Metro Plant Solids Management Improvements Facility Plan

Prepared for

Metropolitan Council Environmental Services

January 2019

METROPOLITAN COUNCIL

Metro WWTP Solids Management Improvements Facility Plan

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

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Executive Summary

Purpose and Objectives

The purpose of this Facility Plan is to present the plan for the Metropolitan Council Environmental Services (MCES) to add solids treatment facilities at the Metropolitan Wastewater Treatment Plant (Metro Plant) and to document the basis for the recommended plan. Several tasks associated with this planning effort are addressed, including:

* Evaluation of current solids production
* Projection of future solids production
* Assessment of existing solids treatment facilities
* Development and evaluation of alternatives
* Selection and development of the recommended plan

Statement of Need

The Metro Plant needs additional solids treatment capacity to preserve existing wastewater treatment plant infrastructure and to serve regional growth in an efficient, reliable, and environmentally responsible manner.

Anticipated future renewal work within the existing incineration system will require that each of the Metro Plant's three incinerators be taken out of service for a period greater than 6 months. System capacity with only two incinerators available for extended periods during construction of the renewal work is insufficient, requiring MCES to landfill excess solids. Without the proposed project, the estimated amount of solids that would be landfilled is 10 percent to 20 percent of the total wastewater solids production, which would require an estimated additional total landfill volume of 2.9 million cubic yards through the end of the planning period (2050).

Population and employment in the Metro Plant service area are anticipated to grow by 25 percent (500,000 residential equivalents) from 2020 to 2050. The corresponding wastewater solids loading increase is 60 dry tons per day (dtpd), from 240 dtpd in 2020 to 300 dtpd in 2050.

The estimated additional capacity needed to extend sustainable solids treatment service at the Metro Plant through the end of the planning period is 75 dtpd, which includes growth and renewal needs.

Evaluation of Alternatives

A wide range of alternatives was narrowed down to the following four alternatives, which maximize the use of the existing incinerators:

Alternative 1: Fourth Incinerator. Add a fourth incinerator, the same size as the existing incinerators (125 dtpd), with associated centrifuges, energy recovery and air pollution control.

Alternative 2: Digest and Incinerate. Add an anaerobic digestion complex to digest a portion of the solids. Digested solids would be incinerated in the existing incineration system. The digester complex is sized at 150 dtpd to reduce loading to the incinerators by 75 dtpd.

Alternative 3: Digest, Dry, and Sell. Add an anaerobic digester complex and dryer facilities (75 dtpd) to produce a biosolids product that can be sold as a fertilizer. Dried solids would be pelletized for offsite use by others.

Alternative 4: Digest and Land Apply. Add an anaerobic digester complex and land application facilities (75 dtpd) to produce biosolids that can be used as a soil amendment.

These selected alternatives were configured to provide an additional minimum of 75 dtpd of solids treatment capacity to meet growth and renewal needs. The evaluation considered cost, sustainability, community impacts, and other non-monetary factors.

All alternatives include renewal projects associated with the maintaining the existing capacity.

Recommended Plan

This Facility Plan recommends the construction of the Alternative 1: Fourth Incinerator, which adds a new incinerator parallel to the existing three units. Due to the size of the Metro Plant and its location relative to land application sites, adding a fourth incinerator costs 50 percent less than the next lowest cost alternative to construct, operate, and maintain. It is the most sustainable alternative and has the lowest community impact. The fourth incinerator provides for continuity with existing Metro Plant operations and increases the reliability of the entire regional wastewater treatment system owned and operated by MCES.

The recommended alternative will be constructed in a 22,000-square-foot addition to the Solids Management Building, which houses the existing incinerators. The construction of the Fourth Incinerator (2021 to 2024) would be followed by renewal of the existing incineration facilities (2025 to 2027). At time of this renewal, the existing incinerators will be 20 years old.

The estimated total cost is $180 million in 2018 dollars.

Summary of Public Outreach, Public Comments, and Resolutions

Public outreach was performed to numerous government, community organizations, environmental organizations, and other stakeholders from May 2018 to August 2018. A public open house was held from 6:30 p.m. to 8:00 p.m. on Wednesday June 13, 2018 at the Wellstone Center, in St. Paul Minnesota. A formal public hearing was held from 6:30-8:00pm on Thursday, August 30 at the Wellstone Center, in St. Paul Minnesota. Verbal public comments were received at the public hearing and written public comments received from July 29, 2018 to September 10, 2018. The Metropolitan Council formally approved and adopted the Metro Plant Solids Management Improvements Facility Plan on October 10, 201 through Resolution No. 2018-19. A summary of public outreach, public comments, and resolutions are attached in Appendix L.

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1.0 Introduction and Facility Management Conditions

1.1 Background and Purpose

The Metropolitan Wastewater Treatment Plant (Metro Plant) has incinerated wastewater solids since its original construction in 1938. In 2005, six multiple hearth incinerators were abandoned, and a new solids management building was constructed to house three fluid bed incinerators. MCES deferred construction of facilities at the Metro Plant for land application of an alkaline stabilized solids product that would have provided additional processing capacity at that time (2005).

MCES has occasionally landfilled sludge during extended incinerator shut downs at the Metro Plant. The Metro Plant needs additional solids processing capacity to preserve existing wastewater treatment plant infrastructure and to serve regional population growth in a sustainable manner. This Metro Plant Solids Management Facility Plan includes renewal of existing incineration facilities at the Metro Plant following construction of the additional capacity needed to perform the renewal work. Additional solids treatment capacity at the Metro Plant would provide emergency backup for solids processing from other MCES plants and, thereby, improve total system reliability.

The purpose of this document is to present the Facility Plan in a manner that meets the funding requirements of the Minnesota Public Facilities Authority. The planning period is through the year 2050.

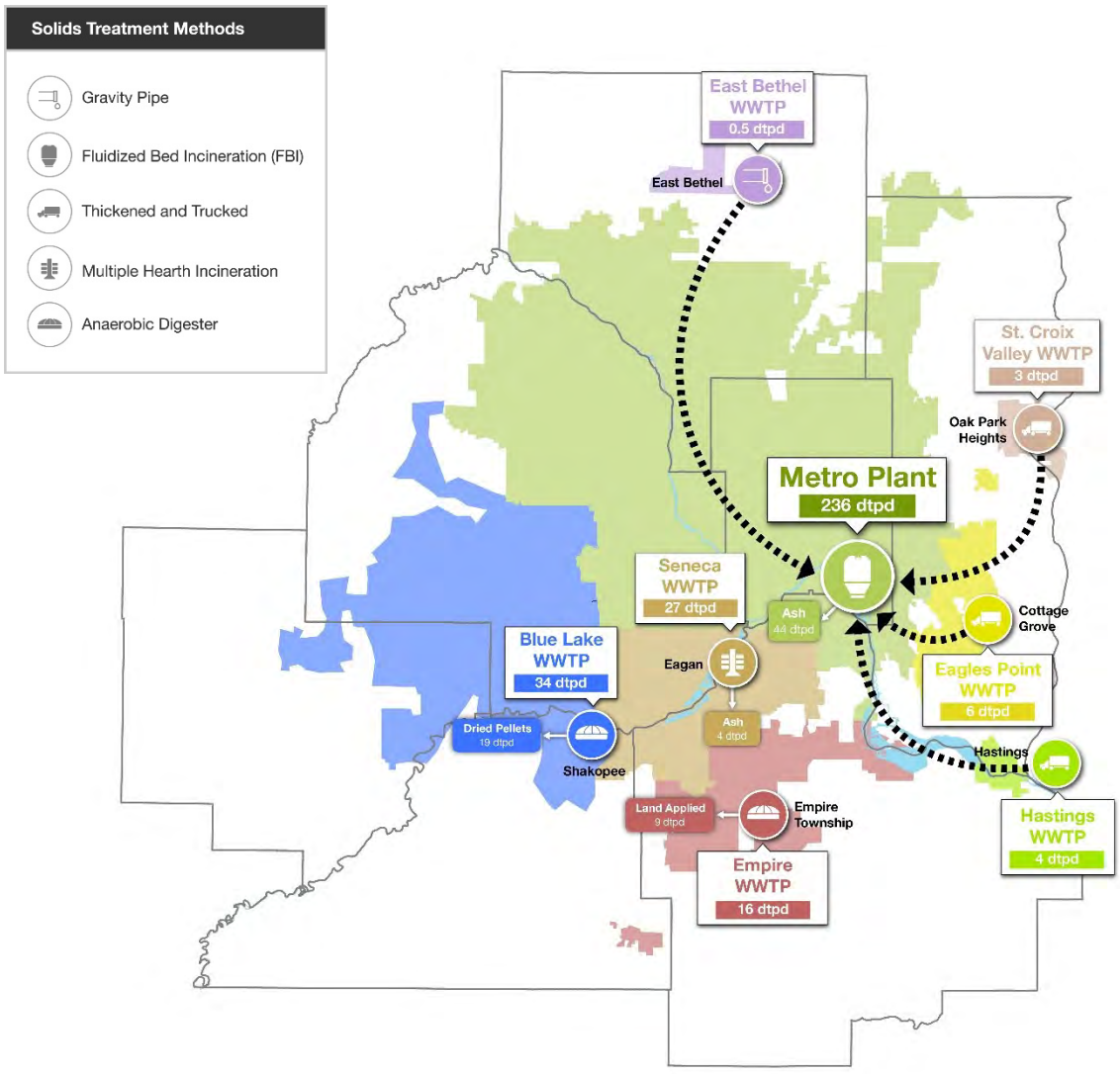


Figure 1. Wastewater and Wastewater Solids Treatment Provided by Metropolitan Council Environmental Services for Minnesota's Twin Cities Region

1.2 Service Area

The wastewater treatment service area for each of eight wastewater treatment plants owned and operated by the Metropolitan Council Environmental Services (MCES) and the solids treatment method employed at each plant are shown in Figure 1.

The Metro Plant located in St. Paul, Minnesota, treats 180 million gallons of wastewater every day for 66 communities (70 percent of the region). The Metro Plant treats wastewater solids for its own service area plus it receives and treats solids from four other plants; Eagles Point, East Bethel, Hastings, and St. Croix Valley. A total of 850 wet tons (including moisture), or 240 dry tons (excluding moisture), of wastewater solids are treated at the Metro Plant every day for 73 communities (75 percent of the region).

The Metro Plant also receives wastewater scum from all the other MCES wastewater treatment plants, except the Seneca Wastewater Treatment Plant. Wastewater scum is floating material skimmed from the liquid surface of process tanks.

As summarized in Table 1, population and employment in the Metro Plant service area are anticipated to grow by 25 percent (500,000 residential equivalents) from 2020 to 2050. The corresponding wastewater solids loading increase is 60 dtpd, from 240 dtpd in 2020 to 300 dtpd in 2050 (Table 2).

Table 1. Projected Population Growth for the Metro Plant Service Area[1]

Year	Residents	Employment	Equivalent Residents	Total Equivalent Residents
2010	1,770,000	1,067,000	267,000	2,040,000
2020	1,910,000	1,177,000	294,000	2,200,000
2040	2,190,000	1,367,000	342,000	2,530,000
2050	2,330,000	1,450,000	363,000	2,700,000

[1] 2014 Water Resources Policy Plan, Metropolitan Council Environmental Services.

1.3 Current and Projected Wastewater Solids Production and End Use

Actual and projected solids quantities treated at the Metro Plant and solids quantities exported from the plant are summarized in Table 2.

1.3.1 Wastewater Solids

The quantity of solids requiring treatment at the Metro Plant, which includes residential, commercial, and industrial components, as well as solids produced within the plant by wastewater treatment processes, has been steady over the last 11 years, with small fluctuations around the average of 234 dtpd.

Table 2. Metro Plant Wastewater Solids, Historical Data (2007-2017) and Projections

Year	Load to Solids Treatment (dtpd)[1]	Scum (dtpd)	Ash (dtpd)	Sludge To Loadout and Landfill (wet tons)[3]
2007	235	--[2]	48	4706
2008	241	--[2]	45	0
2009	234	--[2]	43	0
2010	235	--[2]	44	551
2011	240	--[2]	38	0
2012	225	2	37	4,050
2013	231	2	27	38,287[4]
2014	229	2	44	56,477[4]
2015	232	2	41	10,202[4]
2016	230	2	38	21,544
2017	236	2	41	2,920

Year	Load to Solids Treatment (dtpd)[1]	Scum (dtpd)	Ash (dtpd)	Sludge To Loadout and Landfill (wet tons)[3]
Average	**234**	**2**	**42**	**--**
2020[5]	240	2	43	--
2050[5]	300	2	54	--

[1] Solids load based on flow measured at the cake pump discharge and solids concentration measured at the centrifuge discharge.

[2] Prior to July 2011, scum was processed with the other wastewater solids and is included in the values presented in "Solids Processed". Since July 2011 scum has been processed separately from other solids and is not included in the values presented in "Solids Processed."

[3] Includes wastewater solids, moisture, and ash and lime additives

[4] Sludge loaded out to landfill during the 2013-2015 Solids Processing Improvements Project. Each incinerator was shut down twice (for a total of 19 weeks each) to complete renewal work.

[5] Wastewater solids projections are based on 25% population growth (2020-2050): (0.25x240)/30 = 2 dtpd/yr

Industrial wastewater solids loading into the plant has decreased, residential and commercial components have increased, indicating population growth. Organic loading into the plant has increased, which also indicates population growth. (Soluble wastewater organic compounds produce solids within the plant by the wastewater treatment process.) Historical data depicting these trends are included in Appendix A.

Wastewater solids are projected to increase at the same rate as population and employment growth in the service area, 25 percent over 30 years.

This plan provides for a reliable, long-term average solids processing capacity of 300 dtpd and a peak month design value of 345 dtpd, based on an actual average 30-day peaking factor of 1.15. Appendix B contains a tabulation of solids processing peaking factors for the Metro Plant.

1.3.2 Scum

The Metro Plant currently treats about 2 dtpd of scum, which is floating material collected from the liquid surface of process tanks, and includes scum trucked in from the other wastewater treatment plants, except the Seneca Wastewater Treatment Plant. Scum is treated separately from the settleable wastewater solids and is not reported with wastewater solids quantities described in Section 1.3.1. Scum is concentrated by draining in dumpsters and then landfilled.

MCES is evaluating options to process scum with the other solids, which would add to system capacity requirements.

1.3.3 Ash

Incineration eliminates 95 percent of the Metro Plant waste material that would otherwise have to be hauled offsite (solids and water); the remaining residue, or ash, is collected at the bottom of the incinerator flue gas treatment train. The Metro Plant produces about 40 dtpd of ash, which is currently landfilled or used as a bulking agent during sludge loadout and landfill. From 1989 to 2004, MCES reused Metro Plant ash in cement and other construction products. This practice was discontinued due to the potential to re-volatilize mercury in the ash during cement manufacturing. Ash is currently landfilled without additional treatment.

In 2001, MCES implemented a mercury reduction program that involved an industrial pretreatment campaign, mainly with local dentists. This program reduced mercury loading to the Metro Plant by 70 percent (Appendix A). In 2005, MCES implemented wastewater biological phosphorus removal at the Metro Plant, a process that concentrated phosphorus in the solids. Phosphorus, a non-renewable nutrient required for plant growth, ultimately ended up in the ash.

The result of these two programs, mercury reduction and biological phosphorus removal, is that Metro Plant ash is 27 percent phosphorus and has very low metals content, leading MCES to re-evaluate alternatives for the beneficial use of Metro Plant ash.

As part of this planning effort, a trial greenhouse study of the growth of lettuce and corn using ash as a fertilizer was conducted by the University of Minnesota, and results indicated that Metro Plant ash is potentially a suitable phosphorus fertilizer. The trial greenhouse study report is provided in Appendix C. Subsequently, MCES initiated a 3-year field crop study of the growth of corn and soybeans using Metro Plant ash as a fertilizer, which will be completed by the University of Minnesota in 2019.

Photo 1. Corn and lettuce grown during a trial study conducted by the University of Minnesota found Metro Plant ash to be a potentially suitable phosphorus fertilizer.

Ash nutrient data are summarized in Table 3. For comparison to other commercial fertilizers, Metro Plant ash has an N-P-K ratio of 0:14:2 with an estimated value of $125 per ton.[1]

Ash metals data are summarized in Table 4. Metro Plant ash meets metal concentrations for fertilizers published by the Association of American Plant Food Control Officials and it is below ceiling limits established by the United States Environmental Protection Agency (EPA) for land application of biosolids, for all metals. Metro Plant ash meets EPA's standards for exceptional quality biosolids for all metals except copper. Although the regulations do not apply to ash used as a fertilizer, biosolids regulations provide a reference for acceptable levels of metals for reuse of ash.

Toxicity Characteristic Leachate Procedure (TCLP) tests indicates Metro Plant ash is below toxicity thresholds for arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver.

[1] Comparable value based on June 2018 market rates for commercial grade fertilizers from www.dtnpf.com

Table 3. Fertilizer Constituents of Metro Plant Ash

Constituent	Average (%)[1]
Total Phosphorus, as P2O5	27.73
Available Phosphorus, as P2O5	17.22
Total Potassium, as K2O	3.81
Available Potassium, as K2O	2.27
Boron (B)	0.00
Calcium (Ca)	11.34
Copper (Cu)	11.34
Iron (Fe)	3.20
Magnesium (Mg)	2.89
Manganese (Mn)	0.81
Sulfur (S)	0.61
Zinc (Zn)	0.22

[1] All items based on 32 tests from 2017-2018

Table 4. Metro Ash Metals Content and Comparison to Reference Standards

Constituent	Average (mg/kg)[1]	AAPFCO Heavy Metal Rule (mg/kg)[2]	EPA EQ Biosolids (mg/kg)	EPA Ceiling Biosolids (mg/kg)
Arsenic	91	182	41	75
Cadmium	10	140	39	85
Cobalt	13	1904	-	-
Chromium	216	-	1200	3000
Copper	2143	-	1500	4300
Lead	296	854	300	840
Mercury	3	14	17	57
Molybdenum	48	588	-	75
Nickel	130	3500	420	420
Selenium	12	364	36	100
Zinc	2198	5880	2800	7500

[1] Based on 32 tests through 2017-2018
[2] Based on average available Phosphorus, as P2O5 of 14%.

1.3.4 Sludge Loadout and Landfill

Because it is expensive and environmentally unsustainable, sludge loadout and landfill is used at the Metro Plant only when needed incineration capacity is unavailable[2]. Sludge loadout and landfill costs $220 more per dry ton of solids processed than incineration costs.

As shown in Table 5, sludge loadout and landfill increases the amount of material that must be hauled offsite by 25 fold. To meet Minnesota landfill requirements, lime must be added to the sludge to adjust the sludge's pH level. Ash is added as a bulking agent to make the sludge more transportable.

Table 5. Metro Plant Solids Exports, Incineration versus Sludge Loadout and Landfill

	Incineration	Sludge Loadout and Landfill
Dewatered cake	1.0 parts solid	1.0 parts water
	2.6 parts water	2.6 parts water
Added materials	--	1.3 parts ash
		0.9 parts lime kiln dust
Solids export	0.2 parts ash	5.8 parts sludge

A significant amount of loadout is required when incinerators are taken out of service to perform renewal work (Table 5). More sludge loadout and landfill will be required as equipment continues to age, and more extensive renewal work is needed. The existing incinerators will be 20 years old in 2025.

1.4 Previous Facility Plan

The 1998 Facility Plan for constructing the existing three fluidized bed incinerators (FBIs) included a provision for 94 dtpd of additional treatment (plus one spare) in the form of alkaline stabilization and land application. Alkaline and ash addition facilities were installed, but construction of the curing and storage facilities required to implement land application was deferred while optimizing the operation of the new incineration technology at the Metro Plant.

In 2011, MCES investigated implementing the land application program and found that a number of these facilities had been prematurely abandoned due to higher than anticipated operation and maintenance costs and limited acceptance of the product for land application.

MCES focused on achieving maximum efficiencies with the existing FBI system. MCES also initiated studies to determine the most sustainable alternative to alkaline stabilization and land application, which resulted in this Facility Plan.

[2] Part of the Council's Wastewater Sustainability Policy: "Stabilize and reduce the volume of biosolids through thermal processing or anaerobic digestion, and utilize the remaining solids as fertilizer and soil conditioner."

2.0 Permits

The following is a list of currently-effective Metro Plant permits and licenses:

- Air Quality (Title V) Permit, Minnesota Pollution Control Agency (MPCA)
- Groundwater Permit, Minnesota Department of Health
- Groundwater Appropriations Permit, Minnesota Department of Natural Resources
- Hazardous Waste License, Ramsey County
- Water Quality
    - National Pollution Discharge Elimination System (NPDES) Permit, MPCA
    - Total Phosphorous Permit, MPCA

This section focuses on the Title V permit because this permit regulates incineration and related equipment.

The current Title V Air Emissions Permit regulates emissions from sources at the Metro Plant, including incineration and operation of emergency generators, boilers, secondary treatment, and ash and materials handling. The original Title V of the Clean Air Act Air Emissions Permit was issued on March 13, 2001, and included the requirements codified at 40 Code of Federal Regulations (CFR) Part 503, Standards for the Use or Disposal of Sewage Sludge (1993). This permit was amended three times, as presented in Table 6. The last reissuance was February 25, 2010.

Table 6. Metro Plant Title V of the Clean Air Act Air Emissions Permit History

Permit Number and Issuance Date	Action Authorized
12300053-001 (March 13, 2001)	Part 70 Total Facility Permit issued
12300053-002 (November 15, 2002)	Authorized construction and operation of Solids Processing Facility (Solids Management Building)
12300053-003 (Not Issued)	No action
12300053-004 (June 28, 2004)	Authorized operation for fabric filters to be used instead of electrostatic precipitators, clarified the completion of the Operation and Maintenance Manual, allowed for flexible operation of the alkaline stabilization and three-stage odor scrubber, clarified operational limits of the incinerators, amended the PM10 emissions standard, and eliminated emission units for nonexistent or insignificant activities
12300053-005 (February 5, 2007)	Authorized the use of two 2,000 kilowatt temporary generators for effluent pumping during floods
12300053-006 (February 25, 2010)	Minnesota Pollution Control Agency (MPCA) reissued permit
Renewal application of permit 12300053-006 was sent to MPCA. (August 26, 2014)	No action
MPCA received application for minor modification – generator replacement. (August 18, 2017)	No action

The current Title V of the Clean Air Act Air Emissions Permit is being reviewed by the Minnesota Pollution Control Agency (MPCA) for reissuance. When re-issued, it is assumed that the Title V of the Clean Air Act Air Emissions Permit will incorporate additional incinerator emissions limits and operating and reporting requirements meeting the EPA regulations codified at 40 CFR Part 60, Standards of Performance for New Stationary Sources; including Subparts LLL, LLLL, and MMMM. As part of these regulations, there are New Source Performance Standards (NSPS) for sewage sludge using Maximum Achievable Control Technology (MACT) for Existing Fluid Bed Incinerators[1] or New Fluid Bed Incinerators.[2] Until reissuance of the permit, the Metro Plant incinerators are operating under the Federal Implementation Plan as of March 21, 2016.[3]

2.1 EPA Sewage Sludge NSPS Rule (MACT Rule 2016)

The new rules (81 Federal Register 26040) included requirements for reporting and operating and the rules set new lower emission limits for nine criteria pollutants: cadmium (Cd), polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans (PCDDs/PCDFs), carbon monoxide (CO), hydrogen chloride (HCl), mercury (Hg), nitrogen oxides (NO_X), lead (Pb), particulate matter (PM), and sulfur dioxide (SO_2). Stack testing conducted in 2016 demonstrated that incinerator emissions were below MACT Standards for existing Fluid Bed Incinerators (constructed prior to October 14, 2010) as required by EPA. The supplemental engineering tests conducted in 2017 and 2018 for this facility demonstrated that incinerator emissions were below MACT Standards for new Fluid Bed Incinerators (constructed after October 14, 2010).

Table 7. Metro Plant Performance

Pollutant	Units (corrected to 7% dry Oxygen)	2015 2016 Emission Result (average of six tests)	% of Existing Limit	2017 2018 Emission Result (average of five tests)	% of New Limit (most recent tests 2017 2018)
Cadmium (Cd)	mg/dscm	2.7E-04	17%	7.6E-05	7%
PCDDs/PCDFs (TEQ)	ng/dscm	7.6E-06	0%	-	0%
Carbon Monoxide (CO)	ppmvd	19.5	30%	6.4	24%
Hydrogen Chloride (HCl)	ppmvd	8.5E-02	17%	-	35%
Mercury (Hg)	mg/dscm	8.7E-04	2%	1.8E-04	18%
Nitrogen Oxide (NOx)	ppmvd	20.2	13%	12.9	43%
Lead (Pb)	mg/dscm	9.3E-04	13%	2.6E-04	41%
Particulate Matter (PM)	mg/dscm	1.8	10%	-	18%
Sulfur Dioxide (SO_2)	ppmvd	3.0	20%	1.04	20%

[1] 40 CFR Part 60 Subpart MMMM, for Existing Sewage Sludge Incinerators (constructed before October 14, 2010).
[2] 40 CFR Part 60 Subpart LLLL, for New Sewage Sludge Incinerators (constructed after October 14, 2010).
[3] Federal Implementation Plan 40 CFR 62 Subpart LLL.

2.2 Permitted Incineration Capacity

- **Annual Total Each Unit**: 38,325 dry tons (12-month rolling average)
- **24-Hour Maximum Each Unit**: 130 dtpd
- **24-Hour Maximum Three Units**: 315 dtpd

3.0 Overview of Existing Solids Treatment Facilities

Figure 2 is a Metro Plant site map depicting plant process areas, which includes the following active solids treatment facilities:

- Flotation thickening
- Sludge storage tanks (SSTs)
- Solids Management Building (SMB)
    - Scum concentration dumpsters
    - Dewatering centrifuges
    - Cake bins and cake feed pumps
    - Polymer system
    - Incinerator trains
    - Steam turbines
    - Ash conveyance equipment
    - Sludge loadout
    - Odor control system
- Ash loadout and storage

Incinerator trains include the incinerators, flue gas heat recovery and air pollution control equipment, and stacks (located outside, adjacent to the SMB). A generalized solids process schematic is shown in Figure 3.

Design data for existing solids treatment facilities are included in Appendix E.

3.1 Gravity Thickening

Gravity thickening was installed in 1969. The gravity thickening area of the Metro Plant contains six process tanks to thicken primary solids that enter the plant with the wastewater from 1 percent to 6 percent solids. The gravity thickener building houses electrical and building mechanical equipment.

The gravity thickening tanks were covered in 2007, and a biofilter for odor control was installed.

Renewal work is currently under construction (2018) and includes roof replacement, concrete and mechanical repairs, and replacement of the biofilter with a trickling filter.

3.2 Flotation Thickening

Flotation thickening was installed in 1979. The flotation thickening area of the Metro Plant contains 16 covered process tanks; 12 tanks thicken waste activated sludge that is generated within the plant by the wastewater treatment process from 1 percent to 4 percent solids. Renewal work completed in 2018 that replaced the motors, restored metal components within the tanks, and decommissioned four tanks.

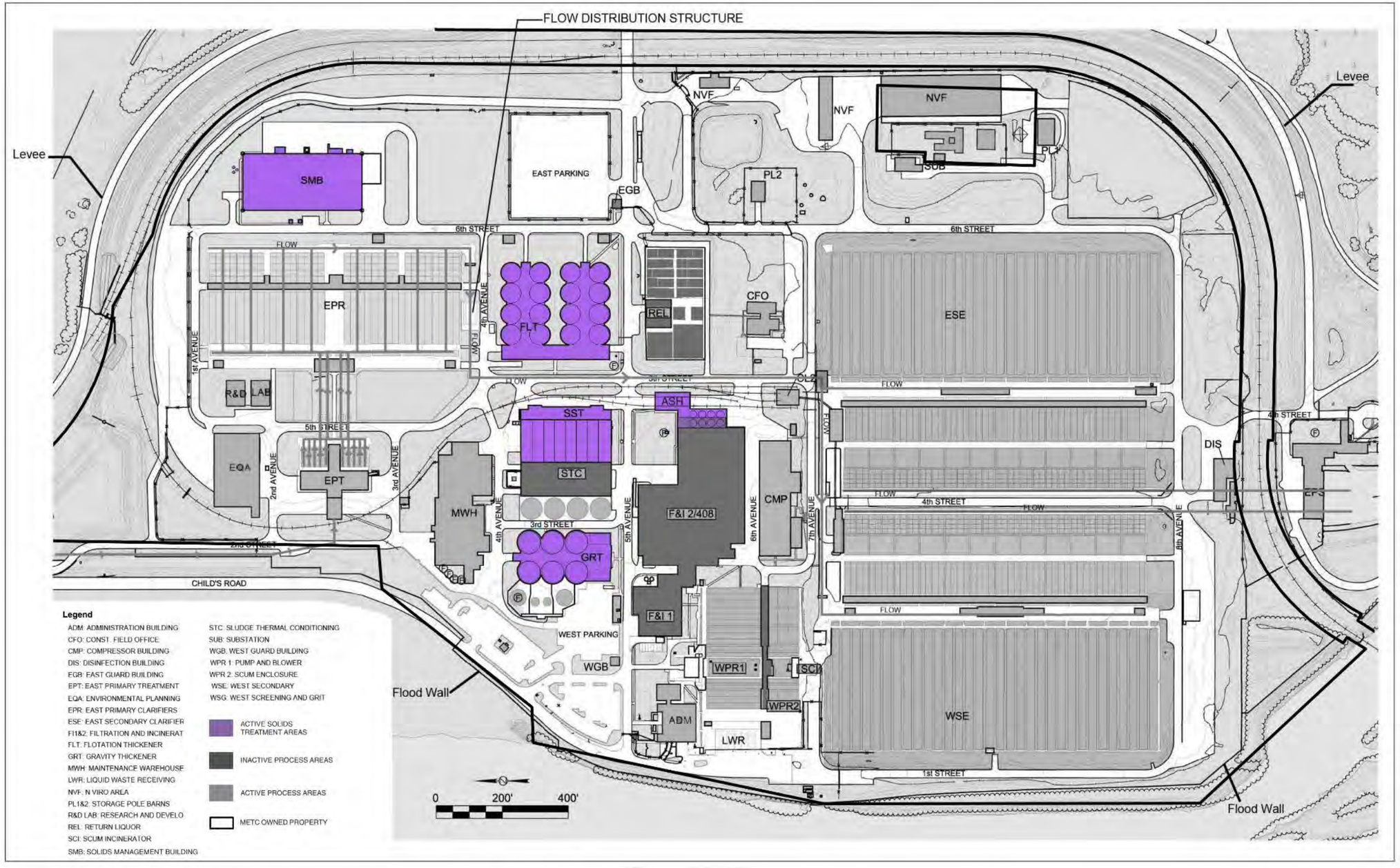


Figure 2. Metro Plant Site Plan

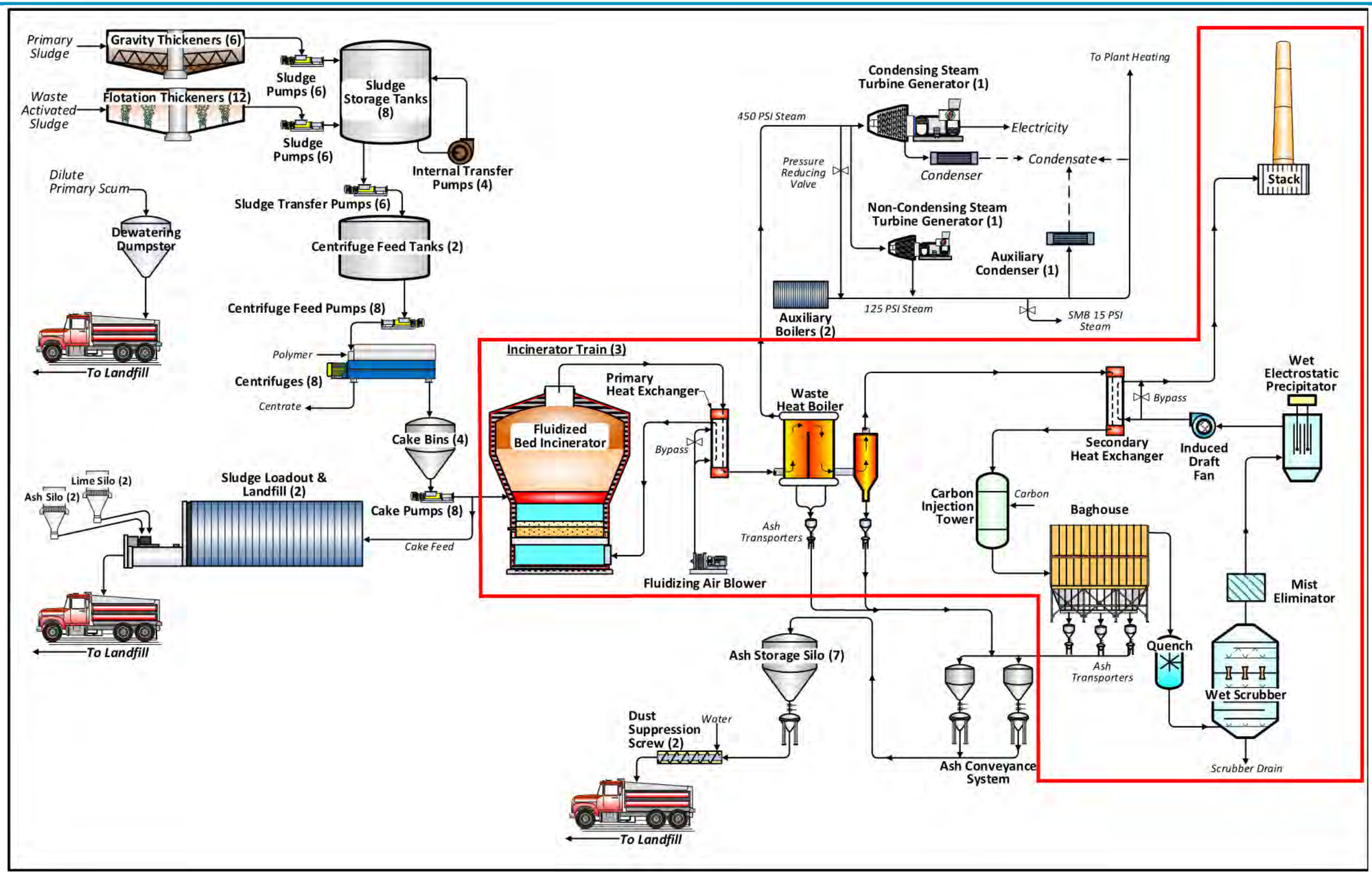


Figure 3. Metro Plant Solids Treatment Process Schematic

3.3 Sludge Storage Tanks (SST)

Eight, 750,000-gallon SSTs began operation in 1980. SST 1 through SST 4 on the north side of the Metro Plant store flotation thickened sludge and are not mixed. SST 5 through SST 8 on the south side of the Metro Plant store gravity thickened sludge and are air mixed.

In 2014, concrete surfaces within the SSTs were rehabilitated and access hatches were replaced.

Ten SST pumps are located alongside the SSTs, below grade in the Metro Plant tunnel network. Six newer progressing cavity pumps, two pumps installed in 1997 and four pumps installed in 2004, are used to transfer sludge from the SST to the centrifuge feed tanks located in the SMB. Four older pumps (two centrifugal pumps and two piston pumps installed in 1980) are used to transfer sludge from any given tank in preparation for maintenance to an alternate tank.

One centrifugal pump and one piston pump are used, in sequence, to transfer sludge between tanks. One set of these pumps serves SST 1 through SST 4, and one set serves SST 5 through SST 8. Four older pumps (two centrifugal pumps and two piston pumps installed in 1980) are used to empty the bottom 5 feet of sludge in any given tank in preparation for maintenance in that tank.

3.4 Solids Management Building (SMB)

The SMB began operation in 2005. It houses scum concentration dumpsters, dewatering centrifuges, a polymer system, cake bins and cake feed pumps, incinerators, heat recovery equipment, air pollution control equipment, ash conveyance systems, and sludge loadout equipment.

SMB floor plans are included in Appendix G.

The Solids Processing Improvements Project, which recovered incineration capacity and service availability of the SMB incineration system, was completed in 2015. Design of the Metro Plant SMB Baghouse/Scrubber/Miscellaneous Improvements Project was initiated in 2018 to renew the ash collection and handling system. A list of modifications to the SMB facilities is provided in Appendix F.

3.4.1 Scum Concentration Dumpsters

Two scum concentration dumpsters that drain water from the scum have been temporarily located in one of the sludge loadout bays. MCES intends to relocate this facility or blend scum into the existing solids treatment process so that it is ultimately incinerated, depending on results of demonstration testing.

3.4.2 Dewatering Centrifuges

Eight dewatering centrifuges concentrate combined gravity and flotation thickened sludge from 5 percent to 28 percent solids. The sludges are combined in two, 50,000-gallon centrifuge feed tanks, operated in a batch mode. The centrifuge feed tanks and eight centrifuge feed pumps are in the basement of SMB.

One centrifuge was installed in 1996 in F&I2. This centrifuge was relocated to the SMB with its construction in 2002 to 2004, and six additional centrifuges were installed at that time. The eighth centrifuge was installed in 2008.

3.4.3 Polymer System

Original construction of the SMB included a polymer system that conditions feed sludge for centrifuge dewatering. Polymer is added to the centrifuge feed piping.

3.4.4 Cake Bins and Cake Feed Pumps

A system of four cake bins and eight cake pumps were installed in the SMB with its construction in 2002 to 2004. As shown in Figure 3, these systems can feed alternate incineration or sludge loadout and landfill trains from any of the eight dewatering centrifuges.

3.4.5 Incinerator Trains

The Metro Plant has three parallel incinerator trains that were installed with the construction of SMB in 2002 to 2004. Each train consists of a fluid bed incinerator, heat recovery equipment, air pollution control equipment, and a stack as shown in Figure 3.

Figure 4 provides a brief description and treatment objective of each component in the incinerator train.

3.4.6 Turbine Generators and Auxiliary Boilers

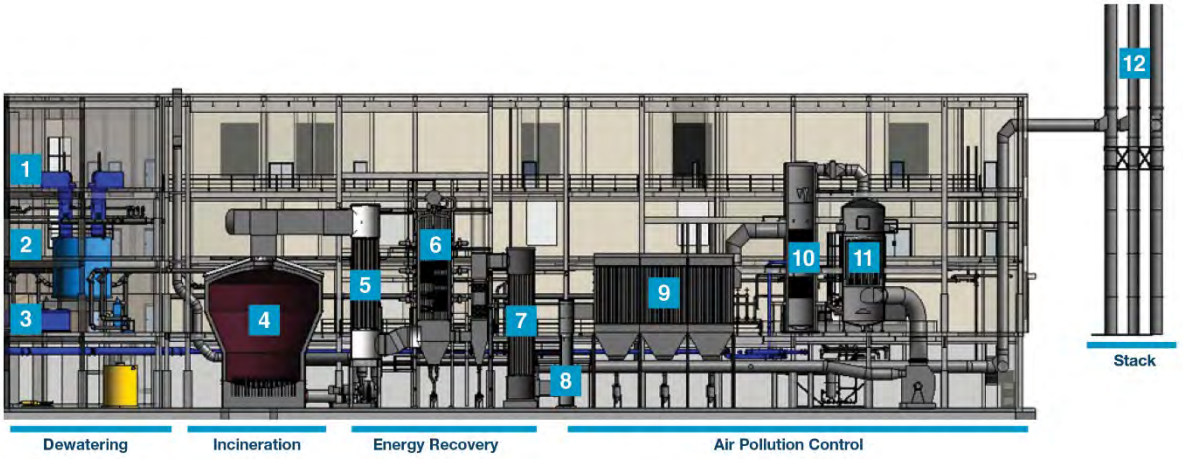
High-pressure steam (450 pounds per square inch [psi]) from the waste heat boilers (WHBs) is used in the winter to heat the plant and used in the summer to produce electricity in the 4.75-megawatt condensing steam turbine generator. This generator and the auxiliary condenser were installed with construction of the SMB. The auxiliary condenser condenses excess steam and is sized to handle all steam from the WHBs in the event of a turbine shutdown.

One smaller, non-condensing steam turbine generator (0.75 megawatts) was added in 2013 to recover energy that would otherwise be lost at the steam pressure reducing station.

Two auxiliary boilers provide 150 psi steam to supplement the steam distribution system, as needed.

3.4.7 Ash Collection and Conveyance from Solids Management Building

The Metro Plant has a dense phase ash conveyance system, which was installed with the original construction of the SMB. One ash conveyance system for each incinerator collects ash from the bottom of the WHBs and the baghouses and sends that ash to two intermediate storage bins located in the SMB. Two parallel ash conveyance systems transport ash 1,500 feet from the storage bins to ash storage and loadout at the east end of the previous incineration building.



1 DEWATERING CENTRIFUGE

Thickened sludge is pumped into a dewatering centrifuge which spins at 2,600 rpm to increase solids concentration from 5% to 28% to a consistency similar to moist soil.

2 CAKE BIN

Dewatered "cake" falls into a cake bin. A sliding frame and an extraction screw conveyor feeds cake into the cake pump.

3 CAKE PUMP

A hydraulically powered piston pump feeds cake through pipes to the fluidized bed incinerator.

4 FLUID BED INCINERATOR

The cake combusts at a temperature of 1,375°F in a bubbling sand bed. Combustion reduces the volume of cake by 95% and eliminates bacteria. The fluid bed incinerators are operated within specified temperature ranges to meet nitrogen oxide standards. Complete combustion minimizes carbon monoxide.

REMOVES: NOx, CO

5 PRIMARY HEAT EXCHANGER

Hot flue gas leaving the incinerator is recovered to preheat the fluidizing air entering the bottom of the incinerator.

6 WASTE HEAT BOILER

The waste heat boiler recovers heat from the flue gas by converting water pumped through hundreds of metal tubes into steam.

