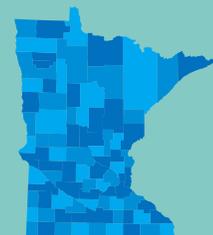


March 2021

Closed Landfill Investment Fund

A report on the MPCA's past use of the fund and why it is needed in the future



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Cover photos

Cover and Waste Investigation, Freeway
Landfill, Burnsville, Minnesota
Solar Array, Washington County Landfill, Lake
Elmo, Minnesota
Monitoring Well Sampling, Rock County
Landfill, Rock County, Minnesota

MINN. STAT. §115B.421 CLOSED LANDFILL INVESTMENT FUND

The closed landfill investment fund is established in the state treasury. The fund consists of money credited to the fund, and interest and other earnings on money in the fund. Beginning July 1, 2003, funds must be deposited as described in section 115B.445. The fund shall be managed to maximize long-term gain through the State Board of Investment. Money in the fund may be spent by the commissioner after fiscal year 2020 in accordance with sections 115B.39 to 115B.444.

Minnesota Pollution Control Agency

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This report is available in alternative formats upon request, and online at www.pca.state.mn.us.

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Executive summary

The 1994 Landfill Cleanup Act created Minnesota's Closed Landfill Program (CLP). The CLP gives the Minnesota Pollution Control Agency (MPCA) the responsibility to manage up to 114 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 cleanup 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 property the CLP is responsible for and working with local governments to incorporate land-use controls at and near the landfills.

The Closed Landfill Investment Fund (CLIF) is one of the funding sources for this work. The CLIF was established by the Legislature in 1999 and was created for the purpose of investing funds in order to pay for future environmental response actions at CLP landfills starting July 1, 2020. The 20 years from enactment until intended first use was to allow sufficient time for investment earnings to accumulate to an amount that could support the long-term care costs of the CLP.

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. Legislation included language to repay the money in four installments, including lost interest and other investment earnings. In 2014, the first principal repayment of \$9.9 million was made to the CLIF, along with a \$51.4 million payment for the lost interest and investment earnings. The three remaining payment installments (\$38.1 million), plus lost interest and other investment earnings, were canceled by legislation in the 2015 session. The 2015 session also transferred \$63.215 million from the CLIF to the General Fund when the state's budget was in a surplus. However, language was added such that, if after any budget forecast there was an anticipated surplus, the \$63.215 million would be repaid. In November 2015, a budget surplus was projected and the entire \$63.215 million was repaid.

The Legislature made an early appropriation from the CLIF in 2017, in the amount of \$3,000,000, to fund investigation and design work at the Freeway Landfill in Burnsville, Minnesota. As of December 31, 2020, the CLP has spent \$2,613,338 of this appropriation to fund investigation and construction design activities at the Freeway Landfill.

In accordance with state statute, the CLP could begin using the CLIF in July 2020, the start of fiscal year 2021, to fund its work. However, disagreement between the Legislature and the MPCA on how to access the fund prevented the CLP from using the CLIF in fiscal year 2021. Clarification to the statute is needed in order to create an open, statutory appropriation in order for the CLP to effectively use the fund.

Future financial obligations of the CLP are currently projected to be \$309 million through fiscal year 2050. Stable long term funding is needed to address the public health and environmental risks posed by 114 closed landfills. The program will depend on three funding sources – the Remediation Fund, the CLIF, and state general obligation bonds – to complete the following work:

- Upgrading monitoring systems and verifying that nearby drinking water wells are not impacted
- Better defining the extent and magnitude of groundwater and landfill gas impacts, especially contaminants of emerging concern (CECs) and vapor intrusion into buildings
- Improving landfill covers and gas management systems
- Conducting studies to address treatment options for CECs and greenhouse gas emissions

- Managing land and land reuse proposals
- Working with local governments to implement appropriate land-use controls to protect the public using land at and near the landfills

Major remedial construction is anticipated in the near future at the Brookston and Freeway Landfills. The Freeway Landfill alone is expected to cost over \$120 million.

The following pages give a brief overview of the CLP and the CLIF, discuss past program activities funded by the CLIF, and provide a look ahead on how the CLIF, in addition to the Remediation Fund and state general obligation bonds, will be spent to protect public health, safety, and the environment into the future.

Program overview

Purpose

The 1994 Landfill Cleanup Act created Minnesota’s CLP so the state could effectively protect human health, safety, and the environment associated with certain closed, state-permitted, mixed municipal solid waste landfills throughout Minnesota.

The program’s goals to help achieve this outcome include managing the risks to human health and the environment associated with:

- Human exposure to landfill waste
- Contaminated groundwater and surface water emanating from the waste area
- Landfill gas migrating from the waste that could threaten nearby structures as well as be released to the atmosphere as a greenhouse gas
- Chemical vapors released from shallow contaminated groundwater into structures

The table below outlines strategies used by CLP to address risks from closed landfills.

