equipment purchased
- measuring how well the CLP is managing the risk at the landfills

The LCA (Minn. Stat. § 115B.412, subd. 10) requires the MPCA to provide a report to the Minnesota Legislature on the activities of the previous fiscal year (FY) and anticipated future work. This report fulfills the requirement and covers FY 2013 (July 1, 2012 to June 30, 2013) activities.

The report provides detailed information on how the CLP managed the closed landfills in the program during FY 2013. The following pages give an overview of the CLP, discuss program activities that were accomplished in FY 2013, and provide a look ahead to FY 2014.

Program highlights in FY 2013 included:

- completing or continuing remedial response actions at 11 sites
- completing 59 Closed Landfill Use Plans (CLUPs) with local government units
- preventing 27.8 million pounds of methane gas from entering the atmosphere
- capturing nearly 10.2 million gallons of landfill leachate by removing it from, or preventing it from reaching, the groundwater

The CLP spent $16,847,035 in contractual and administrative costs in FY 2013 to accomplish these and other activities.

Future CLP work will require additional steps to manage the risks at these sites by maintaining or upgrading monitoring systems, landfill covers, and gas systems; conducting investigations; monitoring groundwater and landfill gas impacts; managing land issues; and working with local governments to implement appropriate land-use controls to protect the public using land at and near the landfills. Major remedial construction underway at the Flying Cloud Landfill is expected to complete the currently known major construction for the CLP, with the exception of the Freeway Landfill, which does not yet have an executed Landfill Cleanup Agreement between the landfill owner and the MPCA.

The Minnesota Legislature transferred $48 million from the Closed Landfill Investment Fund (CLIF, which holds money set aside for future post-closure care) to the General Fund to help address the state's budget shortfall during the 2010 legislative session. Legislation requires, however, that the $48 million plus interest be transferred back to the CLIF over four fiscal years starting July 1, 2014.

Program overview

Purpose

The 1994 LCA created Minnesota's CLP so the state could effectively protect human health, safety, and the environment associated with 112 closed, state-permitted, mixed municipal solid waste landfills throughout Minnesota.

The program's goals to help achieve this outcome include managing the risks associated with human exposure to landfill contaminants and methane gas, and mitigating the degradation of groundwater and surface water. Managing these risks is best accomplished by implementing certain strategies, including (1) understanding the extent and magnitude of contaminant and methane gas impacts, as well as the overall risks, at each site; (2) maintaining the landfills and operating any remediation systems; (3) implementing construction-related response actions to reasonably address contaminant and methane gas migration issues; and (4) working with local governments to manage on-site and nearby land use. Table 1 summarizes the CLP's desired outcome, goals and strategies.

Table 1. Outcome, goals, and strategies of the CLP

Desired outcome	Goals	Strategies
· Protect human health, safety and the environment associated with closed landfills	· Manage the risk · Minimize human exposure to contaminants and methane gas · Minimize degradation of groundwater and surface water	· Understand extent and magnitude of contamination and methane gas migration · Clean up and/or control groundwater contamination · Control or reduce methane gas migration · Cooperatively manage land use · Operate and maintain landfills

The CLP manages the risk to public health and safety in a cyclical fashion referred to as the "Risk Management Cycle." First, site information pertinent to understanding the risks at each landfill is collected (monitoring groundwater, methane gas, nearby land use) and stored in a database. Second, the CLP evaluates the information, identifies the risks at each site and determines each site's numerical risk using a risk-scoring model, and identifies the most practical response actions needed to lower the risk. Third, response actions are implemented based on several factors, including risk-score ranking, available resources (funds, staff), other required site work (operation and maintenance, land surveys, repairs), and other initiatives that are agency and program priorities (e.g., renewable energy). Fourth, the response actions implemented are measured for effectiveness and the monitoring of site conditions is continued.

How sites enter the Closed Landfill Program

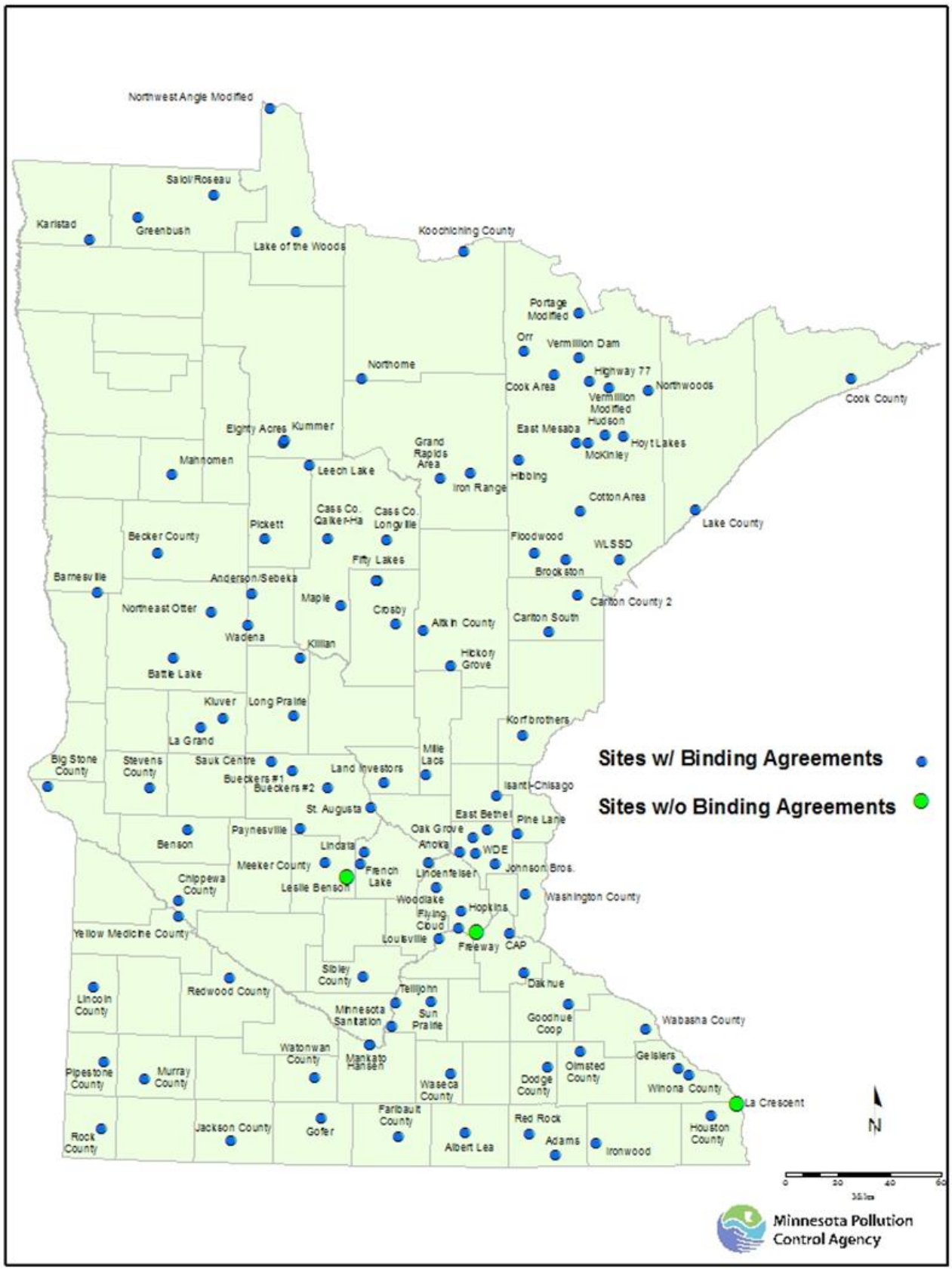
Before landfills are accepted into the CLP, certain requirements as stated in a Landfill Cleanup Agreement or Binding Agreement (BA) – typically executed between landfill owners/operators and the state – must be met. Once these requirements are fulfilled, a Notice of Compliance (NOC) is issued to the owner/operator. At this point, the site enters the program and the state takes over responsibility for the landfill.