7 SECONDARY HEAT EXCHANGER

The secondary heat exchanger recovers heat from the flue gas to evaporate water vapor in the stack, which removes any visible plume.

8 CARBON TOWER

Carbon is injected into the flue gas to remove mercury.

REMOVES: Hg

9 BAGHOUSE

The baghouse uses 816 filter bags to remove particulates which include injected carbon and heavy metals. The particles collected on the outside of the bags fall to bottom in the form of ash.

REMOVES: TSP, Cd, Hg, Pb

10 WET SCRUBBER

Water is sprayed into the wet scrubber to cool the flue gas and remove remaining particulates. Caustic is added to neutralize acid gases.

REMOVES: TSP, SO_2, NOx, Cd, Hg, HCl, Pb, PCDD/PCDF

11 WET ELECTROSTATIC PRECIPITATOR

Electrically charged metal rods remove any remaining very fine particulates and heavy metals from the flue gas.

REMOVES: TSP, Cd, Hg, Pb

12 STACK

Emissions leaving the stacks are clean, odorless, colorless, and have no visible plume.

Figure 4. The Metro Plant Incinerator, Energy Recovery, and Air Pollution Control Equipment

3.4.8 Sludge Loadout

Two sludge loadout trains—each consisting of one intermediate storage bin for lime kiln dust, one intermediate storage bin for ash, and one pug mill—are located in the SMB. These facilities are used to stabilize solids prior to landfill disposal when loadings exceed available storage and incinerator capacity.

During sludge loadout, ash and lime kiln dust is transported 1,500 feet from the large storage silos to four, 10-ton capacity day bins located in the SMB. Sludge cake from the SMB is pumped to cake hoppers. Augers transport the ash, lime, and cake into a mixer that blends the admixture to a chute that drops into a truck parked in one of two bays of the loadout garage.

3.5 Ash Loadout and Storage

Ash is transported from the SMB approximately 1,500 feet to six of seven large storage silos (one silo is reserved for lime kiln dust); each silo stores 600 tons of material.

Commissioned in 1983, the eight concrete ash silos receive about 40 tons per day of ash from the SMB. Ash from storage silos 1 through 7 is conveyed to the ash truck loadout garage where water is added to moisten the ash for dust control. Stored ash from storage silos 2, 4, and 6 can also be routed to the alkaline sludge loadout along with lime kiln dust from storage silo 8.

4.0 Assessment of Existing Solids Treatment Facilities

Solids Treatment Facilities were compared against current and intended future requirements for capacity, condition, and level of service. Level of service requirements include permit compliance, reliability, flexibility, operability, and maintainability.

Project scope items identified by this assessment and included in this Facility Plan are marked with an "∗."

4.1 Sludge Thickening

Condition, capacity, and level of service requirements for the gravity and flotation thickening processes, which have been addressed under other programs, are considered adequate for this Facility Plan.

4.2 Sludge Storage

The following condition and level of service deficiency will be addressed by sludge storage pumping improvements included in this Facility Plan:

- ∗ Six SST pumps are nearing the end of their service life and need to be replaced: two centrifugal pumps, two piston pumps, and two progressing cavity pumps.

Two replacement progressing cavity pumps, sized the same as the existing two progressing cavity pumps, will provide firm capacity for sludge storage transfer through the planning period.

4.2.1 Sludge Storage Tanks

Capacity, condition, and level of service of the SSTs are considered adequate through the planning period. Sludge storage capacity provides between 14 and 21 days of storage with two incinerators operating (one incinerator train out of service).

Air mixing of gravity thickened sludge in SST 5 through SST 8 is prone to diffuser fouling and filling of the air piping with sludge. Currently, mixing air is delivered by blowers through rubber duck-bill type check valves. Mixing improvements are included in the design phase of another project separate from this Facility Plan.

4.2.2 Sludge Storage Tank Pumps

Capacity of the SST pumping systems is sufficient to transfer solids between tanks and to transport solids to the SMB through the planning period. Six SST pumps are nearing the end of their service life: two centrifugal pumps, two piston pumps (installed in 1980), and two progressing cavity pumps (installed in 1997). One of the progressing cavity pumps is currently inoperable.

Due to poor suction piping configuration, the bottom 5 feet of SST volume (150,000 gallons total volume) cannot be emptied with any of the six progressing cavity pumps used for transferring sludge to SMB. Therefore, this volume is not available for storage during normal operation, and other pumps are needed to empty a storage tank for maintenance.

Transfer of sludge between SSTs for maintenance purposes is provided by one centrifugal pump and one piston pump for SST 1 through SST 4, and by one centrifugal pump and one piston pump for SST 5 through SST 8. The centrifugal pumps provide quick draw down to less than 1 foot; the piston pumps are slower, but completely empty a given SST.

4.3 Solids Management Building

4.3.1 Scum Concentration Dumpsters

MCES plans to incinerate scum, which has a heating value of 15,000 BTUs. Scum incineration will increase the sustainability of Metro Plant solids processing, and it will increase the amount of energy recovered at the SMB. Scum processing modifications will be implemented in another project, separate from this Facility Plan.

4.3.2 Sludge Feed Equipment

Capacity of existing sludge feed equipment is sufficient to dewater solids and to deliver dewatered solids to the existing incineration system. The recommended alternative for increasing solids processing capacity (see Section 7) requires additional sludge feed equipment, as selected for the recommended alternative to connect to the existing system.

Polymer storage and blending tanks are sufficient to meet existing and future requirements.

The following are capacity, condition, and level of service deficiencies in the sludge feed equipment that will be addressed by this Facility Plan:

* Additional sludge feed equipment is needed to connect the recommended alternative to the existing system for increasing solids treatment capacity.
* Existing cake bins need to be restored and, based on evaluation during preliminary design, the extraction screws will be replaced with larger ones.
* Additional cake pump capacity is needed to improve reliable service.

Figure 5 shows available routing of sludge through the existing sludge feed equipment.

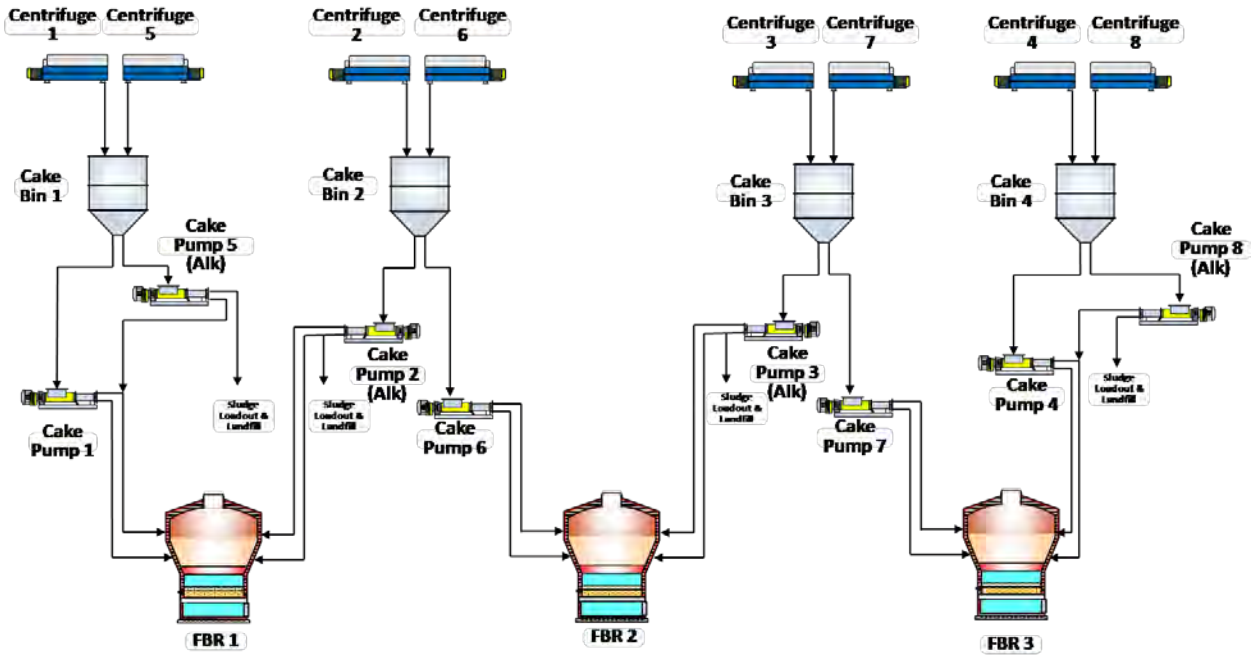


Figure 5. Metro Plant Solids Routing Options from the Centrifuges to the Incinerator

Centrifuges require ongoing maintenance within expected parameters. The time to repair one centrifuge can be long (occasionally more than 12 months), and SMB has two spare rotating assemblies to reduce the mean time for repair.

The cake bins have experienced corrosion and have been reskinned with stainless steel and painted patches. Extraction screws are worn and need to be replaced with higher-capacity units; extraction screws occasionally limit incinerator feed.

The existing system lacks flexibility to feed dewatered sludge from a given centrifuge to all incinerators. For example, dewatered sludge discharged from two centrifuges into cake bin 4 cannot be routed to Incinerator 1 (see Figure 5). Two cake pumps are required to feed each incinerator. Incinerators 1 and 3 each have a standby cake pump; Incinerator 2 does not. The result is that the right combination of six operating centrifuges and six operating feed pumps are needed to fully feed three online incinerators.

Additional cake pump discharge piping to improve system flexibility is currently being designed and implemented in another project, separate from this Facility Plan. This Facility Plan provides for increasing the capacity of each pump with an original equipment manufacturer (OEM) standard retrofit kit so that only one pump is required to feed each incinerator, which will further improve system flexibility.

4.3.3 Incinerator Train

The reliable capacity of one incinerator train in good condition is 90 dtpd,[1] and the reliable system capacity of three incinerator trains is 270 dtpd. Reliable system capacity is sufficient to

[1] Based on MCES experience at the Metro Plant:
Maximum capacity per train = 125 dtpd during optimum operating conditions
Average maximum capacity per train = 106 dtpd averaged over varying operating conditions

treat current peak month solids loadings. However, additional solids treatment capacity is needed to perform the renewal work included in this Facility Plan and to process future solids loadings in a sustainable manner.

Two to three incinerator trains operate continuously to manage sludge inventory in the SSTs. Typically, one incinerator train can be down for a period of approximately 2 weeks before storage capacity is exceeded. MCES schedules two, 2-week preventative maintenance shutdowns per year for each incinerator train. In the event of extended shutdowns, due to the failure of any component of the train or for planned renewal work,[2] excess sludge is loaded out to a landfill to prevent sludge overflow at the SSTs. On occasion, MCES has curtailed preventative maintenance to avoid landfilling.

As equipment ages, it becomes less reliable causing an increase in the number of unplanned shutdowns and a corresponding decrease in system service availability. The net effect is reduced reliable system capacity. At any given time, a portion of the service availability can be recovered through renewal and replacement of system components.

The 2015 Solids Processing Improvements Project recovered reliable system capacity (system service availability increased from 0.75 to 0.85). During renewal, MCES landfilled 105,000 wet tons of sludge (5 percent of production).

As a part of this planning effort, MCES performed a Monte Carlo risk analysis to evaluate the risk of deferring additional solids treatment capacity through the planning period. This risk analysis used historic Metro Plant data, including planned and unplanned outages, variability in solids loading, and variability in SST level. The computer model applied future solids increases of 2 dtpd per year and scheduled renewal periods of 90 days per incinerator every 10 years to predict impacts on sludge storage and loadout requirements.

Results of the Monte Carlo risk analysis, which are included in Appendix H, are summarized as follows:

1. Sludge loadout will increase to 12 percent of annual solids loading by the end of the planning period and it will reach 15 percent during renewal periods. The estimated additional total landfill volume that would be required, without the fourth incinerator, is 2.9 million cubic yards.
2. Sludge storage will be full 1 to 2 times per year; 2.5 times during renewal periods

These risk values, which are anticipated to be higher for more extensive renewals, are not mitigated by modelled increased system reliability input (that is, service availability greater than 0.85). Curtailing maintenance is more effective than increasing system reliability at controlling inventory in the sludge storage tanks during non-renewal years, but this practice is not recommended because it shortens equipment service life and increases the risk of permit non-compliance. Curtailing maintenance is not effective for controlling inventory during renewal

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Reliable capacity per train = average maximum capacity x SERVICE AVAILABILITY
= 106 dtpd x 0.85
= 90 dtpd

Note: A service availability factor of 85 percent accounts for down time needed to perform maintenance, 41 days of planned maintenance plus 21 days of unplanned maintenance (54 days/365 days = 0.85).

[2] During the 2014 renewal project.

periods. Future requirements for landfilling Metro Plant solids, as determined using the Monte Carlo type risk analyses, do not meet the MCES level of service objectives for sustainability, asset preservation, or customer service.

The following are capacity, condition, and level of service deficiencies in the existing incinerator train that will be addressed by this Facility Plan. The reliable capacity of the incineration system is insufficient to perform renewal work and to serve regional growth in a sustainable manner.

Fluid Bed Incinerators

* The incinerator air distribution system needs to be renewed for three incinerators. The expansion joints need to be rehabilitated and damaged and plugged tuyeres need to be replaced. A new tuyere layout is proposed to address the most problematic outer rows of tuyeres.
* The refractory and shell need to be restored in targeted areas.
* The water sprays need to be rehabilitated using better materials.
* The overfire air system needs to be restored.
* The burners should be replaced with low NOx type burners and heat-up control.

Fluidizing Air Blowers and Flue Gas Duct

* The discharge check valves need to be replaced with improved design for longer service life.
* Hydraulic improvements, for example, baffles, should be implemented to mitigate duct erosion, based on hydraulic analysis during preliminary design, and expansion joints may need to be replaced.

Primary Heat Exchangers (pHEX) Renewal

* The pHEXs need to be renewed due to their 10-year expected service life.

Waste Heat Boilers Renewal

* Tubes should be replaced or shielded based on thickness measurements taken near the time of construction.
* Tube supports need to be re-designed to mitigate erosion and to accommodate increased steam production.

Baghouse Renewal

* The baghouse hoppers, which have been temporarily patched, need permanent repair, or replacement (to be determined based on an alternatives evaluation during preliminary design).

Wet Electrostatic Precipitator (ESP) Electrical Upgrades

* The mist eliminator needs to be upgraded with a larger and/or different type unit to achieve target wet ESP operating voltages.

4.3.3.1 Fluid Bed Incinerator

The FBI is shown, with the pHEX, in Figure 6. The incinerator unit is connected to the pHEX through the crossover duct.

The capacity of each FBI is 91,000,000 million BTUs per hour. This capacity corresponds to 130 dtpd throughput of sludge with a specific volatile solids content and water content, for a short duration and when the incinerator is in like-new condition.[3] The capacity of the FBIs is a function of fuel quality, physical limitations, and thermodynamics. The fuel quality anticipated in the original design had fewer volatile solids than the actual loads currently being received. The water content of the feed is based on the sludge blend ratio of gravity and flotation thickened sludges.

Typical FBI bed temperature ranges from 1,350 degrees Fahrenheit (°F) to 1,375 °F. The pHEX inlet temperature the crossover duct is maintained below 1,600 °F to limit the pHEX exit temperature to 1,325 °F, which is the outlet nameplate rating. Cooling water sprays at the top of the incinerator suppress the temperature in the crossover duct as needed. Elevated temperatures above about 1,600 °F in the bed or in the crossover duct will melt the ash into hard rock (known as slagging) and cause an incinerator shut down.

The structural joint around the metal plate is damaged and leaks sand into the plate expansion chamber. If the plate is unable to move freely within the expansion chamber, the plate might shift or catastrophically fail. Strain gauges installed on each incinerator during the 2015 Solids Processing Improvements Project are used during startups to measure plate expansion, and thus far, no shifts have been detected.

About 65 of 1,300 tuyeres in each reactor are plugged. Up to 130 tuyeres (10 percent) can be plugged without impacting fluidization, if the plugs distributed evenly across the plate.[4] The tuyere damage that has occurred in the Metro Plant incinerator is concentrated in areas close to the incinerator walls and appears to be related to differential expansion between the metal plate and the plate's refractory cap. A new layout that removes the outer row and replaces the next two inner rows with higher-flow bubble caps has been proposed by the incinerator design engineer, Brian Copeland. Renewal of the incinerator air distribution system, including the structural joint around the metal plate and tuyeres, will require an extended shutdown, greater than 9 to 12 months.

[3] During construction, each new incinerator was demonstrated at 130 dtpd, hence the maximum permit limit.

[4] Brian Copeland, incinerator design engineer

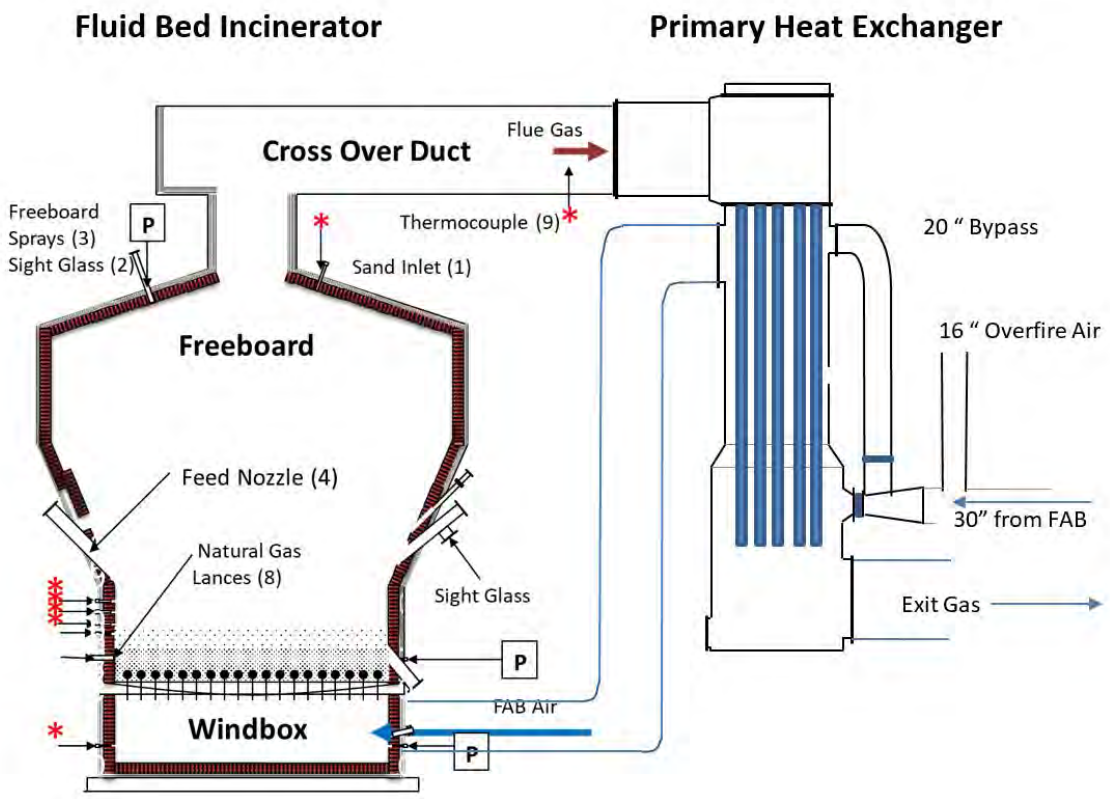


Figure 6. Fluid Bed Incinerator and Primary Heat Exchanger

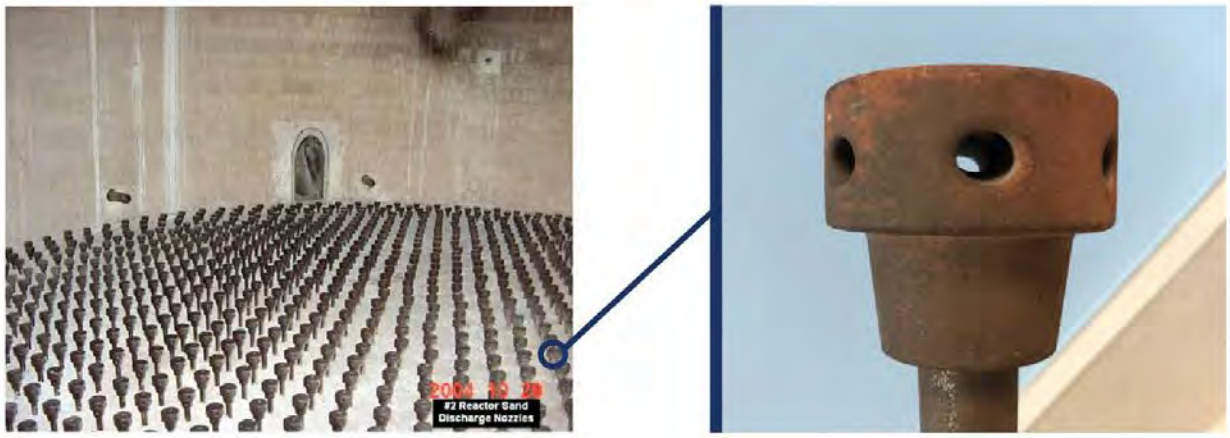


Photo 2. 1,339 tuyeres, which are 1-inch-diameter pipes with bubble caps, deliver combustion and fluidizing air to the incinerator

Water sprays require excessive maintenance to keep them in proper working order; due to extreme temperatures and the corrosive environment in the freeboard area, the nozzles are prone to falling off and the water jackets frequently leak.

The pre-heat burners used for startup are near end of service life and need to be replaced. Low NOx type burners would reduce the plant's Potential to Emit (PTE) level for NOx.

The cake feed ports were originally designed as an over bed feeding system with steam and compressed air addition at the entry point to facilitate distribution of the cake feed. These facilitators were difficult to keep in operation and have been abandoned. Follow-up testing of the feed system shows that adequate distribution is achieved by the over bed feeding without the use of supplemental systems.

The overfire air system, which was installed with the 2015 Solids Processing Improvements Project, is plugged with ash. The overfire air system re-directs some of the fluidizing air from the bottom of the bed to the top of the bed and is designed to increase the capacity of burning wet sludge. Although this feature has been found to be ineffective, overfire air should be restored to provide operation flexibility in controlling NO_X emissions.

4.3.3.2 Fluidizing Air Blower, Induced Draft Fan, and Flue Gas Ducts

The duct system that carries flue gas through the heat recovery and air pollution control equipment for each incinerator train is a push-pull system; a Fluidizing Air Blower and an Induced Draft Fan work together to maintain a zero-pressure set point at the top of the incinerator. The capacity of the Fluidizing Air Blower is 20,000 cubic feet per minute, which is sufficient to fluidize the bed and to provide excess oxygen for the combustion process. The capacity of the Induced Draft Fan is 23,000 cubic feet per minute at 100" w.c., which is sufficient to pull flue gas through to the stack. Replacement of the Induced Draft Fan motors in the 2015 Solids Processing Improvements Project allowed the fans to operate consistently below the motor service factor.

The check valves on the Fluidizing Air Blower discharge piping prematurely failed and have been removed. These check valves need to be replaced and re-designed for a longer service life.

The harsh environment created by flue gas and maldistribution of ash in the flue gas stream has caused corrosion and erosion issues at various locations within the heat recovery and air pollution control equipment (as discussed under those sections) and within the duct segments between equipment (discussed herein).

Leaks in the flue gas duct have been attributed to erosion of the expansion joints and localized corrosion of the carbon steel duct at cold spots. Because the duct is operated at negative pressure, any holes draw air from the environment and rob induced draft fan capacity. As rule of thumb, air in-leakage of greater than 25 percent of the total flow should be corrected. Leak mitigation improvements implemented in the 2015 Solids Processing Improvements Project reduced air in-leakage, as determined from oxygen measurements, from 50 percent to 20 percent.

The carbon steel crossover duct experienced severe corrosion and was replaced with stainless steel in the 2015 Solids Processing Improvements Project. Corrosion was caused by a failure of the insulation and coating system. As the hot acid gases moved through cracks in the refractory, the acids cooled and condensed, which corroded the duct. The expansion joints that were replaced throughout in the 2015 Solids Processing Improvements Project are anticipated to need another renewal by the time of construction (based on a condition assessment and alternatives evaluation during preliminary design.)

4.3.3.3 Primary Heat Exchanger

The capacity of the pHEX is aligned with the capacity of the incinerator.

The pHEXs were replaced during the 2015 Solids Processing Improvements Project. Upon inspection of those units, cracks between the heat exchanger pipes and the tube sheet were found that would have eventually caused the tubes to fall out of the tube sheet (as has been experienced at other facilities). Because the expected service life of the pHEX is 10 years, these units should be renewed under this Facility Plan.

Photo 3. Cracking in the primary heat exchanger tubes at the tube sheet will cause the tubes to fall out of the tube sheet.

4.3.3.4 Waste Heat Boiler

The WHB system includes one unit that houses two banks of water tubes, called super heaters and five banks of water tubes, called evaporators; the second unit houses two banks of water tubes, collectively called the economizer. These WHB components are shown in Figure 7.

The WHB produces approximately 30,000 pounds of steam per hour at a pressure of 450 psi and is sufficient for normal operating conditions.

Occasionally, when processing dry sludge, operators must reduce incinerator feed to reduce the inlet temperature to the WHB. Re-evaluation of the steam system for actual operating conditions by the original equipment manufacturer indicates that the WHB can be re-rated if superheater supports are re-designed.

WHB leaks are the biggest factor in the loss of run time for the incinerator trains. The unpredictability of the leaks and efforts to quickly mitigate leaks to avoid landfilling places significant pressure on operating staff. A summary of the shutdowns resulting in WHB tube leaks is shown in Figure 8.

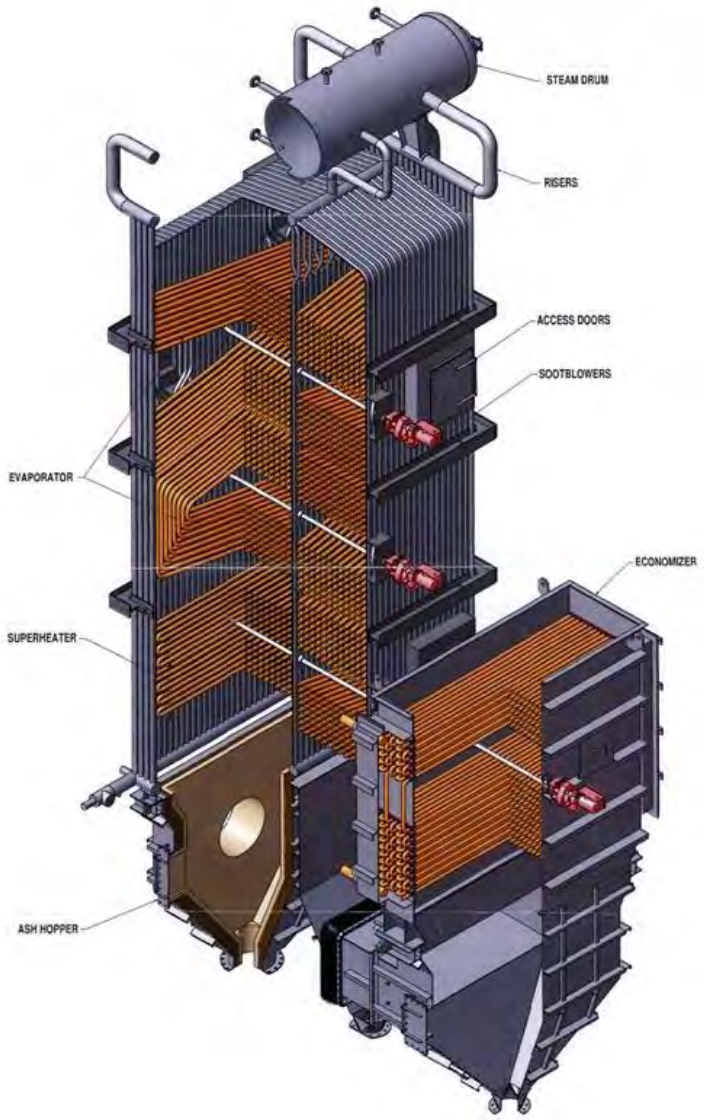


Figure 7. Waste Heat Boiler Components

The WHB experienced leaks during commissioning that were attributed to fabrication defects, and subsequent boiler leaks (prior to the failure of the economizer in incinerator train 2) were considered acceptable because the annual cost of repair was a small percentage of the capital cost for a new WHB. As a part of this planning effort, MCES began mapping WHB leaks and collected samples of damaged tubes for evaluation. Whole banks of tubes were targeted (based on leak history) for replacement during the 2015 Solids Processing Improvements Project to complete forensic analyses on the existing tubes. MCES also completed a hydraulic analysis.

Following the 2015 Solids Processing Improvements Project, MCES implemented a continuous renewal strategy consisting of tube replacement and shielding. The boiler tube repair and replacement schedules are presented in Table 8. This strategy and the 2015 Solids Processing

Improvements Project have reduced the number of days down due to boiler leaks from 109 days in 2012 to 46 days in 2017, which is considered acceptable.

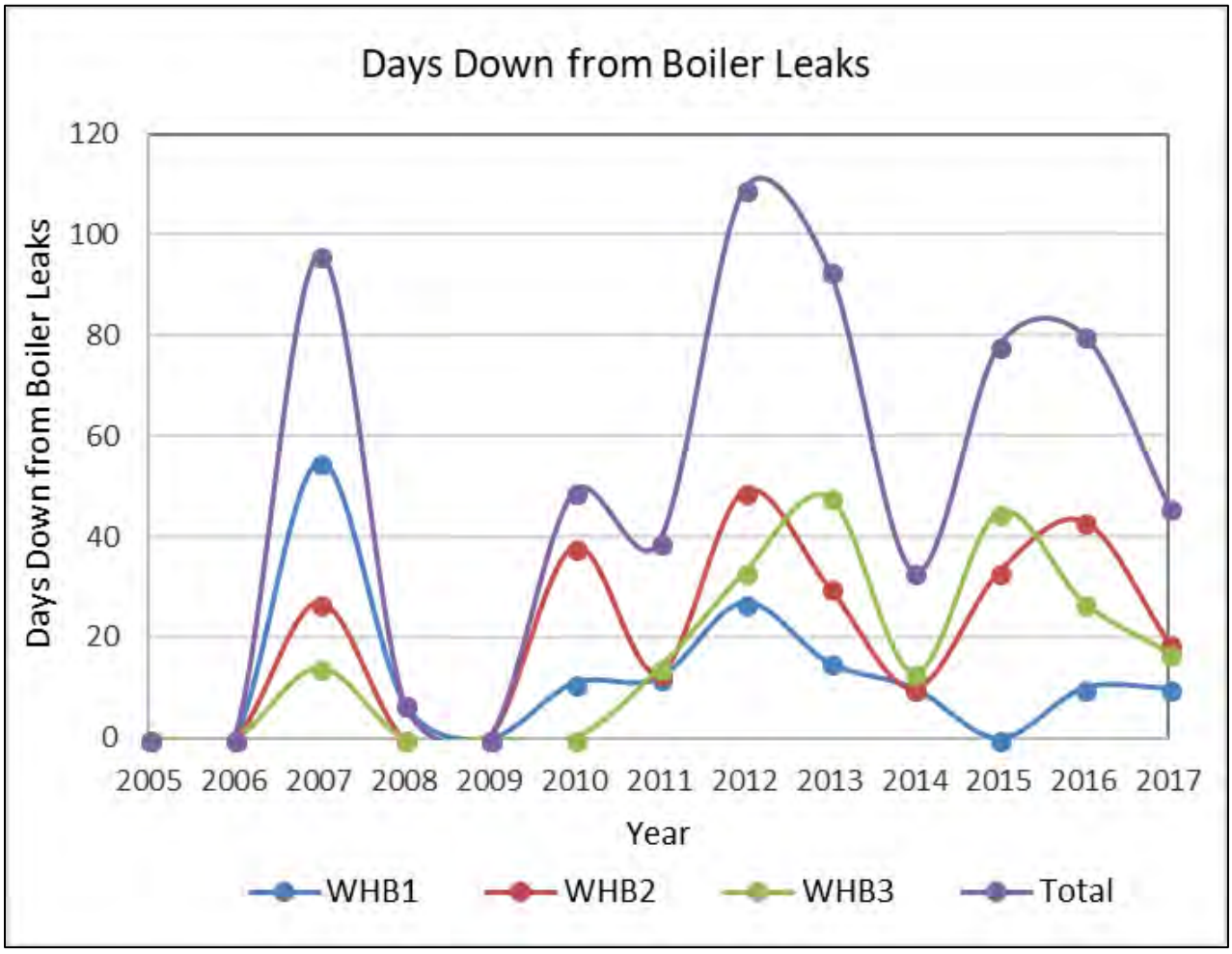


Figure 8. History of Incinerator Shutdowns Due to Waste Heat Boiler Leaks

Table 8. Boiler Tube Repair and Replacement Schedules

	Preventative Repair Criteria	
2" Evaporator UT Measurement	**1 1/4" Superheater and Economizer UT Measurement**	**Repair**
0.15 – 0.12 inches	0.16 – 0.13 inches	Install tube shield
0.12 – 0.08 inches	0.13 – 0.09 inches	Pad weld and install tube shield
0.08 inches or less	0.09 inches or less	Replace tube segment and install tube shield
0.17 – 0.11 inches	0.12 – 0.08 inches	Pad weld
0.11 inches or less	0.08 inches or less	Replace tube segment and install tube shield
	Boiler Tube Replacement Frequency	
Superheater Bundle	11 – 22	2
Evaporator Harp	5 – 10	3
Evaporator Bundle	15 – 30	10
Economizer Bundle	25 – 50	2

4.3.3.4.1 WHB Inlet Duct

Connecting ducts between the WHB and the pHEX have exhibited erosion damage, which has been repaired and baffles have been installed to straighten out the velocity and particle distribution in the gas flow.

4.3.3.4.2 WHB Superheaters and Evaporators

Leaks occur at discontinuities, for example, tube supports, access doors, which create highly erosive eddies. Leaks also occur at tubes closest to the waterwall, at bends, and connections to the waterwall. Computer analysis of the particle velocity distribution confirms that a greater number of particles are hugging the waterwall and velocities are higher near the waterwalls.

During the 2015 Solids Processing Improvements Project, MCES observed that most of the tubes have 70 percent or more of their wall thickness (a corrosion/erosion allowance), and some tubes next to the WHB walls, where most of the leaks have occurred had been flattened on one side next to the waterwall by erosion.

4.3.3.4.3 WHB Economizer

In 2014, during construction of the renewal project, the economizer in incinerator train 2 experienced catastrophic failure. In response, MCES authorized a change order to the construction contract that replaced all economizers and incorporated design improvements.

The economizer removed from incinerator train 2 weighed about 10 tons more than it weighed upon installation. Ash had filled chambers between the tube sheets and the outer housing, and

a growth of hardened ash had blocked about half of the cross-sectional area, which doubled the velocities through the unit. Forensic examination of one of the tubes determined that abrasion between the tube and the tube sheet caused leaks in that area. The tubes were not fixed to the tube sheet to allow for thermal expansion and contraction.

Economizers were constructed with shell material that was too thin. Prior to the 2015 Solids Processing Improvements Project, MCES had to install additional access doors to address premature erosion of tubes along the walls of the units (the outer tubes were coated). While in operation, the economizer housing puffed rhythmically in and out about 2 inches from center.

The new economizers have one less row of tubes (to reduce overall velocity), higher wall thickness (to increase rigidity), and extra thickness of the tubes through the tube sheet.

Photo 4. Forensic examination determined that abrasion between the tube and the tube sheet had caused failures in this area (economizer, incinerator train 2).

4.3.3.5 Secondary Heat Exchanger

The capacity, condition, and level of service of the secondary heat exchanger are sufficient to remove visible water vapor from the stack plume.

The secondary heat exchanger (sHEX) experienced erosion at the pipe inlets, which has been addressed by the installation of abrasion pipe inserts.

The 2015 Solids Processing Improvements Project installed a secondary heat exchanger bypass that diverts a portion of the hot flue gas from the WHB directly to the baghouse. The bypass allows the baghouse to be operated at higher temperatures above 330°F (the dew point temperature of sulfuric acid) to prevent condensation of acid gases inside the baghouse.

4.3.3.6 Baghouse

The capacity of the baghouse is aligned with the particulate loads it receives.

Baghouse condition has been difficult to maintain due to erosion and corrosion. The baghouse was originally designed with a bypass to allow the use of fuel oil for incinerator start up. Fuel oil generates soot, which needs to bypass the baghouse to prevent soot blinding of the bags. These bypasses were severely corroded and would not shut off completely during normal operation, resulting in ash carryover to the scrubber. Although the scrubber removed ash, the scrubber water recycled ash (mercury-laden carbon contained with the ash in the flue gas) back

to secondary treatment and elevated effluent mercury concentrations. Because MCES uses natural gas instead of fuel oil for startup, in 2015 Solids Processing Improvements Project these bypasses were removed, rather than rehabilitated, to reduce the amount of ash carryover into the scrubber.

To address severe corrosion observed on the baghouse covers, the original carbon steel covers with insulation lining on the inside were replaced with stainless steel, externally-insulated covers. As noted under Section 4.3.3.5, a secondary heat exchanger bypass has been installed to elevate temperatures inside the baghouse to prevent corrosion caused by acid gas condensation.

Erosion has been observed inside the baghouse. If bags are missing or torn, ash impinges on the cleaning apparatus, eroding away the apparatus over a 2-year operating period.

Currently, there are holes in all baghouse hoppers (due to erosion) that have been temporarily patched. Rehabilitation (or replacement) of the hoppers, which are constructed of 1/4-inch welded steel plates, will require an extended shutdown of the incinerator train, anticipated to be between three and six months. Each baghouse is 12 feet wide by 37 feet long and 30 feet tall with three hoppers.

Baghouse reliability is needed to prevent mercury-laden carbon contained in the flue gas from entering the wet scrubber and recycling back with the scrubber water through secondary treatment. Mercury can build up in the secondary treatment system to cause exceedance of permitted effluent limits. The cloth filter bags must be monitored and replaced when damaged. MCES' current maintenance strategy, which involves dye testing the bags during preventative maintenance and monitoring mercury in the scrubber water recycle, has been effective in controlling effluent mercury. The baghouse can operate with one chamber out of service with no increase in solids loadings to the scrubber.

4.3.3.7 Wet Scrubber

The wet scrubber is the ring-jet type and has three sections. The first section is a once-through cooling section, the second section is a recirculating acid gas removal section with caustic addition, and the third section is an impingement water spray section where particulates are removed. Capacity and condition of the wet scrubber are sufficient.

Caustic addition has been optimized so that the minimum amount of chemical is needed to control sulfur dioxide emissions.

The scrubber uses plant effluent water for cooling, particulate removal and caustic dilution. To increase cooling, MCES increased the quench from 175 gallons to 225 gpm. Additional cooling was accomplished at the packed tower by increasing the size of the seven nozzles from 3/4-inch to 1 inch. These modifications effectively removed more condensable particulates.[5] Additional scrubber modifications to further increase the removal of condensable particulates are currently being designed and implemented in a project, separate from this Facility Plan.

[5] Flue gas cooling increases with cooler water and higher water flow rates. Condensable particulates decrease with lower flue gas temperature.

4.3.3.8 Wet Electrostatic Precipitator and Mist Eliminator

Capacity and condition of the wet electrostatic precipitator (wet ESP) are sufficient. MCES has recently (2017) upgraded the controls in accordance with the manufacturer's recommendation.

Performance of the wet ESP is sufficient to meet existing permit limits. However, desired optimization efforts have been limited by low operating voltages (typically less than 30,000 volts). The target operating voltage is 50,000 volts or more.

Engineering emissions tests conducted for this Facility Plan suggest that 1) lower emissions levels for particulates (specifically PM2.5)[6] and lead can be achieved with higher operating voltage in the wet ESP and 2) higher operating voltage can be achieved by reducing the water vapor at the inlet to the wet ESP.

Wet ESP performance is limited by the mist eliminator and should be replaced with a larger or different type unit that removes more water vapor so the wet ESP performance can be optimized.

4.3.4 Boiler Makeup Water System

The capacity, condition, and level of service of the boiler makeup water system are sufficient for the existing system. Additional capacity will be needed, as required to align with the recommended alternative for increasing solids processing capacity.

4.3.5 Carbon Storage and Delivery System

Capacity and condition of the carbon storage and delivery system are sufficient.

Operation has experienced plugging at the inlet of the storage tank. Because the reliability of this system is critical for the operation of all three incinerator trains, the following is a level of service deficiency in the carbon storage and delivery system that will be addressed by this Facility Plan:

- An additional carbon storage tank with manual load-in is needed to improve system reliability.

4.3.6 Steam Turbines and Auxiliary Boilers

Capacity and level of service for the steam turbines and the auxiliary boilers are sufficient through the planning period. The steam heat and electric power generation system provide the flexibility to optimize energy use, based the purchase prices of natural gas and electricity.

The following potential condition deficiency of the steam turbines will be addressed by this plan:

- The steam turbines will be replaced, pending a condition assessment during design.

The condition of the auxiliary boilers is considered adequate.

The future condition of the steam turbines at the time of renewal construction is questionable. The expected service life of a steam turbine is around 20 years, and the maintenance requirements are increasing for the condensing steam turbine. The turbine rotor was repaired in 2009 due to high vibration and moisture entering the steam supply. The generator rotor was

[6] PM 2.5 is a subset of total particulates that have a diameter equal to or less than 2.5 microns.

rewound in 2015 due to high vibration. A new generator rotor was ordered in 2018 due to continued vibration issues.

4.3.7 Ash Collection and Conveyance from Solids Management Building

Capacity and condition of ash collection and conveyance from SMB are sufficient. The following is level of service deficiency that will be addressed by this Facility Plan:

* Dense phase transport of ash from the WHB and baghouse needs to be replaced with a vacuum type system to mitigate ash deposition on equipment and structures within SMB.