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

| Desired outcome | Goals | Strategies |
|---|--|---|
| <ul style="list-style-type: none"> • Protect human health, safety and the environment associated with closed landfills | <ul style="list-style-type: none"> • Prevent human exposure to landfill waste • Prevent human exposure to contaminated groundwater • Prevent human exposure to vapors from contaminated groundwater • Prevent the migration of landfill gas from threatening nearby structures • Reduce/control the release of landfill greenhouse gases to the atmosphere • Minimize the degradation of groundwater and surface water | <ul style="list-style-type: none"> • Operate and maintain engineered systems to control/reduce groundwater contamination and landfill gas impacts • Understand the extent and magnitude of groundwater contamination and landfill gas migration • Construct remedies to manage and control groundwater contamination and landfill gas • Cooperatively manage land use with local governments • Communicate risks and cleanup actions to the public |

Landfills currently in the Closed Landfill Program

Before landfills are accepted into the CLP, certain requirements stated in a Landfill Cleanup Agreement – 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. The site then enters the program and the state takes over responsibility for the landfill.

As of December 31, 2020, 110 landfills are the responsibility of the CLP. In 2017, the Legislature passed legislation giving the CLP authority to begin taking environmental response actions at Priority Qualified Facilities, including the Freeway Landfill, if a Landfill Cleanup Agreement was not signed with the owner/operator by a certain date. Because an agreement for the Freeway Landfill was not executed by a certain date, due to a non-cooperative owner, the CLP has since been conducting remedial investigations and designing cleanup actions for the landfill (see Appropriation for the Freeway Landfill for more information).

There are four landfills that are eligible for the Program but Landfill Cleanup Agreements have not been signed and NOCs have not been issued. These sites include the Goodhue County, Crow Wing County, La Crescent, and Leslie Benson Landfills. However, the Crow Wing County Landfill is expected to sign a Landfill Cleanup Agreement in 2021. Figure 1 shows the location of the 110 landfills where the CLP is taking environmental response actions, and the four qualified facilities that have not yet entered the Program.

Program funding

Funding for the CLP comes from three sources:

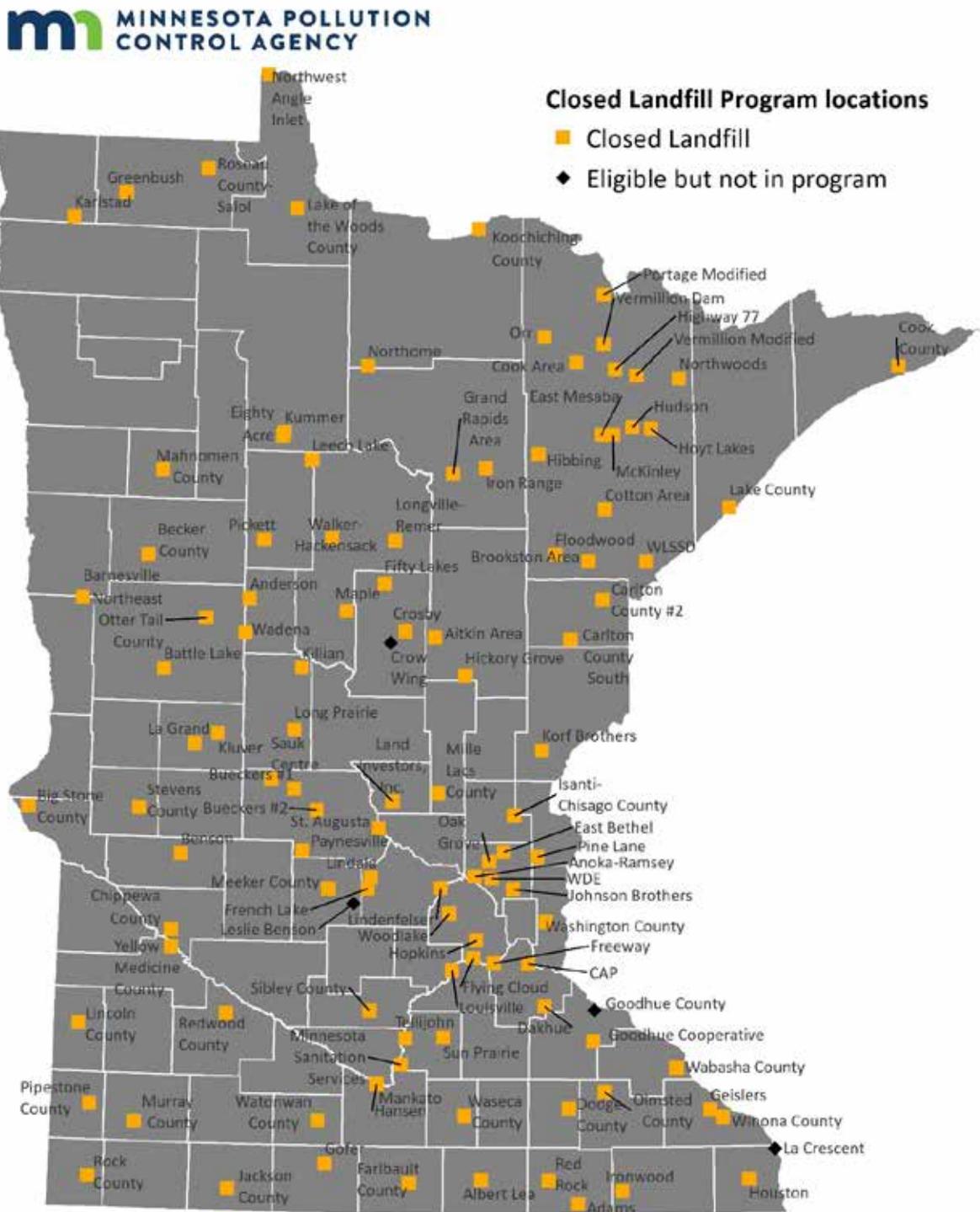
- The Remediation Fund
- General Obligation Bonds
- The Closed Landfill Investment Fund (CLIF)