Through June 30, 2013, 109 landfill owners/operators had executed a Landfill Cleanup Agreement and received an NOC. Currently, three landfills – Freeway, La Crescent, and Leslie Benson – are qualified for entry into the CLP but have not yet executed a Landfill Cleanup Agreement. The Freeway Landfill is of particular concern, given its rather high risk score and past failed efforts to formally enter the site into the CLP. The Freeway Landfill is the only one of the three where major remedial construction is anticipated. Unless new legislation changes landfill entry requirements, the MPCA does not anticipate additional sites to qualify for the CLP. Figure 1 shows the location of all 112 qualified facilities, including the three that currently do not have a Landfill Cleanup Agreement.

The LCA also requires the CLP to reimburse eligible parties for past cleanup costs when sites enter the program. Past reimbursements to landfill owners, operators and responsible parties total $37,107,759, while reimbursements to the U.S. Environmental Protection Agency (EPA) amount to $4,014,550. The Freeway Landfill is the only site that remains eligible for reimbursement to the EPA, at a cost of $17,000, when it enters the program.

Installing new cover and plastic liner at the Hopkins Landfill, Hennepin County

Figure 1. Locations of CLP landfills



Removing sites or land from the Closed Landfill Program

Legislation (Minn. Stat. §115B.412, subd. 8) was passed in 2011 that allows for the removal or delisting of landfills from the CLP and allows for portions of landfill property to be removed from MPCA responsibility when health and safety measures are met and the land is then available for other uses. Eight landfills, where waste was relocated to other landfills and where contamination is not expected, are currently eligible for delisting consideration. The CLP is beginning to assess these sites to make sure that waste and contamination from the former landfill no longer exist. One key step in the delisting process will likely include an agreement between the MPCA and the property owner removing the MPCA from having responsibility for any future response actions at the site.

The CLP also anticipates removing portions of other closed landfill property from program responsibility if the MPCA has no reason to take response actions on that land. In these cases, the landfill will remain in the program but some of the adjoining land will be excluded. An example of this would be where local governments or private landowners have unique land-use desires on certain property and excluding this property from the program will have no impact on the CLP's ability to care for the landfill facility and to protect public health and safety.

Funding

Funding for the CLP comes from three major sources:

- the Remediation Fund
- general obligation bonds
- past settlements from landfill-related insurance coverage

In addition, closed landfills with financial assurance accounts were required to deposit remaining balances into the Remediation Fund to enter the program.

Transfers from the Environmental Fund

The Environmental Fund is used to support many programs at the MPCA including, in part, the CLP. Various sources of revenue are deposited into the Environmental Fund. A portion of this fund is then transferred into the Remediation Fund for use at CLP sites and for other remediation programs.

2013 Minn. Session Laws, Ch. 114, Art. 3, sec. 3, subd. 6 requires up to $46 million to be transferred from the Environmental Fund to the Remediation Fund for the FY 2014–2015 biennium.

General obligation bonds

General obligation bonds are used to fund capital improvements, including the construction of remedial systems and the acquisition of land, at publicly owned CLP sites. Since 1994, the Minnesota Legislature has authorized a number of general obligation bonds for these activities at closed landfills, including an initial authorization of $90 million in 1994. The 1994 authorization was intended to be available long term to meet the future capital needs of the program. However, in 2000, Minn. Stat. § 16A.642 cancelled all unused bonds more than four years old, regardless of program need or legislative intent. As a result, nearly $56 million of the original $90 million was cancelled. All authorizations through FY 2013, together with the cancellations, have resulted in a net authorization of over $104 million of bonds for use at closed landfills. Through FY 2013, nearly $102 million of general obligation bonds has been spent on construction activities and land acquisitions at 52 sites.

Financial assurance

Minn. R. 7035.2665 requires owners of mixed municipal solid waste landfills remaining in operation after July 1, 1990, to set aside funds to pay for the cost of facility closure, postclosure care, and contingency action. Because several of the landfills that entered the CLP were still in operation as of July 1, 1990, their owners were required to meet these financial assurance rules. As part of the LCA, the owners of these landfills, upon entering the CLP, were required to transfer their financial assurance balances to the MPCA after they had met closure requirements.

From inception of the CLP through FY 2013, the state has received a total of $15,406,837 in financial assurance payments from owners or operators of 25 closed landfills. Unless legislative changes allow additional sites to qualify for the CLP and transferring remaining financial assurance funds is required, no additional financial assurance dollars are anticipated in the future.

Insurance recovery

The LCA authorizes the MPCA and the Attorney General's office to seek to recover a fair share of the state's landfill cleanup costs from insurance carriers based upon insurance policies issued to responsible persons who are liable for cleanup costs under the state Superfund law. This would include insurance policyholders who owned or operated the landfills, hauled waste containing hazardous substances to the landfills, or arranged for the disposal of waste containing hazardous substances at the landfills. Under the LCA, the MPCA and Attorney General may negotiate coverage settlements directly with insurance carriers. If a carrier has had an opportunity to settle with the state and fails to do so, the state may sue the carrier directly to recover cleanup costs to the extent of the insurance coverage issued to responsible persons.

The state's settlement efforts concluded in FY 2011. The state, with assistance from the state's special attorneys who had been appointed by the Attorney General's office, commenced a total of six lawsuits against 56 insurance companies. Although all settlements have been resolved successfully, some small payments will continue to be credited to the Remediation Fund in the future due to certain insolvent insurance carriers that were party to earlier settlements. However, the CLP does not anticipate that any significant additional revenue will be generated for the program. In FY 2013, three such payments, totaling $5,976, were credited to the Remediation Fund. Of this amount, $571 was credited to the Natural Resources Damages (NRD) account for the NRD portion of the settlements, $2,702 was transferred to the Closed Landfill Investment Fund, and $2,702 remained in the Remediation Fund. Through FY 2013, the state's share of all insurance carrier settlement payments totaled $96.6 million.

Under the LCA, insurance carriers may request that the state's claims for NRDs at any of the landfills in the CLP be included in settlements with the state. NRD payments received through June 30, 2013, totaled $9,401,506. The Minnesota Department of Natural Resources uses NRD recoveries to rehabilitate, restore, or acquire natural resources to remedy injuries or losses to natural resources resulting from a release of a hazardous substance.