Although it would be advantageous to replace the other segments of dense phase transport system between the SMB and FI2/408 with a vacuum type system, the distance of the other segments is beyond the capability of vacuum transport.

The dense phase ash transport to the storage silos is continuous, and it requires frequent maintenance and testing to maintain its reliability. Because it directly affects incineration capacity, ash collection and conveyance from SMB is well maintained. Control valves, air booster stations, and pipe sections and fittings are programmatically replaced.

The dense phase transport system often plugs around the air booster stations. Frequent small erosion leaks from control valves and piping, dispense material that accumulates as an unsightly dust layer on the operating floor, equipment and internal building structures within a wide area. This creates a housekeeping burden that could be alleviated with a vacuum transport system.

A vacuum transport system is vulnerable to erosion leaks, but air would leak into the hole rather than out of it.

4.3.8 Sludge Loadout and Landfill

Capacity, condition, and level of service of the sludge loadout and landfill system are insufficient to reliably backup one incinerator train through the planning period. The deficiencies described herein are being designed and implemented in a current project, separate from this Facility Plan, to address reliability needs until additional solids processing capacity can be constructed.

System design capacity of 188 dtpd is limited to 93 dtpd. Only one train can be operated at a time. The transport rate of lime kiln dust to the SMB is the current limiting factor.

Even though it is the same design used for transporting ash from SMB to the storage silos, dense phase ash transport of ash and lime kiln dust from the storage silos to SMB has been more difficult for MCES to maintain because of its infrequent use. The return ash and lime kiln ash transport systems required significant cost to commission for use during the 2015 Solids Processing Improvements Project.

4.3.9 Solids Management Building HVAC

Capacity, condition and level of service for the SMB HVAC system are sufficient for existing conditions. The recommended alternative for increasing solids treatment capacity may require addition HVAC equipment in SMB.

The following capacity deficiency will be addressed by SMB HVAC Improvements:

* Expand SMB HVAC system as needed to accommodate the alternative recommended for increasing solids treatment capacity.

4.4 Ash Loadout and Storage

Capacity, condition and level of service for ash loadout and storage are considered adequate. The following level of service deficiency may be addressed by **Ash Loadout and Storage Improvements**, based on future needs:

* Miscellaneous instrumentation and control modifications may be needed to facilitate the ash beneficial use program (to be determined during design).

Similar problems with the dense phase ash system occur between the storage silos and the loadout garage, as reported under Section 4.3.7 above. Parts are programmatically replaced, and remote monitoring cameras are used to identify leaks in unstaffed areas.

Miscellaneous control improvements for remote monitoring and/or remote control of equipment at the loadout bays from the SMB operator control room in SMB would support the ash beneficial use program. These improvements, if any, will be determined during design

4.5 Solids Management Building Effluent Water Service

Three effluent water pumps in the Metro Plant tunnels provide effluent water service to the SMB. Condition and level of service of the effluent water service are sufficient through the end of the planning period. Two to three effluent pumps run continuously. The following capacity deficiency in the SMB effluent water service will be addressed by this Facility Plan:

* Additional effluent water flow will be needed in the SMB, depending on the recommended alternative for additional solids processing capacity.

5.0 Alternatives Development

Many alternatives for adding solids processing capacity at the Metro Plant were initially listed for consideration. Some of the alternatives were dismissed for further evaluation because they were obviously more expensive or were not technically sound. For example, MCES dismissed the alternative of alkaline stabilization and land application for the Metro Plant because it was deemed a failed technology.

The initial list of alternatives was narrowed down to the four discussed herein, which maximize the use of the existing incinerators. The four alternatives were further developed conceptually for this evaluation. The alternatives were sized to increase average solids processing capacity by 75 dtpd, which is the difference between the projected average solids load at the end of the planning period (300 dtpd) and an existing system incineration capacity of 225 dtpd.[1]

[1] Incineration system capacity of 225 dtpd corresponds to a low service availability factor of 0.70, experienced prior to the 2015 Solids Processing Improvements Project.

5.1 Alternative 1: Fourth Incinerator

Alternative 1 includes construction of a fourth incinerator train in an expansion of the existing SMB.

The capacity of this alternative is 90 dtpd, which exceeds the required capacity and matches the existing three incineration trains. Improvements currently under construction at the three existing units would be included in the Alternative 1 design. Additional steam turbine capacity would be installed to provide additional energy recovery. The ash product is very high in phosphorus, a fertilizer, which can be recycled for agricultural benefit.

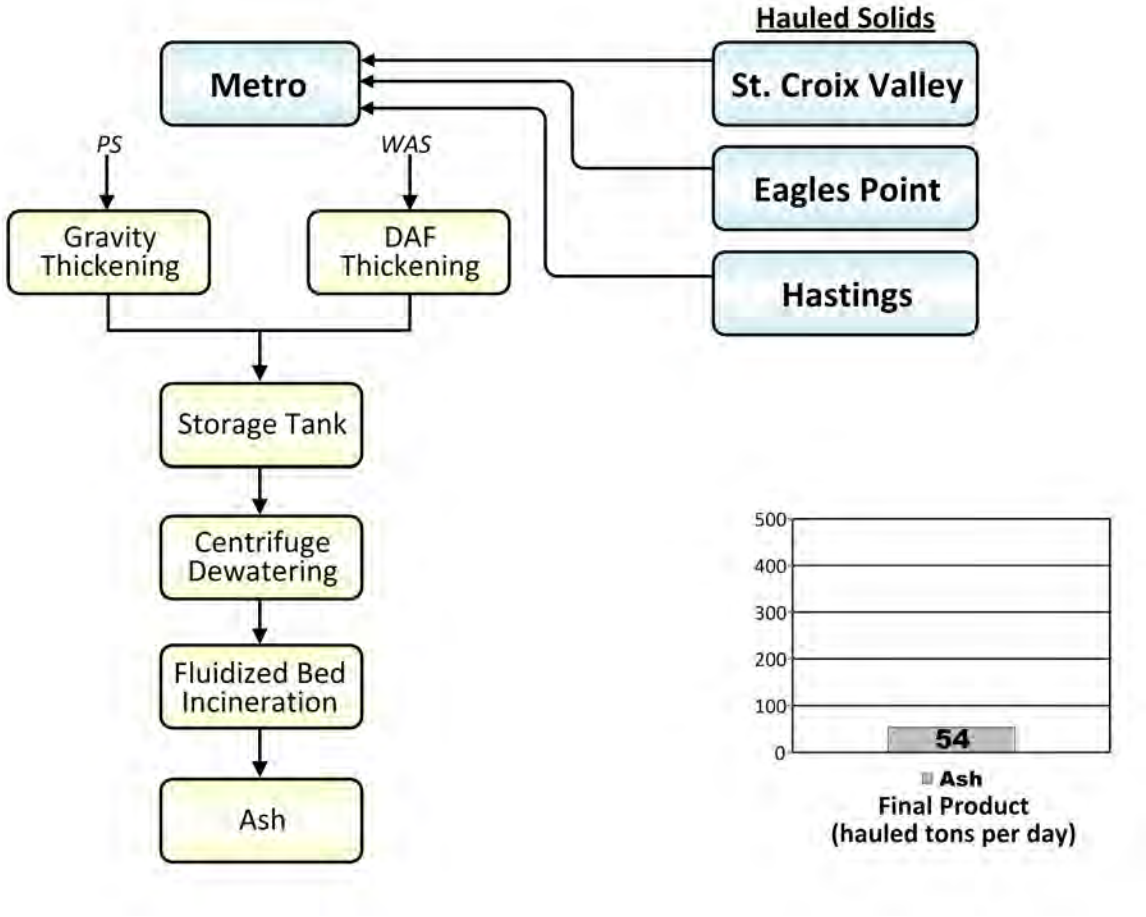


Figure 9. Alternative 1 – Fourth Incinerator

5.2 Alternative 2: Digest and Incinerate

Alternative 2 includes the construction of an anaerobic digestion complex in the space next to the SMB to digest a portion of the solids (150 dtpd). Digested solids would be dewatered and fed to the existing incineration process. Assuming 50 percent solids destruction in the digestion process, loading to the incinerators would be reduced by 75 dtpd (150 x 0.5 = 75).

The digestion complex would be provided with combined heat and power (CHP) engine recovery system, fueled by digester gas.

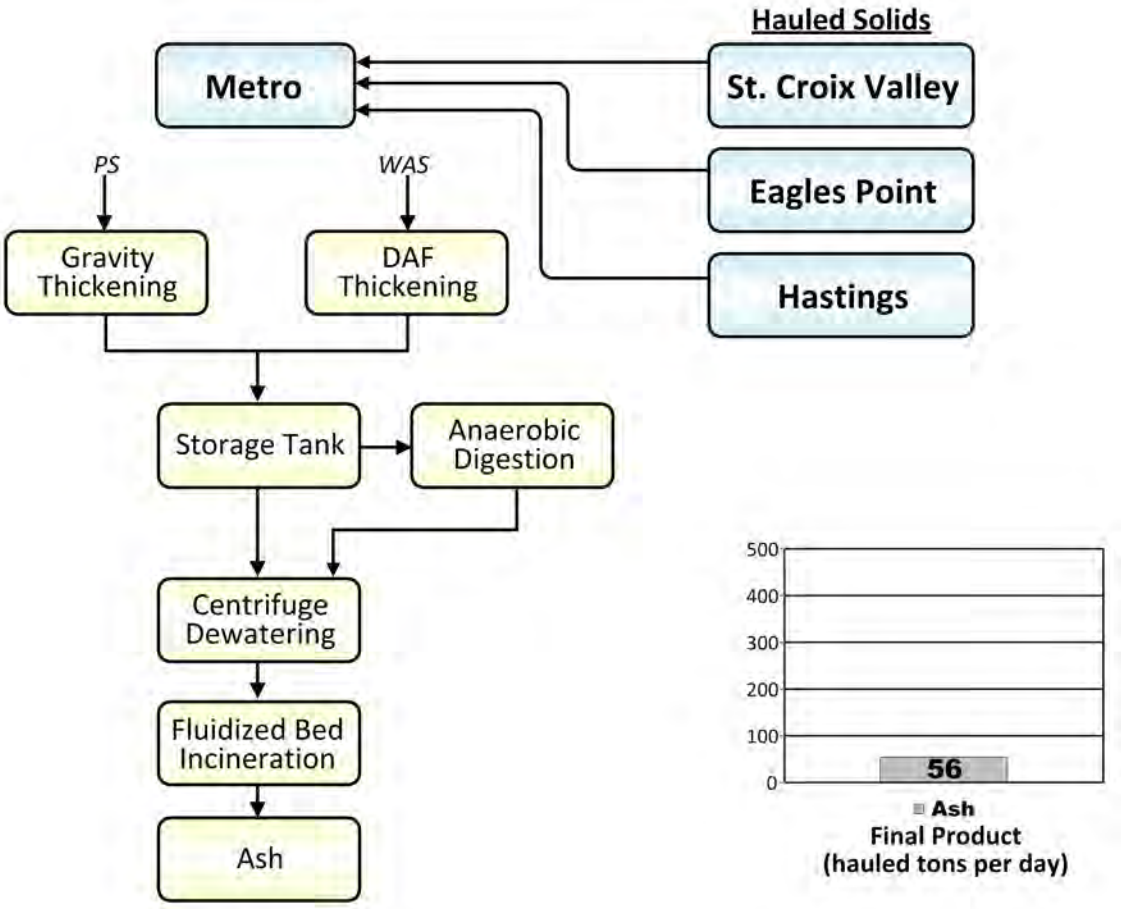


Figure 10. Alternative 2 – Digest and Incinerate

5.3 Alternative 3: Digest, Dry, and Sell

Alternative 3 includes the construction of a digestion complex to digest a portion of the solids (75 dtpd). Assuming 50 percent solids destruction in the digesters, 40 dtpd of digested solids would be dried and pelletized. Pellets would be sold as a fertilizer.

Digester gas would be used as fuel for the drying facilities.

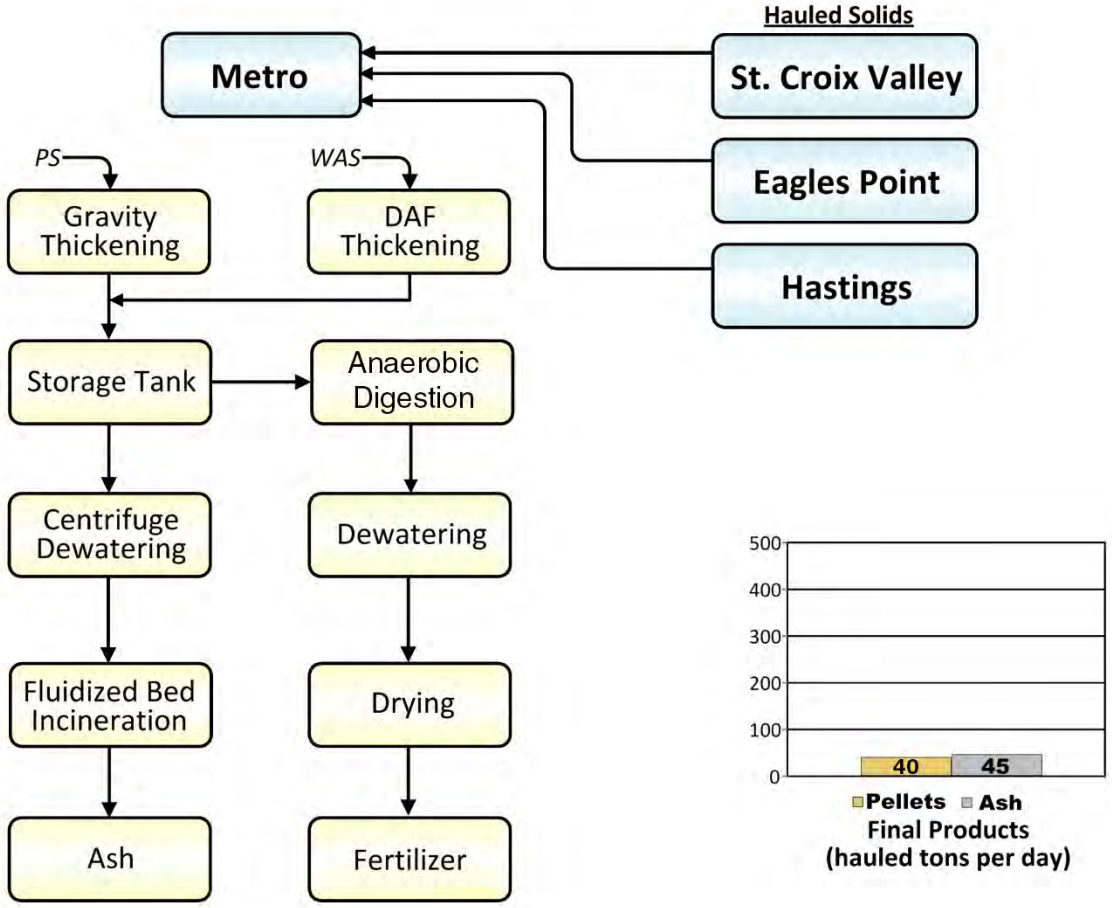


Figure 11. Alternative 3 – Digest, Dry, and Sell

5.4 Alternative 4: Digest and Land Apply

Alternative 4 includes the construction of an anaerobic digestion complex to digest a portion of the solids (75 dtpd). Digested solids would be dewatered and then land applied for soil amendment.

Assuming 50 percent solids destruction in the digesters, 40 dtpd of digested solids would be dewatered and stored onsite for seasonal land application. Seasonal land application is limited to spring and fall which concentrates the loading (i.e., 40 dtpd x (365 days/90 days) = 160).

The digestion complex would be provided with a combined heat and power (CHP) engine recovery system, fueled by digester gas.

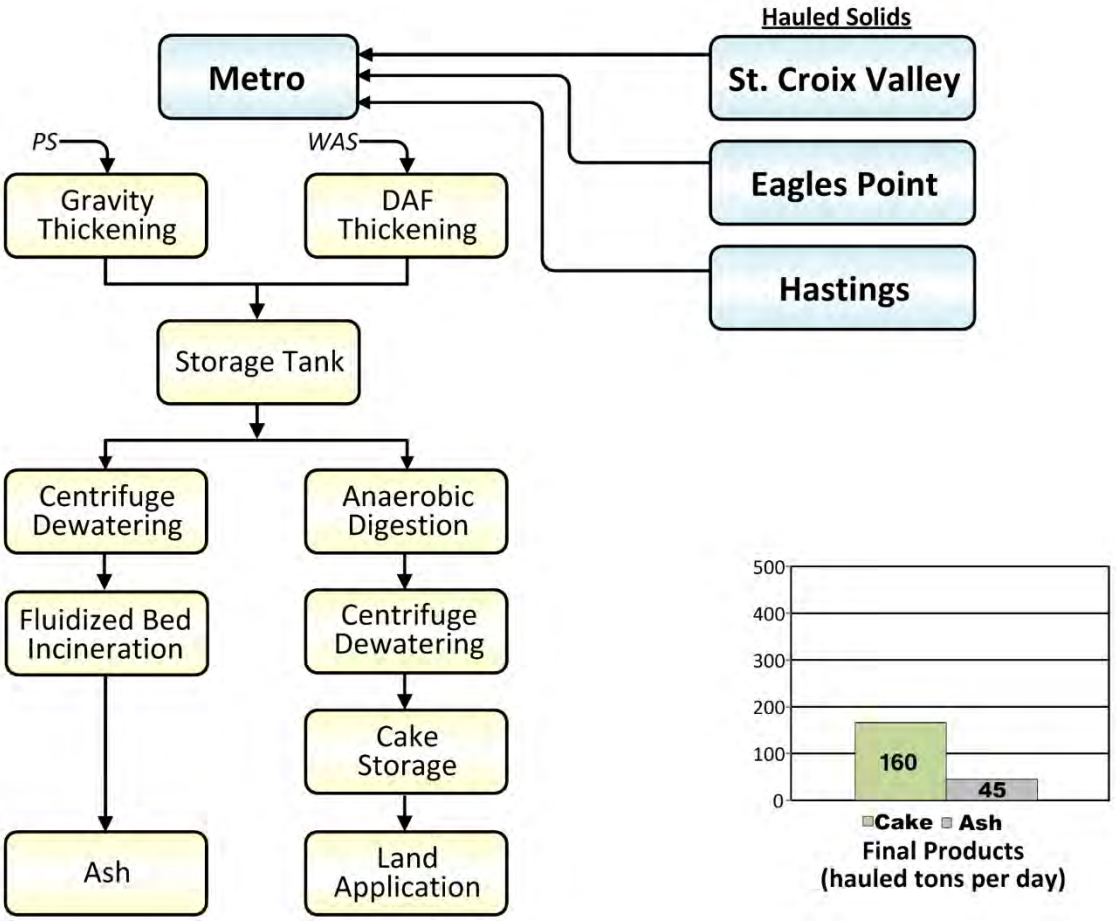


Figure 12. Alternative 4 – Digest and Land Apply

6.0 Evaluation of Alternatives

This evaluation includes economic considerations, sustainability, community impacts, and other non-monetary factors. A set of renewal projects for the existing incinerators 1, 2, and 3, which would be common to each of the alternatives are described in Section 7.

6.1 Present Worth Analysis

The 20-year net present worth of capital, operating, and maintenance costs for each alternative was estimated and referenced to the 2010 existing condition. Capital costs are based on the project scopes summarized in Table 9. Table 10 compares the net present worth of each alternative relative to existing (2010) operating and maintenance costs. The detailed cost data are included in Appendix I.

Table 9. Project Scope Summary for Alternatives

Alternative 1: Fourth Incinerator	Alternative 2: Digest/Incinerate	Alternative 3: Digest, Dry, Sell	Alternative 4: Digest, Land Apply Cake
Centrifuges and cake pump, fourth incinerator with WHB and steam turbine	Digesters, CHP	Digesters, dryer, pellet storage	Digesters, CHP, cake storage, and odor control

The Fourth Incinerator is the most cost-effective alternative to meet the region's wastewater needs. Adding a fourth incinerator costs 50 percent less than the lowest digestion alternative to construct, operate, and maintain.

Alternative 1: Fourth Incinerator is a net producer of electricity and, compared to the other alternatives, it has excellent energy recovery. Alternative 4: Digest and Land Apply is the biggest net producer of electricity, but it is the highest cost alternative, $200M more in present worth of capital and operating and maintenance costs. This alternative also significantly increases ash and solids handling requirements by $2M per year.

The net energy produced by the second incineration alternative, Alternative 2: Digest and Incinerate, is reduced by an increase in the supplemental fuel required to incinerate solids with reduced volatile content (destroyed by digestion). Alternative 3: Digest, Dry and Sell produces less electricity than any other alternative and requires supplemental natural gas due to the fuel requirement for drying.

Table 10. Alternatives Cost Comparison Summary

Cost Components	Existing Condition (2010)	Recommended Alternative: Alternative 1: Fourth Incinerator	Alternative 2: Digest/ Incinerate	Alternative 3: Digest, Dry, Sell	Alternative 4: Digest, Land Apply Cake
Capital					
Preliminary Construction Estimates	$ -	$75,000,000	$125,000,000	$130,000,000	$176,000,000
Engineering (20%)	$ -	$15,000,000	$25,000,000	$26,000,000	$35,000,000
Contingency Value (50%)	$ -	$37,000,000	$63,000,000	$65,000,000	$88,000,000
Total Near-Term Capital Costs (subtotal)	$ -	**$127,000,000**	**$213,000,000**	**$221,000,000**	**$299,000,000**
Present Worth of Salvage Value[1]	$ -	**$(28,000,000)**	**$(44,000,000)**	**$(2,000,000)**	**$(51,000,000)**
Present Worth of Replacements[1]	$ -	**$ -**	**$ -**	**$-**	**$-**
Present Worth of Capital[1]	$ -	**$99,000,000**	**$168,600,000**	**$189,000,000**	**$248,000,000**
Operating and Maintenance (O&M)	**Annual Cost**	**Alt 1: Incremental Annual Cost**	**Alt 2: Incremental Annual Cost**	**Alt 3: Incremental Annual Cost**	**Alt 4: Incremental Annual Cost**
Ash & Solids Handling[2]	280,000	25,000	32,000	(30,000)	1,960,000
Electricity[3]	1,100,000	(200,000)	(1,900,000)	800,000	(900,000)
Natural Gas	(1,370,000)			260,000	
Incinerator Auxiliary Fuel (No. 2 fuel oil)			1,810,000		
Net Energy	(270,000)	(200,000)	(90,000)	1,060,000	(900,000)
Chemicals	2,440,000	250,000	1,170,000	420,000	710,000
Labor	6,990,000	360,000	1,420,000	2,610,000	1,660,000
Additional Maintenance		500,000	870,000	650,000	600,000
Annual O&M Subtotal	$9,440,000	$940,000	$3,400,000	$4,710,000	$4,030,000
Present Worth of O&M[1]	180,000,000	$18,000,000	$65,000,000	$90,000,000	$77,000,000
Present Worth of Capital and O&M		**$117,000,000**	**$234,000,000**	**279,000,000**	**325,000,000**

[1] Note: 20-year Net Preset Worth (nominal discount rate = 4%, escalation rate = 3.5%). Includes 20% growth through the planning period.
[2] Transportation and landfill of ash and/or transportation and land application of solids product.
[3] Electricity cost after credit for power produced by steam turbine or combined heat and power engine generator systems.

6.2 Evaluation of Non-Monetary Factors

Alternative 1: Fourth Incinerator is the most sustainable alternative to meet the region's wastewater needs. It will have the lowest community impact. Alternative 1: Fourth Incinerator provides for continuity with existing facility operating requirements will increase the reliability of the region's wastewater treatment system.

Non-monetary factors are those factors that cannot be quantified in terms of financial measurements as they relate to considerations based on individual perceptions and beliefs or they relate to considerations whose value are not well enough understood to have developed a consensus for measurement of the factors. The non-monetary factors considered for this evaluation are listed in Table 11.

Scoring of the alternatives with respect to non-monetary factors is not conducive to selection of the appropriate alternative. Converting a factor to a score is an accounting approach, which may prevent an in-depth discussion with customers about these issues. It is more important to engage the community in a dialogue about the balancing of competing issues.

Table 11. Summary of Non-Monetary Evaluation Factors

Sustainability	Community Impact	Reliability
• Air emissions: volatile organic carbon, NOx, and carbon monoxide • Energy recovery and consumption • Greenhouse gas emissions: Carbon dioxide, methane, and nitrous oxide • Fate of residuals • Water quality discharges to all receiving waters	• Standard of living (Impacts on the economy of the region by spending more of the region's financial capital to construct higher cost alternatives • Truck hauling, safety • Odors • Offsite land requirements	• Continue the Council's ability to provide reliable treatment to levels lower than the permit levels • The reduction of risk of outages or process upsets and the negative • The flexibility to adapt to future changes

6.2.1 Sustainability

6.2.1.1 Air Quality

Air emissions from Alternative 1 are lower than the other alternatives due to the controlled combustion conditions and advanced air pollution control equipment in the incinerator trains. Air emissions for Alternative 3 would be slightly higher, but comparable to Alternative 1 because the dryer would have similarly robust emissions control equipment. Emissions from the gas engine generator included in Alternative 2 and Alternative 4 causes these alternatives to rank lower in terms of air quality.

6.2.1.2 Energy Recovery

Alternative 1 has excellent energy recovery, compared to the other alternatives. The heat recovery system on the incinerators generates a 1.5 megawatt surplus of electrical power or the equivalent of steam heat from the operation. Alternative 1 energy production reduces reliance on external utility capacity, resulting in a delayed need for electrical energy production capacity construction by the power utility. Reducing power demand lowers the amount of greenhouse gas and other emissions associated with the production of power in the region.

Alternative 4 would produce about the same amount energy as Alternative 1, and it would consume less energy. However, this alternative is the highest cost alternative, $200 million more in present worth of capital and operating and maintenance costs.

Alternative 2 produces the most digester gas to fuel a CHP system, but the electricity production is offset by the need for supplemental fuel in the combustion process; volatile solids reduction by the digestion process lowers the fuel value of the incinerator feed solids. In theory, biogas could be used as a supplemental fuel, but fuel oil is preferred over biogas because it combusts more completely in the bed rather than the freeboard. The alternative analysis assumes that biogas will be used for power generation (CHP).

Alternative 3 produces biogas, but experiences with other systems indicate that the biogas will be consumed by the drying process with no net energy surplus. In addition, the dryer diverts feedstock from the incineration process, reducing the output of the steam turbine generator system, such that the solids system is no longer energy self-sufficient.

6.2.1.3 Greenhouse Gas Emissions

Table 12 lists greenhouse gas (GHG) emissions estimates for the Metro Plant solids treatment alternatives. The listed values are such a small fraction of other sources in the Twin Cities region and in the State of MN, that the alternatives were considered equivalent with respect to GHG emissions.

Table 12. Greenhouse Gas Emissions Estimates for Alternatives

Alternative	Tons/yr as CO2	Equivalent Number of Cars[1]
Alternative 1: Fourth Incinerator	66,000	13,000
Alternative 2: Digest and Incinerate	52,000	10,000
Alternative 3: Digest, Dry and Sell	66,000	13,000
Alternative 4: Digest and Land Apply	43,000	8,000

[1] The average car is driven 11,400 miles per year and gets 21.6 mile per gallon (mpg) fuel efficiency. The GHG emission per average car is 6.6 tons per year CO2 equivalent.

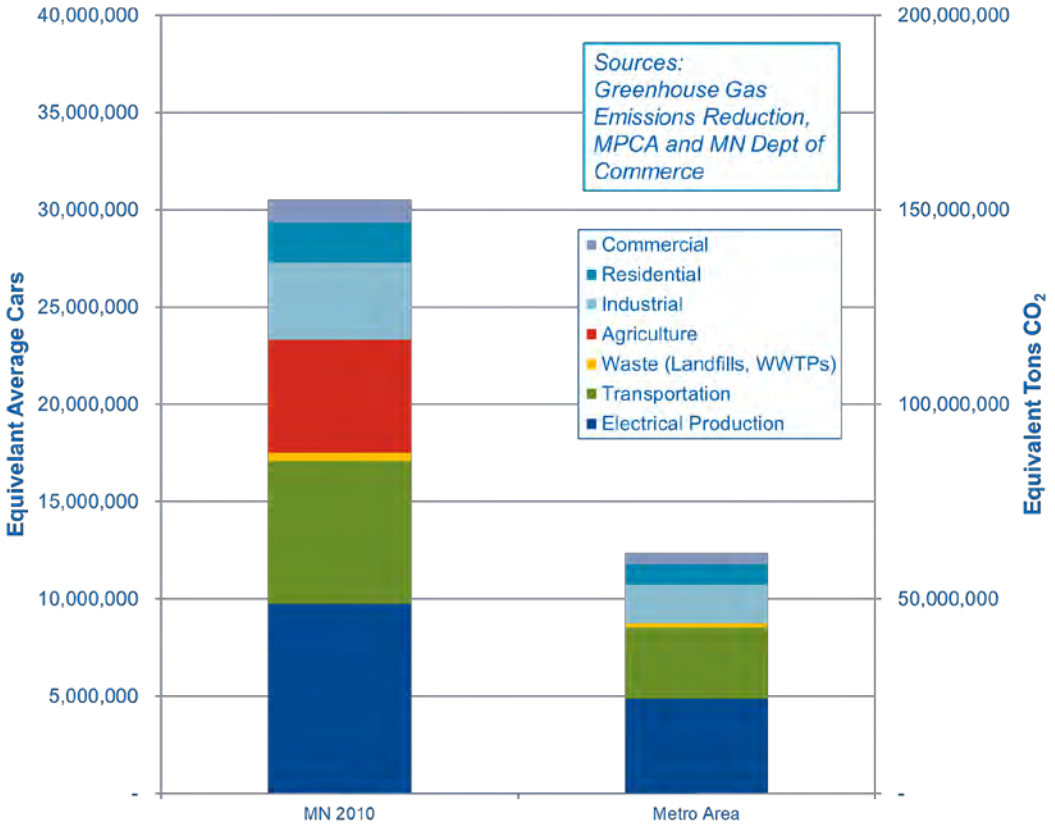


Figure 13. Greenhouse Gas Emissions in MN (2010) and the Metro Area, by Source[1]

6.2.1.4 Fate of Residuals

Phosphorus recovery was considered the most important.

Nitrogen is a renewable nutrient, but phosphorus is not. It takes millions of years to form phosphate rock in the Earth's crust. Due to the potential to beneficially use Metro Plant ash as phosphorus fertilizer, the incineration alternatives (Alternatives 1 and 2) are considered equal to the other fertilizer and land application Alternatives 3 and 4 in terms of nutrient recovery.

In addition, due to the short cycle of agriculture, carbon sequestration was found not to be a delineating factor in comparing the fate of residuals.

6.2.2 Community Impact

6.2.2.1 Financial Stewardship

Financial stewardship has the consequence of raising the standard of living for users and making the region more competitive for economic development. Alternative 1 has the lowest life cycle cost, compared to the other alternatives, which benefits the region by maintaining low user charges.

[1] The average car is driven 11,400 miles per year and gets 21.6 mile per gallon (mpg) fuel efficiency. The GHG emission per average car is 6.6 tons per year CO2 equivalent.

6.2.2.2 Truck Hauling

Because incineration reduces the amount of material that must be handled for export offsite by 95 percent, the incineration alternatives (Alternatives 1 and 2) have the lowest traffic impact. The amount of ash is the same for these two alternatives.

Compared to 54 tpd ash production for Alternatives 1 and 2 at future conditions, Alternative 3 produces 78 tons per day and Alternative 4 produces 200 wet tons per day. Note that land application is restricted to a few weeks in the spring and a few weeks in the fall, which concentrates the hauled traffic load during these seasons.

Truck traffic between the plant and industrial or other application sites, would likely be over major transportation corridors, but ultimately might be on residential or rural roads. Increased safety risks and solids spill risk are directly related to increased truck traffic.

6.2.2.3 Odor

All alternatives would be provided with odor control facilities so that the Metro Plant would not generate additional odors within the community. Alternative 4 may release odors during hauling and land application.

6.2.2.4 Offsite Land

Alternative 1 requires the least amount of land to construct within the existing plant property boundaries, and it has minimum offsite impact hauling.

6.2.3 Reliability

6.2.3.1 Process Failure Risk

The Metro Plant has successfully used incineration technology to treat solids since 1938 and adding a fourth incinerator (Alternative 1) would not pose additional process risk.

All digestion alternatives place a biological process with its associated heating and energy recovery systems would add to the complexity of the facility and may have more risk for process failure. Alternative 3 has additional process and safety risks associated with the thermal drying system.

6.2.3.2 Liquid Stream Impacts

Alternative 1 would have less impact on secondary treatment than the digestion alternatives that generate a recycle with very high levels of ammonia and phosphorus. Digestion process recycle streams would increase requirements for liquid treatment.

6.2.3.3 Land Application Management

Land application programs require significant resources for management and oversight of regulatory requirements, public relations, and logistics.

6.2.3.4 Future Flexibility

Alternative 1 provides the most flexibility in providing increases in future capacity. This alternative has more reserve capacity than the other alternatives.

This reserve capacity improves the reliability of the region's wastewater treatment system because it could backup solids treatment process at the other MCES plants.

Increased capacity for the digestion alternatives to provide future flexibility would not be cost-effective.

7.0 Recommended Plan

Alternative 1: Fourth Incinerator is the recommended alternative for adding needed solids treatment capacity at the Metro Plant. It is the lowest cost, most sustainable alternative, and it has the lowest impact on surrounding communities. The recommended plan is to construct and commission the fourth incinerator train, then complete needed renewal work in incinerator trains 1, 2, and 3.

7.1 Fourth Incinerator and Auxiliary Systems

The current concept is to add the fourth incinerator train on the east side of the SMB. The fourth incinerator will be similar to those in the existing trains and will be integrated with the existing system.

Figure 14 is a process schematic and Figure 15 is a plan view of the proposed facilities.

7.1.1 Incinerator Cake Feed System

The dewatering portion of SMB would be expanded with the addition of Cake Bin 5, two centrifuges, and two cake pumps. The cake pumps will be sized so that either pump can feed the fourth incinerator at full capacity.

7.1.2 Cake Receiving

Cake receiving will allow dewatered solids to be hauled in from other MCES wastewater treatment plants. The proposed cake receiving facility will include one below-grade cake load-in bin with a hydraulically actuated cover, and one hydraulic piston transfer pump designed to transfer cake to any of the five cake bins.

Cake receiving is envisioned to be constructed adjacent to the existing loadout garage in a building extension, with a basement level tied into the existing SMB basement. The cake load-in bin, cake pump, hydraulic power units, and pipeline lubrication pumps will be in the basement a. Access to cake receiving will be through two overhead doors. Odor control will be provided for the building and basement.

Figure 15 shows preliminary layouts for the Cake Receiving Facility.

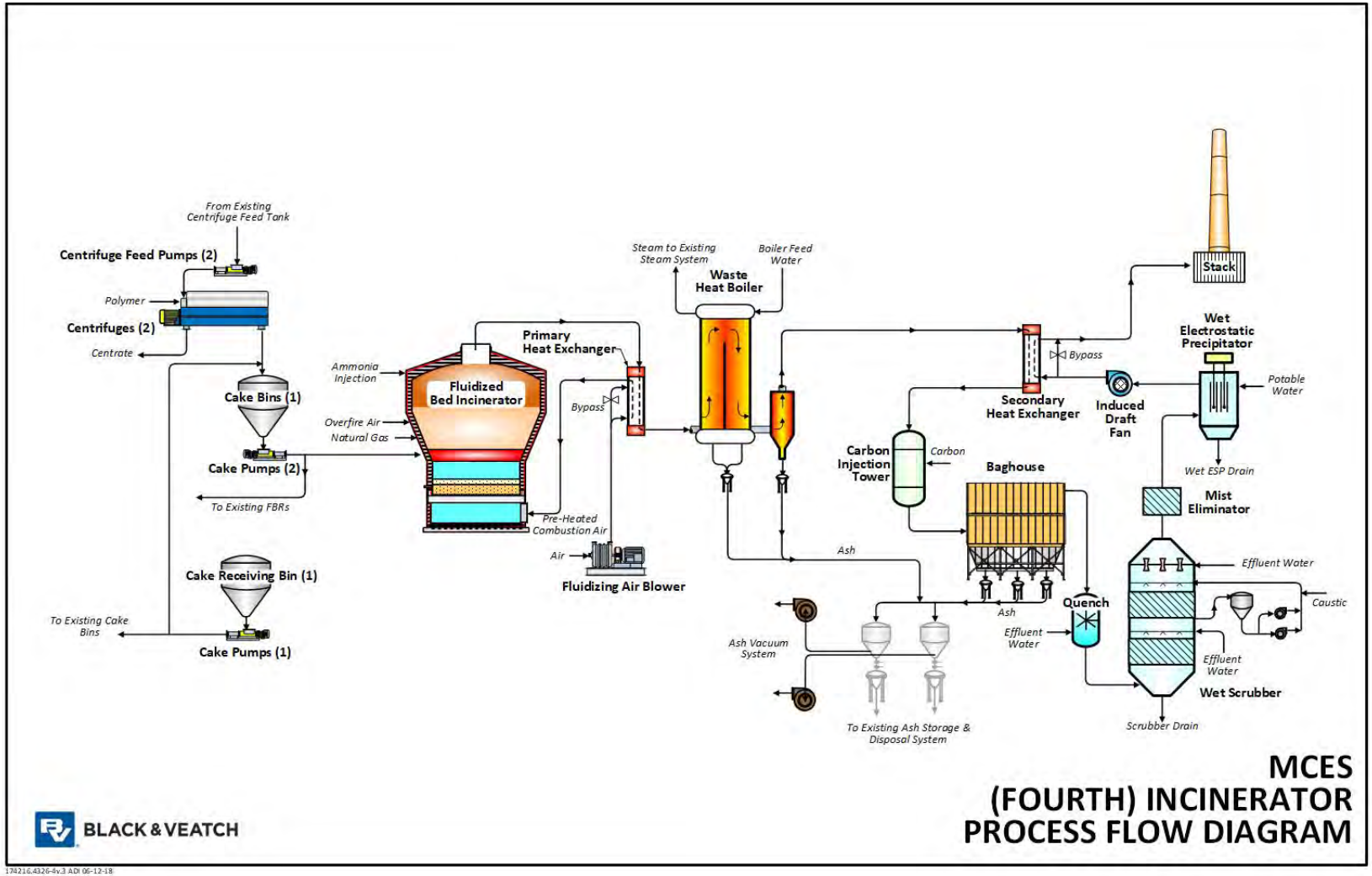


Figure 14. Recommended Plan Fourth Incinerator Process Flow

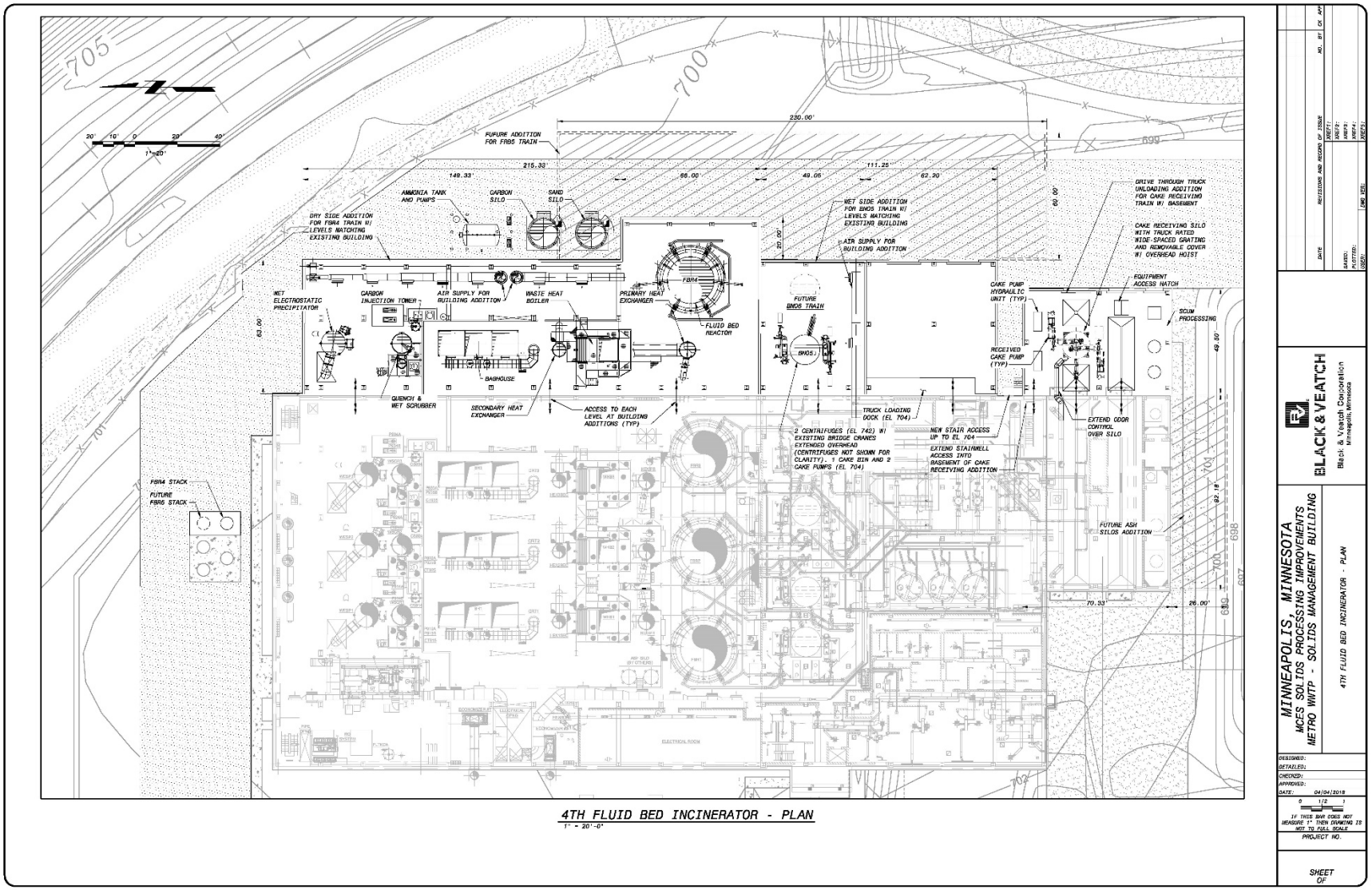


Figure 15. Metro Plant Fourth Incinerator Concept Plan

7.1.3 Incinerator

The proposed fourth incinerator is the fluidized bed type, sized to treat a minimum of 120 dtpd of dewatered cake. The incinerator vessel will consist of three zones: hot windbox, sand bed, and freeboard. Preheated fluidizing air will be directed into the windbox and distributed to the bed through tuyeres in a metal plate or refractory arch.