Closed Landfill Investment Fund

In 1999, the Minnesota Legislature established the CLIF for the purpose of setting aside and investing money for future post closure 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 were deposited equally in the Remediation Fund and the CLIF. The law, Minn. Stat. §115B.421, states that the fund may be used to fund environmental response actions after fiscal year 2020 (beginning July 1, 2020). The 20 years from enactment until intended first use was to allow sufficient time for investment earnings to accumulate to an amount that could support the long-term care costs of the CLP.

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. Legislation included language to repay the money in four installments, including lost interest and other investment earnings. In 2014, the first principal repayment of \$9.9 million was made to the CLIF, along with a \$51.4 million payment for the lost interest and investment earnings. The three remaining payment installments (\$38.1 million), plus lost interest and other investment earnings, were canceled by legislation in the 2015 session. The 2015 session also transferred \$63.215 million from the CLIF to the General Fund when the state's budget was in a surplus.

Figure 1. Locations of CLP landfills



Date: 11/24/2020

However, language was added such that, if after any budget forecast there was an anticipated surplus, the \$63.215 million would be repaid. In November 2015, a budget surplus was projected and the entire \$63.215 million was repaid.

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State statute authorizes the CLP to begin using the CLIF in July 2020 to fund its work. However, disagreement between the Legislature and the MPCA on how to access the fund prevented the CLP from using the CLIF in fiscal year 2021. As of December 31, 2020, the CLIF had a State Board of Investment value of \$119,278,487.

CLIF expenditures to date

Appropriation for the Freeway Landfill

The Freeway Landfill (SW-57), located in Burnsville, Minnesota, became a qualified facility at the inception of the CLP in 1994. The Landfill has been a state Superfund and federal Superfund site since 1984 and 1986, respectively.

For years, the adjacent quarry operation has pumped groundwater that has limited the extent of contamination. Dewatering at the quarry has artificially depressed the groundwater table throughout the operational life of the Landfill, continuing to the present. Prior to that, the site originally included wetlands adjacent to the Minnesota River. Projections show that groundwater levels will eventually rebound to natural conditions when the quarry pumping ceases. When this happens, groundwater levels will rise, and chemicals and other substances from the waste materials in the Landfill will come into direct contact with the groundwater, causing additional contamination that will threaten the Minnesota River and the drinking water supplies for the cities of Burnsville and Savage.

The owner/operator of the Freeway Landfill, after multiple attempts by the MPCA to enter into a Landfill Cleanup Agreement, refused to transfer responsibility to the MPCA for the Landfill cleanup and operation and maintenance. Instead, the Landfill has remained subject to state and federal Superfund authority. Upon U.S. Environmental Protection Agency (EPA's) mailing of notices to 182 potentially responsible parties (PRP's) in 2016, alerting them to their potential Superfund liability to pay for cleanup costs, the PRPs sought indemnity from the state for these costs through the legislative process.

The resulting 2017 legislation gave the MPCA additional authority to address the risks at landfills similar to the Freeway Landfill in a timely manner while, at the same time, helped prevent multi-party litigation by the PRPs. The legislation created a new category of qualified facility called a "Priority Qualified Facility." Priority qualified facilities are qualified facilities that: 1) are listed on both state and federal superfund lists; 2) are absent a Landfill Cleanup Agreement between the operator/owner and the MPCA Commissioner that would transfer responsibility to the MPCA; and 3) include property located within 750 feet of the priority qualified facility where mixed municipal solid waste was disposed of but was not permitted by the MPCA, and where the Commissioner of the MPCA has determined that cleanup actions are necessary to protect public health, welfare, and the environment. The legislation also created a process to ensure that the MPCA would be able to take timely and effective cleanup actions at priority

qualified facilities by establishing a timeframe by which Landfill Cleanup Agreements needed to be signed by the landfill owner. If these timeframes for signing agreements are not met, the MPCA has the authority to begin taking environmental response actions.

The Freeway Landfill meets the definition of a priority qualified facility, and includes the nearby Freeway Dump. Due to a non-cooperative owner, a Landfill Cleanup Agreement was not executed within the time required by the new legislation. As a result, MPCA began taking necessary environmental response actions at the landfill in fiscal year 2018.

The 2017 Legislature appropriated \$3,000,000 from the CLIF to fund, through fiscal year 2021, the CLP’s remedial investigations, feasibility studies, design of a remedy, and other environmental response actions at the Freeway Landfill and Freeway Dump. The appropriation was also used to reimburse the EPA for certain past financial commitments it made under federal Superfund; a requirement under the Landfill Cleanup Act (Minn. Stat. §§115B.39 - 445). Table 1 below shows the CLIF expenditures associated with the Freeway Landfill and Dump by fiscal year.