Closed Landfill Investment Fund

In 1999, the Minnesota Legislature established the Closed Landfill Investment Fund (CLIF) for the purpose of setting aside and investing money for future postclosure care of the CLP landfills. The Legislature foresaw the need to plan for a way to fund the state's obligation to care for these landfills in perpetuity. Initially, $5.1 million was transferred from the former Solid Waste Fund to the CLIF in each of the first four years. In addition, proceeds from settlements with insurance carriers (see **Insurance recovery** section above) were deposited equally in the Remediation Fund and the CLIF. The CLIF cannot be used to fund postclosure care activities until after FY 2020.

During the 2010 Legislative Session, the Legislature transferred $48 million from the CLIF to the General Fund to help address the state's budget shortfall. 2013 Minn. Session Laws, ch. 114, Art. 3, sec. 9, subd. 6 requires that $9.9 million be transferred from the General Fund back to the CLIF on July 1, 2014; $12,550,000 in the years 2015 and 2016; and $13,000,000 in 2017; including interest that would have accrued to the CLIF if the transfers to the General Fund had not been made. As of June 30, 2013, the CLIF had a balance of approximately $4.7 million.

Program activities in fiscal year 2013

Fiscal year 2013 expenditures

Program expenditures for FY 2013 totaled $16,847,035. A summary of these expenditures is found in Table 2. Expenditures in FY 2013 for each landfill are itemized in Appendix A.

Table 2. Closed Landfill Program expenditures

Expenditure type	FY 2013	Cumulative
Closed Landfill Program administration and support	$ 2,204,043	$ 41,756,718
Remedial response actions*	$ 9,852,196	$201,217,685
Operation and maintenance	$ 4,490,570	$ 65,706,273
Land management	$ 245,351	$ 816,847
CLP legal counsel (Attorney General)	$ 54,875	$ 2,523,640
Insurance recovery legal counsel (Attorney General)	$ 0	$ 3,220,882
Insurance recovery legal counsel (special attorneys)	$ 0	$ 43,030,219
EPA reimbursement	$ 0	$ 4,014,550
Responsible party reimbursements	$ 0	$ 37,107,759
Total	**$16,847,035**	**$399,394,574**

Expenditure information is based on SWIFT data for the time period July 1, 2012, to June 30, 2013.

*These activities include both bond and non-bond expenditures.

Collecting site information

Site risks are evaluated by monitoring groundwater, surface water, and landfill gas migration. Currently, the CLP samples over 4,000 monitoring points comprised of monitoring wells, gas probes and wells, residential wells, surface waters, piezometers and springs. These data are stored in a database. Routine inspections are also conducted at each landfill. Site conditions are observed and items needing repair are noted. In addition, any nearby development that is observed is recorded.

Geoprobing for waste at the Pipestone County Landfill

Understanding and evaluating site risks

Site information that is collected is evaluated to help ascertain risks at each site. Minn. Stat. § 115B.40, subd. 2 requires the MPCA to establish and update a priority list for preventing or responding to releases of hazardous substances, pollutants and contaminants, or decomposition gases at closed landfills. The CLP uses a scoring model to determine risk at each site. Landfills are scored based on hazards present at each site (monitoring data and field observations), the conditions that exacerbate those hazards (example: subsurface conditions), and the likelihood the public will be exposed to those hazards (distance to wells and buildings). Landfills with high risk scores receive a high ranking or priority.

The CLP updated its risk priority list in January 2013 by rescoring the landfills and identifying response actions that will help reduce the risk scores at sites (see Table 3). The response actions identified ranged from constructing new liners and covers to installing gas vents and implementing Closed Landfill Use Plans (see **Local land use controls** below). This list was used, in part, to establish CLP work priorities in FY 2013. For some landfills, remedial response actions had already been completed and the remedies undertaken were simply monitored for remedy effectiveness. For these sites, risk scores are expected to decrease over time.

Table 3. Site risk priority list (Top 30) – January 2013

Priority ranking	Landfill	Risk score	Initial response action completed or needed to lower risk score	Status
1	Lindala	44853	Regulate future residential well construction within Special Well Construction Area	Ongoing
2	Houston County	30541	Install device to create negative pressure in gas vent near building; consider consolidating waste away from buildings.	Completed/ Ongoing
3	Hopkins	15900	Consolidate waste away from adjacent property; construct new cover and gas wells.	Ongoing
4	Becker County	15755	Partner with LGU to control land uses on/off landfill.	Ongoing
5	East Bethel	14287	Partner with LGU to control land uses on/off landfill.	Ongoing
6	Freeway	13775	Relocate waste on constructed lined cell or construct new cover and active gas system with waste in place.	No binding agreement
7	Dodge County	10076	Partner with LGU to control land uses on/off landfill.	Ongoing
8	Mille Lacs County	9875	Partner with LGU to control land uses on/off landfill.	Ongoing
9	Carlton County No. 2	7543	Construct new potable wells for adjacent residents; partner with LGU to control land uses on/off landfill.	Ongoing / Ongoing
10	Murray County	7276	Evaluate additional gas probe data near building.	Ongoing
11	Stevens County	6826	Install gas probes near transfer station to monitor gas impacts.	Completed
12	Ironwood	6600	Enhance groundwater pump-out system.	FY 2014
13	Hudson Landfill	6145	Install additional gas probe to monitor methane impacts	Completed
14	Cass County (L-R)	5851	Expand groundwater monitoring network	Completed
15	Oak Grove	5718	Partner with LGU to control land uses on/off landfill	Ongoing
16	Isanti-Chisago	5073	Partner with LGU to control land uses on/off landfill.	Ongoing
17	Bueckers #1	4980	Update/correct current gas data.	Ongoing
18	Maple	4978	Partner with LGU to control land uses on/off landfill.	Ongoing
19	La Crescent	4613	Install gas probes to monitor possible presence of methane.	No binding agreement
20	Kluver	4451	Expand groundwater monitoring network	FY 2014
21	Tellijohn	4376	Install gas probe near building and monitor potential impacts	Ongoing
22	Paynesville	4170	Partner with LGU to control land uses on/off landfill.	FY 2013
23	Red Rock	4087	Partner with LGU to control land uses on/off landfill.	Ongoing
24	Korf Bros.	3532	Partner with LGU to control land uses on/off landfill.	Ongoing
25	Washington County	3518	Monitor effectiveness of relocating waste on triple-lined cells.	Ongoing
26	Waseca	3480	Partner with LGU to control land uses off site	Ongoing
27	Crosby American Properties	3451	Monitor effectiveness of passive gas vent installation near property boundary; partner with LGU to control land uses on/off landfill.	Ongoing/ Ongoing
28	Waste Disposal Engineering (WDE)	3035	Monitor effectiveness of C3 VOC extraction system and PCB extraction system at hazardous waste pit.	Ongoing
29	North East Ottertail	2963	Relocate gas probe to better monitor methane impacts	FY 2015
30	Hansen	2770	Partner with LGU to control land uses on/off landfill.	Ongoing

It is important to point out that not all CLP response actions undertaken are necessarily reflected in the risk priority list because not all such response actions, particularly construction activity, are directly risk related. For example, it may be necessary to replace an aging active gas system, leachate-collection system, or equipment or parts — even at landfills that have a low risk score and ranking.