A fluidizing air blower will provide combustion/fluidizing air, and an induced draft fan will assist in drawing flue gas through energy recovery and air pollution control equipment and exhausting all flue gas from the stack.

Dewatered cake will be pumped into the incinerator through multiple injection nozzles. Auxiliary fuel injection lances (fuel oil or natural gas) will provide supplemental fuel.

Ancillary systems such as purge air blowers, compressed air, emergency roof spray water, and pre-heat burners will also be provided. The pre-heat burner will be the low-NOx type.

7.1.4 Air Pollution Control

The new air pollution control system will include similar technologies to match the approach of existing systems with selected upgrades as required to consistently meet the 40 CFR Part 60, Subpart LLLL emission requirements for new fluid bed incinerators.

The NOx emission requirement may require design enhancements to provide compliance. Current optimization testing (for example, overfire air) may negate the need for additional treatment for NOx. If required, an ammonia injection system will be included during design to reduce NOx emissions. Ammonia injection facilities include aqua ammonia chemical storage and handling equipment located east of the new building addition. Each incinerator train will have a dedicated ammonia metering pump.

The new system will have a baghouse to remove particulates and metals. Powdered Activated Carbon injected upstream of the baghouse will remove mercury to acceptable levels. The carbon silo will be relocated to serve all four incinerator trains, and a second carbon storage tank with manual load-in will be added to improve reliability.

A wet scrubber will be provided with caustic injection and effluent water sprays to meet sulfur dioxide (SO_2) and hydrogen chloride (HCl) limits and to remove particulates that pass through the baghouse. An additional effluent pump will be provided to meet increased effluent water demands.

A wet electrostatic precipitator will be provided as a polishing device for particulates, Cadmium (Cd), and Lead (Pb).

7.1.5 Energy Recovery

The heat recovery system will include a pHEX, a WHB, and a secondary heat exchanger.

The WHB will be the water tube type and will include an economizer. It will be designed to integrate with the existing steam heat and steam turbine system. Alternate configurations for improved maintenance access and lower flow velocities around the tubes will be evaluated during design.

The pHEX will transfer heat from the incinerator exhaust gases to the fluidizing/combustion air to minimize auxiliary fuel demand, and the secondary heat exchanger will provide plume

suppression for the stack discharge. Both primary and secondary heat exchangers will be provided with bypass ductwork and dampers to optimize heat recovery to the incinerator and provide temperature control respectively.

7.1.6 Ash Handling and Storage

A new vacuum type ash handling system will be provided for all four incinerators to collect and convey incinerator fly ash from the WHBs and the baghouse and to the existing ash storage bins in the SMB.

Miscellaneous modifications to ash loadout in FI2/408 may be incorporated as required to implement the beneficial use of incinerator ash program.

7.2 Cost Estimate

Table 13 provides the opinion of probable cost summary for the fourth incinerator. The scope for this work is described in Section 7.1.

Table 14 provides the opinion of probable cost summary for renewal of incinerators 1, 2, and 3. The scope for this work is described in Section 4.

Detailed cost estimates are included in Appendix I.

Table 13. Opinion of Probable Cost Summary, Fourth Incinerator

Item	Cost
Mobilization, Bonds, Insurance	$7,700,000
Demolition/Relocation	$250,000
Site Work	$1,450,000
Incinerator Building Addition	$6,050,000
Incinerator Feed System	$5,770,000
Cake Receiving	$1,910,000
Incinerator and Fans	$26,000,000
Energy Recovery Equipment	$8,100,000
Air Pollution Control Equipment	$11,300,000
Other Equipment and Systems	$3,640,000
Plumbing and HVAC	$9,620,000
Electrical, Instrumentation, and Controls	$14,430,000
Subtotal	**$96,220,000**
Contingency	$28,870,000
Design Engineering	$12,510,000
Construction Engineering and Inspection	$12,510,000
Fourth Incinerator Project Cost	**$150,110,000**

Table 14. Opinion of Probable Cost Summary; Renewal of Incinerators 1, 2, and 3

Item	Cost
Mobilization and Bonds	$1,550,000
Sludge Storage Pumping Improvements	$230,000
Sludge Feed Equipment Improvements	$2,400,000
Incinerator Rehabilitation	$3,400,000
Fluidizing Air Blowers, Induced Draft Fans and Duct Modifications	$610,000
Primary Heat Exchangers Renewal	$2,250,000
Waste Heat Boilers Renewal	$1,500,000
Baghouse Renewal	$1,130,000
Mist Eliminator Upgrade	$300,000
Wet Electrostatic Precipitator Electrical Upgrades	$450,000
Turbine Generators and Auxiliary Boilers	$3,580,000
Electrical, Instrumentation and Controls	$1,930,000
Subtotal	**$19,330,000**
Contingency	$5,800,000
Design Engineering & Construction Inspection	$5,020,000
Total Renewal Cost	**$30,150,000**

7.3 Implementation Plan and Schedule

Implementing the project will require a variety of phases including formal approval of the Facility Plan, preliminary engineering detailed engineering, permitting, construction, and commissioning. A preliminary schedule including these various activities is listed below:

Table 15. Proposed Plan Schedule

Project Activity	Date
Public Outreach	April 2018 – June 2018
Public Hearing	August 30, 2018
Design and Permitting	2019 – 2021
Construct Fourth Incinerator	2021 – 2024
Renew Incinerators 1, 2, and 3	2025 – 2027

7.3.1 Permit Considerations

The fourth incinerator will require a major amendment for a minor modification to the existing air permit. MCES has voluntarily completed an Environmental Assessment Worksheet (EAW), which is included in Appendix K, and will follow with an application for the major amendment as a separate submittal to the MPCA. Ultimately, MPCA would issue a combined construction and operating permit.

EPA uses ambient air quality standards to classify geographical areas as either attainment or non-attainment for seven criteria pollutants (CO, SO_2, PM10, PM2.5, NO_x, ozone, Pb). The Metro Plant is in an attainment area. However, part of St. Paul, including the Metro Plant site is designated a PM10 Maintenance Area, which means that MPCA is taking special precautions to assure that the area remains in attainment for PM10.

Metro Plant's location in an attainment area dictates that the applicable air permitting procedure is governed by Prevention of Significant Deterioration (PSD) thresholds for emissions of the criteria pollutants. The overall site and new sources within the site are subject to PSD thresholds. Major thresholds for the site are 250 tons per year (tons/year) of potential to emit (PTE) of each criteria pollutant, except PM10. The site's designation as a PM10 Maintenance Area reduces the major threshold for PM10 to 100 tons/year.

The Metro Plant's NO_x PTE was listed as 318 tons/year in the plant's current 2010 Title V of the Clean Air Act Air Emissions Permit. Hence, the Metro Plant is rated as a major PSD source for NO_x. All other criteria pollutant PTEs are listed within major thresholds and the special maintenance area threshold. Actual emissions of NO_x were listed as 157 tons/year, in the 2010 Title V of the Clean Air Act Air Emissions Permit.

The Title V of the Clean Air Act Air Emissions Permit also includes limits that restrict the site to minor status for Hazardous Air Pollutants (Pb, Cd, Hg, and HCL). The permit is renewed every 5 years.

Metro Plant's NO_x PTE calculation is based on NO_x emissions from packaged boilers and emergency generators as well as from combustion of sludge in the existing FBIs. The PTE value reflecting existing conditions, as would be stated in the Title V of the Clean Air Act Air Emissions Permit renewal application, is approximately 340 tons/year. The NO_x PTE from sludge incineration is based on the new MACT 129 emissions rule governing existing sewage sludge incinerators. That rule became effective in 2016. The NO_x concentration in incinerator emissions from existing FBIs (40 CFR 60 Subpart MMMM) will be 150 ppmvd adjusted to 7 percent oxygen. An important consideration regarding the new emissions rule is that allowable NO_x emissions from new FBIs (40 CFR 60 Subpart LLLL) are five times more stringent than from existing FBIs, that is, 30 ppmvd at 7 percent oxygen.

The sensitivity of the Metro Plant site NO_x PTE to emissions from its incinerators is illustrated in Figure 16. The total site NO_x PTE is 340 tons/year assuming the existing three FBIs are compliant with Subpart MMMM and 161 tons/year if they were to be compliant with Subpart LLLL. Thus, it is very likely that the site could be reclassified as minor PSD source. Certainly, the plant would continue to perform as a minor source, even if it continued to be classified major.

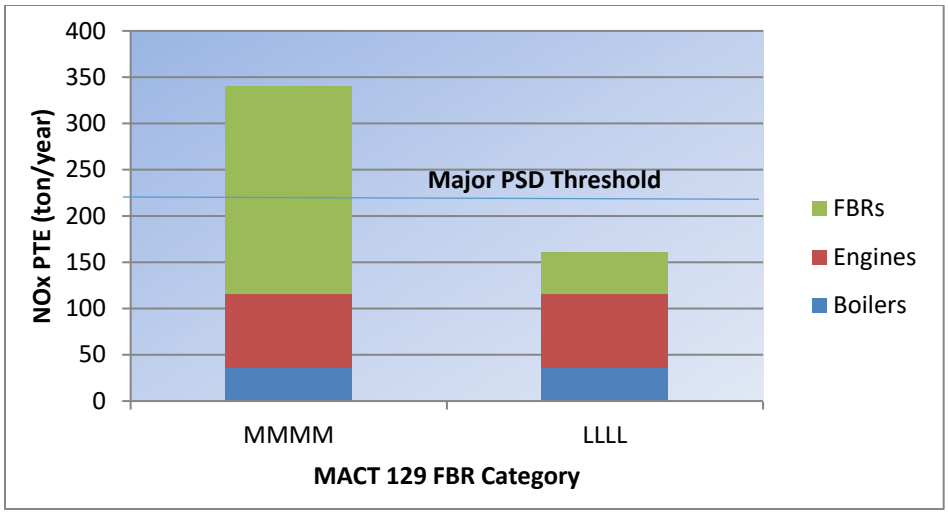


Figure 16. Site NO_x Sensitivity to FBI PTE

The added incinerator emissions source would be accounted for in the application for the Major Minnesota Air Permit Amendment. PM10 air dispersion modeling results would be submitted with the application. PSD review of the new source could conceivably be addressed through either of two options:

Accepting NO_x emission limits on the existing incinerators to establish minor PSD source status for the site as a whole, including the proposed equipment. This would be feasible considering the results of controlled performance tests wherein emissions from the existing FBIs were well within the Subpart MMMM NO_x limitation.

Or, remaining a PSD major source and (a) staying below the PSD significant air emissions increase thresholds, (b) proposing emission limits on the fourth FBI for PM (PM, PM10 and PM2.5) and possibly VOCs, and (c) factoring in new source compliance requirements, as of 2016, with 40 CFR 60 Subpart LLLL emission limits for NO_x, SO_2 and CO. PM includes filterable PM, but does not contain condensable PM. Condensable PM is included within PM10 and PM2.5, but is not regulated under 40 CFR 60 Subpart LLLL. Therefore, total PM10 and PM2.5 emission limits for a fourth FBI could be proposed by MCES, as would be similar to the levels listed in the permit for the three existing FBIs.

These options are based on the assumptions that (a) the proposed capacity for the fourth FBI will be 130 tons/day (same as the three existing FBIs), (b) that no other new air emission sources will be installed at the same time that the fourth FBI is installed, and (c) that actual PM emissions from the ash handling system, after the fourth FBI is placed into service, will increase less than 50% from the most recently reported levels. An additional scenario of installing one generator engine of a 2 MW size burning either propane or diesel within three years of the installation of the fourth FBI may require lowering any proposed emission limits for the fourth FBI. However, it is likely that PSD could be addressed through either of the two options identified above.

The primary advantage of establishing minor source status for the Metro Plant site is fewer compliance requirements. For example, the installation of new air emission sources on PSD minor source sites only need to be reviewed for potential site emission increases, not for both potential and actual emission increases. The PSD major source criteria were established by

EPA to identify those sources where more stringent requirements are needed. Reclassification as a minor source would serve to recognize that there are currently no such concerns at Metro Plant and that the fourth FBI would not cause the NOx major threshold to be exceeded.

The disadvantage of establishing PSD minor source status for the site may be restriction of total allowable NOx emissions to more than the project-by-project restrictions that are established for PSD major sources. The major source threshold for NOx with new projects is 40 ton/year. Reverting to major site status could affect all plant NOx sources, not only new sources under consideration. Also, PSD minor source status is typically established in a separate permit application, which would extend the schedule for air permitting of the fourth FBI.

After considering the air permitting alternatives for the new fourth incinerator at the Metro Plant, MCES is committed to retaining the plant's existing PSD major status, keeping any increases in air emissions from the new incinerator below the regulatory thresholds for PSD applicability, and accepting a limit on PM. New source performance standards of 40 CFR Part 60 Subpart LLLL would cause this approach to be feasible. There is no significant advantage to MCES or its customers to seek minor site reclassification. Continuing as a major site allows for plant expansion projects in the future without the burden of reconsidering all plant sources of NO_x. The next step would be to submit the protocol for PM10 dispersion modeling. The results of that modeling would be submitted with the Application for a Minor Modification to the Existing Air Permit.

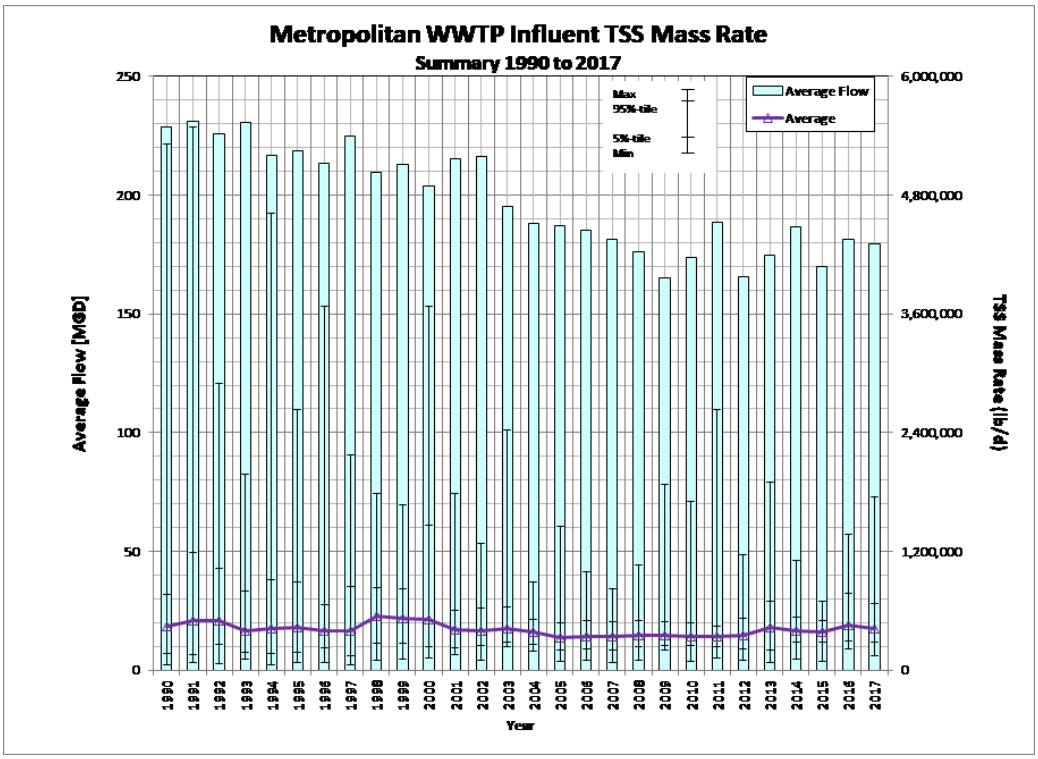
7.3.2 Project Delivery Methods

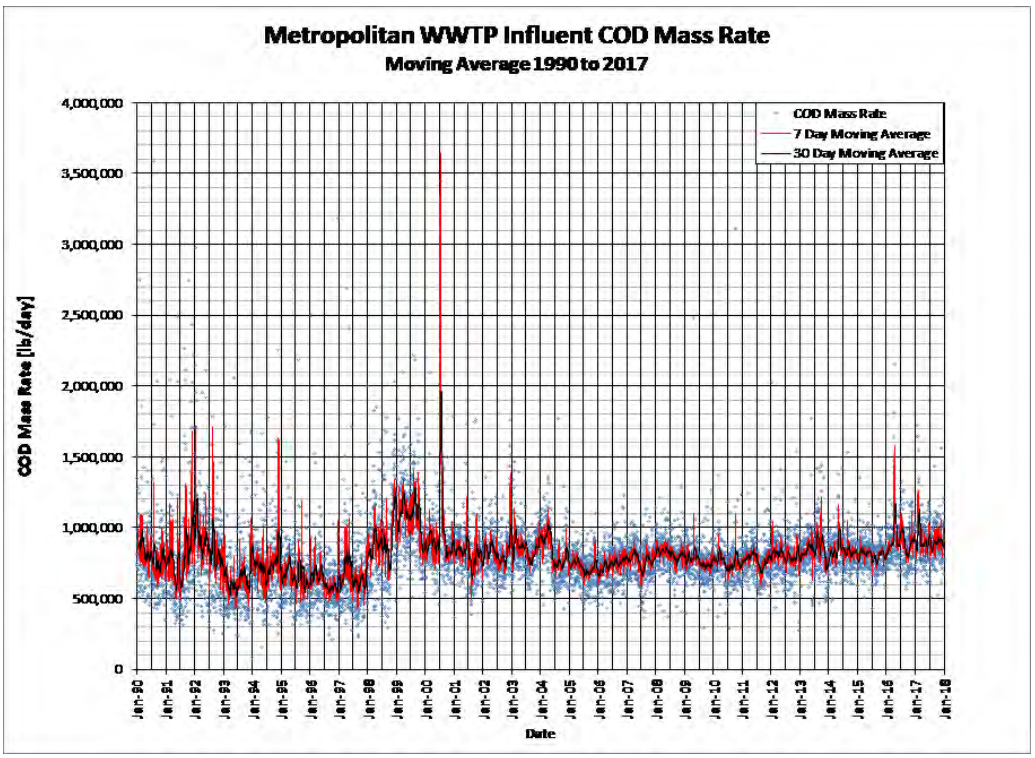
The original incineration project was constructed using a design build approach for the reactors, air pollution control trains, and energy recovery. The building and utility systems were constructed using conventional design-bid-build methods. Foundation work (pile installation) was constructed in a preliminary phase.

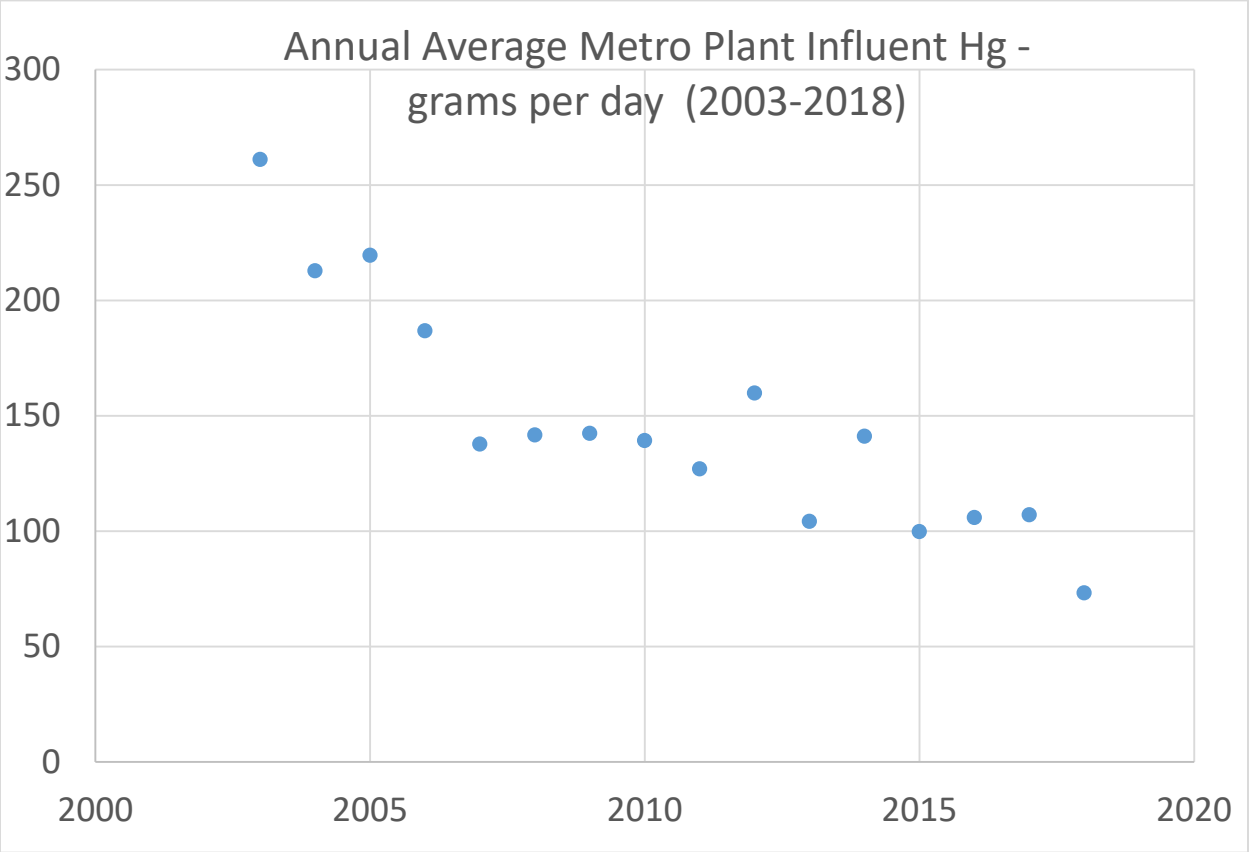
Due to consolidation and bankruptcy, there are currently a very limited number of qualified firms in the specialized area of sewage sludge incineration, resulting in limited competition and price leverage. Furthermore, few if any design firms can provide detailed design services for a full incineration system and need to rely on experienced incineration equipment vendors.

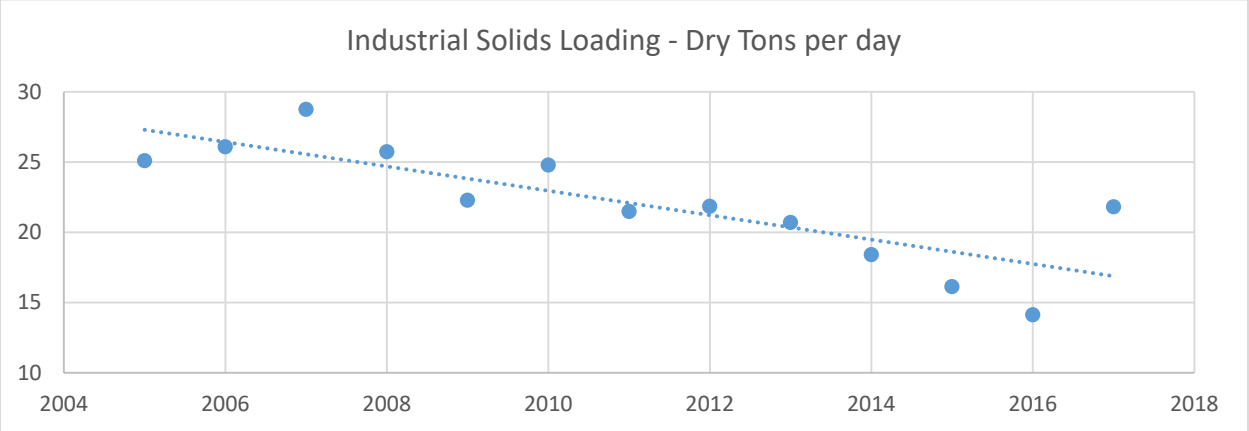
Selection of an equipment vendor and installation package through an evaluated design-build proposal or multiple proposal process is recommended for the fourth incinerator project. The performance criteria and minimum requirements need to be addressed as part of a detailed request for proposal process that would include statements of interest, proposer prequalification and evaluated proposals based on project criteria and proposals received.

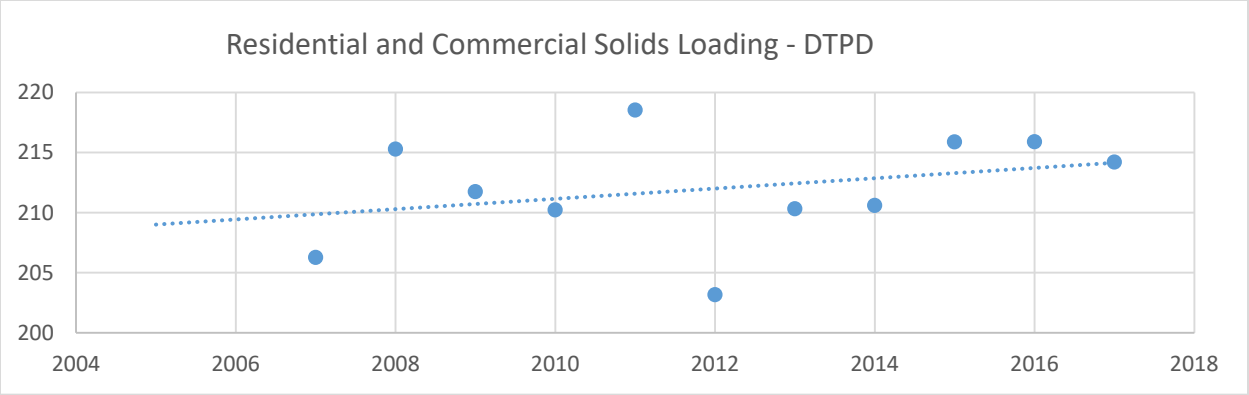
Appendix A. Metro Plant Influent Flow and Load Data

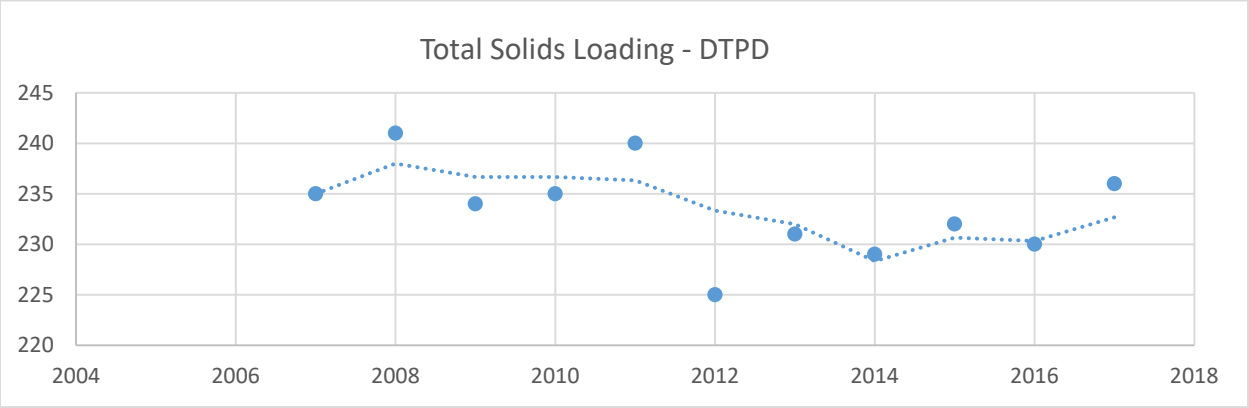





Annual Average Metro Plant Influent Hg - grams per day (2003-2018)
300
250
200
150
100
50
0
2000
2005
2010
2015
2020


Industrial Solids Loading - Dry Tons per day
30
25
20
15
10
2004
2006
2008
2010
2012
2014
2016
2018


Residential and Commercial Solids Loading - DTPD
220
215
210
205
200
2004
2006
2008
2010
2012
2014
2016
2018


Total Solids Loading - DTPD
245
240
235
230
225
220
2004
2006
2008
2010
2012
2014
2016
2018

Appendix B. Tabulation of Metro Plant 30-day Peaking Factors for Solids Treatment

Metro Plant Total Solids Processed, Average Daily and Peak 30-Day Mass Load Values

Year	Input Total Solids Processed (dtpd)[1]	Input 30-day Peak Solids Processed (dtpd)	30-day Peaking Factor
2007	235	264	1.12
2008	241	274	1.14
2009	234	261	1.12
2010	235	271	1.15
2011	240	286	1.19
2012	225	254	1.13
2013	231	293	1.27
2014	229	256	1.12
2015	232	266	1.15
2016	230	259	1.13
2017	236	273	1.16
Average	**234**	**269**	**1.15**
2020[2]	240	276	1.15
2050[2]	300	345	1.15

1. 2014 Water Resources Policy Plan, Metropolitan Council Environmental Services
2. Population equivalent for business growth is estimated as 25 percent of the employment increase, that is, 0.25 x (1,366,990 – 1,067,250) = 75,000 people

Appendix C. Feasibility Study: Beneficial Use of Metro Plant Ash as Phosphorus Fertilizer

Corn and Lettuce Growth Responses and Elemental Uptake in Soils Amended with Sewage Sludge Incinerator Ash

Final Report Submitted to Brown and Caldwell
September 9, 2014

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The effects of ash from incinerated sludge on plant growth and soil and plant chemical composition were examined for corn (*Zea mays* L., HL R208) and lettuce (*Lactuca sativa* L., cv. Valmaine) grown in a greenhouse. Pots were filled with 2500 dry grams of Esterville sandy loam soil fertilized with triple super phosphate (TSP), sludge ash, pelletized biosolids, or struvite, to phosphate application rates equivalent to 50, 100, or 200 lbs/Ac, with a control treatment receiving no supplemental phosphorus. Urea and potassium chloride were added as necessary to achieve equivalent application rates of nitrogen and potassium for all treatments. Plants were grown from seed, thinned to two plants per pot at 14 or 18 days post planting, and harvested at 60 days post planting. Plant shoot biomass was determined at harvest, as were the concentrations of 28 elements in the soil and in the shoot tissue. Uptake of these elements into the above ground tissue was calculated. Based on growth responses and phosphorus uptake, sludge ash was found to be an acceptable phosphorus source relative to the other sources tested, while pelletized biosolids were found to be less effective in this regard. At the rates applied, neither amendment had an effect on soil pH or soil salinity. Sludge ash and pelletized biosolids produced higher plant-available soil copper and zinc concentrations than TSP or struvite. These differences were generally not observed for total soil concentrations, except that sludge ash and pelletized biosolids produced higher total soil copper concentrations than TSP for corn. Above ground tissue concentrations of these elements tended to be elevated in ash- and pellet-fertilized plants of both crop species, but remained well below toxicity levels for plants and levels of concern for human consumption. Sludge ash and biosolids pellets had elevated mercury concentrations compared to TSP and struvite, but this had no effect on soil or tissue mercury concentrations or plant uptake of mercury. Neither sludge ash nor biosolids pellets produced unsafe concentrations of other heavy metals in either soils or plant tissues. Based on these results, the sludge ash and pelletized biosolids tested in this study are potentially usable as phosphorus fertilizer sources for crops. While results from this greenhouse study are promising, longer-term studies are necessary to evaluate effects on crop responses and soil chemical properties under field conditions.

Introduction

The bulk of sewage sludge in the Twin Cities metropolitan area is incinerated and the resulting ash discarded into landfills. Previous research has shown that ash from incinerated sludge is a viable P source for crop production, but the high concentrations of heavy metals such as Hg, Cd, Pb, etc., in the evaluated ash raised environmental and safety concerns. The sludge ash that is currently produced has much lower metal concentrations than that used in previous studies. It is therefore appropriate to re-evaluate the use of ash from incinerated sludge as a P source for crops.

While most sludge in the Twin Cities is incinerated, a smaller amount is heat-dried and made into pellets. The pelletized product may also be a viable N and P source. Additionally, struvite (NH_4MgPO_4) is a compound formed in wastewater processing and may also be useful as a potential P source.

The overall objective of this study was to assess the value of ash from incinerated Twin-Cities sludge as a P source for crops, relative to pelletized biosolids, struvite and triple super phosphate fertilizer (TSP). Specific objectives included the following: 1) chemically characterize each amendment, 2) compare the effects of the amendments on corn and lettuce growth and biomass production, 3) evaluate the effects of the amendments on selected soil chemical properties after harvest, and 4) determine the effects of the amendments on above ground plant elemental composition and uptake.

Materials and methods

Corn (*Zea mays* L.) and lettuce (*Lactuca sativa* L.) were grown in a greenhouse at the University of Minnesota, St. Paul, MN. Each treatment was replicated four times in a randomized complete block design. There were thirteen treatments, including a control treatment receiving no supplemental P and twelve treatments receiving P_2O_5 at one of three rates (equivalent to 50, 100, or 200 lbs P_2O_5/Ac) from one of four sources (sludge ash, pelletized biosolids, struvite, and triple superphosphate fertilizer - TSP), with urea and KCl applied as needed to achieve equivalent application rates of N (250 lb N/Ac) and K (100 lb K_2O/Ac) in all treatments. The soil used was a dried, mixed, and sieved Esterville sandy loam. Soil characteristics are presented in Table 1. Concentrations of elements in the soil and in each amendment based on a microwave digestion procedure (EPA Method 3051) and inductively coupled plasma (ICP) analysis are presented in Table 2.

Corn (HL R208, a Hyland Roundup-ready grain line) and lettuce (cv. Valmaine) were planted on December 12, 2013, in six-inch square pots containing 2,500 dry grams of soil plus treatment-appropriate fertilizers and amendments (Table 3). Corn seeds were planted 3/4" deep, 6 seeds per pot, and lettuce seeds were planted 3/8” deep, 9 seeds per pot. The plants were thinned to 2 plants per pot on December 26 (corn), and December 30 (lettuce). The number of plants in each pot immediately prior to thinning was noted to assess germination and survival over 14 days (both corn and lettuce) or 18 days (lettuce only).

Plants were watered daily as needed to maintain soil moisture. They were fertilized with the equivalent of 55.1 lbs/Ac NH_4NO_3 and 241.9 lbs/Ac $Ca(NO_3)_2$, divided among four equal applications, on January 3, 8, and 21 and February 5, 2014, for corn, and on January 6, 8, 14, and 28, 2014, for lettuce. The plants were photographed on February 7 (lettuce) and 11 (corn) for visual comparison of plants grown in different treatments.

The plants were harvested on February 11, 2014. Plants of both species were cut at the base, weighed, and rinsed with distilled water to remove soil. In addition, for corn, the width of the stalks at 1/2” above the first node and the height to the top of the whorl were determined. Plant

tissues were dried at 60 ˚C, weighed, ground to pass through a 2 mm sieve with a Wiley mill, and the sent to the University of Minnesota Soil Testing and Research Analytical Laboratories (UMSTRAL. St. Paul, MN), where elemental concentrations were determined by both microwave wet digestion (EPA 3051) and dry combustion, followed by inductively coupled plasma (ICP) analysis for all elements except mercury. Both microwave digestion and dry combustion procedures were used because each method proved superior to the other in recovering certain elements from the plant tissues. Data from wet digestion are presented unless dry combustion produced statistically significantly higher recovery (Wilcoxon signed-rank test). Data on dry weight and element concentrations were used to calculate uptake amounts of each element by the plants in each pot. Total mercury was determined using EPA Method 1631: Revision E. For this method, Hg was detected using cold vapor atomic fluorescence spectroscopy (CVAFS) with a Brooks Rand Model III CVAFS detector.

The soil from each pot was dried at 35^{o}C, ground, and sent to UMSTRAL to obtain measurements of pH, electrical conductivity, organic matter content, and nutrient availability, and to determine elemental composition by microwave digestion and ICP analysis. In addition, microwave-digested soil was analyzed on a second, dual-filtered ICP machine because the measured concentrations of some elements were erratic on the first machine.

Data were analyzed using the GLM procedure in SAS 9.3. Each dependent variable was analyzed as a function of (1) treatment and replicate and (2) P source, rate, source*rate, and replicate. Significant differences between groups for each main effect were determined using a Waller-Duncan k-ratio t-test (k ratio = 50; $\alpha \approx 0.10$). Linear and quadratic rate effects were also investigated using contrasts in the second GLM for each variable.

Results and discussion

Plant health

Results for plant stand are presented in Table 4. At least 92% of planted corn seeds germinated and survived to 14 days post-planting in each treatment. Germination was much lower for lettuce. Between 39% and 78% of seeds in each treatment produced living seedlings by 14 days after planting, and 41 – 81% had done so by 18 days. It is unclear why the plant stand of the lettuce was low for some pots. Plant stand did not vary significantly among the treatments, nor with application rate or P source, for either crop. Photographs of the plants taken on February 7 for lettuce and February 11 for corn revealed no clear visible differences among treatments or signs of phytotoxicity.

Plant available concentrations of elements in soil, soil pH, organic matter and electrical conductivity after harvest

Corn

Post-harvest soil properties for each treatment are presented in Table 5. The treatments receiving sludge ash had greater Bray and Olsen P concentrations than those receiving biosolids pellets, but lower concentrations than those receiving struvite. They also had lower Olsen P than the treatments receiving TSP. Because the Bray P test uses an acid extractant, some of the insoluble P in the ash is dissolved during the extraction. The Olsen P test uses $NaHCO_3$ as the extractant, which does not extract insoluble P, resulting in a greater difference in measured P between soils supplemented with sludge ash versus TSP at the same rate of P_2O_5/Ac than seen with the Bray P test.

Available soil P after harvest increased with increasing application rate. This relationship of soil P to application rate was evident among the treatments receiving each P source except for the pelletized biosolids, for which the two variables showed no apparent relationship. As a result, the source-by-rate interaction effect was significant.

The treatments receiving struvite had a higher mean soil Mg concentration than those receiving any other P source, reflecting the higher amount of Mg applied with this source. Across all sources, soil Mg concentration was higher at 200 lbs P_2O_5/Ac than at 100 lbs P_2O_5/Ac, with an intermediate mean concentration in the 50 lbs P_2O_5/Ac treatments.

The treatments receiving pelletized biosolids or sludge ash had higher mean available soil Cu and Zn concentrations than those receiving TSP or struvite, and the sludge ash treatments had a higher mean soil Zn concentration than those receiving pelletized biosolids. Mean soil Cu and Zn concentrations both increased with increasing P_2O_5 application rate. The positive relationship between soil Cu and Zn concentrations and application rate was only evident among the treatments receiving sludge ash or pelletized biosolids, and not among those receiving TSP or struvite, resulting in significant source-by-rate interaction effects on the concentrations of both elements.

Lettuce

Post-harvest soil properties for each treatment are presented in Table 6. The treatments receiving sludge ash had higher Bray and Olsen P than those receiving pelletized biosolids, but lower Bray and Olsen P than those receiving struvite. The Bray vs. Olsen effect for ash vs. fertilizer observed with corn was not significant for lettuce, but the trends were the same, with Olsen P lower on average with ash than fertilizer and Bray P similar between the two sources. Soil P increased with application rate. The effect of application rate on soil P concentration was markedly stronger for P sources with higher mean P concentrations, resulting in a significant source-by-rate interaction effect.

The treatments receiving struvite had a higher mean post-harvest available Mg concentration than those receiving any other treatment.

The treatments receiving sludge ash or pelletized biosolids had higher mean available soil Cu and Zn concentrations than those receiving TSP or struvite, and the treatments receiving pelletized biosolids had a higher mean soil Cu concentration than those receiving sludge ash. Soil Cu and Zn concentrations increased with application rate. Similar to the corn results, the effect of application rate on Cu and Zn concentration was much more pronounced among the treatments receiving sludge ash or pelletized biosolids than those receiving TSP or struvite, resulting in significant source-by-rate effects for both elements.

For both crops, sludge ash and pelletized biosolids had higher Cu and Zn concentrations than TSP or struvite (Table 2). Fertilization with sludge ash or pelletized biosolids produced higher soil concentrations of Cu and Zn than fertilization with TSP or struvite, based on DTPA extraction (Tables 5 and 6). Concentrations of both metals increased with application rate when sludge ash or biosolids pellets were applied, but showed little or no response to rate when TSP or struvite was used. Although neither element was present in high enough soil concentration to cause concern in any treatment, it is possible that consistent use of sludge ash or biosolids pellets as P sources over many years could result in greater-than-desirable Cu or Zn soil concentrations.

Previous research has indicated that the effects of using sludge ash as a P source may include increases in soil pH due to liming (which may or may not be desirable) and phytotoxicity due to the high salt content. We found no effect with sludge ash or pelletized biosolids on soil pH at any application rate. At the rates applied, electrical conductivity (E.C.) was never high enough to be harmful to crops. For lettuce, soil in the pots receiving pelletized biosolids had a higher mean E.C. than those receiving TSP or struvite. However, overall, E.C. decreased with increasing application rate, and no fertilized treatment had significantly higher E.C. than the unfertilized control treatment. There is no evidence from our results that fertilizing with the sludge ash used in this study has any effect on soil salinity, though fertilization with pelletized biosolids over many years may result in elevated salt levels relative to using other sources.

Total concentrations of elements in soil after harvest, microwave digest extraction

Corn

Post-harvest soil concentrations of nutrient elements are shown in Table 7.