Table 1. CLIF expenditures at the Freeway Landfill by fiscal year

| | FY 2018 | FY 2019 | FY 2020 | FY 2021* | Cumulative |
|--|------------|------------|--------------|-----------|--------------|
| Closed Landfill Program administration | \$ 0 | \$ 33,948 | \$ 122,343 | \$ 0 | \$ 156,291 |
| Investigation | \$ 432,160 | \$ 548,601 | \$ 192,208 | \$ 0 | \$ 1,172,969 |
| Design | \$ 0 | \$ 0 | \$ 793,411 | \$92,603 | \$ 886,014 |
| Land surveys | \$ 6,585 | \$ 0 | \$ 37,368 | \$ 0 | \$ 43,953 |
| EPA reimbursement | \$ 0 | \$ 354,111 | \$ 0 | \$ 0 | \$ 354,111 |
| Total | \$ 438,745 | \$ 936,660 | \$ 1,145,330 | \$ 92,603 | \$ 2,613,338 |

*As of December 31, 2020

Future needs of the CLIF

Expanding concerns at closed landfills

The CLP is responsible for the long-term care of the program landfills in-perpetuity. With this responsibility comes certain challenges and demands that require additional cleanup actions as well as funding to implement those actions. Below is a brief discussion of these concerns and, as a result, how future program cost obligations are increasing. The CLIF was established by the Legislature to specifically fund future CLP response actions well into the future. Any use of the CLIF for other purposes will significantly hinder the CLP’s ability to address expanding environmental concerns that threaten public health, safety, and the environment.

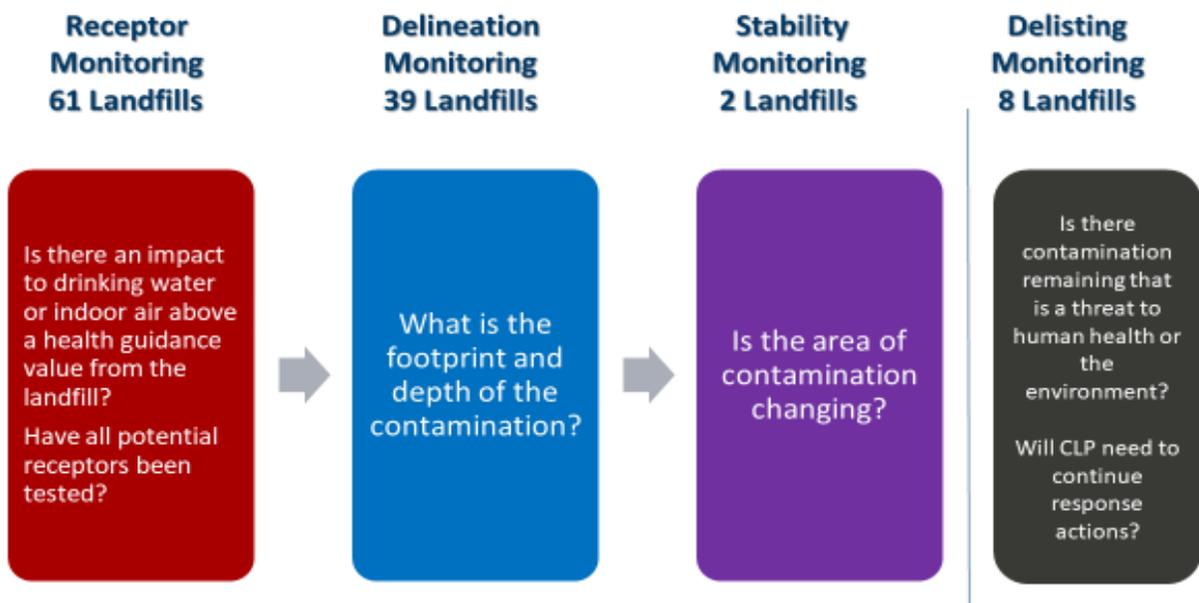
Understanding groundwater impacts better

Environmental monitoring is the foundation of the CLP. It identifies where there is a human health risk and provides the necessary data to ascertain where environmental response actions, such as constructing a new waste cover or installing a treatment system, are needed to reduce risk. The CLP is implementing a strategy to better understand the groundwater impacts that each landfill has on the public and the environment. The program will collect data to answer four major questions:

- Does the landfill present an ongoing impact to human health (drinking water and/or indoor air)?
- What is the footprint and depth of the contamination from the landfill?
- Is the area of contamination stable or is it changing?
- Can the landfill be delisted from the CLP because no waste remains and there is no longer a risk to human health and the environment from the landfill?

In July 2020, a baseline monitoring assessment was conducted to determine where each program landfill is in the progression of monitoring questions above. Figure 2 shows the number of landfills currently within each monitoring stage formed by the monitoring questions.