Response actions taken

Various response actions were taken in FY 2013 to address the risks posed by the closed landfills. These actions included implementing remedial response actions that were focused on reducing risks at the sites and were based on, in part, the risk priority list. Response actions also included operation and maintenance activities at all the landfills.

Remedial response actions

The CLP takes remedial response actions at closed landfills to help manage the risks as well as to lower the landfills' risk priority scores. Remedial response actions taken at closed landfills in FY 2013 included cover construction, waste consolidation, installation of active and passive gas systems, modifying existing gas vents, installation of new residential drinking water wells, and acquisition of adjacent land containing landfill waste. Table 4 summarizes these activities.

Consolidating waste at the Flying Cloud Landfill, Hennepin County

The CLP uses contractors to help complete some of these response actions. One contract involves investigation, designing response actions, and providing construction oversight. A second contract is for drilling services.

Table 4: Remedial response actions in FY 2013

Landfill	Remedial response action
Anoka-Ramsey	Completed modifications to the groundwater treatment system.
Carlton County #2	Installed new wells for adjacent residents; evaluating feasibility of a community water supply.
East Mesaba	Completed construction of new cover, passive gas vents, including relocated waste.
Flying Cloud	Ongoing waste consolidation, new cover, and active gas system.
Hopkins	Ongoing waste consolidation, new cover, and active gas system.
Hoyt Lakes	Acquired adjacent property that contains additional waste.
Koochiching County	Completed construction of new cover and improved leachate-collection system.
Kummer	Installed additional gas probes to investigate possible methane migration on to adjacent property.
Maple	Installed new potable wells for three nearby residents.
Waste Disposal Engineering	Installed soil vapor/cryogenic extraction system for the hazardous waste pit; installed GAC filter system to treat PCB-contaminated groundwater.
Winona County	Relocated leachate and condensate collection tank to a more accessible location.

Operation and maintenance

The MPCA is responsible for the long-term care of all CLP landfills in perpetuity. Depending on the site, operation and maintenance (O&M) activities include mowing, sampling and analysis, inspections, general repair and maintenance, providing and maintaining alternative water supplies or water-treatment systems, and operation of active gas- and groundwater-treatment systems. Operation and maintenance costs totaled about $4.5 million in FY 2013. These costs included minor construction at two sites (Carlton No. 2 and Winona County). Costs for each site are provided in Appendix A.

Some of the costs shown are for invoices paid in FY 2013 and are not necessarily total project costs. Many of the O&M activities are performed by firms under contract with the state. One contract is for routine O&M activities, a second is for sampling and analytical services, a third is for mowing the landfills, and a fourth is for leachate collections and disposal. However, as a cost-savings measure for the state, CLP staff have taken over the O&M activities at several sites that previously had been performed by state active remediation contractors.

In FY 2011, the CLP began a continuous improvement pilot project to utilize available CLP field staff, rather than state contractors, to operate and maintain active remediation systems at four landfills. In FY 2012, about $139,000 of contractor labor costs were saved as a result of this effort. This led to the development of an active remediation O&M Business Plan in FY 2013. The plan called for expansion of active remediation site assignments to CLP field staff and the standardization of work plans to more efficiently use state contractors. CLP field staff took over O&M responsibilities at 10 sites in FY 2013. As a result, about $271,000 of contractor labor costs were saved in FY 2013. Additional site assignments have occurred in FY 2014 and an increase in cost savings is anticipated.

O&M - Road repair needed at the Koochiching County Landfill

Renewable energy opportunities

The CLP has had occasional discussions with developers regarding opportunities for renewable energy because of two important resources it has at its landfills: methane gas and open space. Landfill gas can sometimes be used as a boiler fuel or to produce electricity. Open space at some landfills can be conducive for constructing and operating solar energy farms.

Three CLP landfills have used landfill gas to generate electricity. However, these efforts were short term because of significant decreases in the volume of usable methane over time and/or high equipment maintenance costs. Several solar contractors have contacted the CLP with interest in constructing solar arrays on closed landfill property. These solar development opportunities will continue to grow as more developers recognize the benefits of recent solar legislation.

Local land use controls

Managing the risks associated with the closed landfills not only involves cleanup and long-term O&M, but also managing land use on and near the landfills so that persons living or working nearby can do so safely. Since it is unlikely that a reasonable cleanup effort will eliminate all the risks associated with a landfill, proper management and regulation of land use at and near a closed landfill is an additional important factor in assuring long-term protection from the risks posed by the facility. Future use of property at and around closed landfills needs to be planned carefully and responsibly. Because managing land use is the responsibility of local government units (LGUs), an effective partnership between the CLP and LGUs is critical.

For each landfill, the MPCA is required to develop a CLUP in which the MPCA (1) determines the appropriate land uses at the landfill where the MPCA is implementing environmental response actions and, (2) provides information about property at or near the landfill that may be affected by groundwater and/or and methane gas migration. The purpose of each CLUP is to (1) protect the health and safety of those living on, or occupying land near, the landfill and, (2) protect the integrity of the landfill and the MPCA's response action equipment.

Minn. Stat. § 115B.412, subd. 9 requires LGUs to make their local land use plans consistent with the MPCA's CLUP. The CLP will specifically identify land uses it designates for the property described in the Landfill Cleanup Agreement, property with adjacent waste, adjacent buffer property, and adjacent property where response-action equipment is operated. The CLP will identify a "closed landfill management" use over all of the property to reflect the CLP's obligation to take response actions anywhere on the property. The CLP also has a policy to try to incorporate alternative energy uses (solar energy farm, wind energy conversion) where such uses are compatible with site conditions. In addition, the CLP will try to include land uses the landowner or LGU desires for the property. The MPCA will recommend that LGUs adopt a new zoning district — "Closed Landfill Restricted" — and ordinance for these properties that will reflect the land uses it has identified.

Minn. Stat. § 115B.412, subd. 4 (Affected Property Notice) requires the MPCA to provide LGUs with information that describes the types, locations and potential movement of hazardous substances, pollutants and contaminants, or methane gas related to the landfill. LGUs are required to incorporate this information in their land use plans and to notify persons applying for a permit to develop affected property of the existence of this information and, on request, to provide them a copy of the information. In addition, the MPCA will work with LGUs to identify appropriate land-use controls (for example, building setbacks) on affected properties outside the landfill that best protect public health and safety.

The CLP considers a CLUP complete when it meets with the LGU to discuss the risks associated with the landfill, potential and appropriate land uses on the landfill property, and land-use controls the LGU should consider to protect public health and safety. In FY 2013, the CLP completed CLUPs at 59 landfills. Through June 30, 2013, CLUPs have been completed for all landfills except for those that do not have a Landfill Cleanup Agreement, where waste has been removed and monitoring shows no contamination, or where property boundary issues need resolution. Implementation of a CLUP is when the LGU amends its zoning ordinance and/or adopts other land-use controls based on the information provided by the MPCA. The CLP is assisting LGUs in adopting land use controls to protect public health and safety.