The treatments receiving sludge ash had a higher mean post-harvest soil P concentration than those receiving pelletized biosolids. The treatments receiving 50 lbs P_2O_5/Ac had a lower mean concentration than those receiving 200 lbs P_2O_5/Ac.

The treatments receiving sludge ash or pelletized biosolids had higher mean soil Cu concentrations than those receiving TSP.

Post-harvest soil concentrations of non-nutrient elements are shown in Table 8.

Treatments receiving sludge ash and struvite had higher mean Cr soil concentrations than those receiving pelletized biosolids and higher Ni concentrations than those receiving TSP or

biosolids pellets. Treatments receiving sludge ash had a lower mean Na concentration than those receiving TSP or pelletized biosolids.

Lettuce

Post-harvest soil concentrations of nutrient elements are shown in Table 9.

The treatments receiving pelletized biosolids had a lower mean post-harvest P concentration than those receiving struvite or sludge ash. Soil P concentration increased with application rate; the treatments receiving 200 lbs P_2O_5/Ac had a higher mean concentration than those receiving 50 or 100 lbs P_2O_5/Ac.

The mean Mo concentration was highest in the treatments receiving 50 lbs P_2O_5/Ac and lowest in those receiving 100 lbs P_2O_5/Ac; the treatments receiving 200 lbs P_2O_5/Ac had an intermediate soil Mo concentration that was significantly lower than that of the treatments receiving 50 lbs P_2O_5/Ac.

The treatments receiving 200 lbs P_2O_5/Ac had a higher mean post-harvest soil Zn concentration than those receiving 50 or 100 lbs P_2O_5/Ac.

Post-harvest soil concentrations of non-nutrient elements are shown in Table 10.

The treatments receiving TSP or pelletized biosolids had higher mean Na concentrations than those receiving struvite.

Concentrations of both Cr and V increased with increasing P_2O_5 application rate.

The effect of fertilization treatment on total soil P was small, though sometimes statistically significant. Even at the highest application rate, the amount of P added with the amendments was only 15% of the total of P in the soil.

The potential concerns about using sludge ash as a P source include contamination of soils with heavy metals. In the corn planting, treatments receiving sludge ash had higher soil Cr and Ni concentrations than those receiving biosolids pellets (both metals) or TSP (Ni only). However, no treatment had a significantly higher concentration of either metal than the zero-P control treatment. These results do not indicate a short-term concern about Cr or Ni soil contamination from the sludge ash used in this study, but a cumulative effect from multiple years of use of sludge ash as a P source is possible.

Contamination with Hg is a particular concern with sludge ash, based on previous studies. We found higher Hg concentrations in sludge ash than the other amendments (Table 2) but soil Hg concentration was not affected by treatment for either crop, and there was no trend toward higher soil Hg concentration in treatments receiving sludge ash. Because the Hg could not be accounted for in the plants (see below), these results indicate that the low Hg amounts added with the sludge ash are within experimental error of the analytical methods used. Soil Hg contamination is not likely to be an issue with the sludge ash at the rates used in this study.

The potentially concerning results for plant-available Cu and Zn concentrations found with DTPA extraction were not reflected in the microwave digestion with ICP analysis, except that the

treatments receiving sludge ash or biosolids pellets had higher soil Cu concentrations than those receiving TSP among pots containing corn plants.

Another potential concern with using sludge ash and biosolids pellets is their effect on soil salinity. Treatments receiving sludge ash had a lower soil mean Na concentration than those receiving TSP for both crops, though the difference was only statistically significant for corn. Based on these results, the use of sludge ash as a P source poses no greater threat of elevated soil Na concentration than the use of conventional P sources. Biosolids pellets generally produced higher soil Na concentrations than struvite, but similar concentrations to TSP, suggesting that this amendment also poses little risk of producing elevated soil Na concentrations.

Plant size and biomass at harvest

Results for corn shoot height to the top of the whorl, diameter ½ inch above the first node, and biomass are shown in Table 11. The treatments receiving 50 lbs P_2O_5/Ac had lower dry weight and percent dry matter than those receiving 100 or 200 lbs P_2O_5/Ac. Mean percent dry matter was lower for the treatments receiving pelletized biosolids than for those receiving TSP or sludge ash. Corn height and diameter were not affected by treatment.

Results for lettuce shoot biomass are shown in Table 12. The treatments receiving 50 lbs P_2O_5/Ac had lower fresh and dry biomass than those receiving 100 or 200 lbs P_2O_5/Ac. TSP and struvite produced greater fresh and dry biomass than pelletized biosolids. The treatments receiving struvite also produced a greater mean dry biomass than those receiving sludge ash.

In general, plant biomass of both species increased with increasing P rate. The effect was more pronounced in lettuce than corn, which reflects the higher P demand for lettuce. The response to P fertilizer relative to the control (no P applied) was not as pronounced as expected due to the fact that soil test P was already in the medium to high range. Had a soil with lower soil test P used, the response would have been greater. However, finding agriculturally useful soils with very low P is difficult because most agricultural soils have a long history of P fertilizer and/or manure applications. Even though the soil test P was not as low as desired, the results clearly show a benefit to P application for all P sources and that the ash in particular is an effective P source. Dried, pelletized biosolids yielded a lower mean fresh and dry biomass of lettuce than TSP or struvite, and may therefore require higher rates to achieve a similar P response.

The two crops exhibited different growth responses to supplemental P: increased dry matter concentration for corn and increased size for lettuce. Corn showed no biomass response above 100 lbs P_2O_5/Ac, while the biomass response of lettuce spanned the tested application rate range, confirming the higher demand for P by lettuce than for corn.

Concentrations of elements in plant tissues after harvest

<u>Corn</u>

Corn shoot tissue concentrations of nutrient elements are shown in Table 13.

The treatments receiving TSP had a lower mean tissue P concentration, and those receiving struvite had a higher concentration, than those receiving sludge ash or biosolids pellets. Tissue P concentration increased linearly with P_2O_5 application rate. The source-by-rate interaction effect was significant. The treatments receiving struvite showed a large effect of application rate between 100 and 200 lbs P_2O_5/Ac, while those receiving pelletized biosolids showed a much weaker response over that range.

The treatments receiving pelletized biosolids had a higher mean tissue N concentration than those receiving TSP or struvite. The treatments receiving struvite had a higher mean Mg concentration than those receiving sludge ash. The treatments receiving pelletized biosolids had a higher mean tissue Cu concentration than those receiving TSP or struvite. The treatments receiving sludge ash had a higher mean tissue Fe concentration than those receiving pelletized biosolids or struvite. The treatments receiving TSP had a higher mean Mn concentration than the treatments receiving sludge ash or pelletized biosolids. The treatments receiving sludge ash had a higher mean Zn concentration than those receiving pelletized biosolids, which had a higher mean than the ones receiving TSP or struvite.

The treatments receiving 50 lbs P_2O_5/Ac had higher mean tissue K and Cu concentrations than those receiving 100 or 200 lbs P_2O_5/Ac. The treatments receiving sludge ash had a higher mean Zn concentration than those receiving pelletized biosolids, which had a higher mean than those receiving TSP or struvite. The treatments receiving 100 lbs P_2O_5/Ac had a higher mean tissue Zn concentration than those receiving 200 lbs P_2O_5/Ac, with those receiving 50 lbs P_2O_5/Ac intermediate between the two.

There was a significant source-by-rate interaction effect on tissue Zn concentration. Among the treatments receiving sludge ash, those receiving 100 lbs P_2O_5/Ac had much higher Zn concentrations than those receiving the other application rates, while treatments receiving the other amendments either showed decreasing Zn concentration with increasing P_2O_5 application rate (TSP and struvite) or no apparent rate effect (pelletized biosolids).

Each of the significant results for tissue Zn concentration reflected very high Zn concentrations (26.7 and 26.2 μg/g) in two of the four replicates of the treatment receiving 100 lbs P_2O_5/Ac as sludge ash (treatment 6). Further research is required to validate these results.

Corn shoot tissue concentrations of non-nutrient elements are shown in Table 14.

The treatments receiving TSP or struvite had higher mean tissue Pb concentrations than those receiving sludge ash or pelletized biosolids. The treatments receiving sludge ash had a higher mean tissue Ti concentration than the treatments receiving any other P source, consistent with the high Ti concentration observed in sludge ash itself (Table 2). Tissue Ba concentration decreased with increasing application rate over all P sources.

Lettuce

Lettuce shoot tissue concentrations of nutrient elements are shown in Table 15.

Tissue P concentration showed only marginal responses to P source and application rate. This suggests that, for lettuce, the main response to P deficiency was reduced growth. By reducing growth, internal P concentration can be maintained.

The treatments receiving pelletized biosolids had a higher mean tissue N concentration than those receiving TSP or struvite. The treatments receiving sludge ash or pelletized biosolids had greater mean tissue S and Cu concentrations than those receiving TSP or struvite. The treatments receiving sludge ash or TSP had higher mean tissue Mn concentrations than those receiving pelletized biosolids. The treatments receiving sludge ash had a greater mean tissue Zn concentration than those receiving P from any other source.

The concentrations of N, K, S, and Cu in lettuce plant tissues decreased, while the concentration of B increased, with increasing application rate.

There was a significant source-by-rate interaction effect on tissue Zn concentration, which decreased with application rate among treatments receiving TSP or struvite, but increased with rate among the treatments receiving sludge ash and pelletized biosolids.

Lettuce shoot tissue concentrations of non-nutrient elements are shown in Table 16.

The treatments receiving TSP or struvite had greater mean tissue Cd concentrations than those receiving pelletized biosolids. The treatments receiving TSP had a greater mean Ni concentration than those receiving sludge ash.

Tissue concentrations of Ba, Sr, and V were negatively related to P_2O_5 application rate.

Tissue Na concentration generally increased with application rate among treatments receiving sludge ash or pelletized biosolids, but not among those receiving TSP or struvite, resulting a significant source-by-rate interaction effect.

Tissue Hg concentration was not related to treatment in either crop, and there was no trend toward elevated Hg concentration in treatments receiving ash sludge.

The effects of sludge ash and biosolids pellets on available soil Cu and Zn were generally reflected in the concentrations of these metals in plant tissues. However, no treatment had significantly higher tissue Cu or Zn concentrations than the control, and in no treatment were tissue Cu or Zn concentrations high enough to cause phytotoxicity or raise concerns about toxicity to humans. It remains to be seen whether tissue concentrations will increase over time if sludge ash is used as a P source over multiple seasons.

Uptake of elements into plant tissues

Corn

Uptake of nutrient elements into corn shoots is shown in Table 17.

The treatments receiving struvite had a higher mean uptake of P than those receiving P from any other source, and the ones receiving sludge ash had a higher mean P uptake than those receiving TSP. Plant P uptake increased linearly with application rate. The response to application

rate was stronger for sources with higher mean P uptake, resulting in a significant source-by-rate interaction effect.

The treatments receiving TSP or struvite had higher mean uptake of Ca than those receiving pelletized biosolids, and higher mean uptake of Mg than those receiving pelletized biosolids or sludge ash. The treatments receiving sludge ash or pelletized biosolids had higher mean uptake of Cu than those receiving struvite, and those receiving pelletized biosolids also had a higher mean Cu uptake than those receiving TSP. The treatments receiving sludge ash had a higher mean uptake of Fe than those receiving pelletized biosolids or struvite. The treatments receiving TSP had a higher mean uptake of Mn than those receiving sludge ash or pelletized biosolids. The treatments receiving sludge ash had a higher mean uptake of Zn than those receiving P from any other source.

Plant uptake of Ca, Mg, Mn, and Fe increased with application rate. Uptake of Zn among treatments receiving 100 lbs P_2O_5/Ac was greater than at 200 lbs P_2O_5/Ac and not significantly greater than at 50 lbs P_2O_5/ac.

The treatments receiving 50 lbs P_2O_5/Ac had much higher uptake of Mo than those receiving 100 or 200 lbs P_2O_5/Ac among the treatments receiving sludge ash or struvite, but much lower uptake among the treatments receiving TSP or biosolids pellets, resulting in a significant source-by-rate effect. There was also a significant source-by-rate effect for Zn uptake, which decreased with application rate among treatments receiving TSP or struvite and peaked notably at 100 lbs P_2O_5/Ac for treatments receiving sludge ash.

As was true for tissue Zn concentration, the results for Zn uptake are strongly influenced by two replicates (out of four) with very high tissue Zn concentrations and Zn uptake from the treatment receiving 100 lbs P_2O_5/Ac as sludge ash (treatment 6). Further research is required to validate these results.

Uptake of non-nutrient elements into corn shoots is shown in Table 18.

The treatments receiving TSP or struvite had higher Ba uptake than those receiving pelletized biosolids, and higher Pb uptake than those receiving sludge ash or pelletized biosolids. The treatments receiving sludge ash had significantly higher uptake of Ti than the treatments receiving P from any other source, reflecting the high Ti concentration of sludge ash (Table 2).

Lettuce

Uptake of nutrient elements into lettuce shoots is shown in Table 19.

Plants from the treatments receiving struvite took up more P, on average, than plants from the treatments receiving pelletized biosolids. Overall, lettuce P uptake increased with application rate. However, the different P sources yielded different P uptake responses to P_2O_5 application rate, with TSP and sludge ash producing decelerating increases with rate, struvite producing an accelerating increase, and pellets yielding linear increases. These differences in response resulted in a significant source by rate interaction.

Plants receiving pelletized biosolids took up less Ca, Mg, and B than plants receiving P from all other sources, less Mn than plants receiving TSP or struvite, and less Zn than those

receiving sludge ash. Plants receiving sludge ash took up less Mn than those receiving TSP. The amount of each of these elements taken up increased with increasing application rate, except for Zn, which displayed an insignificant trend in that direction. Uptake of N, K, S, Cu, and Mo also increased with increasing application rate.

Uptake of B, Cu, K and Zn showed significant source-by-rate effects. B uptake increased with application rate for all four P sources, but the relationship either accelerated (struvite), decelerated (TSP and sludge ash), or increased linearly (pelletized biosolids) with increasing application rate. Uptake of Cu, K, and Zn all showed similar variations in response to application rate among P sources to each other. Uptake of these elements decreased with increasing application rate among treatments receiving TSP, increased among those receiving sludge ash or biosolids pellets, and showed no directional response to rate among treatments receiving struvite.

Non-nutrient elements: Uptake of non-nutrient elements into lettuce shoots is shown in Table 20. Plants receiving pelletized biosolids took up less Ba and Sr than plants receiving any other P source. They also took up less Cd than plants receiving TSP or struvite, while plants receiving sludge ash took up an intermediate amount of Cd. Plants receiving sludge ash or pelletized biosolids took up less Ni than plants receiving TSP, and less Si than plants receiving TSP or struvite. Uptake of Ba, Cd, Na, Si, and Sr increased with increasing P_2O_5 application rate, while uptake of Cr peaked at 100 lbs P_2O_5/Ac.

As was true of soil and tissue Hg concentration, uptake of Hg into above-ground tissues was not related to treatment in either crop, and there was no trend toward elevated Hg uptake in treatments receiving sludge ash.

Conclusions

The sludge ash and struvite examined in this study were adequate sources of P_2O_5, while the pelletized biosolids was slightly less effective in this role. In general, all P sources tested tended to increase plant biomass with increasing application rate, with greater responses by lettuce than by corn. At the rates used based on P fertilizer requirements, neither product significantly increased soil pH or E.C., and neither produced dangerous concentrations of metals or Na in the soil or in plant tissues. Relative to the unfertilized control and fertilization with TSP or struvite, fertilization with sludge ash or pelletized biosolids resulted in elevated soil concentrations in Cu and Zn, as measured by DTPA extraction (plant available) but usually not by microwave extraction (total), the exception being higher total soil Cu concentrations for sludge ash and pelletized biosolids than for TSP in corn. These elevated Cu and Zn concentrations were reflected in tissue concentrations and uptake, but in no treatment were tissue concentrations significantly greater than in the control, nor were they high enough to present a health concern for human consumers. Sludge ash and, to a smaller degree, pellets, had higher Hg concentrations than TSP or struvite, but this had no effect on Hg concentrations in soil or tissues or on Hg uptake into tissues. While results

from the greenhouse studies are promising, longer-term studies are necessary to evaluated ash effects on crop responses and soil chemical properties under field conditions

Table 1. Selected properties of Esterville sandy loam soil

Macronutrients							Micronutrients						Soil properties		
Bray P	NO_3-N	NH_4OAc K	Exchangeable NH_4OAc K	SO_4-S	Exchangeable NH_4OAc Ca	Exchangeable NH_4OAc Mg	Hot-H_2O B	DTPA Cu	DTPA Fe	DTPA Mn	DTPA Zn	Exchangeable NH_4OAc Na	pH	1:1 slurry E.C.	O.M.
(ppm)														(mmhos/cm)	(%)
17.7	8.9	84.5	74.9	6.5	2068	400	0.55	0.64	47.2	14.5	1.95	14.98	6.7	0.20	4.2

Table 2. Concentrations of selected elements, determined by microwave digestion and ICP analysis, in Esterville sandy loam and each soil amendment. NT = not tested.

Element	Esterville sandy loam	TSP	Sludge ash	Pelletized biosolids	Struvite
Abundant elements - concentrations in g / kg					
Aluminum	10.2	1.5	26.7	4.1	0.9
Calcium	3.5	182.9	109.3	35.7	13.6
Iron	13.4	1.8	21.5	28.2	22.4
Magnesium	2.4	6.7	30.2	10.6	136.7
Manganese	0.99	0.02	10.79	2.24	2.27
Phosphorus	0.6	225.0	118.5	33.3	162.4
Potassium	1.0	1.6	25.6	3.0	0.7
Silicon	1.46	3.18	1.07	2.16	0.74
Sodium	0.11	4.72	6.03	2.44	0.24
Sulfur	0.08	12.37	1.68	2.39	0.26
Trace elements - concentrations in mg / kg					
Antimony	<0.010	NT	<0.010	<0.010	<0.010
Arsenic	7.7	13.5	28.0	12.8	9.6
Barium	141	65	1244	534	64
Beryllium	1.79	2.01	2.75	3.04	2.32
Boron	19.8	45.0	73.0	50.9	31.4
Cadmium	0.54	15.43	5.95	2.00	0.98
Chromium	16	350	130	34	3
Cobalt	5.6	1.0	15.0	2.0	0.2
Copper	10	65	1936	921	48
Lead	8	5	107	21	12
Lithium	7.80	1.85	8.76	3.30	0.05
Mercury	0.082	0.008	2.513	0.415	0.160
Molybdenum	0.7	1.4	56.0	22.7	1.4
Nickel	12.9	32.8	88.1	28.5	3.6
Platinum	<0.010	NT	<0.010	1.963	<0.010
Selenium	0.6	NT	12.8	4.5	2.2
Silver	<0.010	NT	13.5	1.6	<0.010
Strontium	102	808	459	326	215
Thallium	<0.010	NT	<0.010	<0.010	<0.010
Tin	<0.010	NT	29.1	12.3	1.0
Titanium	228	77	1601	58	25
Zinc	46	417	2717	1095	59
Zirconium	5.8	NT	6.2	21.7	4.8

Table 3. Amounts of each amendment (dry wt), and of each fertilizer used to correct N and K to a consistent rate, applied to 2,500 g soil (dry wt) per pot for each treatment.

Treatment			Tested amendments				Fertilizers to correct N & K	
Treatment #	P rate (lbs P_2O_5 / Ac)	P source	TSP	Sludge ash	Pelletized biosolids	Struvite	Urea	Potassium chloride
			g / pot (2,500 dry g soil)					
1	0	None	0	0	0	0	0.195	0.208
2	50	TSP	0.139	0	0	0	0.195	0.208
3	100	TSP	0.278	0	0	0	0.195	0.208
4	200	TSP	0.555	0	0	0	0.195	0.208
5	50	Sludge ash	0	0.465	0	0	0.195	0.193
6	100	Sludge ash	0	0.930	0	0	0.194	0.178
7	200	Sludge ash	0	1.861	0	0	0.192	0.147
8	50	Pelletized biosolids	0	0	0.796	0	0.165	0.204
9	100	Pelletized biosolids	0	0	1.592	0	0.135	0.201
10	200	Pelletized biosolids	0	0	3.184	0	0.075	0.193
11	50	Struvite	0	0	0	0.363	0.159	0.208
12	100	Struvite	0	0	0	0.726	0.123	0.208
13	200	Struvite	0	0	0	1.451	0.051	0.208

Table 4. Plant percent stand 14 or 18 days after planting (December 12, 2013).

Treatment			Stand (%)		
Treatment #	P rate (lbs P_2O_5 / Ac)	P source	Corn	Lettuce	
			26-Dec	26-Dec	30-Dec
1	0	None	100	53	53
2	50	TSP	92	61	64
3	100	TSP	100	64	64
4	200	TSP	96	59	67
5	50	Sludge ash	92	61	73
6	100	Sludge ash	96	58	61
7	200	Sludge ash	92	39	41
8	50	Pelletized biosolids	92	47	70
9	100	Pelletized biosolids	100	59	72
10	200	Pelletized biosolids	96	64	70
11	50	Struvite	100	78	81
12	100	Struvite	92	53	75
13	200	Struvite	100	61	67
Overall treatment effect		Treatment significance[1]	NS	NS	NS
		Treatment LSD (0.1)	--	--	--
P_2O_5 application rate and source effects among fertilized treatments		P rate[1]	NS	NS	NS
		P source[1]	NS	NS	NS
		P source * rate[1]	NS	NS	NS
Contrasts against application rate for fertilized treatments		Rate linear[1]	NS	NS	NS
		Rate quadratic[1]	NS	NS	NS

[1]NS: $P \geq 0.10$; ++: $0.05 \leq P < 0.10$; *: $0.01 \leq P < 0.05$; **: $P < 0.01$

Table 5. Selected post-harvest properties of soil in each treatment for corn

Treatment #	P rate (lbs P_2O_5 / Ac)	P source	Available macronutrients: Bray P (ppm)	Olsen P (ppm)	K (ppm)	Ca (ppm)	Mg (ppm)	Available micronutrients: B (ppm)	Cu (ppm)	Fe (ppm)	Mn (ppm)	Zn (ppm)	Soil properties: pH	1:1 slurry E.C. (mmhos/cm)	O.M. (%)
1	0	None	13.3	6.7	70.7	2308	408	0.49	0.91	58.1	22.1	2.35	6.4	0.43	4.0
2	50	TSP	19.3	10.5	64.8	2351	413	0.51	0.92	55.6	20.0	2.38	6.4	0.40	4.2
3	100	TSP	20.5	12.3	67.0	2302	399	0.48	0.95	57.1	20.4	2.42	6.4	0.43	4.1
4	200	TSP	34.3	19.8	72.3	2334	405	0.47	0.93	57.9	20.8	2.47	6.4	0.40	3.9
5	50	Sludge ash	16.8	8.8	70.5	2241	398	0.47	1.04	57.3	20.6	2.65	6.4	0.43	4.1
6	100	Sludge ash	22.5	10.8	72.5	2274	403	0.43	1.02	57.1	20.1	2.69	6.4	0.40	4.1
7	200	Sludge ash	31.0	14.0	72.0	2299	413	0.50	1.14	57.7	20.2	3.19	6.4	0.43	4.0
8	50	Pelletized biosolids	17.8	10.5	70.3	2247	399	0.44	0.97	57.1	20.5	2.44	6.4	0.40	4.1
9	100	Pelletized biosolids	15.8	9.0	73.0	2269	397	0.47	1.08	57.8	21.0	2.60	6.4	0.43	4.1
10	200	Pelletized biosolids	19.0	10.0	69.0	2310	406	0.50	1.32	57.6	20.6	2.80	6.4	0.43	4.2
11	50	Struvite	21.0	11.8	71.5	2284	417	0.43	0.96	57.9	21.0	2.43	6.5	0.43	4.1
12	100	Struvite	27.5	15.5	74.8	2301	417	0.45	0.93	57.5	20.5	2.38	6.4	0.43	4.0
13	200	Struvite	49.0	29.3	67.8	2257	437	0.47	0.89	55.1	18.5	2.34	6.4	0.40	4.1
Overall treatment effect		Treatment significance[1]	**	**	NS	NS	**	NS	**	NS	NS	**	NS	NS	NS
		Treatment LSD (0.1)	3.0	2.2	--	--	18	--	0.12	--	--	0.16	--	--	--
P_2O_5 application rate and source effects among fertilized treatments		P rate[1]	**	**	NS	NS	++	NS	*	NS	NS	**	NS	NS	NS
		P source[1]	**	**	NS	NS	**	NS	**	NS	NS	**	NS	NS	NS
		P source * rate[1]	**	**	NS	NS	NS	NS	**	NS	NS	**	NS	NS	NS
Contrasts against application rate for fertilized treatments		Rate linear[1]	**	**	NS	NS	*	NS	**	NS	NS	**	NS	NS	NS
		Rate quadratic[1]	*	++	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

[1]NS: $P \geq 0.10$; ++: $0.05 \leq P < 0.10$; *: $0.01 \leq P < 0.05$; **: $P < 0.01$

Table 6. Selected post-harvest properties of soil in each treatment for lettuce.

Treatment #	P rate (lbs P_2O_5 / Ac)	P source	Available macronutrients: Bray P (ppm)	Olsen P (ppm)	K (ppm)	Ca (ppm)	Mg (ppm)	Available micronutrients: B (ppm)	Cu (ppm)	Fe (ppm)	Mn (ppm)	Zn (ppm)	Soil properties: pH	1:1 slurry E.C. (mmhos/cm)	O.M. (%)
1	0	None	17.5	9.8	81.8	2370	439	0.59	0.91	56.5	20.6	2.37	6.3	0.68	4.1
2	50	TSP	22.8	12.3	79.8	2352	434	0.58	0.93	57.5	21.4	2.32	6.4	0.53	4.0
3	100	TSP	29.0	15.3	78.5	2330	428	0.47	0.95	58.0	22.3	2.27	6.3	0.55	4.1
4	200	TSP	32.5	18.5	74.3	2287	417	0.54	0.96	58.1	22.0	2.33	6.3	0.48	4.0
5	50	Sludge ash	24.0	12.5	84.5	2350	438	0.59	0.97	56.8	20.6	2.57	6.3	0.70	4.1
6	100	Sludge ash	26.0	12.8	76.0	2276	422	0.57	1.01	55.6	19.8	2.61	6.3	0.53	4.2
7	200	Sludge ash	37.8	17.3	72.5	2246	420	0.59	1.12	57.6	21.3	3.09	6.4	0.53	4.1
8	50	Pelletized biosolids	20.8	11.0	82.8	2330	434	0.60	1.05	56.7	20.7	2.45	6.3	0.78	4.1
9	100	Pelletized biosolids	24.0	12.0	80.3	2344	435	0.64	1.11	56.9	20.5	2.75	6.3	0.65	4.1
10	200	Pelletized biosolids	25.5	14.8	79.0	2341	433	0.58	1.29	58.9	21.1	2.81	6.3	0.63	4.2
11	50	Struvite	27.3	14.3	75.8	2330	444	0.61	0.92	56.8	20.6	2.28	6.4	0.65	4.1
12	100	Struvite	35.5	18.5	79.0	2260	436	0.54	0.92	56.7	20.7	2.26	6.3	0.55	4.1
13	200	Struvite	55.0	31.8	75.5	2317	466	0.53	0.93	58.2	19.9	2.26	6.3	0.45	4.1
Overall treatment effect		Treatment significance[1]	**	**	NS	NS	**	NS	**	NS	NS	**	NS	*	NS
		Treatment LSD (0.1)	4.3	2.9	--	--	19	--	0.05	--	--	0.18	--	0.19	--
P_2O_5 application rate and source effects among fertilized treatments		P rate[1]	**	**	NS	NS	NS	NS	**	++	++	**	NS	*	NS
		P source[1]	**	**	NS	NS	**	NS	**	NS	NS	**	NS	*	NS
		P source * rate[1]	**	**	NS	NS	++	NS	**	NS	NS	**	NS	NS	NS
Contrasts against application rate for fertilized treatments		Rate linear[1]	**	**	*	NS	NS	NS	**	*	NS	**	NS	**	NS
		Rate quadratic[1]	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

[1]NS: $P \geq 0.10$; ++: $0.05 \leq P < 0.10$; *: $0.01 \leq P < 0.05$; **: $P < 0.01$

Table 7. Concentrations of nutrient elements in post-harvest soil of corn plant pots, determined by microwave digestion and ICP analysis.

Treatment #	P rate (lbs P_2O_5 / ac)	P source	P	K	Ca	Mg	S	B	Cu	Fe	Mn	Mo	Zn
			Macronutrients (µg / dry gram soil)					Micronutrients (µg / dry gram soil)					
1	0	None	630	1117	4287	2498	429	35.8	8.47	16494	912	0.252	52.0
2	50	TSP	647	1012	4579	2547	437	32.4	7.84	15024	867	0.568	49.2
3	100	TSP	642	1137	4469	2523	433	34.8	8.16	15857	909	0.241	52.1
4	200	TSP	650	1100	4670	2537	425	34.6	8.11	15591	859	0.048	51.9
5	50	Sludge ash	627	1056	4324	2475	425	33.0	8.39	15384	845	0.015	50.5
6	100	Sludge ash	662	1115	4483	2519	432	34.8	9.19	15810	822	0.367	52.6
7	200	Sludge ash	683	1041	4118	2429	421	34.9	8.83	15850	845	0.103	52.6
8	50	Pelletized biosolids	628	1029	4489	2517	434	34.3	9.02	15458	897	0.193	52.0
9	100	Pelletized biosolids	613	1065	4229	2475	435	33.5	8.15	15190	826	0.125	51.4
10	200	Pelletized biosolids	636	1035	4342	2454	439	33.2	8.68	15632	898	0.444	51.1
11	50	Struvite	643	1203	4475	2595	432	34.1	8.16	15477	821	0.010	52.4
12	100	Struvite	635	1086	4296	2585	431	34.2	8.45	15626	836	0.063	52.0
13	200	Struvite	664	1085	4210	2472	424	34.5	8.46	16061	835	0.439	50.6
Overall treatment effect		Treatment significance[1]	++	NS	NS	NS	NS	NS	++	NS	NS	NS	NS
		Treatment LSD (0.1)	44	--	--	--	--	--	0.92	--	--	--	--
P_2O_5 application rate and source effects among fertilized treatments		P rate[1]	++	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		P source[1]	++	NS	NS	NS	NS	NS	*	NS	NS	NS	NS
		P source * rate[1]	NS	NS	NS	NS	NS	NS	NS	NS	NS	*	NS
Contrasts against application rate for fertilized treatments		Rate linear[1]	*	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		Rate quadratic[1]	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

[1]NS: $P \geq 0.10$; ++: $0.05 \leq P < 0.10$; *: $0.01 \leq P < 0.05$; **: $P < 0.01$

Table 8. Concentrations of non-nutrient elements in post-harvest soil of corn plant pots, determined by microwave digestion and ICP analysis.

Treatment #	P rate (lbs P_2O_5 / ac)	P source	Al	As	Ba	Be	Cd	Co	Cr	Hg	Li	Na	Ni	Pb	Si	Sr	Ti	V
			Elements															
			µg / g dry soil															
1	0	None	12627	3.62	154	0.705	0.155	7.96	16.0	0.007	9.66	225	15.6	12.2	1483	16.0	252	22.0
2	50	TSP	11967	3.55	153	0.685	0.139	7.56	14.3	0.002	9.16	240	14.6	11.8	1491	15.4	222	20.0
3	100	TSP	13170	3.88	161	0.694	0.159	7.84	16.1	0.004	9.95	242	15.5	12.1	1393	16.6	256	22.0
4	200	TSP	12714	3.57	147	0.675	0.160	7.94	15.3	0.009	9.71	247	14.3	12.2	1411	16.2	254	21.9
5	50	Sludge ash	12306	3.62	146	0.687	0.141	7.88	15.8	0.004	9.06	225	15.8	11.5	1430	15.5	226	21.1
6	100	Sludge ash	12968	3.68	151	0.677	0.177	7.78	18.8	0.005	9.61	241	16.3	12.3	1435	16.0	247	21.9
7	200	Sludge ash	12036	3.40	144	0.678	0.136	7.67	16.8	0.002	9.12	224	15.5	11.9	1438	15.4	231	21.4
8	50	Pelletized biosolids	12025	3.54	150	0.687	0.170	7.85	13.6	0.006	9.01	248	14.3	12.4	1474	15.3	224	20.5
9	100	Pelletized biosolids	12307	3.43	148	0.702	0.140	7.62	14.3	0.003	9.30	235	14.1	12.2	1474	15.5	233	20.7
10	200	Pelletized biosolids	12084	3.56	152	0.690	0.160	7.71	14.1	0.004	8.88	249	14.5	12.0	1469	15.2	222	20.6
11	50	Struvite	13597	3.49	153	0.709	0.183	7.69	17.2	0.001	10.24	244	15.2	11.8	1440	17.2	255	22.9
12	100	Struvite	12934	3.57	147	0.687	0.151	7.91	16.1	0.004	9.62	237	15.1	12.3	1415	16.0	250	21.7
13	200	Struvite	12535	3.69	147	0.681	0.155	7.93	15.9	0.002	9.60	223	15.7	12.1	1415	15.8	238	21.6
Overall treatment effect		Treatment significance[1]	NS	NS	NS	NS	NS	NS	NS	NS	NS	*	NS	NS	NS	NS	NS	NS
		Treatment LSD (0.1)	--	--	--	--	--	--	--	--	--	19	--	--	--	--	--	--
P_2O_5 application rate and source effects among fertilized treatments		P rate[1]	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		P source[1]	NS	NS	NS	NS	NS	NS	**	NS	NS	*	**	NS	++	NS	NS	NS
		P source * rate[1]	NS	NS	NS	NS	NS	NS	NS	NS	NS	*	NS	NS	NS	NS	NS	NS
Contrasts against application rate for fertilized treatments		Rate linear[1]	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		Rate quadratic[1]	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	++	NS	NS	NS	NS

[1]NS: $P \geq 0.10$; ++: $0.05 \leq P < 0.10$; *: $0.01 \leq P < 0.05$; **: $P < 0.01$

Table 9. Concentrations of nutrient elements in post-harvest soil of lettuce plant pots, determined by microwave digestion and ICP analysis.

Treatment #	P rate (lbs P_2O_5 / ac)	P source	P	K	Ca	Mg	S	B	Cu	Fe	Mn	Mo	Zn
			Macronutrients (µg / dry gram soil)					Micronutrients (µg / dry gram soil)					
1	0	None	617	1022	4318	2468	412	32.5	7.98	14998	855	0.947	49.2
2	50	TSP	628	1046	4441	2497	410	34.2	8.48	15636	881	1.383	50.9
3	100	TSP	637	1039	4360	2419	413	32.5	8.13	14923	861	0.174	50.0
4	200	TSP	677	1201	4541	2596	435	36.5	8.35	16670	892	0.124	54.3
5	50	Sludge ash	656	1086	4537	2476	422	32.5	8.37	15094	836	0.686	51.1
6	100	Sludge ash	644	1025	4384	2456	422	32.4	8.71	14932	860	0.231	50.6
7	200	Sludge ash	705	1091	4292	2524	421	33.3	9.06	15693	902	0.673	53.6
8	50	Pelletized biosolids	610	1092	4466	2515	405	34.5	8.50	15391	929	0.769	50.6
9	100	Pelletized biosolids	636	1161	4419	2521	420	34.7	8.77	15258	800	0.327	51.4
10	200	Pelletized biosolids	640	1091	4300	2462	417	33.9	8.32	15098	839	0.560	51.7
11	50	Struvite	644	1063	4326	2465	419	33.4	7.95	15368	870	0.782	50.3
12	100	Struvite	656	1139	4272	2555	410	34.9	8.79	16355	850	0.112	51.1
13	200	Struvite	690	1111	4368	2581	417	34.6	8.08	15584	862	0.703	51.4
Overall treatment effect		Treatment significance[1]	**	NS	NS	NS	NS	NS	NS	NS	NS	*	*
		Treatment LSD (0.1)	27	--	--	--	--	--	--	--	--	0.727	2.5
P_2O_5 application rate and source effects among fertilized treatments		P rate[1]	**	NS	NS	NS	NS	NS	NS	NS	NS	**	**
		P source[1]	**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		P source * rate[1]	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Contrasts against application rate for fertilized treatments		Rate linear[1]	**	NS	NS	NS	++	NS	NS	NS	NS	NS	**
		Rate quadratic[1]	NS	NS	NS	NS	NS	NS	NS	NS	NS	**	NS

[1]NS: $P \geq 0.10$; ++: $0.05 \leq P < 0.10$; *: $0.01 \leq P < 0.05$; **: $P < 0.01$

Table 10. Concentrations of non-nutrient elements in post-harvest soil of lettuce plant pots, determined by microwave digestion and ICP analysis.

Treatment #	P rate (lbs P_2O_5 / ac)	P source	Al	As	Ba	Be	Cd	Co	Cr	Hg	Li	Na	Ni	Pb	Si	Sr	Ti	V
			Elements															
			µg / g dry soil															
1	0	None	11766	3.46	152	0.681	0.130	7.72	14.5	0.010	8.45	138	14.2	11.90	1466	14.6	213	20.0
2	50	TSP	12128	3.55	155	0.691	0.172	7.88	15.1	0.006	8.84	147	15.7	12.50	1448	15.0	222	20.2
3	100	TSP	12017	3.41	155	0.673	0.176	7.73	15.0	0.011	8.73	130	15.1	11.65	1459	15.2	226	20.2
4	200	TSP	13807	3.65	167	0.703	0.152	8.05	17.2	0.010	10.08	152	14.9	12.30	1410	17.1	261	23.8
5	50	Sludge ash	12307	3.60	158	0.684	0.134	7.71	17.2	0.003	8.76	139	15.9	11.90	1473	15.4	232	20.5
6	100	Sludge ash	12065	3.57	152	0.673	0.149	7.64	15.6	0.006	8.57	134	15.2	12.05	1500	14.9	222	20.1
7	200	Sludge ash	12537	3.57	158	0.718	0.191	8.01	18.0	0.007	9.10	135	16.7	12.15	1445	16.1	239	21.9
8	50	Pelletized biosolids	12253	3.51	158	0.670	0.130	7.58	14.2	0.008	8.93	144	15.2	12.05	1460	15.6	235	20.9
9	100	Pelletized biosolids	13081	3.50	151	0.703	0.147	7.60	15.5	0.007	9.47	147	14.0	11.98	1458	16.1	250	21.6
10	200	Pelletized biosolids	12521	3.76	158	0.685	0.197	7.54	14.6	0.006	9.31	136	14.8	12.10	1441	15.7	237	21.1
11	50	Struvite	12270	3.56	161	0.689	0.153	7.62	14.0	0.006	8.81	133	14.5	11.85	1450	15.4	219	20.9
12	100	Struvite	12888	3.79	157	0.679	0.138	8.05	16.4	0.007	9.47	127	15.9	11.77	1433	15.9	264	22.4
13	200	Struvite	12828	3.60	156	0.699	0.157	7.79	17.5	0.006	9.42	123	15.2	11.95	1413	15.8	250	21.3
Overall treatment effect		Treatment significance[1]	NS	NS	NS	NS	++	NS	*	NS	NS	*	*	NS	NS	++	*	*
		Treatment LSD (0.1)	--	--	--	--	0.053	--	2.8	--	--	17	1.5	--	--	1.5	32	2.2
P_2O_5 application rate and source effects among fertilized treatments		P rate[1]	NS	NS	NS	NS	++	NS	*	NS	++	NS	NS	NS	++	++	++	*
		P source[1]	NS	NS	NS	NS	NS	NS	++	NS	NS	**	++	NS	NS	NS	NS	NS
		P source * rate[1]	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	++	NS	NS	NS	++	++
Contrasts against application rate for fertilized treatments		Rate linear[1]	*	NS	NS	++	*	NS	*	NS	*	NS	NS	NS	*	*	*	*
		Rate quadratic[1]	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

[1]NS: $P \geq 0.10$; ++: $0.05 \leq P < 0.10$; *: $0.01 \leq P < 0.05$; **: $P < 0.01$

Table 11. Linear dimensions and biomass of corn shoots in each treatment.

Treatment #	P rate (lbs P_2O_5 / Ac)	P source	Height (cm)	Diameter (cm)	Fresh weight (g)	Dry weight (g)	Dry matter (%)
1	0	None	127	0.89	187.0	29.0	15.5
2	50	TSP	127	0.86	171.8	28.4	16.5
3	100	TSP	130	0.88	181.6	30.7	16.9
4	200	TSP	131	0.88	184.3	30.7	16.6
5	50	Sludge ash	123	0.86	182.4	29.3	16.0
6	100	Sludge ash	128	0.86	176.6	29.3	16.7
7	200	Sludge ash	129	0.86	184.2	30.7	16.7
8	50	Pelletized biosolids	127	0.87	177.1	27.8	15.7
9	100	Pelletized biosolids	131	0.88	185.9	29.4	15.8
10	200	Pelletized biosolids	120	0.86	178.8	28.9	16.2
11	50	Struvite	129	0.86	176.2	27.4	15.6
12	100	Struvite	129	0.86	185.2	31.3	16.9
13	200	Struvite	126	0.88	187.9	31.4	16.7
Overall treatment effect		Treatment significance[1]	NS	NS	NS	*	**
		Treatment LSD (0.1)	--	--	--	2.7	0.9
P_2O_5 application rate and source effects among fertilized treatments		P rate[1]	NS	NS	NS	**	*
		P source[1]	NS	NS	NS	NS	*
		P source * rate[1]	NS	NS	NS	NS	NS
Contrasts against application rate for fertilized treatments		Rate linear[1]	NS	NS	NS	**	*
		Rate quadratic[1]	NS	NS	NS	*	*

[1]NS: $P \geq 0.10$; ++: $0.05 \leq P < 0.10$; *: $0.01 \leq P < 0.05$; **: $P < 0.01$

Table 12. Biomass of lettuce shoots in each treatment.