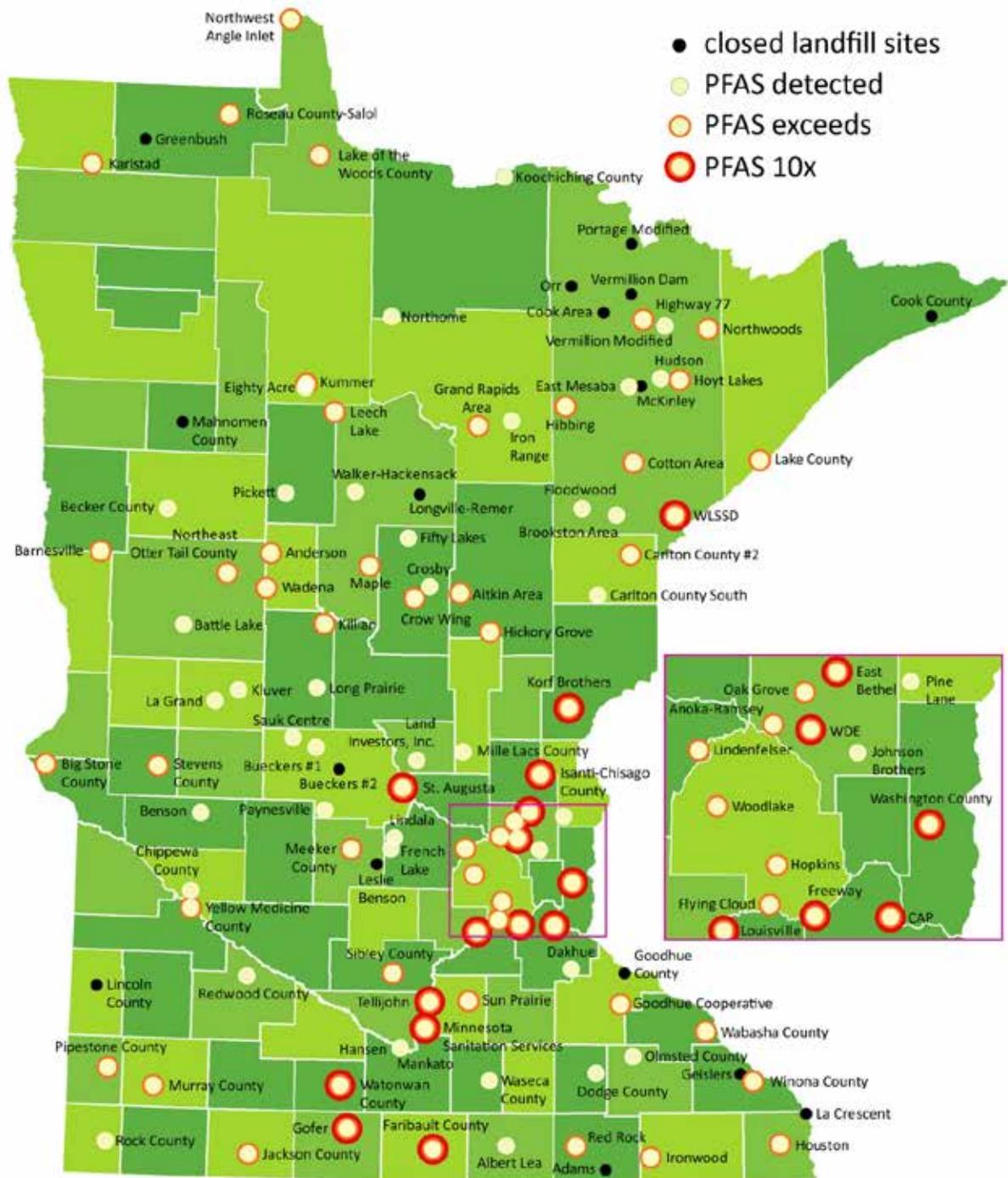
Figure 2. Landfills within each monitoring stage



Per- and Polyfluoroalkyl Substances (PFAS)

Per- and Polyfluoroalkyl Substances (PFAS) are a large family of chemicals that repel grease and water and are resistant to heat. They do not degrade in the environment and many pose health risks at very low concentrations. The CLP began testing for PFAS contamination in 2006. In 2018, the CLP set a goal to sample all CLP sites for PFAS. Currently, PFAS testing has been completed at over 90% of the CLP sites. To date, PFAS has been detected in groundwater at 98 of the 101 tested sites. Groundwater levels exceeded Minnesota Department of Health’s (MDH) Health Based Values (HBVs) in groundwater at 59 of those sites. The highest concentrations of PFAS have been identified at the Gofer, Washington County, and Freeway Landfills. Figure 3 is a map showing PFAS detections at closed landfills across the state.

Figure 3. PFAS sampling results at MPCA closed landfills



A future focus of monitoring work will expand beyond drinking water wells to wells used for agriculture purposes. Ongoing sampling of groundwater around these facilities will help determine the impact from PFAS contamination while informing the need for additional remedial actions.

Gofer Closed Landfill

At the Gofer Landfill, located in Martin County, multiple PFAS have been found exceeding MDH's drinking water standards. PFOA and PFOS, both types of PFAS, have been detected at concentrations 1000 times the health risk limit at the landfill. PFAS contamination has been detected in nearly all of the monitoring wells at the landfill, in an adjacent creek, and in one off-site, temporary monitoring well. All drinking water wells within a mile of the landfill have been tested and PFAS was not detected in any of the drinking water wells. Additional investigation is planned to identify the area of contamination coming from the landfill.