Land ownership

Closed Landfill Program landfills are owned by local governments, the state, or are privately owned. In FY 2013, the CLP acquired 733.4 acres of landfill property or adjacent buffer through either purchase or conveyance at no cost. As of June 30, 2013, the MPCA owned 37 landfills totaling 2,911 acres across Minnesota. Acquiring ownership of landfills is done in cases where state ownership provides the best method of controlling access and to help manage the facility. In many cases, the previous owner of the property transferred title to the MPCA upon entry of the site into the CLP. More recently, transfers have occurred because the owners simply desire to divest their ownership interest in the land. In other cases, the state acquires title to the land when the property goes tax forfeiture.

In FY 2013, the CLP acquired 236.2 acres of the Flying Cloud Landfill when Allied Waste, Inc. transferred ownership to the MPCA prior to the CLP beginning remedial construction at the landfill. Due to tax forfeiture, the MPCA acquired 80.0 acres at the Korf Brothers Landfill at a cost of $8,370, 112.1 acres at the Waste Disposal Engineering Landfill for $1,000, and 50.9 acres at the Crosby American Properties Landfill at no cost. The MPCA also purchased 1.1 acres of the Anoka-Ramsey Landfill from a nearby resident at a cost of $174,900. The city of Karlstad conveyed 20.0 acres of the Karlstad Landfill to the

MPCA at no cost. The city of Benson transferred ownership of 47.1 acres of the Benson Landfill to the MPCA for no cost. In addition, the CLP was transferred ownership of 160.2 acres at the Western Lake Superior Sanitary District Landfill at no cost to the MPCA. The CLP is in the process of acquiring title to a number of other landfills in the program.

In addition to the landfill property itself, the MPCA sometimes acquires adjacent property as a buffer to protect public health and safety. As of June 30, 2013, 513 acres of adjacent buffer at 22 sites are under state ownership. In FY 2013, the MPCA acquired 25.8 acres that were adjacent to the Hoyt Lakes Landfill and contained waste material for $9,300. The CLP is currently working to acquire property adjacent to the Hansen Landfill as buffer because landfill waste is on this property.

Relocating waste away from adjacent apartments at the Hopkins Landfill, Hennepin County

Making property available for useful purposes

As risks at landfills are better understood or are mitigated over time, the CLP realizes that some of the land it has certain responsibilities on (through easements, restrictive covenants, Landfill Cleanup Agreements) is not critical to meet its obligations. At the same time, local governments sometimes have desires for certain land uses on those same properties. When situations like these arise, the CLP will consider reducing some of the land it is responsible for. This can be done through a surplus process or through friendly condemnation. The CLP has authority to do this under Minn. Stat. § 115B.412, subd. 8.

The CLP is working on reducing some of the acreage at several landfills it is responsible for. An example is the Winona County Landfill where over 300 acres, all owned by Winona County, will be released from CLP responsibility. Winona County has developed a conceptual plan for several public uses around on this property including a dog park, walking and ski trails, picnic sites, and interpretive centers. Currently, a portion of the land is used for community gardens.

Also, there are opportunities for the state to lease the land it owns to others for certain uses, as long as state general obligation bonds were not used for response actions. The CLP currently leases either land or buildings at the Lindenfelser (garage for storage), Olmsted County (aero-modeling club), and Sun Prairie (cropland) landfills.

Contractual costs associated with land-management activities, including property record searches, property boundary surveys, as well as costs for land purchases, totaled $245,351 in FY 2013. These are broken down by landfill in Appendix A.

Community gardens at the Winona County Landfill

Measuring progress

The MPCA staff uses environmental and other indicators to measure the progress of the CLP. Currently, two environmental indicators are measured: (1) the volume of landfill leachate that is removed from, or is collected before it has a chance to impact, groundwater and (2) the amount of landfill gas emissions that are captured and destroyed. Both, if left unabated, have the potential to cause risk to public health and the environment. However, new measures are being considered that may better reflect the program's overall management of risk at the closed landfills.

Leachate reduction

Landfill leachate is the liquid that has percolated through solid waste. This leachate contains extracted, dissolved or suspended materials from the solid waste. Some of the response actions completed at closed landfills have removed leachate from groundwater or have significantly reduced the amount of leachate that could reach the groundwater. Completely eliminating leachate generation at unlined landfills is impossible given current technology, knowledge, and economics. However, several activities can be done to reduce the amount of leachate each landfill generates, thereby minimizing the potential impact leachate can have on groundwater. Those activities include relocating poorly covered waste and waste originally placed in or near groundwater, reducing waste footprints, placing impermeable covers over waste, and collecting and treating leachate and contaminated groundwater. In certain situations,

although expensive, constructing a bottom liner and relocating the waste on top of that liner can provide the greatest safeguard to protecting public health and the environment. To date, waste placement on a complete or partial bottom liner system has been completed at the Mille Lacs County, Washington County, and Winona County landfills.

Improved or synthetic covers greatly reduce the infiltration of precipitation into the waste, thereby reducing the volume of leachate produced. The CLP has implemented cover enhancements at more than 50 closed landfills since inception of the program. The CLP also re-contours landfill surfaces, establishes vegetative growth on landfill covers, and constructs holding basins to further reduce the amount of surface water likely to come into contact with waste and form leachate. The CLP also operates 10 leachate-collection systems and six groundwater-collection systems at 16 sites. These systems prevented an estimated 10.2 million gallons of leachate from reaching, or remaining in, the groundwater in FY 2013 (see Table 5).

Table 5. Volume of leachate prevented from reaching or remaining in groundwater in FY 2013

Landfill	Type of system	Volume pumped (gallons)	% Leachate	Leachate (gallons)
Albert Lea	Leachate collection	480,000	100	480,000
Anoka–Ramsey	Groundwater treatment	119,050,524	1	1,190,505
Becker County	Groundwater treatment	146,475,212	1	1,464,752
Cook County	Leachate collection	270,000	15	40,500
East Bethel	Groundwater treatment	36,051,351	1	360,154
Isanti–Chisago	Groundwater treatment	9,851,775	1	98,518
Ironwood	Groundwater treatment	18,434,489	1	184,345
Koochiching County	Leachate collection	2,812,500	25	703,125
Mille Lacs County	Leachate collection	36,500	100	36,500
Northeast Otter Tail County	Leachate collection	26,000	100	26,000
Olmsted County	Leachate collection	812,000	100	812,000
Washington County	Leachate collection	2,078,424	100	2,078,424
WDE	Groundwater treatment	29,903,591	4	1,196,144
Winona County	Leachate collection	974,000	100	974,000
WLSSD	Leachate collection	8,125,300	2	162,506
Woodlake	Leachate collection	348,396	100	348,396
TOTAL				**10,155,868**

Landfill gas reduction

Landfill gas, primarily methane, is a concern with closed landfills because (1) it can migrate off site and become an explosive hazard and (2) it is a greenhouse gas. Methane is generated as landfill waste decomposes and needs to be managed because it accumulates beneath the landfill cover and can migrate beyond the cover. Currently, most landfills in the CLP have some type of passive or active gas-extraction system that helps alleviate methane buildup and migration.