Treatment #	P rate (lbs P_2O_5 / Ac)	P source	Fresh weight (g)	Dry weight (g)	Dry matter (%)
1	0	None	79.4	7.0	8.8
2	50	TSP	93.1	8.3	8.9
3	100	TSP	104.5	9.3	8.9
4	200	TSP	110.6	10.1	9.1
5	50	Sludge ash	67.7	5.9	8.8
6	100	Sludge ash	106.0	9.0	8.5
7	200	Sludge ash	110.4	9.6	8.7
8	50	Pelletized biosolids	66.8	6.0	8.9
9	100	Pelletized biosolids	85.3	7.2	8.5
10	200	Pelletized biosolids	98.3	8.0	8.2
11	50	Struvite	92.5	8.1	8.6
12	100	Struvite	95.9	8.8	9.2
13	200	Struvite	131.0	11.6	8.9
Overall treatment effect		Treatment significance[1]	**	**	NS
		Treatment LSD (0.1)	22.8	1.9	--
P_2O_5 application rate and source effects among fertilized treatments		P rate[1]	**	**	NS
		P source[1]	*	**	NS
		P source * rate[1]	NS	NS	NS
Contrasts against application rate for fertilized treatments		Rate linear[1]	**	**	NS
		Rate quadratic[1]	NS	NS	NS

[1]NS: $P \geq 0.10$; ++: $0.05 \leq P < 0.10$; *: $0.01 \leq P < 0.05$; **: $P < 0.01$

Table 13. Concentrations of nutrient elements in corn plant shoot tissues, determined by microwave digestion or dry combustion and ICP analysis.

Treatment #	P rate (lbs P_2O_5 / ac)	P source	P	N	K	Ca	Mg	S	B	Cu	Fe	Mn	Mo	Zn
			mg / g dry weight						µg / g dry weight					
1	0	None	1.20	8.59	14.3	2.80	3.85	0.63	5.31	2.07	20.8	17.7	3.4	14.3
2	50	TSP	1.26	8.61	14.4	3.11	4.13	0.65	8.98	2.56	21.6	22.7	5.3	12.4
3	100	TSP	1.34	8.91	14.2	3.13	4.20	0.65	9.37	1.97	23.0	25.5	8.6	10.7
4	200	TSP	1.55	8.25	12.8	3.01	4.27	0.60	8.73	2.23	22.3	23.0	8.2	9.8
5	50	Sludge ash	1.38	8.59	14.1	2.80	3.86	0.64	8.44	3.06	21.9	19.5	10.3	13.5
6	100	Sludge ash	1.50	8.84	13.5	2.89	4.02	0.64	8.02	2.38	24.7	19.0	5.3	19.3
7	200	Sludge ash	1.72	8.79	13.8	3.10	4.08	0.66	9.43	2.40	33.4	21.9	4.7	12.4
8	50	Pelletized biosolids	1.38	9.20	14.4	2.99	4.15	0.65	7.83	2.59	20.9	18.9	6.1	12.9
9	100	Pelletized biosolids	1.50	9.10	14.0	2.81	3.92	0.65	8.72	2.87	20.5	19.0	7.6	13.6
10	200	Pelletized biosolids	1.59	9.28	14.4	2.88	4.23	0.69	8.96	2.94	23.4	20.8	7.8	13.3
11	50	Struvite	1.58	9.19	14.7	3.06	4.21	0.69	7.40	2.69	21.2	21.1	11.5	12.6
12	100	Struvite	1.69	8.31	13.0	2.95	4.32	0.66	9.13	2.21	21.4	21.6	6.2	11.7
13	200	Struvite	2.14	8.13	12.6	2.95	4.51	0.62	8.23	1.59	20.5	21.0	5.7	9.5
Overall treatment effect		Treatment significance[1]	**	++	**	NS	*	NS	NS	**	++	**	NS	**
		Treatment LSD (0.1)	0.10	0.84	1.1	--	0.37	--	--	0.69	7.6	3.2	--	2.5
P_2O_5 application rate and source effects among fertilized treatments		P rate[1]	**	NS	**	NS	++	NS	NS	*	NS	NS	NS	**
		P source[1]	**	*	++	NS	**	NS	NS	**	*	**	NS	**
		P source * rate[1]	**	NS	++	NS	NS	NS	NS	++	NS	NS	++	**
Contrasts against application rate for fertilized treatments		Rate linear[1]	**	NS	**	NS	*	NS	NS	*	++	NS	NS	*
		Rate quadratic[1]	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	*

[1]NS: $P \geq 0.10$; ++: $0.05 \leq P < 0.10$; *: $0.01 \leq P < 0.05$; **: $P < 0.01$

Table 14. Concentrations of non-nutrient elements in corn plant shoot tissues, determined by microwave digestion or dry combustion and ICP analysis.

Treatment #	P rate (lbs P_2O_5 / ac)	P source	Al	As	Ba	Be	Cd	Co	Cr	Hg	Li	Na	Ni	Pb	Si	Sr	Ti	V
			µg / g dry matter															
1	0	None	12.7	0.849	11.7	0.018	0.020	0.059	0.697	0.007	0.087	37.1	0.430	0.423	1600	6.09	2.87	0.315
2	50	TSP	7.0	1.782	11.7	0.013	0.042	0.017	0.719	0.002	0.013	72.2	0.348	0.749	1683	6.36	0.09	0.253
3	100	TSP	18.3	0.198	12.0	0.006	0.001	0.044	0.677	0.004	0.061	57.3	0.359	0.965	1765	6.41	0.08	0.276
4	200	TSP	10.8	1.490	11.5	0.014	0.105	0.020	0.797	0.009	0.037	51.7	0.516	0.821	1714	6.26	0.72	0.288
5	50	Sludge ash	16.0	0.287	11.4	0.014	0.015	0.008	0.750	0.004	0.072	40.9	0.405	0.426	1558	6.07	3.60	0.265
6	100	Sludge ash	9.7	0.895	10.6	0.011	0.043	0.027	0.849	0.005	0.024	31.1	0.578	0.495	1750	5.98	1.87	0.265
7	200	Sludge ash	19.3	0.491	10.9	0.005	0.032	0.019	0.829	0.002	0.020	39.4	0.467	0.236	1723	6.34	0.56	0.287
8	50	Pelletized biosolids	10.1	0.165	12.0	0.011	0.031	0.022	0.692	0.006	0.028	45.9	0.421	0.279	1634	6.43	0.23	0.284
9	100	Pelletized biosolids	9.8	1.408	10.7	0.006	0.097	0.007	0.678	0.003	0.025	30.4	0.415	0.260	1685	5.85	0.50	0.247
10	200	Pelletized biosolids	10.5	0.405	10.1	0.014	0.275	0.000	0.776	0.004	0.049	51.1	0.335	0.391	1655	5.97	0.24	0.305
11	50	Struvite	5.9	1.297	12.0	0.005	0.057	0.000	0.704	0.001	0.016	59.9	0.532	1.758	1700	6.67	0.03	0.301
12	100	Struvite	6.5	2.155	11.3	0.009	0.142	0.026	0.762	0.004	0.009	62.7	0.200	0.691	1730	5.93	0.04	0.301
13	200	Struvite	6.8	1.922	11.3	0.007	0.044	0.000	0.631	0.002	0.025	78.6	0.546	1.010	1650	6.17	0.05	0.307
Overall treatment effect		Treatment significance[1]	NS	NS	++	NS	NS	NS	NS	NS	NS	NS	NS	*	NS	NS	NS	NS
		Treatment LSD (0.1)	--	--	1.4	--	--	--	--	--	--	--	--	0.762	--	--	--	--
P_2O_5 application rate and source effects among fertilized treatments		P rate[1]	NS	NS	*	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	++	NS	NS
		P source[1]	NS	NS	++	NS	NS	NS	NS	NS	NS	++	NS	**	NS	NS	*	NS
		P source * rate[1]	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Contrasts against application rate for fertilized treatments		Rate linear[1]	NS	NS	*	NS	++	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		Rate quadratic[1]	NS	NS	NS	NS	NS	++	NS	NS	NS	NS	NS	NS	++	*	NS	NS

[1]NS: $P \geq 0.10$; ++: $0.05 \leq P < 0.10$; *: $0.01 \leq P < 0.05$; **: $P < 0.01$

Table 15. Concentrations of nutrient elements in lettuce plant shoot tissues, determined by microwave digestion or dry combustion and ICP analysis.

Treatment #	P rate (lbs P_2O_5 / ac)	P source	P	N	K	Ca	Mg	S	B	Cu	Fe	Mn	Mo	Zn
			mg / g dry weight						µg / g dry weight					
1	0	None	2.66	29.4	36.1	12.9	7.86	2.61	19.6	10.0	68.3	105	5.9	50.5
2	50	TSP	2.57	27.1	33.4	13.8	7.63	2.47	18.8	9.4	74.5	116	8.2	46.8
3	100	TSP	2.51	26.7	28.7	13.1	7.35	2.25	19.3	7.8	72.6	120	9.1	43.7
4	200	TSP	2.32	23.6	22.9	12.0	6.81	1.83	17.2	6.0	48.0	104	9.0	30.6
5	50	Sludge ash	2.80	31.1	42.6	17.9	8.28	2.84	17.9	11.6	105.0	108	15.8	49.7
6	100	Sludge ash	3.03	27.6	31.4	13.2	8.33	2.53	20.6	10.2	68.7	102	9.0	55.6
7	200	Sludge ash	3.08	25.0	32.1	13.4	8.26	2.34	22.4	9.4	70.5	105	11.1	54.0
8	50	Pelletized biosolids	2.55	29.0	37.8	16.3	7.23	2.57	14.8	10.6	81.4	83	6.5	35.7
9	100	Pelletized biosolids	2.67	28.7	33.5	14.0	7.15	2.45	17.0	10.6	74.6	90	3.8	44.6
10	200	Pelletized biosolids	3.42	29.7	35.5	13.8	8.27	2.66	19.5	11.8	74.3	85	9.1	47.9
11	50	Struvite	2.99	28.3	37.0	14.6	8.20	2.58	19.7	9.4	70.8	108	7.6	50.3
12	100	Struvite	2.35	26.4	27.8	12.4	6.51	2.16	16.4	7.1	54.3	91	6.6	37.6
13	200	Struvite	3.13	22.5	23.7	13.0	7.82	1.84	20.7	6.8	70.1	104	10.1	33.3
Overall treatment effect		Treatment significance[1]	*	**	**	NS	NS	**	++	**	NS	NS	NS	**
		Treatment LSD (0.1)	0.65	3.0	9.0	--	--	0.34	4.6	2.1	--	--	--	11.2
P_2O_5 application rate and source effects among fertilized treatments		P rate[1]	++	**	**	*	NS	**	NS	*	NS	NS	NS	NS
		P source[1]	++	**	*	NS	NS	**	++	**	NS	**	NS	**
		P source * rate[1]	NS	++	NS	NS	NS	++	NS	NS	NS	NS	NS	*
Contrasts against application rate for fertilized treatments		Rate linear[1]	++	**	**	++	NS	**	*	**	++	NS	NS	NS
		Rate quadratic[1]	NS	NS	*	NS	NS	NS	NS	NS	NS	NS	NS	NS

[1]NS: $P \geq 0.10$; ++: $0.05 \leq P < 0.10$; *: $0.01 \leq P < 0.05$; **: $P < 0.01$

Table 16. Concentrations of non-nutrient elements in lettuce plant shoot tissues, determined by microwave digestion or dry combustion and ICP analysis.

Treatment #	P rate (lbs P_2O_5 / ac)	P source	Al	As	Ba	Be	Cd	Co	Cr	Hg	Li	Na	Ni	Pb	Si	Sr	Ti	V
			µg / g dry matter									mg / g	µg / g dry matter					
1	0	None	28.3	0.529	31.3	0.000	0.729	0.013	0.314	0.010	0.073	13.2	0.709	0.609	588	24.1	0.557	0.482
2	50	TSP	39.6	0.625	32.0	0.000	0.816	0.020	0.302	0.006	0.070	12.3	1.104	0.454	614	25.3	0.450	0.539
3	100	TSP	35.9	0.764	27.2	0.001	0.818	0.071	0.573	0.011	0.090	11.5	0.800	0.583	537	23.6	0.435	0.437
4	200	TSP	17.4	0.461	25.9	0.000	0.807	0.020	0.294	0.010	0.050	12.1	0.889	0.366	503	22.7	0.377	0.428
5	50	Sludge ash	73.4	0.956	43.7	0.000	0.634	0.000	0.522	0.003	0.101	11.5	0.466	0.367	573	33.8	1.183	0.526
6	100	Sludge ash	26.1	0.070	29.4	0.000	0.772	0.000	0.326	0.006	0.073	16.0	0.447	0.740	501	24.6	0.320	0.447
7	200	Sludge ash	35.1	0.583	28.4	0.000	0.667	0.008	0.317	0.007	0.075	14.7	0.414	0.288	584	23.8	0.485	0.415
8	50	Pelletized biosolids	52.2	0.131	37.1	0.000	0.520	0.000	0.516	0.008	0.083	9.3	0.709	0.185	438	30.6	2.302	0.552
9	100	Pelletized biosolids	74.1	0.388	32.8	0.001	0.712	0.010	0.649	0.007	0.057	11.7	0.941	0.638	456	27.6	0.342	0.504
10	200	Pelletized biosolids	28.3	0.412	26.8	0.001	0.576	0.023	0.364	0.006	0.031	16.0	0.338	0.333	578	24.7	0.152	0.361
11	50	Struvite	31.6	0.598	35.8	0.001	0.741	0.054	0.334	0.006	0.081	14.3	0.723	0.391	528	27.1	0.367	0.415
12	100	Struvite	23.2	0.351	30.2	0.001	0.714	0.000	0.450	0.007	0.100	10.5	0.608	0.530	489	23.4	0.053	0.405
13	200	Struvite	45.3	0.021	29.7	0.000	0.894	0.045	0.335	0.006	0.087	13.0	0.641	0.485	558	23.2	0.907	0.415
Overall treatment effect		Treatment significance[1]	NS	NS	NS	NS	++	NS	NS	NS	NS	*	NS	NS	NS	NS	NS	NS
		Treatment LSD (0.1)	--	--	--	--	0.242	--	--	--	--	3.7	--	--	--	--	--	--
P_2O_5 application rate and source effects among fertilized treatments		P rate[1]	NS	NS	**	NS	NS	NS	NS	NS	NS	++	NS	NS	NS	*	NS	*
		P source[1]	NS	NS	NS	NS	**	NS	NS	NS	NS	NS	++	NS	NS	NS	NS	NS
		P source * rate[1]	NS	NS	NS	NS	NS	NS	NS	NS	NS	*	NS	NS	NS	NS	NS	NS
Contrasts against application rate for fertilized treatments		Rate linear[1]	NS	NS	**	NS	NS	NS	NS	NS	NS	*	NS	NS	NS	*	NS	*
		Rate quadratic[1]	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	++	NS	NS	NS	NS

[1]NS: $P \geq 0.10$; ++: $0.05 \leq P < 0.10$; *: $0.01 \leq P < 0.05$; **: $P < 0.01$

Table 17. Uptake of nutrient elements into corn plant shoot tissues (2 plants/pot).

Treatment #	P rate (lbs P_2O_5 / ac)	P source	P	N	K	Ca	Mg	S	B	Cu	Fe	Mn	Mo	Zn
			mg / pot						µg / pot					
1	0	None	34.8	249	413	81.0	112	18.2	154	60.5	603	513	102	413
2	50	TSP	35.7	244	408	88.0	117	18.3	253	71.5	612	644	149	351
3	100	TSP	40.9	272	432	95.4	128	19.8	287	60.0	701	791	254	330
4	200	TSP	47.7	252	392	92.1	131	18.5	268	67.5	682	702	246	300
5	50	Sludge ash	40.0	250	407	80.9	112	18.8	244	88.6	644	572	278	394
6	100	Sludge ash	44.1	259	396	84.8	118	18.8	235	69.6	722	558	155	568
7	200	Sludge ash	53.0	270	423	95.1	125	20.3	288	73.9	1018	670	143	381
8	50	Pelletized biosolids	38.3	255	400	83.0	115	18.1	217	71.5	582	526	170	357
9	100	Pelletized biosolids	44.2	267	411	82.3	115	19.1	256	83.3	602	558	221	399
10	200	Pelletized biosolids	45.9	267	412	83.0	122	19.8	259	83.6	678	603	223	383
11	50	Struvite	43.6	251	403	83.6	115	18.9	204	73.2	583	576	306	346
12	100	Struvite	53.0	260	406	91.8	135	20.6	285	68.2	668	674	195	366
13	200	Struvite	67.3	255	395	92.5	141	19.5	258	50.1	644	656	181	296
Overall treatment effect		Treatment significance[1]	**	++	NS	**	**	NS	++	*	*	**	NS	**
		Treatment LSD (0.1)	4.5	21	--	9.1	9	--	74	18.4	218	94	--	77
P_2O_5 application rate and source effects among fertilized treatments		P rate[1]	**	*	NS	*	**	NS	++	NS	*	*	NS	**
		P source[1]	**	NS	NS	*	**	NS	NS	**	*	**	NS	**
		P source * rate[1]	*	NS	NS	NS	NS	NS	NS	++	NS	NS	*	*
Contrasts against application rate for fertilized treatments		Rate linear[1]	**	++	NS	*	**	NS	++	NS	**	*	NS	NS
		Rate quadratic[1]	NS	*	NS	NS	++	NS	NS	NS	NS	NS	NS	**

[1]NS: $P \geq 0.10$; ++: $0.05 \leq P < 0.10$; *: $0.01 \leq P < 0.05$; **: $P < 0.01$

Table 18. Uptake of non-nutrient elements into corn plant shoot tissues (2 plants/pot).

Treatment #	P rate (lbs P_2O_5 / ac)	P source	Al	As	Ba	Be	Cd	Co	Cr	Hg	Li	Na	Ni	Pb	Si	Sr	Ti	V
			µg / pot									mg / pot	µg / pot		mg / pot	µg / pot		
1	0	None	370	26.3	338	0.537	0.561	1.714	20.6	0.205	2.500	1.07	12.4	12.6	50.0	177	88.6	9.14
2	50	TSP	197	52.0	330	0.364	1.145	0.431	20.5	0.054	0.357	1.98	10.0	21.7	46.9	179	2.5	7.20
3	100	TSP	553	6.2	367	0.181	0.018	1.232	20.4	0.120	1.977	1.66	10.9	29.1	54.1	196	2.9	8.32
4	200	TSP	327	46.7	351	0.427	3.069	0.636	24.5	0.258	1.133	1.58	15.9	24.8	52.5	192	22.5	8.86
5	50	Sludge ash	472	9.0	336	0.451	0.443	0.236	22.5	0.131	1.841	1.22	12.3	13.0	45.3	175	115.1	7.85
6	100	Sludge ash	284	26.0	311	0.329	1.249	0.801	24.8	0.161	0.718	0.91	16.9	14.4	51.3	175	53.8	7.76
7	200	Sludge ash	564	15.2	334	0.146	1.000	0.533	25.2	0.075	0.627	1.21	14.1	7.4	52.7	194	16.1	8.76
8	50	Pelletized biosolids	284	4.6	332	0.311	0.870	0.574	19.2	0.175	0.748	1.26	11.6	7.7	45.3	178	6.9	7.87
9	100	Pelletized biosolids	284	39.9	315	0.188	2.765	0.203	20.1	0.083	0.734	0.90	12.4	7.6	49.4	171	15.0	7.23
10	200	Pelletized biosolids	301	12.2	295	0.402	7.398	0.000	22.4	0.112	1.355	1.56	9.6	12.6	47.8	172	6.9	8.83
11	50	Struvite	163	31.9	330	0.127	1.361	0.000	19.7	0.043	0.368	1.65	14.4	49.0	46.7	182	0.9	8.31
12	100	Struvite	202	69.3	353	0.268	4.635	0.866	24.0	0.118	0.261	2.00	6.2	21.2	54.3	185	1.1	9.28
13	200	Struvite	213	59.9	355	0.218	1.359	0.000	19.9	0.064	0.748	2.45	17.1	31.6	52.2	193	1.5	9.60
Overall treatment effect		Treatment significance[1]	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	*	++	NS	NS	NS
		Treatment LSD (0.1)	--	--	--	--	--	--	--	--	--	--	--	23.0	8.2	--	--	--
P_2O_5 application rate and source effects among fertilized treatments		P rate[1]	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	**	NS	NS	++
		P source[1]	NS	NS	*	NS	NS	NS	NS	NS	NS	++	NS	**	NS	++	*	NS
		P source * rate[1]	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Contrasts against application rate for fertilized treatments		Rate linear[1]	NS	NS	NS	NS	++	NS	NS	NS	NS	NS	NS	NS	*	++	NS	*
		Rate quadratic[1]	NS	NS	NS	NS	NS	++	NS	NS	NS	NS	NS	NS	**	NS	NS	NS

[1]NS: $P \geq 0.10$; ++: $0.05 \leq P < 0.10$; *: $0.01 \leq P < 0.05$; **: $P < 0.01$

Table 19. Uptake of nutrient elements into lettuce plant shoot tissues (2 plants/pot).

Treatment #	P rate (lbs P_2O_5 / ac)	P source	P	N	K	Ca	Mg	S	B	Cu	Fe	Mn	Mo	Zn
			mg / pot						µg / pot					
1	0	None	17.9	203	243	87	52.9	18.1	140	71.0	475	732	48.1	354
2	50	TSP	21.0	222	273	113	63.1	20.3	155	77.7	596	973	68.4	388
3	100	TSP	23.6	246	267	123	68.7	21.0	183	74.2	695	1143	85.6	417
4	200	TSP	23.5	234	228	122	68.9	18.3	176	61.8	482	1061	92.7	312
5	50	Sludge ash	15.9	181	225	93	46.1	16.1	102	62.8	582	585	66.7	289
6	100	Sludge ash	27.2	246	281	120	75.2	22.7	187	91.9	618	928	83.5	502
7	200	Sludge ash	28.9	240	295	126	77.4	22.2	215	88.4	679	999	99.2	520
8	50	Pelletized biosolids	14.5	164	194	81	40.0	14.2	89	57.1	388	471	51.9	211
9	100	Pelletized biosolids	19.1	203	224	91	49.7	16.9	121	74.7	475	648	25.8	328
10	200	Pelletized biosolids	27.0	237	280	110	65.3	21.0	155	93.6	586	681	68.0	383
11	50	Struvite	22.4	217	253	103	61.6	19.8	156	69.8	530	836	43.4	394
12	100	Struvite	20.9	229	236	107	56.9	18.6	147	61.9	467	796	60.8	332
13	200	Struvite	35.8	259	272	149	89.3	21.1	238	77.3	784	1186	112.1	383
Overall treatment effect		Treatment significance[1]	**	++	++	**	**	NS	**	++	NS	**	NS	*
		Treatment LSD (0.1)	6.0	64	67	21	16.0	--	44	26.7	--	259	--	147
P_2O_5 application rate and source effects among fertilized treatments		P rate[1]	**	**	NS	**	**	++	**	++	NS	**	NS	++
		P source[1]	*	NS	NS	**	**	NS	**	NS	NS	**	NS	*
		P source * rate[1]	*	NS	*	NS	++	NS	*	*	NS	NS	NS	*
Contrasts against application rate for fertilized treatments		Rate linear[1]	**	**	*	**	**	*	**	*	NS	**	*	++
		Rate quadratic[1]	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

[1]NS: $P \geq 0.10$; ++: $0.05 \leq P < 0.10$; *: $0.01 \leq P < 0.05$; **: $P < 0.01$

Table 20. Uptake of non-nutrient elements into lettuce plant shoot tissues (2 plants/pot).

Treatment #	P rate (lbs P_2O_5 / ac)	P source	Al	As	Ba	Be	Cd	Co	Cr	Hg	Li	Na	Ni	Pb	Si	Sr	Ti	V
			µg / pot									mg / pot	µg / pot		mg / pot	µg / pot		
1	0	None	207	3.31	212	0.000	4.73	0.092	2.07	0.072	0.603	89	5.22	4.44	4.76	163	3.84	3.35
2	50	TSP	308	4.28	261	0.000	6.73	0.162	2.45	0.051	0.620	101	8.97	4.01	5.04	206	3.35	4.43
3	100	TSP	349	7.65	256	0.013	7.75	0.711	5.68	0.106	0.856	107	7.69	4.70	5.03	221	4.28	4.11
4	200	TSP	171	4.06	262	0.000	8.34	0.150	3.00	0.099	0.474	121	9.73	3.80	5.12	230	2.88	4.34
5	50	Sludge ash	411	5.54	228	0.000	3.67	0.000	2.92	0.016	0.784	71	2.65	2.90	2.61	174	7.15	3.05
6	100	Sludge ash	231	0.66	264	0.000	7.00	0.000	2.94	0.053	0.694	144	4.06	6.13	4.45	221	2.97	3.99
7	200	Sludge ash	353	5.72	269	0.000	6.41	0.092	3.03	0.074	0.651	138	4.01	2.53	5.68	225	5.10	3.99
8	50	Pelletized biosolids	208	0.99	183	0.000	2.94	0.000	2.28	0.063	0.635	61	3.70	0.44	2.68	151	15.29	3.17
9	100	Pelletized biosolids	580	2.40	213	0.004	4.28	0.030	4.59	0.063	0.328	89	8.33	4.66	2.99	179	1.31	3.60
10	200	Pelletized biosolids	221	3.05	212	0.011	4.61	0.175	2.93	0.051	0.274	126	2.85	2.74	4.61	196	1.16	2.81
11	50	Struvite	251	4.31	254	0.011	5.77	0.508	2.48	0.051	0.773	112	6.85	2.66	3.77	191	2.42	3.40
12	100	Struvite	195	3.65	258	0.013	6.33	0.000	3.69	0.062	0.926	94	5.09	4.65	4.63	200	0.40	3.50
13	200	Struvite	498	0.26	342	0.000	10.19	0.512	3.82	0.072	0.992	148	7.43	5.76	6.37	265	9.75	4.75
Overall treatment effect		Treatment significance[1]	NS	NS	**	NS	**	NS	NS	NS	NS	**	NS	NS	**	**	NS	NS
		Treatment LSD (0.1)	--	--	40	--	2.09	--	--	--	--	41	++	--	1.73	37	--	--
P_2O_5 application rate and source effects among fertilized treatments		P rate[1]	NS	NS	**	NS	**	NS	++	NS	NS	**	NS	NS	**	**	NS	NS
		P source[1]	NS	NS	**	NS	**	NS	NS	NS	NS	NS	*	NS	*	**	NS	NS
		P source * rate[1]	NS	NS	++	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Contrasts against application rate for fertilized treatments		Rate linear[1]	NS	NS	**	NS	**	NS	NS	NS	NS	**	NS	NS	**	**	NS	NS
		Rate quadratic[1]	NS	NS	NS	NS	NS	NS	*	NS	NS	NS	NS	++	NS	NS	NS	NS

[1]NS: $P \geq 0.10$; ++: $0.05 \leq P < 0.10$; *: $0.01 \leq P < 0.05$; **: $P < 0.01$

Appendix D. Metro Plant Emissions Data for Fluid Bed Incinerators 1, 2, and 3

Test (1)	Start Date	End Date	Feed Rate	MACT Parameters											Existing Permit Parameters (2)									
				Cd	dioxins/ furans TEQ (3)	dioxins/ furans TMB(3)	CO	HCl	Hg	NOx	Pb	TSP (PM)	SO_2	PM 2.5	Filterable Particulate Matter	Filterable Particulate Material	PM-10	Pb	Hg	Hg Combined	Metal HAPS	Volatile HAPS	HCl	N2O
		Units ⇨	dtph	mg/ dscm	ng/ dscm	ng/ dscm	ppmvd	ppmvd	mg/ dscm	ppmvd	mg/ dscm	mg/ dscm	ppmvd	lb/hr (2.0 mg blank correction)	lb/ ton	lb/ hr	lb/ hr	lb/ ton	lb/ ton	gms/ 24hr	lbs/ ton	lbs/ ton	lbs/ ton	ppmvd
EPA Final MACT Limits for Fluid Bed Reactors (FBRs) 02/21/2011															**Existing Air Permit**									
Existing FBRs			**0.0016**	**0.1000**	**1.2**	**64**	**0.51**	**0.0370**	**150**	**0.0074**	**18**	**15**		1.30	2.57	2.01	0.00097	0.0036	3200	0.065	0.034	0.1	
NEW FBRs			0.0011	0.0044	0.013	27	0.24	0.0010	30	0.00062	9.6	5.3	0.55										
Metro FBR1																								
C	04/22/08	04/22/08	3.7																0.00000627	0.24				
C	01/29/08	01/29/08	4.2															0.0000547	0.0000129	1.97	0.00129			
C	03/11/08	03/11/08	4.4												0.063	0.28						0.0139	0.005	
C	09/16/08	09/16/08	4.2																0.0000146	0.7				
C	12/16/08	12/16/08	4.9														0.55							
C	12/18/08	12/18/08	4.0																0.0000058	0.5				
C	02/10/09	02/10/09	4.0															0.000021	0.0000372	1.73	0.00116			
C	03/24/09	03/24/09	4.4												0.02	0.09						0.0098	0.004	
C	03/31/09	03/31/09	4.3														0.47							
C	04/28/09	04/28/09	4.4																0.00000488	0.47				
C	09/09/09	09/09/09	3.8																0.00000446	0.6				
C	10/29/09	10/29/09	4.2																0.00000943	0.62				
I	02/08/10	02/09/10	3.8		0.03		0.4			28.5			0											
C	03/02/10	03/02/10	4.1												0.03	0.12						0.0096	0.004	
D	03/02/10	03/02/10	4.10	0.00039				0.17	0.0007		0.0020	2.4												
C	03/09/10	03/09/10	4.5														0.52							
C	03/30/10	03/30/10	3.5															0.0000348	0.0000118		0.000742			
C	04/06/10	04/06/10	3.0																0.0000135					
C	11/29/11	11/29/11	5.0												0.03	0.14						0.0091	0.001	
C	12/06/11	12/06/11	4.7														0.57							
C	12/13/11	12/13/11	4.5															0.00000856	0.0000109		0.000245			
C	03/31/15	04/01/15	**4.50**	**0.0002**	**0.00004**	**0.029**	**33.8**	**0.016**	**0.0027**	**28.5**	**0.0006**	**2.47**	**1.9**											
C	04/20/16	04/20/16	**4.60**	**0.0003**	**0.00000**	**0.00670**	**16.4**	**0.040**	**0.00025**	**28.0**	**0.0018**	**1.73**	**5.4**											

Test (1)	Start Date	End Date	Feed Rate	MACT Parameters											Existing Permit Parameters (2)									
				Cd	dioxins/ furans TEQ (3)	dioxins/ furans TMB(3)	CO	HCl	Hg	NOx	Pb	TSP (PM)	SO_2	PM 2.5	Filterable Particulate Matter	Filterable Particulate Material	PM-10	Pb	Hg	Hg Combined	Metal HAPS	Volatile HAPS	HCl	N2O
		Units ⇨	dtph	mg/ dscm	ng/ dscm	ng/ dscm	ppmvd	ppmvd	mg/ dscm	ppmvd	mg/ dscm	mg/ dscm	ppmvd	lb/hr (2.0 mg blank correction)	lb/ ton	lb/ hr	lb/ hr	lb/ ton	lb/ ton	gms/ 24hr	lbs/ ton	lbs/ ton	lbs/ ton	ppmvd
EPA Final MACT Limits for Fluid Bed Reactors (FBRs) 02/21/2011															**Existing Air Permit**									
Existing FBRs			**0.0016**	**0.1000**	**1.2**	**64**	**0.51**	**0.0370**	**150**	**0.0074**	**18**	**15**		1.30	2.57	2.01	0.00097	0.0036	3200	0.065	0.034	0.1	
NEW FBRs			0.0011	0.0044	0.013	27	0.24	0.0010	30	0.00062	9.6	5.3	0.55										
Metro FBR1																								
C	04/22/08	04/22/08	3.7																0.00000627	0.24				
C	01/29/08	01/29/08	4.2															0.0000547	0.0000129	1.97	0.00129			
C	03/11/08	03/11/08	4.4												0.063	0.28						0.0139	0.005	
C	09/16/08	09/16/08	4.2																0.0000146	0.7				
C	12/16/08	12/16/08	4.9														0.55							
C	12/18/08	12/18/08	4.0																0.0000058	0.5				
C	02/10/09	02/10/09	4.0															0.000021	0.0000372	1.73	0.00116			
C	03/24/09	03/24/09	4.4												0.02	0.09						0.0098	0.004	
C	03/31/09	03/31/09	4.3														0.47							
C	04/28/09	04/28/09	4.4																0.00000488	0.47				
C	09/09/09	09/09/09	3.8																0.00000446	0.6				
C	10/29/09	10/29/09	4.2																0.00000943	0.62				
I	02/08/10	02/09/10	3.8		0.03		0.4			28.5			0											
C	03/02/10	03/02/10	4.1												0.03	0.12						0.0096	0.004	
D	03/02/10	03/02/10	4.10	0.00039				0.17	0.0007		0.0020	2.4												
C	03/09/10	03/09/10	4.5														0.52							
C	03/30/10	03/30/10	3.5															0.0000348	0.0000118		0.000742			
C	04/06/10	04/06/10	3.0																0.0000135					
C	11/29/11	11/29/11	5.0												0.03	0.14						0.0091	0.001	
C	12/06/11	12/06/11	4.7														0.57							
C	12/13/11	12/13/11	4.5															0.00000856	0.0000109		0.000245			
C	03/31/15	04/01/15	**4.50**	**0.0002**	**0.00004**	**0.029**	**33.8**	**0.016**	**0.0027**	**28.5**	**0.0006**	**2.47**	**1.9**											
C	04/20/16	04/20/16	**4.60**	**0.0003**	**0.00000**	**0.00670**	**16.4**	**0.040**	**0.00025**	**28.0**	**0.0018**	**1.73**	**5.4**											

Test (1)	Start Date	End Date	Feed Rate	MACT Parameters											Existing Permit Parameters (2)									
				Cd	dioxins/ furans TEQ (3)	dioxins/ furans TMB(3)	CO	HCl	Hg	NOx	Pb	TSP (PM)	SO_2	PM 2.5	Filterable Particulate Matter	Filterable Particulate Material	PM-10	Pb	Hg	Hg Combined	Metal HAPS	Volatile HAPS	HCl	N2O
		Units ⇨	dtph	mg/ dscm	ng/ dscm	ng/ dscm	ppmvd	ppmvd	mg/ dscm	ppmvd	mg/ dscm	mg/ dscm	ppmvd	lb/hr (2.0 mg blank	lb/ ton	lb/ hr	lb/ hr	lb/ ton	lb/ ton	gms/ 24hr	lbs/ ton	lbs/ ton	lbs/ ton	ppmvd
EPA Final MACT Limits for Fluid Bed Reactors (FBRs) 02/21/2011															**Existing Air Permit**									
Existing FBRs				**0.0016**	**0.1000**	**1.2**	**64**	**0.51**	**0.0370**	**150**	**0.0074**	**18**	**15**		1.30	2.57	2.01	0.00097	0.0036	3200	0.065	0.034	0.1	
NEW FBRs				0.0011	0.0044	0.013	27	0.24	0.0010	30	0.00062	9.6	5.3											
Metro FBR2																								
C	01/03/08	01/03/08	4.1														0.29							
C	02/05/08	02/05/08	4.1																0.0000313	1.97				
C	04/15/08	04/15/08	3.8																0.0000313	1.3				
C	09/23/08	09/23/08	3.2																0.00000171	0.7				
C	10/07/08	10/07/08	4.5												0.06	0.26						0.0048	0.006	
C	10/14/08	10/14/08	4.5														3.75							
C	11/18/08	11/18/08	3.0															0.000044	0.00000669		0.0146			
C	12/04/08	12/04/08	4.6				2.6			16.7							0.87							
C	02/18/09	02/18/09	3.2																0.000000451	1.73				
C	04/21/09	04/21/09	3.1																0.0000025	0.47				
C	09/15/09	09/15/09	4.1																0.0000074	0.6				
C	10/13/09	10/13/09	3.5															0.0000547	0.0000224	0.62	0.000845			
D	10/13/09	10/13/09		0.0006					0.0013		0.0001													
D	12/01/09	12/01/09						0.14																
C	12/01/09	12/01/09	4.2												0.02	0.08						0.0107	0.004	
C	12/08/09	12/08/09	4.2														0.67							
I	02/09/10	02/10/10	3.60	0.00075	0.0300		1.5			13.4			0											
C	12/07/10	12/07/10	4.3														0.90							
C	12/09/10	12/09/10	4.8												0.02	0.10								
D	12/09/10	12/09/10										1.25												
C	03/24/15	03/25/15	**4.50**	**0.0002**	**0.00001**	**0.018**	**21.3**	**0.020**	**<0.0007**	**24.9**	**0.0008**	**2.07**	**<2.0**											
C	08/31/16	09/01/16		**0.0006**	**0.00000**	**0.003**	**6.6**	**0.044**	**0.0002**	**13.8**	**0.0007**	**1.84**	**5.0**											
E																								

Appendix E. Metro Plant Facilities Design Data

Item	Unit	Design	Year Installed
Solids Management Building			
Centrifuges			2005 (7), 2008 (1)
Type		Decanter (High Solids)	
Number		8	
Capacity, each	dtpd	70	
Loading	dtph	2.5	
Centrifuge Feed Tanks			2005
Type		Rectangular	
Number		2	
Capacity, each	gallons	60,000	
Centrifuge Feed Pumps			2005 (7), 2008 (1)
Type		Progressing Cavity	
Number		8	
Capacity, each	gpm	340	
Centrifuge Feed Grinders			2005
Type		Heavy-Duty, In-Line	
Number		8	
Capacity, each	gpm	340	
Centrifuge Feed Tank Air Compressors			2005
Type		Positive Displacement	
Number		2	
Capacity, each	scfm	1000	
Cake Pumps			2005
Type		Hydraulic Piston	
Number		8	
Capacity, each	gpm	60	
Cake Pipeline Lubrication Pumps			2005
Type		Metering Diaphragm	
Number		16	
Capacity, each	gph	180 @ 1,000 psi	
Cake Bin			2005
Type		Steel	
Number		4	
Capacity, each	ft^3	2,290	
Polymer Storage Tanks			2005
Type		Fiberglass	
Number		4	
Capacity, each	gallons	12,000	
Polymer Mix Tanks			2005
Type		Fiberglass	
Number		3	
Capacity, each	gallons	4,800	
Polymer Feed Tanks			2005
Type		Fiberglass	
Number		4	
Capacity, each	gallons	4,800	
Polymer Transfer Pumps			2005
Type		Progressing Cavity	
Number		3	
Capacity, each	gpm	40	
Polymer Feed Pumps			2005
Type		Progressing Cavity	
Number		8	
Capacity, each	gpm	20	
Fluidized Bed Incinerators			2005

Item	Unit	Design	Year Installed
Type		Fluidized Sand	
Number		3	
Capacity, each	dtpd	105	
Precooler			2005
Type		Shell and Tube	
Number		6	
Capacity, each	gpm	600	
Heat Recovery Units			2005
Type		Shell and Tube	
Number		4	
Capacity, each	ft^3/min	75,000	

Appendix F. Solids Management Building Modifications Included in Recent Projects

Solids Management Building Modifications Included in Recent Solids Management Building Projects

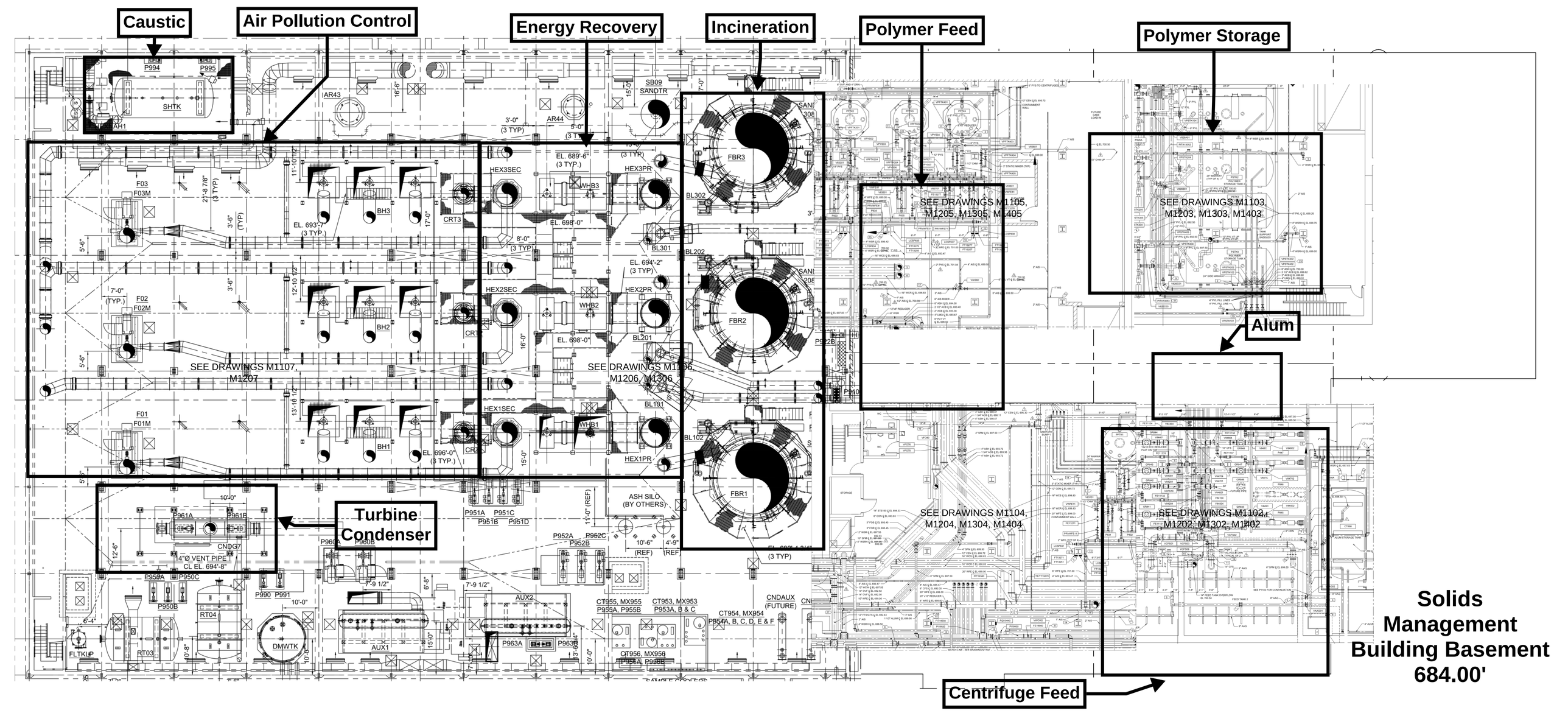
Component	Metro Plant Solids Processing Improvements (construction completed 2015)	Metro Plant SMB Baghouse/Scrubber/ Miscellaneous Improvements (design initiated 2018)	Others
Centrifuges			Installed eighth centrifuge (CF6) in 2008
Cake Bins & Cake Pumps			Repaired and coated internal surface of corroded cake bins
Incinerator	Add overfire air – redirect a portion of the combustion air to the incinerator freeboard to reduce the use of cooling water sprays	Renew air distribution in one incinerator with new design – demonstrate effectiveness of proposed design	With NOx emission concentrations cut in half between 2005 and 2013 (from 48 ppm to 24 ppm) by reducing bed temperatures, the ammonia system was decommissioned in July, 2014. Ran silica sand from 2015-2017. After experiencing high sand loss rates at times, switched back to olivine sand in 2017.
Fluidizing Air Blower	Replace inlet valves on fluidizing air blowers – decrease size to improve control		A new motor for the FBR1 fluidizing air blower was provided in 2015 after the 2014 feed sludge tank overflow incident.
Flue Gas Duct	Replace crossover duct – upgrade to stainless steel material to mitigate premature corrosion damage Replace expansion joints - mitigate air leaks into the flue gas train[1]		
Primary Heat Exchanger	Replace primary heat exchangers – avoid pending failure caused by thermal cracking of tubes at the tube sheet		Reskinned inlet and outlet tees 2011-2011.