Washington County Closed Landfill

PFAS was discovered in groundwater monitoring wells at the Washington County Landfill, located in Lake Elmo, Minnesota, in 2004. Since then, several hundred private wells near the Landfill in Lake Elmo have been sampled by the CLP. Currently, 21 point-of-entry water treatment systems that were installed on private water systems are maintained by the MPCA and one resident is receiving bottled water.

Freeway Closed Landfill

A network of groundwater monitoring wells has been installed around both the Freeway Landfill and Freeway Dump to investigate the presence and movement of groundwater contamination. The sampling results show that groundwater contamination is widespread within the waste footprints, and recent testing shows that the contamination has migrated beneath and outside of the waste footprints. At most locations sampled, this contamination has been detected at levels exceeding HBV's. The most common contaminants include PFAS, 1,4-dioxane, and heavy metals, though many other contaminants were also detected. The highest PFAS contamination found was about 45 times health-based guidance values.

Other closed landfills with notable PFAS contamination

There are 13 additional closed landfills across the state where PFAS contamination has been detected at concentrations at least 10 times greater than the health-based guidance values. These landfills are located in both metropolitan and rural parts of the state.

Addressing PFAS contamination

Significant PFAS contamination in groundwater can be addressed by installing an engineered system to pump groundwater that will control the movement and reduce the impact of the contamination. The collected groundwater is typically disposed of at a wastewater treatment facility (WWTF). However, at the six CLP landfills that have groundwater pump and treat systems (installed prior to the development of a laboratory method to analyze for PFAS and 1,4-dioxane), the pumped groundwater is sent to an on-site treatment pond to treat volatile organic compounds, not PFAS. Therefore, PFAS is left untreated. PFAS is also found in landfill leachate and, at the seven CLP sites where it is collected, is disposed of at a WWTF. Because PFAS does not break down naturally in the environment, the WWTF does not reduce or eliminate the PFAS but, rather, only dilutes and transfers the contamination to the receiving surface water.

The MPCA plans to conduct feasibility studies to determine how best to treat groundwater and leachate contaminated with PFAS.

1,4-Dioxane

1,4-Dioxane is another chemical that does not degrade in the environment and is a health concern at very small concentrations. A laboratory method to analyze and detect this compound was not available

until 2016. This chemical has been found in the groundwater at a majority of CLP sites, and removing it from the groundwater at the handful of landfills with existing groundwater treatment systems is currently not occurring. Similar to PFAS, 1,4-dioxane is left untreated in the treatment ponds at the six CLP landfills with groundwater pump and treat systems (three of these ponds infiltrate to the groundwater). The CLP plans to conduct a feasibility study to determine whether a treatment technology exists that is effective at removing 1,4-dioxane from the environment.

Unplanned and time critical events

The CLP plans and budgets its work annually by focusing on program priorities, within the limits of its fiscal and staff resources. There are situations that arise unexpectedly that cannot be planned for but require an immediate shift of resources in order to address the situation. In some cases, these unforeseen circumstances can turn into unexpected emergencies that consume significant fiscal resources.

In November 2020, signs of a subsurface combustion event (fire) were observed at the Louisville Landfill in Shakopee, Minnesota. White-colored fumes were seen emanating from a gas extraction well and settlement of a portion of the Landfill cover was noted. Such combustion events can occur deep within the landfill waste when the right concentrations of oxygen, organic waste, and chemicals combine to create a combustion reaction that slowly burns the waste. This usually results in damage to the landfill's remediation systems. At the Louisville Landfill, the infrastructure used to collect landfill gas to be burned in the extraction system flare, was damaged due to the fire's heat. Also, waste consumed by the event resulted in a portion of the landfill cover above the fire to sink. The Landfill's gas extraction system, used to manage methane at the site, has been shut down to help contain the fire by reducing the amount of available oxygen.

An investigation to determine the extent of damage is currently being conducted. Unplanned costs to respond to the incident are expected to exceed \$90,000. Funds were diverted from other program needs, including planned residential drinking water well monitoring and planned repairs at other program landfills. Additional funding will be needed to fully resolve the situation.

Vapor investigations

Vapor intrusion occurs when chemical vapors migrate from contaminated groundwater through the soil into the basements or foundations of buildings. These chemical vapors can degrade indoor air, sometimes to the point of posing risks to human health.

The CLP began investigating such vapors in fiscal year 2019 and will continue to investigate more landfills into the future. Vapor intrusion mitigation systems will be installed in buildings where there is a significant risk of vapor intrusion from the landfill.

Climate change

The cumulative impacts of climate change are having an effect on Minnesotans and the state's economy by causing early and costly repairs to infrastructure, increasing home and crop insurance rates, and contributing to changes in our native ecosystems. Landfill gas from CLP landfills is a source of greenhouse gases (GHG) – a contributor to climate change. Methane, one component of landfill gas, is explosive and can be dangerous if it is allowed to accumulate within enclosed structures.

Since 1995, the CLP has installed and operated engineered systems with flares to collect and destroy landfill gas at several of its landfills. However, only 20 CLP landfills produce enough methane to keep an active gas extraction system running, and some of them only operate part time. Solar-powered, single-

vent flares have been installed at a few landfills where localized “hot spots” of methane exist. Where active gas extraction systems and solar-powered single-vent flares are not applicable, or are not continually operable due to minimal concentrations of methane, landfill gases are simply vented to the atmosphere in order to reduce their migration in soils. Technologies that are efficient in managing and treating landfill gas, other than active flaring and passive venting, are currently not known to the CLP.