It is not currently possible to completely eliminate landfill gas escaping to the environment. However, installation of active gas-collection systems with flares at larger sites can significantly reduce landfill gas emissions directly to the atmosphere. In FY 2013, 21 landfills had active gas-extraction systems in operation.

Solar-powered, single-vent flares provide a way to destroy methane gas at landfills where large volumes of methane generation are not sufficient to support an active-gas extraction system with a flare. These solar flares are effective at addressing localized methane “hot spots” at smaller landfills. They can be

installed on existing passive gas vents that demonstrate elevated levels of methane. In FY 2013, the CLP installed 59 solar flares at seven landfills. The installation of solar flares may be considered at other landfills in the near future.

Active landfill gas-extraction systems and single-vent solar flares provide the following beneficial uses:

- reduction in methane migration and vegetative loss
- overall reduction in greenhouse gases
- reduction of volatile organic compounds that would otherwise migrate to groundwater

In FY 2013, almost 28 million pounds of methane were destroyed by the gas-extraction systems at CLP landfills (see Table 6). Although 59 solar flares were installed in FY 2013, only 21 flares at three sites were installed early enough in the fiscal year to provide useful data for Table 6. Since 2000, these gas-extraction systems have prevented about 342 million pounds of methane (3.26 million metric tons of carbon dioxide equivalents) from entering the atmosphere. Results from recent stack tests show about 99.9% destruction of methane and other contaminants in the CLP's enclosed flares.

Table 6. Methane destroyed by gas-extraction systems in FY 2013

Landfill	Gas flow (cfm)	% Methane in landfill gas	Operation hours	Methane destroyed (lb)
Albert Lea	124	50	4,410	722,307
Anoka-Ramsey	157	41	8,608	1,498,781
Becker County	62	32	4,284	222,685
Dakhue	87	25	6,615	390,386
East Bethel	58	35	8,277	449,053
Flying Cloud	450	47	8,700	4,899,555
Grand Rapids	62	45	7,995	589,283
Hopkins	204	24	361	47,985
Isanti-Chisago (8 solar flares)	50	43	3,888	223,453
Koochiching County (3 solar flares)	90	60	2,400	346,439
Kummer (1 solar flare)	3	25	438	878
Lindenfelser	70	35	8,470	544,424
Louisville	250	41	7,727	2,137,636
Oak Grove	80	45	8,726	850,961
Olmsted County (Oronoco)	183	47	6,701	1,533,602
Pine Lane	84	50	8,128	918,926
St. Augusta	68	37	8,334	558,415
Tellijohn	129	23	6,578	524,422
Washington County	165	61	8,687	2,329,806
Watonwan County	39	45	2,212	103,485
WDE	116	43	8,711	1,171,406
Winona County	79	44	5,799	537,259
WLSSD	276	51	8,295	3,091,858
Woodlake	330	53	8,623	4,002,309
Woodlake (8 solar flares)	40	58	918	56,931
TOTAL				**27,752,246**

Future measurements

Additional environmental and program measurements are being considered for the future. For example, using its GIS database, the CLP can create maps showing the groundwater and methane gas impacts at each landfill and can now track changes in acreage of each landfill's groundwater plume, as well as the groundwater and methane gas areas of concern. In addition, the CLP is considering tracking the number of acres of impacted land (the groundwater and methane areas of concern) that become subject to local land use controls that protect public health and safety. This will provide the program a way to measure how well its response actions are affecting the size of the environmental impacts from the landfills while, at the same time, measure how well the public's exposure to these impacts via land use is being managed. The CLP is also considering tracking the cumulative total of all site risk scores from year to year, which would reflect a change in overall risk over time.

Looking ahead to fiscal year 2014

Anticipated new projects

In FY 2014, the CLP will implement response actions at sites with high risk priority scores and repair or upgrade existing remedial and monitoring systems. Table 7 lists the anticipated major response actions at specific landfills, assuming funding is available. Additional activities for FY 2014 include ongoing partnerships with several LGUs to control land uses on/off the landfill, and to maintain water-treatment units on private residential wells near the Becker County, Kluver, Lindala, Maple, Mille Lacs County, and Washington County landfills.

C3 remediation system at the WDE Landfill, Anoka County

Table 7. Anticipated major response actions for FY 2014

Landfill	Response action
Carlton County #2	Conduct a feasibility study to determine a long-term remedy to provide potable water to affected residents living near the landfill.
Flying Cloud	Continue construction of new cover and active gas-extraction system.
Hopkins	Complete installation of new cover and active gas system.
Ironwood	Enhance groundwater pump-out system.
Korf Bros.	Rehabilitate former gravel pit on landfill property.
Kluver	Repair cover and drainage issues, reconstruct road.
WDE	Complete enhancements to the C3 vapor extraction system to address VOCs at the hazardous waste pit.
Winona County	Complete improvements to leachate collection system.

Additional information

Additional information about the Closed Landfill Program, including landfill-specific information, can be found on the MPCA's website at http://www.pca.state.mn.us/0agx803.

- For more information about the Closed Landfill program, contact:
- **Shawn Ruotsinoja**, Land Manager, Closed Landfill Program, 651-757-2683 or 800-657-3864
- **Doug Day**, Unit Supervisor, Closed Landfill Program, 651-757-2302 or 800-657-3864
- **Stephen Lee**, Section Manager, Closed Landfill and Emergency Response Programs, 651-757-2160 or 800-657-3864