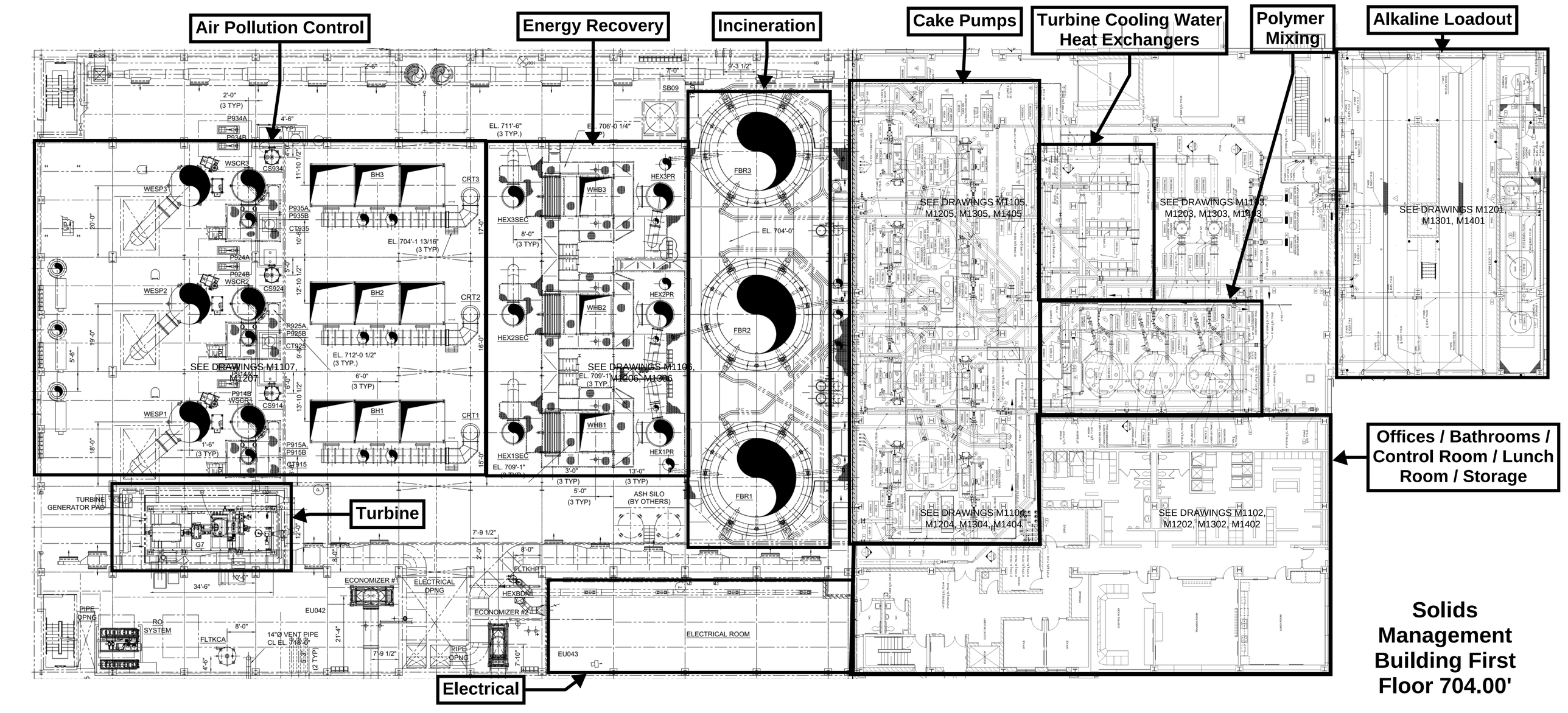
Component	Metro Plant Solids Processing Improvements (construction completed 2015)	Metro Plant SMB Baghouse/Scrubber/ Miscellaneous Improvements (design initiated 2018)	Others
Waste Heat Boiler	Replace economizer sections all boilers - avoid pending failure caused by erosion and cementitious buildup on tubes. Included design modifications to improve flow distribution and mitigate tube abrasion at the tube sheets. Replace selected waste heat boiler sections – complete forensics to identify issues	Replace baghouse inlet duct supports – correct observed sagging Replace waste heat boiler tube sections – address known high wear areas Replace ash transporters and valves – address abrasion issues	
Steam Turbine G7			Major overhauls in 2006, 2009 (reblade stages 1,2,3,8) and 2014 (T&T valve and bent rotor) Replace HVAC system – increase cooling capacity
Noncondensing Steam Turbine G9			Installed and started in February 2003.
Auxiliary Condenser		Replace auxiliary condenser – avoid pending failure	Replaced in July 2010 after 28 of the 210 tubes were plugged due to leakage.
Boiler Feedwater system			Replaced RO membranes 2007, 2009, 2011, 2017.
Baghouse	Replace Baghouse Covers – includes re-design of insulation and seal and upgraded stainless steel alloy material to mitigate corrosion. Add bypass to secondary heat exchanger – allows operation of baghouse at higher temperature to mitigate corrosion Removed bypass valves to mitigate leakage in 2014	Rehabilitate baghouse hoppers - permanently repair areas that have been temporarily patched Replace ash transporters and valves – address abrasion issues	Installed epoxy coating on corroded carbon steel covers in 2006. Complete bag changeout 2007, 2011, and 2015. Reskinned lower BH access doors 2009 Reskinned upper plenums 2013.
Scrubber		Modify scrubber – optimize scrubber performance	Installed larger packed tower nozzles.
Wet Electrostatic Precipitator	Disconnected purge air blower and installed orifice plates to reduce purge air flow into the flue gas train.		Replace control panel 2015. Installed filters on purge air pipe 2018.

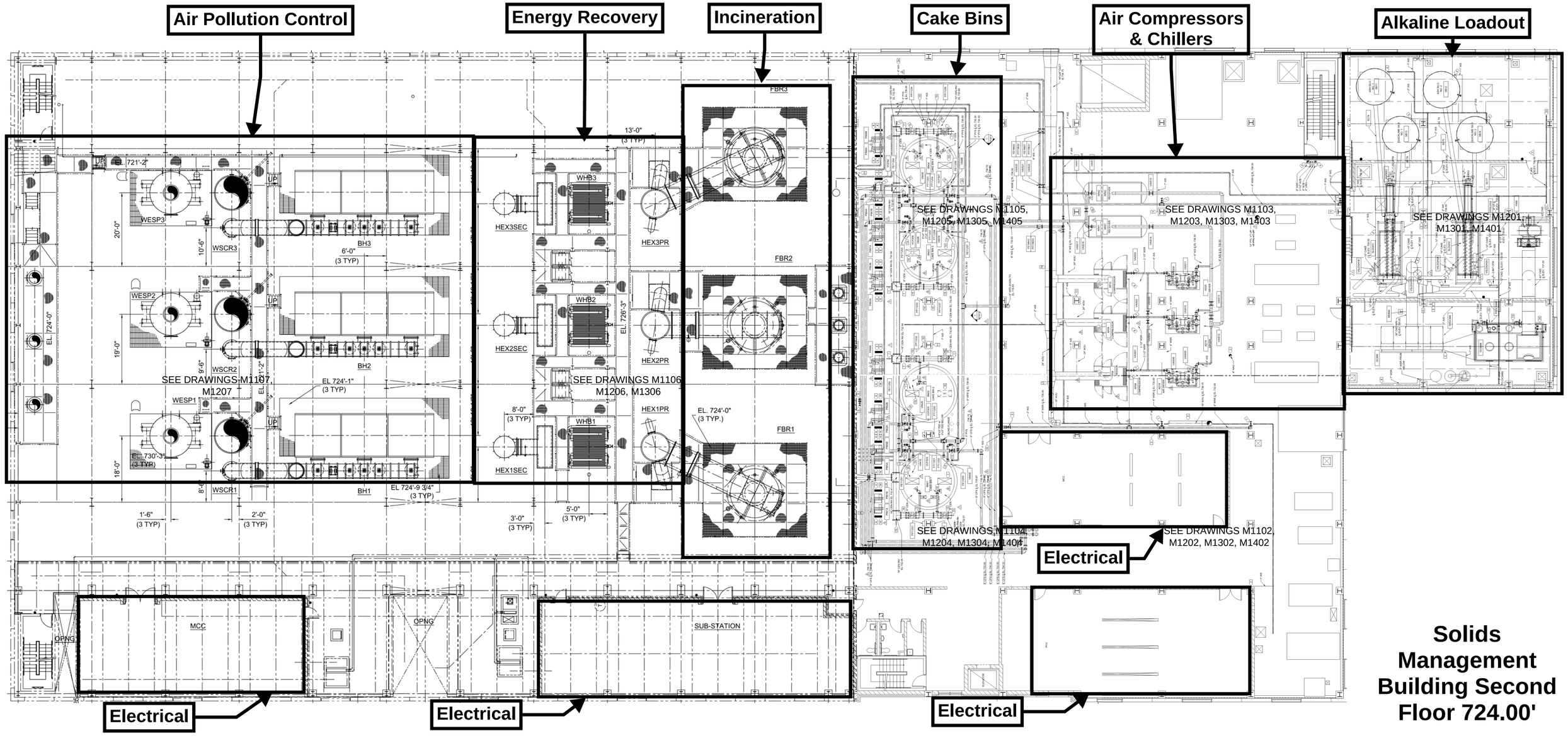
Component	Metro Plant Solids Processing Improvements (construction completed 2015)	Metro Plant SMB Baghouse/Scrubber/ Miscellaneous Improvements (design initiated 2018)	Others
Induced Draft Fan	Replace Induced Draft Fan Motors – increases size to maintain operation within the motor service factor Install internal sprays – prevent chemical buildup		
Secondary heat exchanger			Installed abrasion pipe inserts in outer tube rows of HEXSEC starting in 2006. Continued to check upper tubes during shutdown.
Process Areas Vacuum Systems		Replace SMB vacuum system – increase capacity Reroute F&I2/408 vacuum system bag filter vent – reduce plugging of vent pipes	
Digital Control System			Changed PLCs from ABB Conductor software to Modicon Quantum software 2013.
Carbon system			Changed gearboxes from 15:1 to 60:1 gear ration in 2005. Maximum carbon rate decrease to 6 pph. Changed back to 15: 1 gearbox in 2012 to restore 12 pph carbon maximum flow rate.
Odor Control		Renew – ensure continued service	
Wet Scrubber			Installed extra 6 inches of pall ring stainless steel packing in packed tower in 2009.
Backup service for natural gas		Add propane system – replace old fuel oil system	

1. This and modifications to the carbon injection and the wet electrostatic precipitator reduced air in-leakage from 30% to < 5% of the flue gas flow.

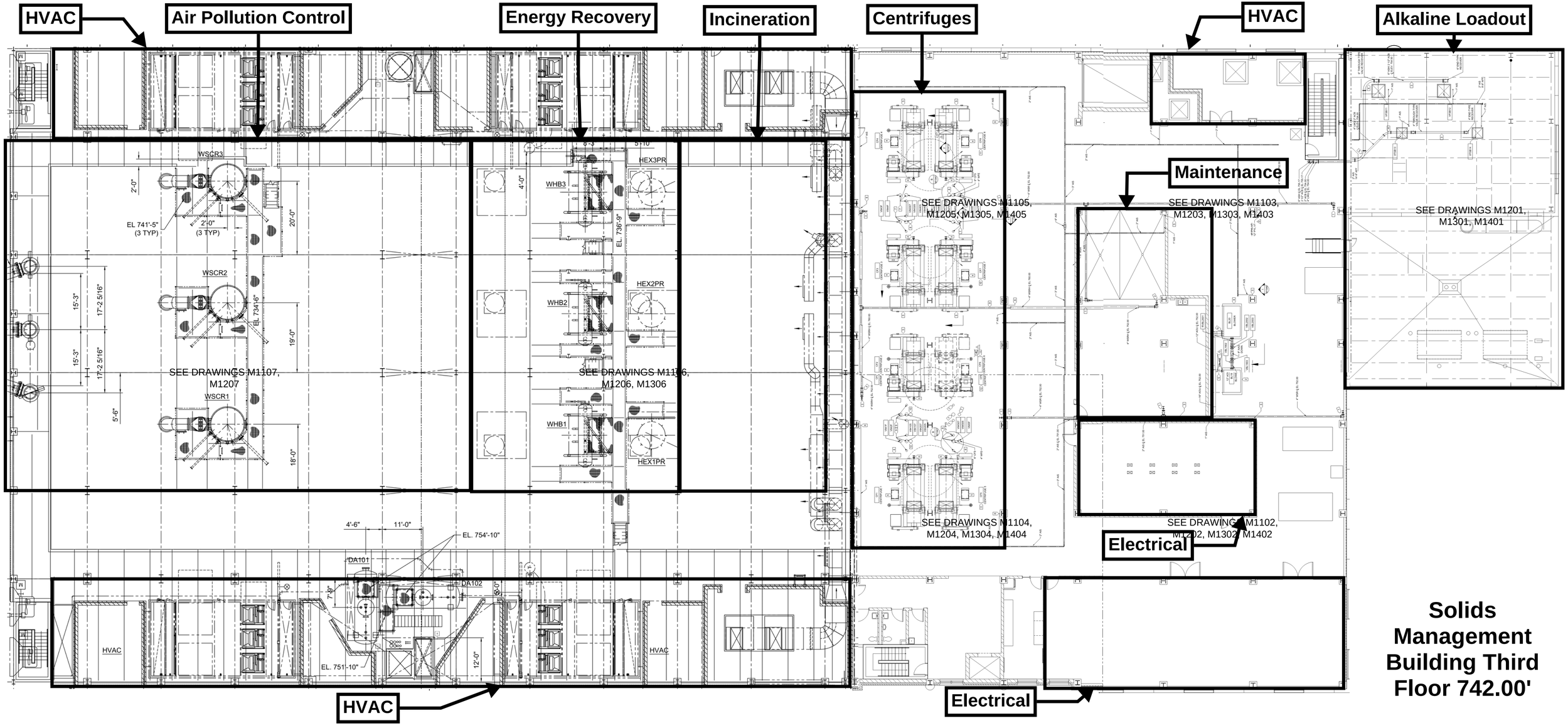
Appendix G. Metro Plant Solids Management Building Floor Plan


Caustic
Air Pollution Control
Energy Recovery
Incineration
Polymer Feed
Polymer Storage
Alum
Turbine Condenser
Centrifuge Feed
SEE DRAWINGS M1107, M1207
SEE DRAWINGS M1106, M1206, M1306
SEE DRAWINGS M1105, M1205, M1305, M1405
SEE DRAWINGS M1103, M1203, M1303, M1403
SEE DRAWINGS M1104, M1204, M1304, M1404
SEE DRAWINGS M1102, M1202, M1302, M1402
Solids Management Building Basement 684.00'


Air Pollution Control
Energy Recovery
Incineration
Cake Pumps
Turbine Cooling Water Heat Exchangers
Polymer Mixing
Alkaline Loadout
Offices / Bathrooms / Control Room / Lunch Room / Storage
Turbine
Electrical
Solids Management Building First Floor 704.00'
SEE DRAWINGS M1107, M1207
SEE DRAWINGS M1106, M1206, M1306
SEE DRAWINGS M1105, M1205, M1305, M1405
SEE DRAWINGS M1103, M1203, M1303, M1403
SEE DRAWINGS M1201, M1301, M1401
SEE DRAWINGS M1104, M1204, M1304, M1404
SEE DRAWINGS M1102, M1202, M1302, M1402
WESP3
WESP2
WESP1
WSCR3
WSCR2
WSCR1
CS934
CS924
CS914
BH3
BH2
BH1
CRT3
CRT2
CRT1
WHB3
WHB2
WHB1
HEX3PR
HEX2PR
HEX1PR
HEX3SEC
HEX2SEC
HEX1SEC
FBR3
FBR2
FBR1
EL. 704'-0"
EL. 704'-1 13/16" (3 TYP)
EL. 712'-0 1/2" (3 TYP.)
EL. 709'-1" (3 TYP.)
EL. 711'-6" (3 TYP.)
EL. 706'-0 1/4"
TURBINE GENERATOR PAD
G7
ASH SILO (BY OTHERS)
ECONOMIZER #1
ECONOMIZER #2
ELECTRICAL OPNG
HEXBDM
FLTKHP
FLTKCA
RO SYSTEM
PIPE OPNG
14"Ø VENT PIPE CL EL. 718'-0"
EU042
EU043
ELECTRICAL ROOM
SB09



Solids Management Building Second Floor 724.00'


HVAC
Air Pollution Control
Energy Recovery
Incineration
Centrifuges
HVAC
Alkaline Loadout
Maintenance
WSCR3
WSCR2
WSCR1
2'-0"
EL 741'-5"
(3 TYP)
2'-0"
(3 TYP)
20'-0"
15'-3"
17'-2 5/16"
EL 734'-6"
19'-0"
15'-3"
17'-2 5/16"
5'-6"
18'-0"
SEE DRAWINGS M1107,
M1207
4'-0"
WHB3
WHB2
WHB1
EL. 736'-9"
5'-10"
HEX3PR
HEX2PR
HEX1PR
SEE DRAWINGS M1106,
M1206, M1306
SEE DRAWINGS M1105,
M1205, M1305, M1405
SEE DRAWINGS M1103,
M1203, M1303, M1403
SEE DRAWINGS M1201,
M1301, M1401
SEE DRAWINGS M1104,
M1204, M1304, M1404
SEE DRAWINGS M1102,
M1202, M1302, M1402
Electrical
4'-6"
11'-0"
EL. 754'-10"
DA101
DA102
7'-6"
50'-0"
HVAC
EL. 751'-10"
12'-0"
HVAC
HVAC
Electrical
Solids
Management
Building Third
Floor 742.00'

Appendix H. Risk Evaluation: Deferring Additional Solids Processing Capacity at the Metro Plant

1

SMB Risk Project

Nov 6, 2017 Update
Jan 22, 2018 Minor Corrections and *Added Material on Sensitivity to Renewal Maintenance*

George Sprouse, Process Engineering Manager

v1.2018_01_22_1400

METROPOLITAN COUNCIL

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- Updates
  - Inputs
    - Starting projection year average annual = 2016 value
    - Sludge storage fill tank level to access contingency condition counting = 170.8 (per discussion with Mike M and Peter)
  - **Simulation Addition – Logic to Curtail (end) a PM upon the Number of Failed Units**
    - Now includes a logic input that, if the number of failed units gets above an input criteria, then any unit in PM will be immediately put back into service
    - The amount of PM remaining is captured and reported as planned PM not performed
    - With this addition that is more close to actual conditions, number of units on-line and sludge to landfill more closely match observed info
  - Past info corrections
    - Corrected table and revised cumulative probability plots to match original graphs (included graphs at end)
  - ***Jan 22, 2018 Added two runs with shorter renewal maintenance times and corrected some legends***
- New Item
  - Attempted additional method to work towards also putting info in a relatable framework

Input Updates – Solids Production For Projection Period

INPUTS

Scenario Designation: 3 Units, UM avg failure p = 0.0162

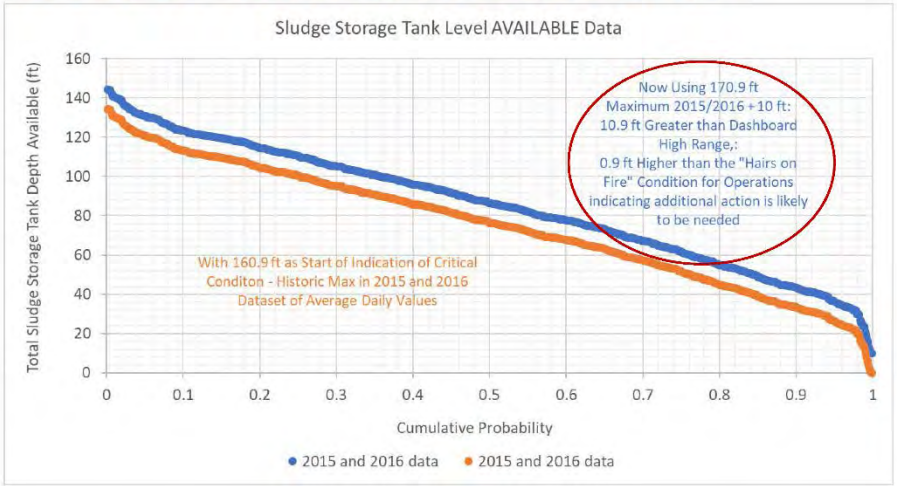
System Processing Requirements

Start Year:		2010
First Projection Year:		2017
First Projection Year Average Annual Solids Production [dtpd]:	(2016 value used for first projection year)	230.00
Increase in Average Annual Solids Production for Future Years [dtpd/yr]:		1.80
Future Year Maximum Month Peaking Factor:		1.15

The Resulting Monthly Solids Production Factors using the Max Month Input Factor From Warping the Past Average Curve

Month	Days in Month	Day of the Year Start	Day of the Year End	M/A factor not wt'ed	M/A factor wt'ed
Jan	31	1	31	0.938	0.938
Feb	28	32	59	1.044	1.044
Mar	31	60	90	1.018	1.018
Apr	30	91	120	1.059	1.059
May	31	121	151	1.103	1.103
Jun	30	152	181	1.150	1.150
July	31	182	212	1.028	1.028
Aug	31	213	243	0.892	0.892
Sep	30	244	273	0.911	0.911
Oct	31	274	304	0.946	0.946
Nov	30	305	334	0.972	0.972
Dec	31	335	365	0.946	0.946
Sum:	365		Avg:	1.001	1.001
			Wt Avg:	1	1

Input Updates – SST Fill Level used in critical condition ID



Input – Capacity Characteristics

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Treatment Train Characteristics	
FBR Units Characteristics	
Number of FBR Units (min = 1, max = 8 in current programming)	3
FBR Unit Capacity [dtpd]:	110 *
Alkaline Addition System Characteristics	
Alkaline Addition System Capacity [dtpd]:	90 *

Capacity While Operating

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Input – Capacity Characteristics Additional Info - CORRECTED

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Corrected →

FBR Mass Flow Rate (dtph) During Periods with 2 FBRs Running									
Item	FBR 1			FBR 2			FBR 3		
	For All Data with 2 FBRs Running	For Data With Sludge to Loadout Also Running	For Data Without Sludge to Loadout Running	For All Data with 2 FBRs Running	For Data With Sludge to Loadout Also Running	For Data Without Sludge to Loadout Running	For All Data with 2 FBRs Running	For Data With Sludge to Loadout Also Running	For Data Without Sludge to Loadout Running
2014									
Count	*150*	*101*	*49*	*213*	*128*	*83*	*185*	*121*	*64*
50 %-tile	101.7	101.6	102.3	103.2	104.0	101.2	105.2	106.1	103.9
75 %-tile	106.5	106.7	106.5	108.6	109.2	106.8	110.0	111.0	108.0
90 %-tile	109.2	109.3	108.7	113.2	114.3	111.7	114.0	114.4	112.2
95 %-tile	111.5	111.4	112.7	115.4	116.3	113.9	116.7	116.7	117.1
2015									
Count	*155*	*46*	*109*	*154*	*29*	*125*	*111*	*23*	*88*
50 %-tile	100.1	103.4	99.6	102.9	96.2	103.8	101.0	100.4	102.1
75 %-tile	105.6	108.0	103.1	107.5	104.6	108.0	111.8	108.2	113.2
90 %-tile	109.9	115.7	108.5	112.1	108.4	112.3	116.0	112.8	116.1
95 %-tile	113.9	116.0	110.9	113.3	111.3	113.8	116.9	115.2	117.6
2016									
Count	*200*	*70*	*130*	*106*	*32*	*74*	*148*	*46*	*102*
50 %-tile	104.3	104.4	104.2	106.3	106.2	106.4	102.6	99.4	104.6
75 %-tile	108.0	106.9	108.5	111.4	113.6	111.1	110.0	105.0	111.3
90 %-tile	112.1	111.3	113.3	116.4	118.6	115.9	113.4	111.9	114.5
95 %-tile	114.2	112.6	115.0	119.2	122.0	118.8	114.9	113.1	115.1
2017 to Oct 25									
Count	*97*	*15*	*82*	*79*	*2*	*77*	*106*	*17*	*89*
50 %-tile	103.6	103.6	103.5	100.4	98.6	100.4	105.6	105.3	105.6
75 %-tile	107.3	105.0	107.6	106.7	Note 1	106.8	109.7	109.5	109.9
90 %-tile	109.9	108.5	110.0	111.1	Note 1	111.1	114.5	112.1	114.6
95 %-tile	111.4	Note 1	111.6	113.4	Note 1	113.4	115.1	Note 1	115.2

Note 1. Excel function returned an error. It is likely there were too few data points for the Excel to calculate the cumulative probability by its method.

See pages at end for reformatted cumulative probability graphs

Using full processing day screening criteria of:
-FBR daily average >= 10 wtph (~67 dtpd)
-Sludge to Landfill daily average >= 0.2 dtph (4.8 dtpd)

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PM Curtailment in the Real World

Status Tracking Project FBR History for 5/9/16 to 9/15/17 – Scheduled Outage Data

FBR	First Tracking Project Recorded Day with "F" Status	Last Tracking Project Recorded Day with "F" Status	Estimated First Day Off-Line Based on Feed Data (criteria (6 wp/h for day)	Estimated Last Day Off-Line Based on Feed Data (criteria (6 wp/h for day)	Estimated Duration Based on FBR Feed Data	Minimum Potential Duration (including weekend) - Project Recorded Days	Minimum Duration Days with Observations (weekends not included, consistent with sampling approach) - Project Recorded Days	Note
1	6/10/2016	6/10/2016	6/9/2016	6/9/2016	1	1	1	All day building shut down.
1	7/25/2016	8/10/2016	7/22/2016	8/11/2016	21	17	12	FBR 1 maintenance shut down
1	11/18/2016	11/18/2016	short - did not flag in daily feed			1	1	all day building shut down for electrical PM
1	12/19/2016	12/20/2016	12/17/2016	12/20/2016	4	2	2	FBR 1 down for PMs but not completed out short due to WHB 2 Tube leak
1	1/30/2017	2/10/2017	1/28/2017	2/10/2017	14	12	10	FBR 1 maintenance shut down and c alibrations
1	8/17/2017	8/18/2017	8/5/2017	8/20/2017	16	2	2	No note
1	8/30/2017	8/30/2017	8/29/2017	8/29/2017	1	1	1	SMB Shutdown
Sum					57	36	29	
2	6/10/2016	6/10/2016	6/9/2016	6/9/2016	1	1	1	All day building shut down.
2	9/6/2016	10/6/2016	9/4/2016	10/5/2016	32	31	18	FBR 2 maintenance shut down
2	11/18/2016	11/18/2016	short - did not flag in daily feed			1	1	all day building shut down for electrical PM
2	4/17/2017	5/5/2017	4/15/2017	5/5/2017	21	19	15	FBR 2 maintenance shut down #1 WHB tube leak, #2, #3 down for electrical PMs. A day with all FBRs down for some period including one in forced outage
2	7/19/2017	7/19/2017	7/18/2017	7/18/2017	1	1	1	
2	8/30/2017	8/30/2017	8/30/2017	8/30/2017	1	1	1	SMB Shutdown
Sum					56	54	37	
3	6/8/2016	6/10/2016	6/8/2016	6/10/2016	3	3	3	BH 3 Mod 3 Plugged since May limiting capacity. Taken down to correct issue.
3	10/20/2016	10/20/2016	10/19/2016	10/19/2016	1	1	1	Electrical PM Maintenance on FBR 3 train
3	11/4/2016	11/4/2016	11/4/2016	11/5/2016	2	1	1	FBR 3 could have been started, but remained down due to electrical PM -- Electrical PM tacked on to the end of a forced shutdown
3	11/18/2016	11/18/2016	short - did not flag in daily feed			1	1	all day building shut down for electrical PM
3	12/2/2016	12/8/2016	12/2/2016	12/8/2016	7	7	5	FBR 3 tube leak repaired afternoon of 12/2, now down entirely for PM. PM tacked on to a forced outage.
3	6/12/2017	6/22/2017	6/10/2017	6/25/2017	16	11	9	Tracking project didn't capture data for the next week - use FBR Feed data for this case
3	7/19/2017	7/19/2017	7/18/2017	7/18/2017	1	1	1	#1 WHB tube leak, #2, #3 down for electrical PMs. A day with all FBS down for some period with one in forced outage
3	8/30/2017	8/30/2017			1	1	1	SMB Shutdown
Sum					31	26	22	

Number 3 does not appear to have received 2 of the programmed long duration planned maintenance shut downs during this >1 year period

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Input – Maintenance and Renewal Characteristics – Now With PM Curtailment Option

FBR Unit's Maintenance Characteristics		
Maximum Allowed Number of FBR Units in PM/RM	1	
FBR Unit's Unplanned Maintenance		
Probability of Failure when operating:		Input Results in
At the Start of the Renewed Period	0.01530	3.42
At the End of the Renewed Period	0.01530	Events per unit
Unplanned Maintenance Duration (calendar d):	7	per year in 2016
Calendar Day Window in which the UM will be converted to PM (calendar d):	30	
FBR Unit's Planned Maintenance		Input Results in
Operating Days Between Planned Maintenance, if operating will not force taking off line and PM (operating d):	122	2.03
Maximum Operating Days Between Planned Maintenance, will force taking out of operation and PM (operating d):	210	Events per unit
Planned Maintenance Duration (d):		per year in 2016
At the Start of the Renewed Period	22	Input Results in
At the End of the Renewed Period	25	13.328
Calendar Day Window in which the PM will be converted to RM (calendar d):	90	Event days duration
Number of Units (>=) in UM to cause all PMs to be curtailed and units in PM to be converted to available.	1	per unit per year in 2016

```
' start - if number in UM is >= limit, place units in PM to available and capture the amount of curtailed PM

        units_in_um_w = 0

        For i = 1 To n_unit

            units_in_um_w = units_in_um_w + unit_status(i, 6)

        Next i

        If units_in_um_w >= pm_curtail_no_in_um Then

            For i = 1 To n_unit

                If unit_status(i, 8) = 1 Then

                    der_pm_day_sum = der_pm_day_sum + (pm_dur_start - unit_status(i, 9))

                    unit_status(i, 4) = 1
                    unit_status(i, 5) = -1
                    unit_status(i, 8) = 0
                    unit_status(i, 6) = 0

                End If

            Next i

        End If

' end - if number in UM is >= limit, place units in PM to available and capture the amount of curtailed PM
```

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Failure Rate Input for Comparisons

Status Tracking Project FBR History Data From 5/9/16 to 3/15/17 – Overall Brief Summary							
Item	FBR1	FBR2	FBR3	Total	Total Expressed Per 3 Units	Total – 2 and 3	Total Expressed Per 2 Units
Unplanned Maintenance							
Total Number of Days Without Feed per Year	2.95	34.68	30.25	67.88	22.63	64.93	32.47
Total Number of Events per Year	0.74	4.43	5.17	10.33	3.44	9.59	4.80
Net Days Without Feed per Event	4.00	7.83	5.86	-	6.57	-	6.77
Planned Maintenance						Total – 1 and 2	Total Expressed Per
Total Number of Days Without Feed per Year	42.06	41.32	22.87	106.25	35.42	83.38	41.69
Actual Total Number of Events per Year	5.17	4.43	5.90	15.50	5.17	9.59	4.80
Number of Major Events Per Year to Distribute Over	2.00	2.00	2.00	2.00	2.00	4.00	2.00
Net Days per Major Event for Risk Evaluation	21.03	20.66	11.44	53.13	17.71	41.69	20.85
Failure Rate					Low PM for 3		
Days Operating per year (365 -UM-PM)	319.99	289.00	311.87		306.95		290.84
Operating Days Availble per year (365-PM)	322.94	323.68	342.13		329.58		323.31
Failure Rate – Time to Failure Basis (events/operating day)	0.0023	0.0153	0.0165		0.0116		0.0165
Failure Rate – Time Between Failure Basis (events/day)	0.0023	0.0137	0.0151		0.0104		0.0148

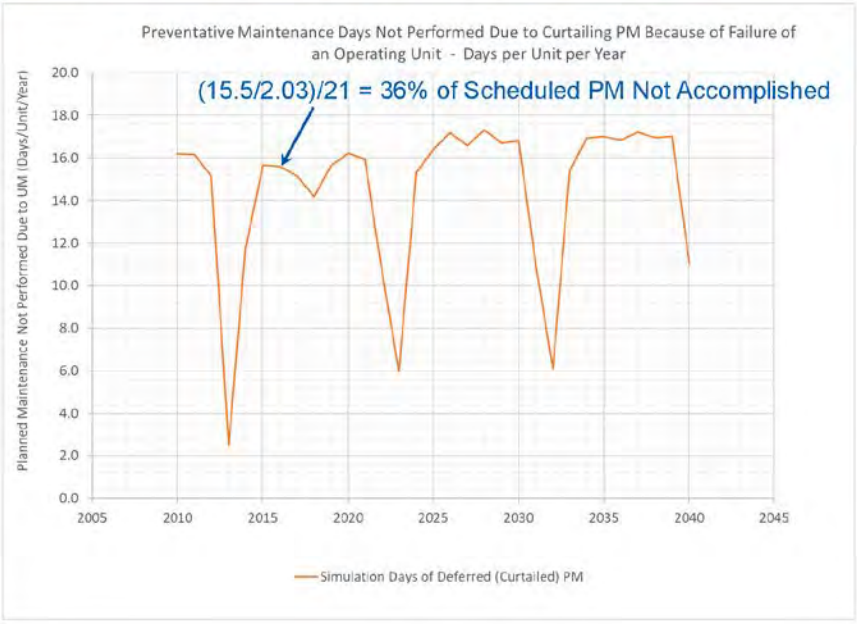
Median

PM Curtailment - Simulated

Treatment Train Characteristics		
FBR Units Characteristics		
Number of FBR Units (min = 1, max = 8 in current programming):	3	
FBR Unit Capacity (dtpd):	110	
Alkaline Addition System Characteristics		
Alkaline Addition System Capacity (dtpd):	90	
FBR Unit's Maintenance Characteristics		
Maximum Allowed Number of FBR Units in PM/RM	1	
FBR Unit's Unplanned Maintenance		
Probability of Failure when operating:		Input Results in
At the Start of the Renewed Period	0.01530	3.42
At the End of the Renewed Period	0.01530	Events per unit
Unplanned Maintenance Duration (calendar d):	7	per year in 2016
Calendar Day Window in which the UM will be converted to PM (calendar d):	30	
FBR Unit's Planned Maintenance		
Operating Days Between Planned Maintenance, if operating will not force taking off line and PM (operating d):	122	Input Results in
Maximum Operating Days Between Planned Maintenance, will force taking out of operation and PM (operating d):	210	2.03
Planned Maintenance Duration (d):		Events per unit
At the Start of the Renewed Period	21	per year in 2016
At the End of the Renewed Period	21	Input Results in
Calendar Day Window in which the PM will be converted to RM (calendar d):	50	13.328
Number of Units (>=) in UM to cause all PMs to be curtailed and units in PM to be converted to available:	1	Event days duration
		per unit per year in 2016
FBR Renewal Maintenance		
Operating Days Between Renewal Mainteance, if operating will not force taking off line and RM (operating d):	2,700	
Maximum Operating Days Between Renewal Mainteance, will force taking out of operation and RM (operating d):	3,200	
Renewal Mainteance Duration (d):	90	
The Operating Days added to the normal PM need following a RM (operating d):	80	

PM Curtailment – Simulated

11

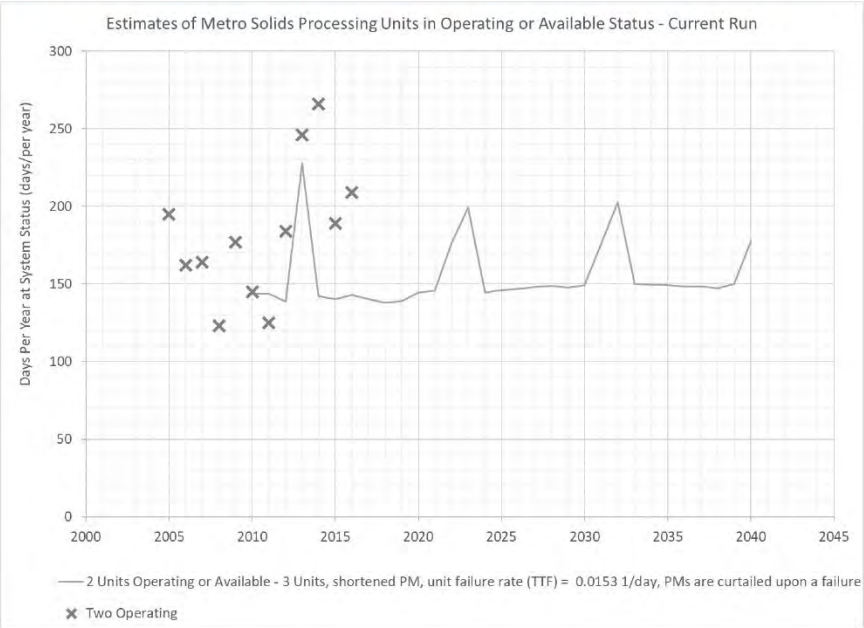


PM Curtailment – Simulated - 3

12

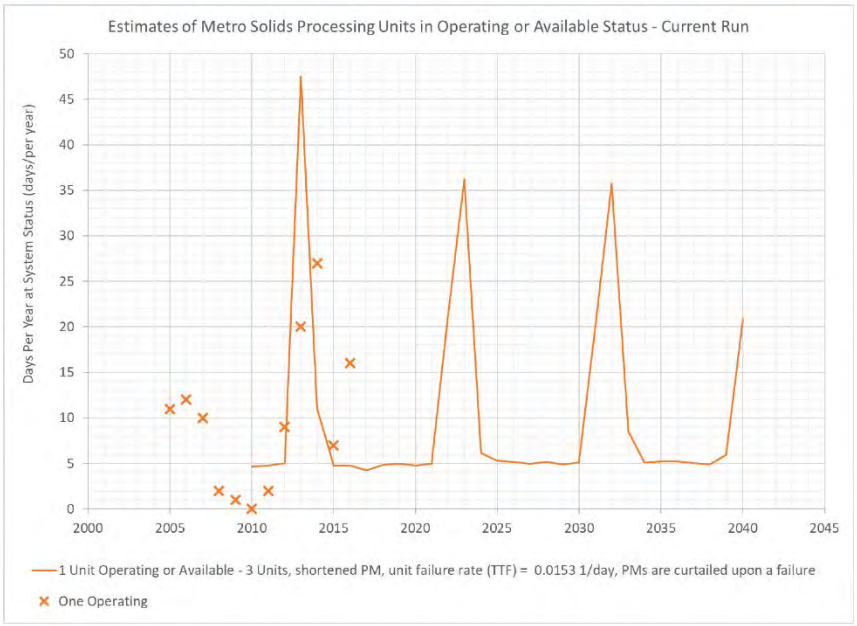
PM Curtailment – Simulated - 2

13



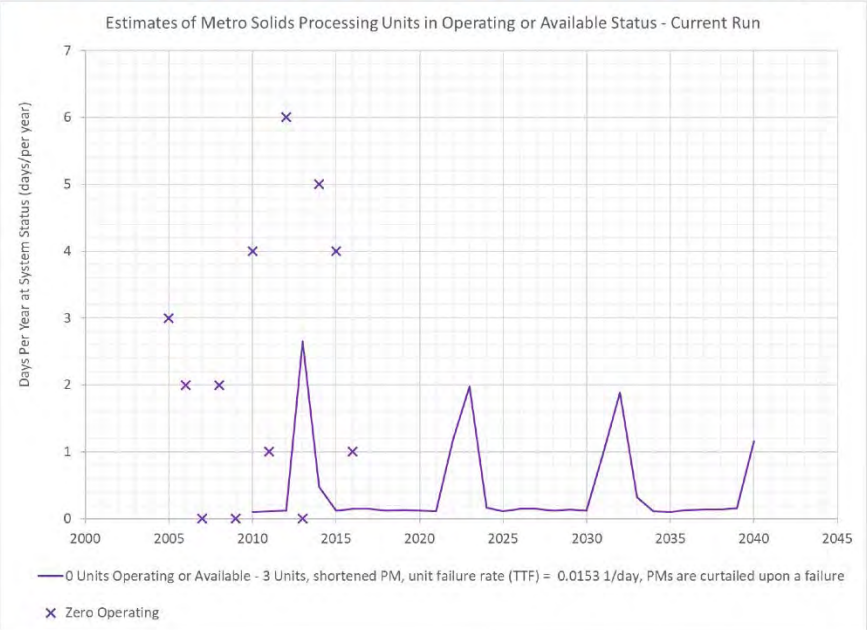
PM Curtailment – Simulated - 1

14



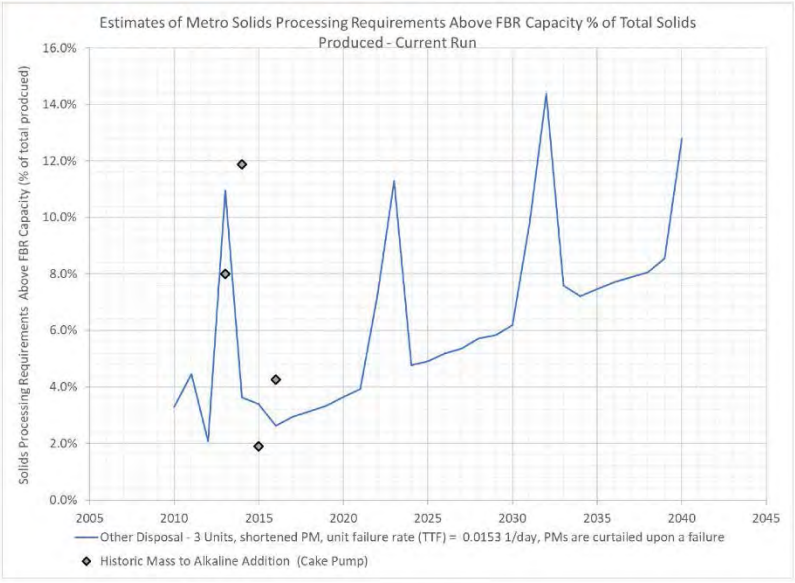
PM Curtailment – Simulated - 0

15



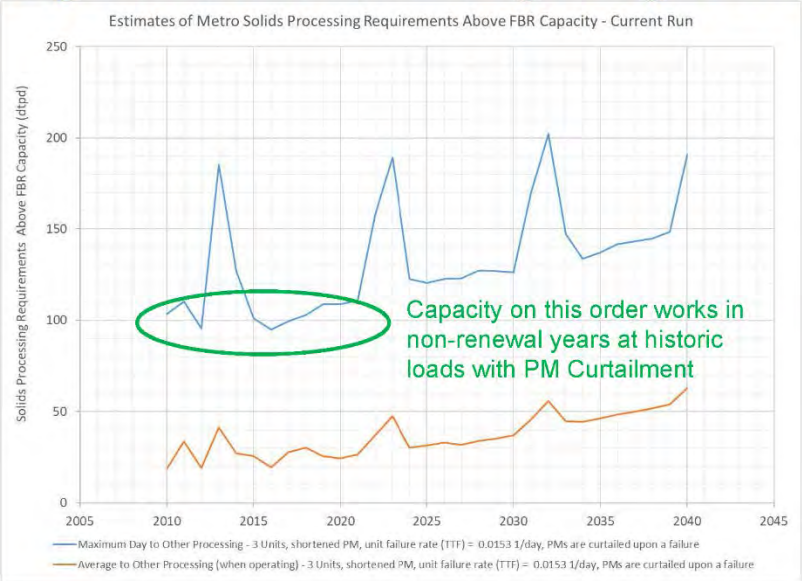
PM Curtailment – Simulated – Sludge to Landfill