The MPCA plans to conduct a feasibility study into innovative methods to mitigate landfill gas to reduce GHG emissions. If no such methods are available or practical, an alternative to destroying landfill gas is to offset current GHG emissions by installing photovoltaic solar facilities at CLP landfills rather than address actual emissions at the sites.

Future reuse of CLP landfills

The CLP currently manages over 8,500 acres of closed landfill property. The current scope of the CLP, as outlined in the 1994 Landfill Cleanup Act, includes authority for cleanup actions at program landfills. While the CLP has the authority to enter into leases when there is an expressed interest in leasing state property, provided the proposed land use is appropriate, the CLP is not authorized or funded to proactively facilitate property reuse. It is important to note, however, that any property reuse at program landfills must not interfere with the MPCA’s cleanup responsibilities at the site.

Additional statutory authority and funding are needed to allow CLP to proactively facilitate closed landfill property reuse. A closed landfill is a unique type of brownfield that has fewer options for beneficial reuse than many other types of brownfields, in part because constructing buildings on or near closed landfills is risky due to landfill gas migration. Solar energy development is a good example of a compatible use at closed landfills because public access is restricted, solar panels can be installed without penetrating the waste cover, and landfill maintenance activities can be accommodated.

In 2019, Minnesota’s Governor signed Executive Order 19-28, which included a directive to the MPCA to “manage closed landfills under its supervision to create, protect, and enhance pollinator habitat.” The CLP’s pollinator strategy has three goals: 1) improve pollinator habitat on closed landfill sites; 2) reduce effects on pollinators from use of herbicides and other chemicals on CLP sites; and 3) promote the CLP pollinator strategy and share pollinator projects on the program’s sites. Improving pollinator habitat and decreasing the amount of chemicals used will help not only pollinators but a number of other species, including other insects, mammals, and birds.

Other uses could include agricultural, recreational, and civic uses, or sites could be managed as open space for wildlife habitat.

Solar development feasibility on state-managed closed landfills

Legislation was passed in 2019 that authorized the Minnesota Environmental Quality Board (EQB) to evaluate the closed landfills for their solar development potential. The study examined the potential for solar development on CLP landfills, the barriers to that development, and recommendations that would facilitate solar development on these landfills in line with state and local sustainability goals. The study also ranked the landfills in terms of their capacity to accommodate solar development.

The report found there is significant potential for solar development on Minnesota’s CLP sites. The technical assessment estimated that there is potential to generate 950 megawatts - AC (MW) using solar on 4,500 acres in the CLP, or enough to power over 100,000 homes.

The report also identified the following barriers limit solar development on CLP sites.

- The current statutory mission of the CLP is limited to taking environmental response actions and protecting human health and the environment. Establishing beneficial property reuse was not included and funded in the original CLP program mission.
- Fifty-five CLP landfills have use restrictions because of past general obligation bond financing of cleanup actions. The prospects for beneficial reuse, including solar development, are limited for property where bond financing was used until the bonds are retired.
- Solar development could be more costly and complex on closed landfills than on greenfield (uncontaminated) sites. Solar developers face uncertainty about site-specific suitability for solar, increased costs associated with construction on the landfill cap, as well as real and perceived risks associated with CLP responsibilities.
- State regulations impose limitations on solar projects under some solar ownership, operation, and program models. For example, new Community Solar Garden projects are limited to 1 MW, which is well below the estimated solar energy generation capacity of many CLP sites. Legislative action would be required to raise this limit at brownfield locations such as CLP sites.

Recommendations from the study are to:

- Expand statutory authority of the CLP to authorize and fund proactive work on property reuse, including solar development, and provide funding to establish a Closed Landfill Beneficial Reuse Program.
- Appropriate funds to retire bond debt early and legislatively authorize the release of state bonding restrictions for select CLP sites. Freeing property from bond restrictions would open up lands for solar development and could generate significant revenues into the future.

Other concerns

The CLP is also subject to changes in health standards for certain chemicals. For example, the Health Risk Limits for certain PFAS were decreased by the MDH based on additional research on the potential effects they might have on human health. Decreases in health standards can result in the need for additional monitoring.

In addition, new landfills have the potential of entering the CLP. In recent years, legislation was enacted that qualified two new landfills for the program – the Crow Wing County and Goodhue County Landfills. New landfills will increase the CLP’s obligations for caring for these landfills significantly, including the need for annual sampling and analysis and mowing, plus possible cover and gas venting work, and the potential for additional investigations. Additional landfills have the potential of entering the CLP depending on actions taken by the Legislature.