Appendix A: fiscal year 2013 site costs

Landfill Name	Risk Priority Rank	MPCA Salary and Expenses	Attorney General Support	Operation & Maintenance*	Design / Construction*	Land Management*	Landfill Total
Adams (Relocated)	109	$ 57	$ 0	$ 0	$ 0	$ 0	$ 57
Aitkin Area	79	$ 1,868	$ 0	$ 5,018	$ 0	$ 0	$ 6,886
Albert Lea	51	$ 2,998	$ 0	$ 207,321	$ 0	$ 0	$ 210,319
Anderson-Sebeka	103	$ 717	$ 0	$ 3,368	$ 0	$ 0	$ 4,085
Anoka-Ramsey	57	$ 18,858	$ 2,116	$ 284,688	$ 613,328	$ 10,373	$ 929,363
Barnesville	82	$ 3,326	$ 62	$ 8,562	$ 0	$ 0	$ 11,950
Battle Lake	87	$ 2,651	$ 0	$ 5,839	$ 0	$ 276	$ 8,766
Becker County	4	$ 6,142	$ 0	$ 128,990	$ 0	$ 0	$ 135,132
Benson	52	$ 1,674	$ 1,574	$ 5,360	$ 0	$ 11,349	$ 19,957
Big Stone County	47	$ 623	$ 0	$ 9,712	$ 0	$ 0	$ 10,335
Brookston Area	77	$ 1,648	$ 0	$ 5,644	$ 0	$ 1,800	$ 9,092
Bueckers #1	17	$ 3,560	$ 0	$ 7,841	$ 0	$ 15,930	$ 27,331
Bueckers #2 (Relocated)	105	$ 896	$ 0	$ 0	$ 0	$ 0	$ 896
Carlton County #2	9	$ 17,654	$ 12	$ 258,274	$ 0	$ 1,130	$ 277,070
Carlton County South	75	$ 516	$ 37	$ 2,878	$ 0	$ 0	$ 3,431
Cass County (L-R)	14	$ 2,727	$ 0	$ 1,497	$ 0	$ 1,793	$ 6,017
Cass County (W-H)	31	$ 1,814	$ 0	$ 1,940	$ 0	$ 1,793	$ 5,547
Chippewa County	40	$ 674	$ 0	$ 12,343	$ 0	$ 0	$ 13,017
Cook Area	65	$ 448	$ 0	$ 698	$ 0	$ 0	$ 1,146
Cook County	95	$ 1,064	$ 12	$ 41,983	$ 0	$ 0	$ 43,059
Cotton Area	102	$ 745	$ 0	$ 1,480	$ 0	$ 0	$ 2,225
Crosby	83	$ 3,526	$ 344	$ 3,798	$ 0	$ 3,371	$ 11,039
Crosby American Properties	27	$ 2,762	$ 234	$ 11,039	$ 0	$ 0	$ 14,035
Dakhue	81	$ 11,257	$ 0	$ 10,449	$ 0	$ 0	$ 21,706
Dodge County	7	$ 2,310	$ 0	$ 7,092	$ 0	$ 0	$ 9,402
East Bethel	5	$ 11,579	$ 0	$ 188,908	$ 0	$ 2,120	$ 202,607
East Mesaba	38	$ 19,498	$ 172	$ 3,874	$ 1,028,227	$ 0	$ 1,051,771
Eighty Acre	71	$ 548	$ 0	$ 3,907	$ 0	$ 0	$ 4,455
Faribault County	54	$ 697	$ 0	$ 9,406	$ 0	$ 0	$ 10,103
Fifty Lakes	63	$ 2,948	$ 0	$ 1,914	$ 0	$ 710	$ 5,572
Floodwood	66	$ 1,213	$ 0	$ 1,564	$ 0	$ 2,200	$ 4,977
Flying Cloud	44	$ 57,239	$ 99,298	$ 49,133	$ 817,363	$ 1,204	$ 1,024,237
Freeway (No BA)	6	$ 6,128	$ 1,427	$ 0	$ 0	$ 0	$ 7,555
French Lake	106	$ 1,839	$ 0	$ 3,203	$ 0	$ 0	$ 5,042
Geislers (Relocated)	107	$ 2,106	$ 0	$ 525	$ 0	$ 0	$ 2,631
Gofer	42	$ 96	$ 0	$ 8,851	$ 0	$ 0	$ 8,947
Goodhue Co-Op	80	$ 1,014	$ 0	$ 3,203	$ 0	$ 0	$ 4,217
Grand Rapids	46	$ 5,612	$ 0	$ 34,501	$ 0	$ 0	$ 40,113
Greenbush (Relocated)	110	$ 742	$ 0	$ 0	$ 0	$ 0	$ 742
Hansen	30	$ 1,226	$ 406	$ 6,837	$ 0	$ 16,392	$ 24,861
Hibbing	89	$ 689	$ 0	$ 3,529	$ 0	$ 3,000	$ 7,218
Hickory Grove	91	$ 1,034	$ 0	$ 13,695	$ 0	$ 0	$ 14,729

Landfill Name	Risk Priority Rank	MPCA Salary and Expenses	Attorney General Support	Operation & Maintenance*	Design / Construction*	Land Management*	Landfill Total
Highway 77	64	$ 1,039	$ 0	$ 0	$ 0	$ 0	$ 1,039
Hopkins	3	$ 45,612	$ 4,293	$ 27,787	$ 2,891,483	$ 0	$ 2,969,175
Houston County	2	$ 1,821	$ 0	$ 3,214	$ 0	$ 0	$ 5,035
Hoyt Lakes	58	$ 2,978	$ 17,651	$ 0	$ 0	$ 9,300	$ 29,929
Hudson	13	$ 1,101	$ 0	$ 4,528	$ 0	$ 0	$ 5,629
Iron Range	70	$ 1,385	$ 0	$ 2,543	$ 0	$ 0	$ 3,928
Ironwood	12	$ 5,371	$ 0	$ 111,380	$ 0	$ 0	$ 116,751
Isanti-Chisago	16	$ 6,727	$ 0	$ 100,930	$ 0	$ 80	$ 107,737
Jackson County	100	$ 196	$ 0	$ 4,972	$ 0	$ 0	$ 5,168
Johnson Bros.	53	$ 455	$ 0	$ 2,244	$ 0	$ 0	$ 2,699
Karlstad	73	$ 1,192	$ 1,230	$ 1,775	$ 0	$ 145	$ 4,342
Killian	86	$ 2,457	$ 0	$ 8,271	$ 0	$ 1,526	$ 12,254
Kluver	20	$ 5,504	$ 1,402	$ 26,915	$ 0	$ 11,561	$ 45,382
Koochiching County	49	$ 21,334	$ 2,780	$ 303,081	$ 3,862,008	$ 8,436	$ 4,197,639
Korf Bros.	24	$ 6,137	$ 1,870	$ 1,530	$ 0	$ 16,138	$ 25,675
Kummer	84	$ 6,267	$ 0	$ 4,363	$ 0	$ 0	$ 10,630
La Crescent (No BA)	19	$ 145	$ 172	$ 0	$ 0	$ 0	$ 317
La Grand	96	$ 4,128	$ 0	$ 2,806	$ 0	$ 138	$ 7,072
Lake County	92	$ 560	$ 0	$ 5,666	$ 0	$ 0	$ 6,226
Lake of the Woods County	94	$ 687	$ 0	$ 1,417	$ 0	$ 0	$ 2,104
Land Investors (Relocated)	93	$ 1,367	$ 0	$ 1,853	$ 0	$ 0	$ 3,220
Leech Lake	88	$ 1,036	$ 0	$ 2,203	$ 0	$ 0	$ 3,239
Leslie Benson (No BA)	90	$ 218	$ 25	$ 0	$ 0	$ 0	$ 243
Lincoln County (Relocated)	104	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0
Lindala	1	$ 3,282	$ 0	$ 11,617	$ 0	$ 0	$ 14,899
Lindenfelser	76	$ 4,456	$ 25	$ 49,315	$ 0	$ 0	$ 53,796
Long Prairie	32	$ 3,435	$ 172	$ 2,602	$ 0	$ 1,526	$ 7,735
Louisville	60	$ 6,479	$ 185	$ 45,280	$ 0	$ 0	$ 51,944
Mahnomen County	61	$ 1,339	$ 98	$ 5,031	$ 0	$ 0	$ 6,468
Mankato	43	$ 111	$ 0	$ 4,477	$ 0	$ 0	$ 4,588
Maple	18	$ 6,454	$ 234	$ 58,908	$ 0	$ 1,793	$ 67,389
McKinley (Relocated)	108	$ 575	$ 25	$ 0	$ 0	$ 0	$ 600
Meeker County	35	$ 1,189	$ 37	$ 9,914	$ 0	$ 0	$ 11,140
Mille Lacs County	8	$ 10,177	$ 0	$ 27,407	$ 0	$ 0	$ 37,584
Minnesota Sanitation	34	$ 507	$ 148	$ 4,098	$ 0	$ 491	$ 5,244
Murray County	10	$ 478	$ 0	$ 14,269	$ 0	$ 0	$ 14,747
Northeast Otter Tail	29	$ 3,708	$ 0	$ 31,707	$ 0	$ 0	$ 35.415
Northome	101	$ 506	$ 0	$ 3,564	$ 0	$ 0	$ 4,070
Northwest Angle	41	$ 550	$ 0	$ 0	$ 0	$ 0	$ 550
Northwoods	97	$ 1,487	$ 0	$ 3,087	$ 0	$ 0	$ 4,574
Oak Grove	15	$ 4,376	$ 258	$ 103,125	$ 0	$ 2,220	$ 109,979
Olmsted County	72	$ 1,076	$ 62	$ 88,727	$ 0	$ 0	$ 89,865
Orr	67	$ 873	$ 0	$ 0	$ 0	$ 0	$ 873