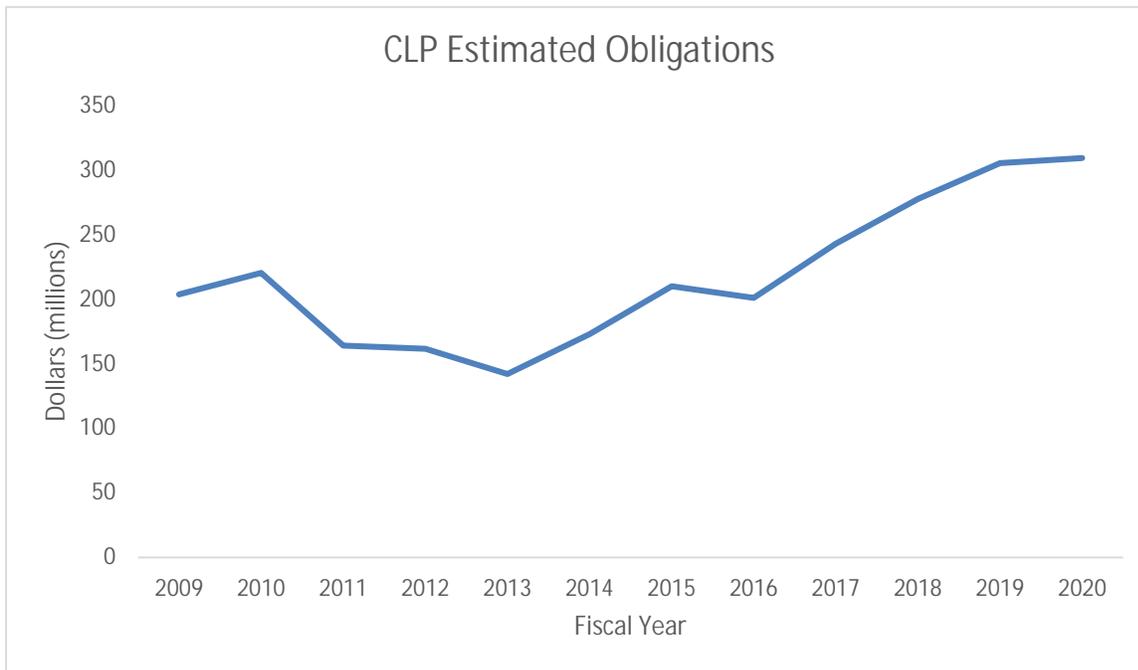
Future financial obligations of the CLP

Each year the CLP projects its future, 30-year, financial obligations or liabilities the program has to take care of the landfills under its care. The program’s current contractual obligations over the next 30 years are anticipated to be \$309 million. These costs do not include administrative costs. Figure 3 shows change in the program’s projected 30-year financial obligation over the past 12 years.

The 30-year financial obligations have increased significantly since fiscal year 2013. Reasons for the increase include: 1) the addition of three landfills to the CLP, including the Freeway Landfill; 2) the need to conduct vapor investigations and increased monitoring of PFAS and 1,4-dioxane; 3) better understanding of possible human health effects from groundwater impacts at landfills, especially from PFAS and 1,4-dioxane; and 4) better definition of extent and magnitude of groundwater contamination.

The CLP anticipates future obligations to increase more as the result of needed feasibility studies to: 1) evaluate alternative technologies to address landfill GHGs; and 2) research technologies to remove PFAS and 1,4-dioxane from the groundwater at several closed landfills.

Figure 3. CLP 30-year estimates of financial obligations over past 12 years



Funding CLP’s future – CLIF, Remediation Fund, state general obligation bonds

The CLP, given its charge to perpetually protect human health and the environment, will rely on three funding sources to address future environmental response actions at program landfills – the CLIF, the Remediation Fund, and state general obligation bonds. State bonds will be used to fund design and construction activities at publicly owned landfills needing waste consolidation and cover construction. Significant bond funds will be needed at the Freeway Landfill in the next two years. Construction at the Freeway Landfill is anticipated to cost over \$120 million.

The Remediation Fund will be used to fund every-day operation and maintenance at landfills, including operation of active remediation equipment, leachate/condensate management, utility costs, site mowing, land surveys and acquisition, and equipment. The fund will also be used to pay for routine groundwater and methane monitoring at all program landfills. These expenses include administrative staffing expenses to carry out this work.

The CLP plans to use the CLIF to fund landfill gas-related investigations as part of the program’s climate change work, including feasibility studies to address management of GHGs; expanded groundwater monitoring and investigations to better determine impacts from CECs (such as PFAS and 1,4-dioxane); vapor intrusion investigations; landfill leachate feasibility studies to address PFAS, and 1,4-dioxane; implementation of leachate and GHG treatment technologies; and non-bonded design/construction at privately-owned landfills. The CLIF would also be used to fund unplanned and time critical projects, like the Louisville Landfill case discussed above.

Future fiscal management of the CLIF

The MPCA anticipates spending monies in the CLIF as an open, statutory appropriation in order to implement the program work described above. A small clarification is being sought to the fund’s

statutory language to mirror how the Remediation Fund, the newly legislatively established Natural Resources Damages Account, and the Water Quality and Sustainability Account (3M Natural Resources Damages Settlement), are utilized to respond to contaminated sites. This recommendation will help to ensure that the Legislature's foresight in establishing CLIF can be successfully and efficiently implemented.

Annual budgets will approximate the fund's historic interest earnings as calculated by the State Board of Investment. Detailed program spending plans using the CLIF will be reviewed and approved annually by the MPCA Commissioner's Office, including any necessary modifications to those plans due to unexpected program events or emergencies. The goal will be to balance program expenditures with investment earnings in order to ensure long-term viability of the fund.

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/Oagx803>.

For more information about the Closed Landfill Program, contact:

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