Landfill Name	Risk Priority Rank	MPCA Salary and Expenses	Attorney General Support	Operation & Maintenance*	Design / Construction*	Land Management*	Landfill Total
Paynesville	22	$ 6,352	$ 0	$ 15,553	$ 0	$ 0	$ 21,905
Pickett	48	$ 2,816	$ 0	$ 4,566	$ 0	$ 0	$ 7,382
Pine Lane	85	$ 4,478	$ 0	$ 48,112	$ 0	$ 0	$ 52,590
Pipestone County	69	$ 1,354	$ 0	$ 8,130	$ 0	$ 15,243	$ 24,727
Portage Mod. (Relocated)	112	$ 1,330	$ 0	$ 0	$ 0	$ 0	$ 1,330
Red Rock	23	$ 1,999	$ 0	$ 8,517	$ 0	$ 2,554	$ 13,070
Redwood County	74	$ 969	$ 0	$ 7,439	$ 0	$ 0	$ 8,408
Rock County	39	$ 44	$ 0	$ 7,419	$ 0	$ 0	$ 7,463
Salol/Roseau	50	$ 1,163	$ 0	$ 7,615	$ 0	$ 31,099	$ 39,877
Sauk Centre	98	$ 1,928	$ 74	$ 10,392	$ 0	$ 0	$ 12,394
Sibley County	59	$ 260	$ 0	$ 6,007	$ 0	$ 0	$ 6,267
St. Augusta	45	$ 4,223	$ 12	$ 54,572	$ 0	$ 18,465	$ 77,272
Stevens County	11	$ 3,558	$ 0	$ 8,687	$ 0	$ 0	$ 12,245
Sun Prairie	68	$ 2,910	$ 2,165	$ 8,625	$ 0	$ 2,858	$ 16,558
Tellijohn	21	$ 1,771	$ 0	$ 39,882	$ 0	$ 0	$ 41,653
Vermillion Dam (Relocated)	111	$ 536	$ 0	$ 0	$ 0	$ 0	$ 536
Vermillion Modified	99	$ 3,688	$ 0	$ 0	$ 0	$ 24,636	$ 28,324
Wabasha County	36	$ 2,518	$ 135	$ 4,645	$ 0	$ 46	$ 7,344
Wadena County	56	$ 1,552	$ 959	$ 6,582	$ 0	$ 0	$ 9,093
Waseca County	26	$ 216	$ 0	$ 19,915	$ 0	$ 0	$ 20,131
Washington County	25	$ 19,702	$ 12	$ 347,230	$ 127,215	$ 0	$ 494,159
Watonwan County	62	$ 4,664	$ 0	$ 75,132	$ 0	$ 0	$ 79,858
WDE	28	$ 31,249	$ 2,595	$ 372,276	$ 356,199	$ 1,309	$ 763,628
Winona County	78	$ 15,209	$ 25	$ 461,161	$ 0	$ 0	$ 476,395
WLSSD	37	$ 9,558	$ 5,031	$ 165,295	$ 156,373	$ 182	$ 336,439
Woodlake	55	$ 7,858	$ 12	$ 194,713	$ 0	$ 372	$ 202,955
Yellow Medicine County	33	$ 2,933	$ 0	$ 33,815	$ 0	$ 21,790	$ 58,538
Administration and support		$ 1,695,709	$ 0	$ 134,824	$ 0	$ 0	$ 1,830,533
TOTAL		**$ 2,204,043**	**$ 54,875**	**$ 4,490,570**	**$ 9,852,196**	**$ 245,351**	**$ 16,847,035**

*Contractual Costs

Appendix B: state ownership of landfills and adjacent property

Site Name	County	Landfill Acres	Buffer Acres
Anderson/Sebeka	Wadena	27.1	
Anoka/Ramsey	Anoka	246.8	18.8
Barnesville	Wilkin	15.0	6.2
Benson	Benson	47.1	
Bueckers #1	Stearns	30.8	
Crosby American Properties	Dakota	50.9	
Dakhue	Dakota	79.8	
East Bethel	Anoka	58.3	0.3
East Mesaba	St. Louis	226.5	
Flying Cloud	Hennepin	236.2	
French Lake	Wright	11.0	69.0
Hoyt Lakes	St. Louis		25.8
Isanti-Chisago	Isanti	64.3	0.6
Karlstad	Kittson	20.0	
Kluver	Douglas	21.4	7.4
Koochiching County	Koochiching		3.6
Korf Brothers	Pine	80.0	
Kummer	Beltrami		9.1
La Grande	Douglas	70.4	
Land Investors, Inc.	Benton	8.6	
Leech Lake	Hubbard	66.2	16.5
Lindala	Wright	40.0	20.0
Lindenfelser	Wright	61.7	12.1
Long Prairie	Todd	28.0	99.6
McKinley	St. Louis	5.5	
Oak Grove	Anoka	148.8	1.2
Olmsted County	Olmsted	252.0	46.9
Paynesville	Stearns	75.9	
Pickett	Hubbard	16.2	3.8
Pine Lane	Chisago	45.7	19.4
Pipestone County	Pipestone	40.0	
Red Rock	Mower	79.7	80.5
Salol-Roseau	Roseau	101.6	
Sauk Centre	Stearns	10.8	3.2
St. Augusta	Stearns	70.8	43.0
Sun Prairie	Le Sueur	80.3	
Wabasha County	Wabasha	29.0	
Washington County	Washington		20.1
WDE	Anoka	112.1	5.5
WLSSD	St. Louis	160.2	
Woodlake	Hennepin	192.2	
Total		**2,910.9**	**512.6**