16



PM Curtailment – Simulated – Sludge to Landfill – Capacity Used

17



PM Curtailment – Simulated – Critical Conditions

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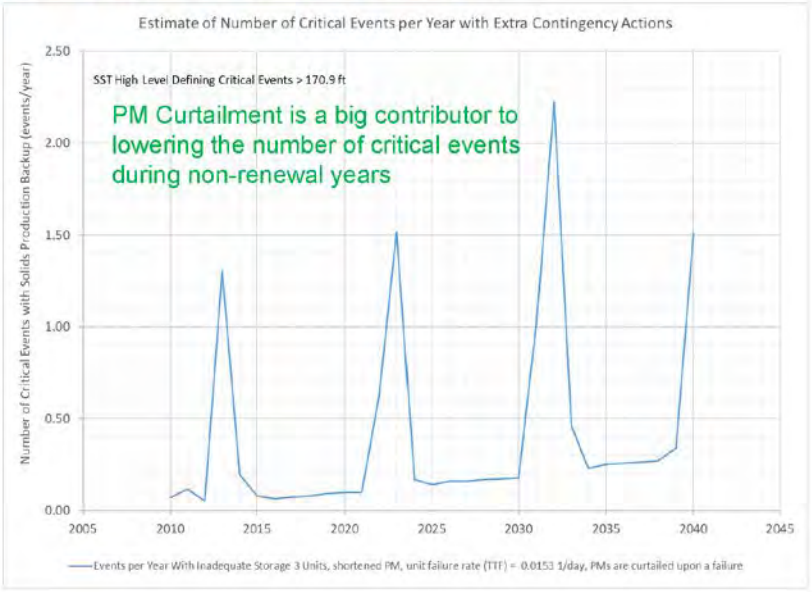

Simulation Runs - PM Curtailment

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Treatment Train Characteristics		
FBR Units Characteristics		
Number of FBR Units (min = 1, max = 8 in current programming):	3	
FBR Unit Capacity [dtpd]:	110	
Alkaline Addition System Characteristics		
Alkaline Addition System Capacity [dtpd]:	90	
FBR Unit's Maintenance Characteristics		
Maximum Allowed Number of FBR Units in PM/RM	1	
FBR Unit's Unplanned Maintenance		
Probability of Failure when operating:		Input Results in
At the Start of the Renewed Period	0.01530	3.42
At the End of the Renewed Period	0.01530	Events per unit
Unplanned Maintenance Duration [calendar d]:	7	per year in 2016
Calendar Day Window in which the UM will be converted to PM [calendar d]:	30	
FBR Unit's Planned Maintenance		Input Results in
Operating Days Between Planned Maintenance, if operating will not force taking off line and PM [operating d]:	122	2.03
Maximum Operating Days Between Planned Maintenance, will force taking out of operation and PM [operating d]:	210	Events per unit
Planned Maintenance Duration [d]:		per year in 2016
At the Start of the Renewed Period	21	Input Results in
At the End of the Renewed Period	21	13.328
Calendar Day Window in which the PM will be converted to RM [calendar d]:	50	Event days duration
Number of Units (>=) in UM to cause all PMs to be curtailed and units in PM to be converted to available:	1	per unit per year in 2016
FBR Renewal Maintenance		
Operating Days Between Renewal Mainteance, if operating will not force taking off line and RM [operating d]:	2,700	
Maximum Operating Days Between Renewal Mainteance, will force taking out of operation and RM [operating d]:	3,200	
Renewal Mainteance Duration [d]:	90	
The Operating Days added to the normal PM need following a RM [operating d]:	80	

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Sim Runs - Without PM Curtailment - 3

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Treatment Train Characteristics		
FBR Units Characteristics		
Number of FBR Units (min = 1, max = 8 in current programming)	3	
FBR Unit Capacity [dtpd]:	110	
Alkaline Addition System Characteristics		
Alkaline Addition System Capacity [dtpd]:	90	
FBR Unit's Maintenance Characteristics		
Maximum Allowed Number of FBR Units in PM/RM	1	
FBR Unit's Unplanned Maintenance		
Probability of Failure when operating:		Input Results in
At the Start of the Renewed Period	0.01530	3.38
At the End of the Renewed Period	0.01530	Events per unit
Unplanned Maintenance Duration [calendar d]:	7	per year in 2016
Calendar Day Window in which the UM will be converted to PM [calendar d]:	30	
FBR Unit's Planned Maintenance		Input Results in
Operating Days Between Planned Maintenance, if operating will not force taking off line and PM [operating d]:	122	1.90
Maximum Operating Days Between Planned Maintenance, will force taking out of operation and PM [operating d]:	210	Events per unit
Planned Maintenance Duration [d]:		per year in 2016
At the Start of the Renewed Period	21	Input Results in
At the End of the Renewed Period	21	21.000
Calendar Day Window in which the PM will be converted to RM [calendar d]:	50	Event days duration
Number of Units (>=) in UM to cause all PMs to be curtailed and units in PM to be converted to available:	3	per unit per year in 2016
FBR Renewal Maintenance		
Operating Days Between Renewal Mainteance, if operating will not force taking off line and RM [operating d]:	2,700	
Maximum Operating Days Between Renewal Mainteance, will force taking out of operation and RM [operating d]:	3,200	
Renewal Mainteance Duration [d]:	90	
The Operating Days added to the normal PM need following a RM [operating d]:	80	

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Sim Runs - Without PM Curtailment - 4

Treatment Train Characteristics		
FBR Units Characteristics		
Number of FBR Units (min = 1, max = 8 in current programming)	4	
FBR Unit Capacity [dtpd]:	110	
Alkaline Addition System Characteristics		
Alkaline Addition System Capacity [dtpd]:	90	
FBR Unit's Maintenance Characteristics		
Maximum Allowed Number of FBR Units in PM/RM	1	
FBR Unit's Unplanned Maintenance		
Probability of Failure when operating:		Input Results in
At the Start of the Renewed Period	0.01530	3.01
At the End of the Renewed Period	0.01530	Events per unit
Unplanned Maintenance Duration [calendar d]:	7	per year in 2016
Calendar Day Window in which the UM will be converted to PM [calendar d]	30	
FBR Unit's Planned Maintenance		
Operating Days Between Planned Maintenance, if operating will not force taking off line and PM [operating d]:	122	Input Results in
Maximum Operating Days Between Planned Maintenance, will force taking out of operation and PM [operating d]:	210	1.61
Planned Maintenance Duration [d]:		Events per unit
At the Start of the Renewed Period	21	per year in 2016
At the End of the Renewed Period	21	Input Results in
Calendar Day Window in which the PM will be converted to RM [calendar d]:	90	21.000
Number of Units (>=) in UM to cause all PMs to be curtailed and units in PM to be converted to available:	8	Event days duration
		per unit per year in 2016
FBR Renewal Maintenance		
Operating Days Between Renewal Mainteance, if operating will not force taking off line and RM [operating d]:	2,700	
Maximum Operating Days Between Renewal Mainteance, will force taking out of operation and RM [operating d]:	3,200	
Renewal Mainteance Duration [d]:	90	
The Operating Days added to the normal PM need following a RM [operating d]:	80	

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Sim Runs - Without PM Curtailment – 3 and 75% of current failure rate

FBR Units Characteristics		
Number of FBR Units (min = 1, max = 8 in current programming)	3	
FBR Unit Capacity [dtpd]:	110	
Alkaline Addition System Characteristics		
Alkaline Addition System Capacity [dtpd]:	90	
FBR Unit's Maintenance Characteristics		
Maximum Allowed Number of FBR Units in PM/RM	1	
FBR Unit's Unplanned Maintenance		
Probability of Failure when operating:		Input Results in
At the Start of the Renewed Period	0.01163	2.33
At the End of the Renewed Period	0.01163	Events per unit
Unplanned Maintenance Duration [calendar d]:	7	per year in 2016
Calendar Day Window in which the UM will be converted to PM [calendar d]	30	
FBR Unit's Planned Maintenance		
Operating Days Between Planned Maintenance, if operating will not force taking off line and PM [operating d]:	110	Input Results in
Maximum Operating Days Between Planned Maintenance, will force taking out of operation and PM [operating d]:	210	1.92
Planned Maintenance Duration [d]:		Events per unit
At the Start of the Renewed Period	21	per year in 2016
At the End of the Renewed Period	21	Input Results in
Calendar Day Window in which the PM will be converted to RM [calendar d]:	90	21.000
Number of Units (>=) in UM to cause all PMs to be curtailed and units in PM to be converted to available:	8	Event days duration
		per unit per year in 2016
FBR Renewal Maintenance		
Operating Days Between Renewal Mainteance, if operating will not force taking off line and RM [operating d]:	2,700	
Maximum Operating Days Between Renewal Mainteance, will force taking out of operation and RM [operating d]:	3,200	
Renewal Mainteance Duration [d]:	90	
The Operating Days added to the normal PM need following a RM [operating d]:	80	

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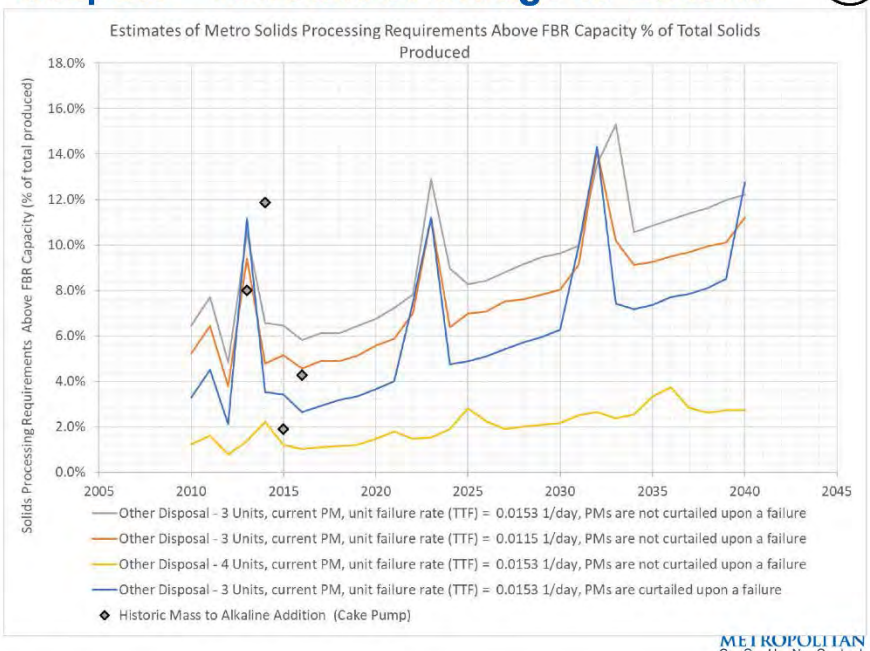
Outputs – Amount of Sludge to Landfill

23



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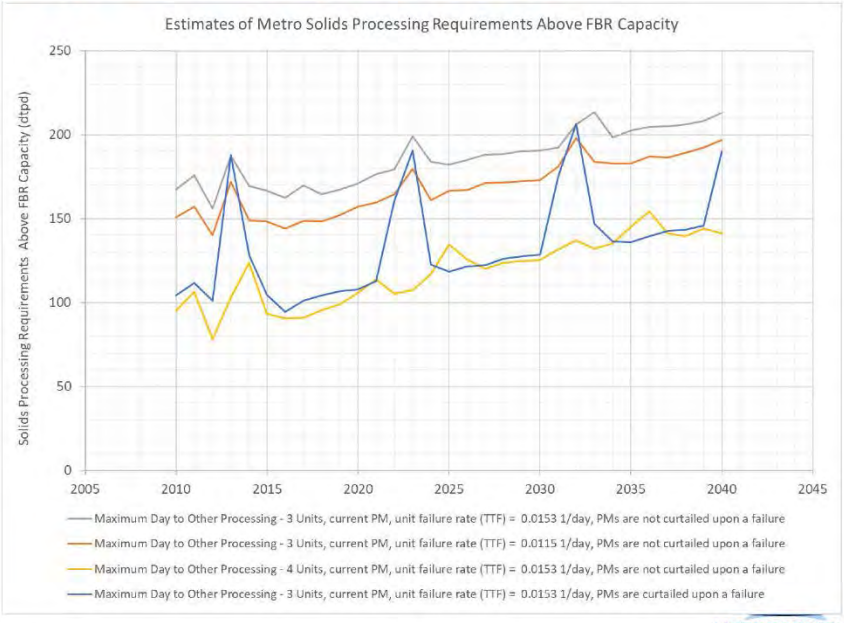
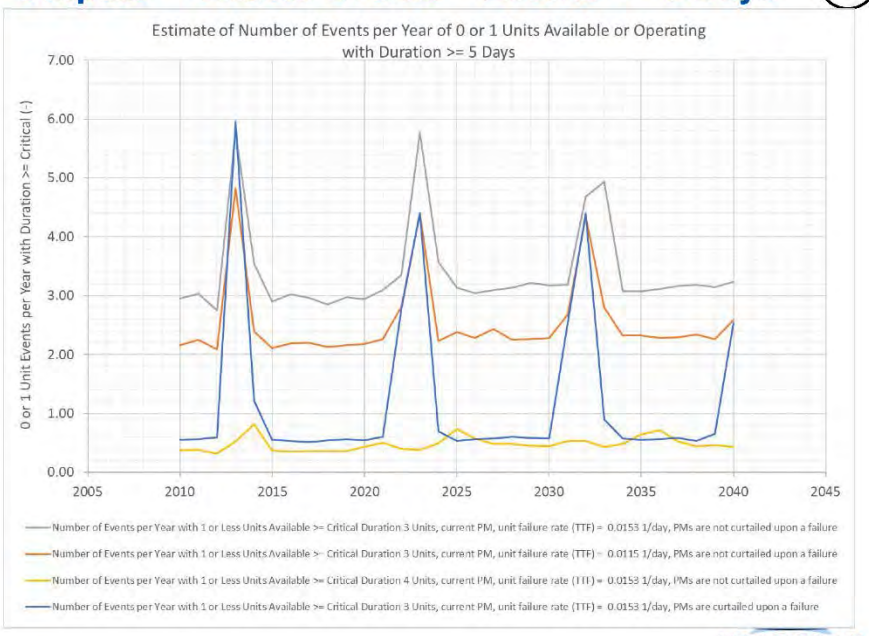
Outputs – Max Day Above FBRs

24



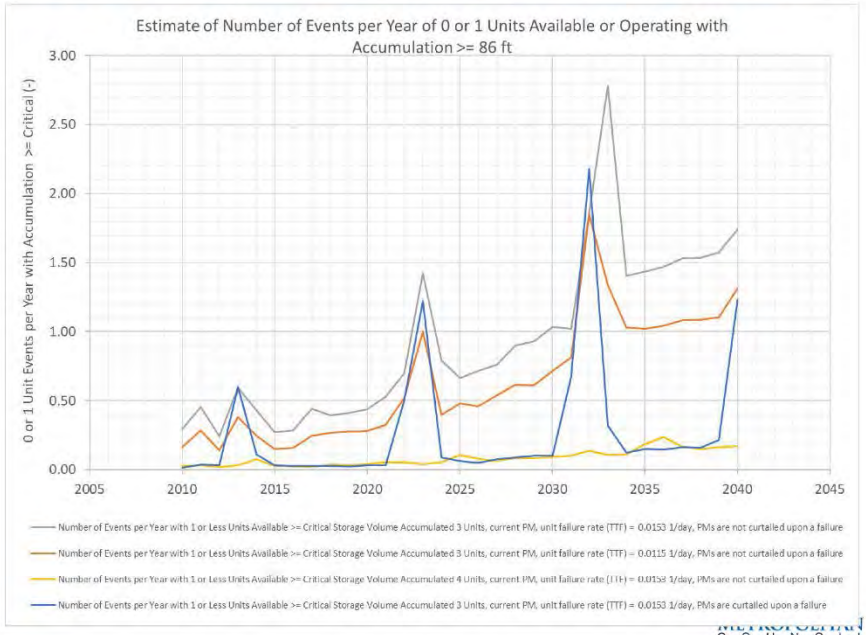
METROPOLITAN COUNCIL

Outputs – Critical Events – Events >= 5 Days



METROPOLITAN COUNCIL

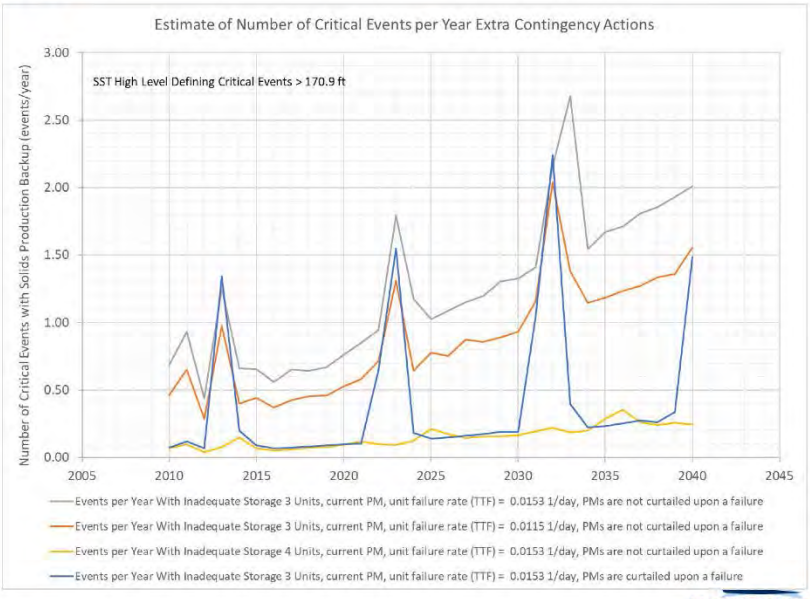
Outputs – Events Requiring Over 86 ft of SST



METROPOLITAN COUNCIL

Outputs – Events Requiring Extra Contingency Action

27



METROPOLITAN COUNCIL

Curtailment vs. Shorter PM

28

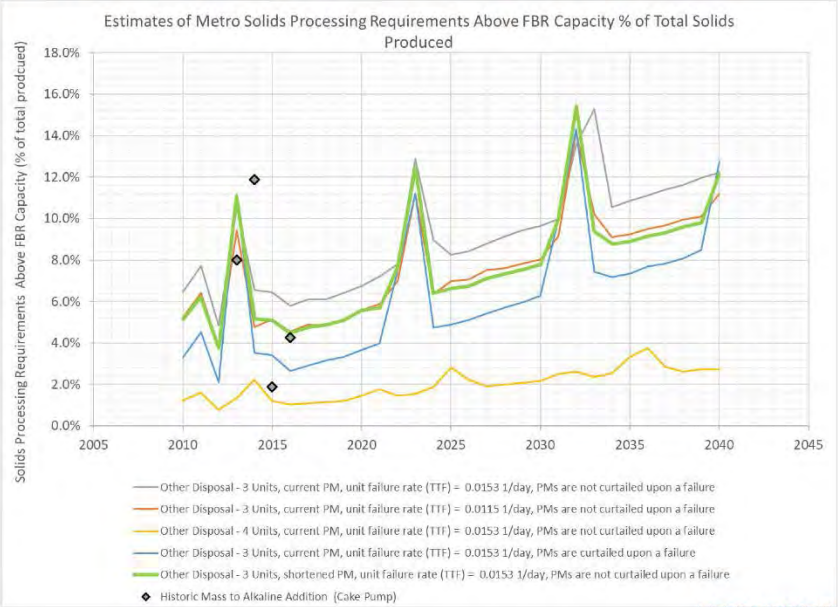
- What if PM is shortened to the days that resulted from curtailment but curtailment isn't practiced?

Treatment Train Characteristics		
FBR Units Characteristics		
Number of FBR Units (min = 1, max = 8 in current programming):	3	
FBR Unit Capacity [dtpd]:	110	
Alkaline Addition System Characteristics		
Alkaline Addition System Capacity [dtpd]:	90	
FBR Unit's Maintenance Characteristics		
Maximum Allowed Number of FBR Units in PM/RM	1	
FBR Unit's Unplanned Maintenance		
Probability of Failure when operating:		Input Results in
At the Start of the Renewed Period	0.01530	3.37
At the End of the Renewed Period	0.01530	Events per unit
Unplanned Maintenance Duration [calendar d]:	7	per year in 2016
Calendar Day Window in which the UM will be converted to PM [calendar d]:	30	
FBR Unit's Planned Maintenance		Input Results in
Operating Days Between Planned Maintenance, if operating will not force taking off line and PM [operating d]:	122	2.04
Maximum Operating Days Between Planned Maintenance, will force taking out of operation and PM [operating d]:	210	Events per unit
Planned Maintenance Duration [d]:		per year in 2016
At the Start of the Renewed Period	14	Input Results in
At the End of the Renewed Period	14	14.000
Calendar Day Window in which the PM will be converted to RM [calendar d]:	30	Event days duration
Number of Units (>=) in UM to cause all PMs to be curtailed and units in PM to be converted to available:	8	per unit per year in 2016
FBR Renewal Maintenance		
Operating Days Between Renewal Maintenance, if operating will not force taking off line and RM [operating d]:	2,700	
Maximum Operating Days Between Renewal Maintenance, will force taking out of operation and RM [operating d]:	3,200	
Renewal Maintenance Duration [d]:	90	
The Operating Days added to the normal PM need following a RM [operating d]:	80	

METROPOLITAN COUNCIL

Outputs – Amount of Sludge to Landfill

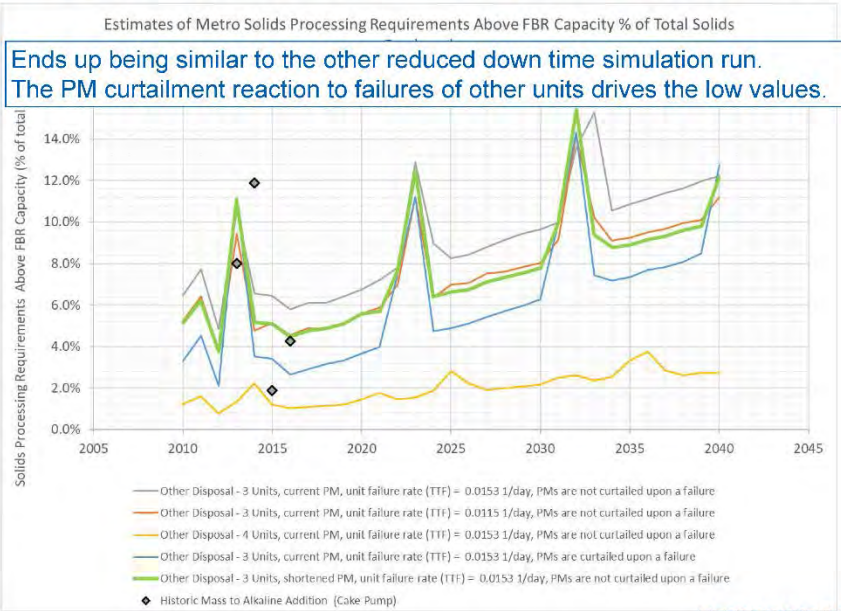
29



METROPOLITAN COUNCIL

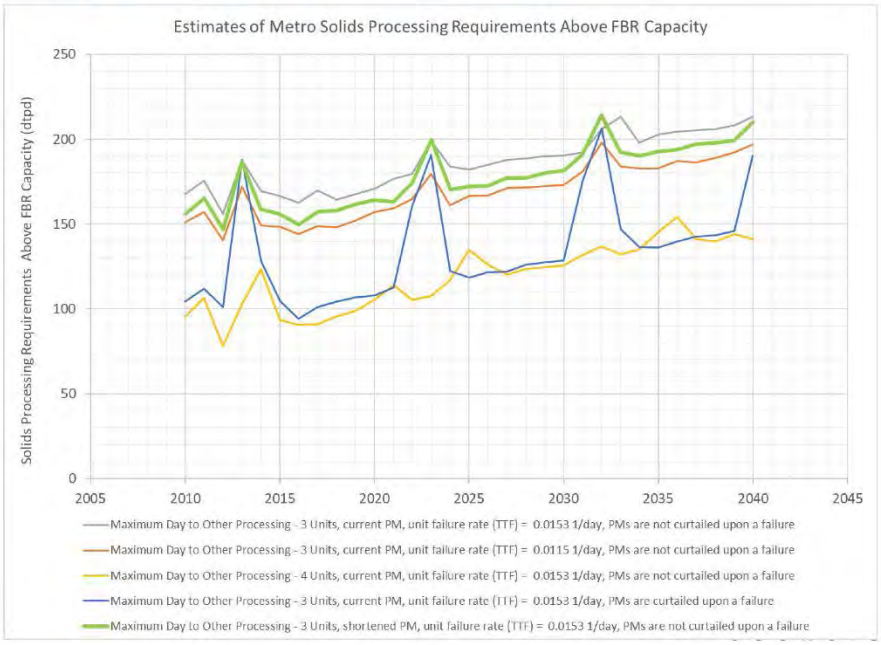
Outputs – Amount of Sludge to Landfill

30

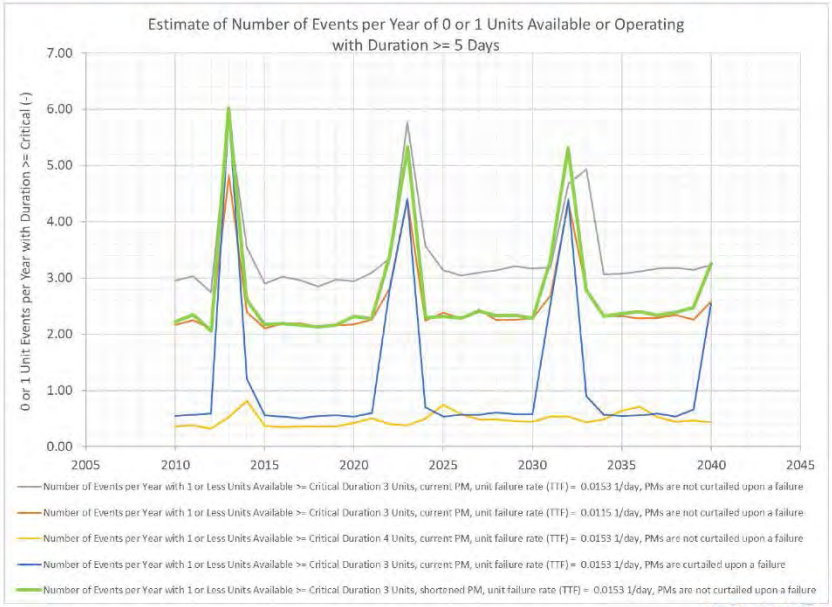


METROPOLITAN COUNCIL

Outputs – Max Day Above FBRs

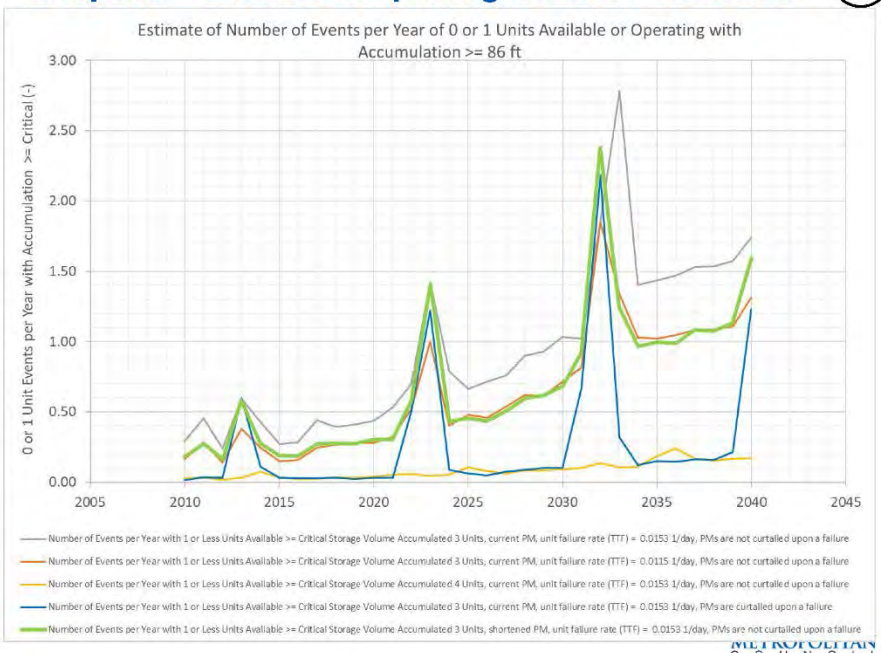


Outputs – Critical Events – Events >= 5 Days



Outputs – Events Requiring Over 86 ft of SST

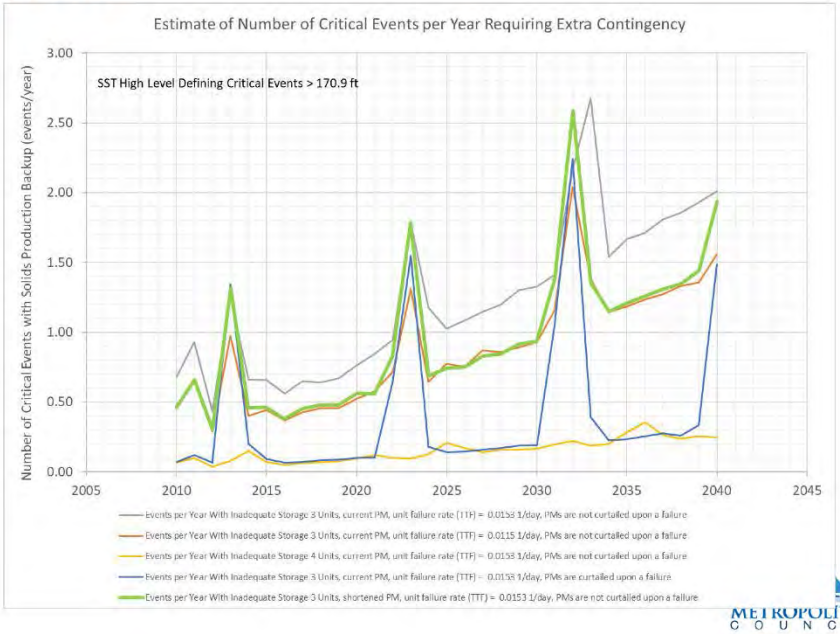
33



METROPOLITAN COUNCIL

Outputs – Events Requiring Extra Contingency Action

34



METROPOLITAN COUNCIL

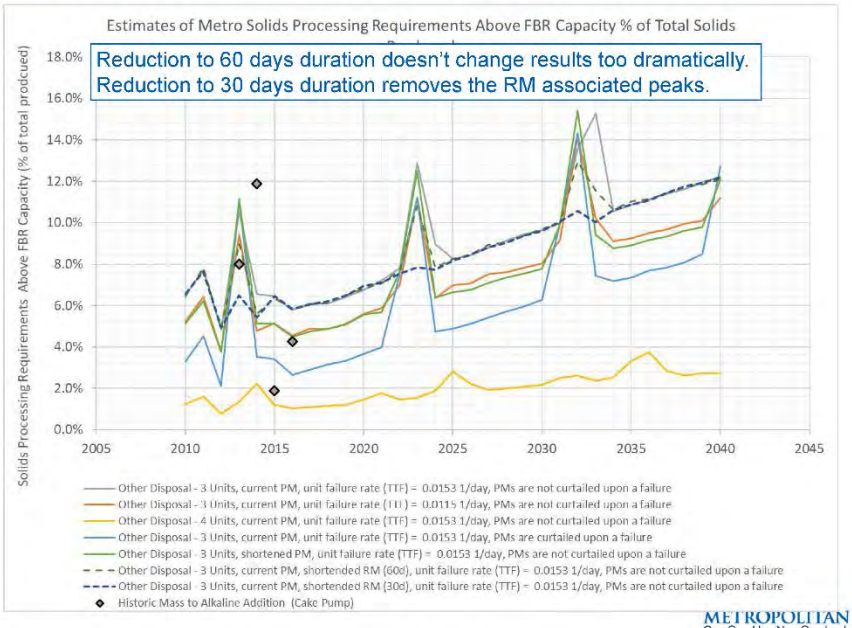
Jan 2018 Runs with Shorter Renewal Periods (base = 90 d)

FBR Renewal Maintenance	
Operating Days Between Renewal Mainteance, if operating will not force taking off line and RM [operating d]:	2,700
Maximum Operating Days Between Renewal Mainteance, will force taking out of operation and RM [operating d]:	3,200
Renewal Mainteance Duration [d]:	60
The Operating Days added to the normal PM need following a RM [operating d]:	0

FBR Renewal Maintenance	
Operating Days Between Renewal Mainteance, if operating will not force taking off line and RM [operating d]:	2,700
Maximum Operating Days Between Renewal Mainteance, will force taking out of operation and RM [operating d]:	3,200
Renewal Mainteance Duration [d]:	30
The Operating Days added to the normal PM need following a RM [operating d]:	0

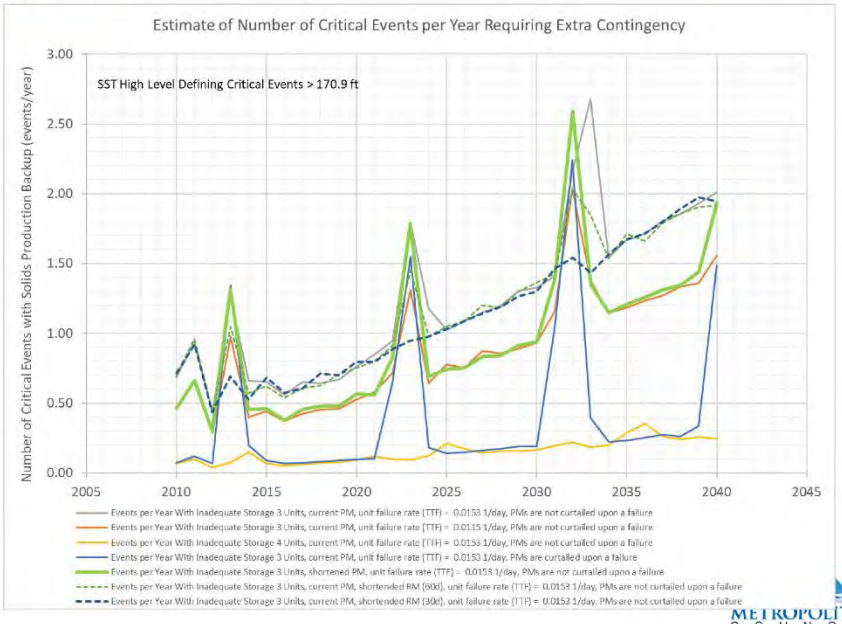
METROPOLITAN COUNCIL

Outputs – Amount of Sludge to Landfill



METROPOLITAN COUNCIL

Outputs – Events Requiring Extra Contingency Action



METROPOLITAN COUNCIL

Parallel Calcs in a More Standard Framework

Status Tracking Project FBR History Data From 5/9/16 to 9/15/17 – Overall Brief Summary

Item	FBR 1	FBR 2	FBR 3	Total	Total Expressed Per 3 Units	Total – 2 and 3	Total Expressed Per 2 Units
Unplanned Maintenance							
Total Number of Days Without Feed per Year	2.95	34.68	30.25	67.88	22.63	64.93	32.47
Total Number of Events per Year	0.74	4.43	5.17	10.33	3.44	9.59	4.80
Net Days Without Feed per Event	4.00	7.83	5.86	-	6.57	-	6.77
Planned Maintenance						Total – 1 and 2	Total Expressed Per
Total Number of Days Without Feed per Year	42.06	41.32	22.87	106.25	35.42	83.38	41.69
Actual Total Number of Events per Year	5.17	4.43	5.90	15.50	5.17	9.59	4.80
Number of Major Events Per Year to Distribute Over	2.00	2.00	2.00	2.00	2.00	4.00	2.00
Net Days per Major Event for Risk Evaluation	21.03	20.66	11.44	53.13	17.71	41.69	20.85
Failure Rate					Low PM for 3		
Days Operating per year (365 -UM-PM)	319.99	289.00	311.87		306.95		290.84
Operating Days Availble per year (365-PM)	322.94	323.68	342.13		329.58		323.31
Failure Rate – Time to Failure Basis (events/operating day)	0.0023	0.0153	0.0166		0.0112		0.0165
Failure Rate – Time Between Failure Basis (events/day)	0.0023	0.0137	0.0151		0.0104		0.0148

Item	FBR 1	FBR 2	FBR 3
Failure Rate - Time Between Failure Basis (events/day)	0.00228487	0.01367798	0.01509723
Operating Days Availble per year (365-PM)	322.94	323.68	342.13
Operating Days Availble per year (365-PM) Per 2 Periods	161.47	161.84	171.06

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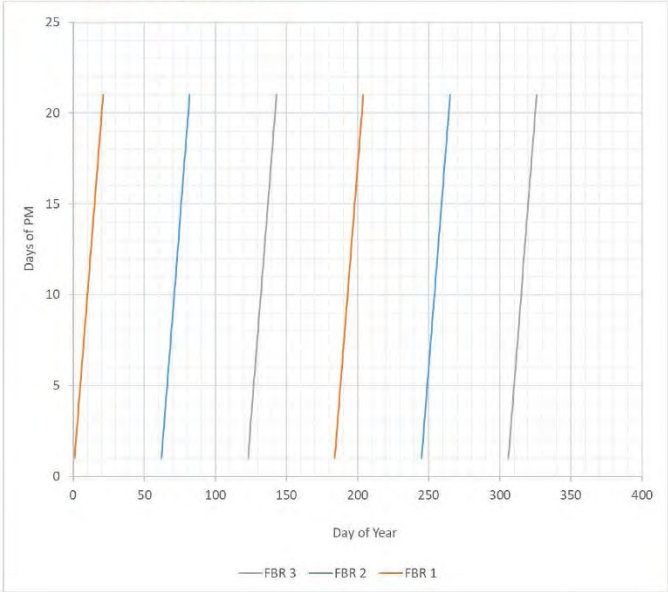
Use 162 days even spacing and 21 days per PM event (2)

PM Schedule

39



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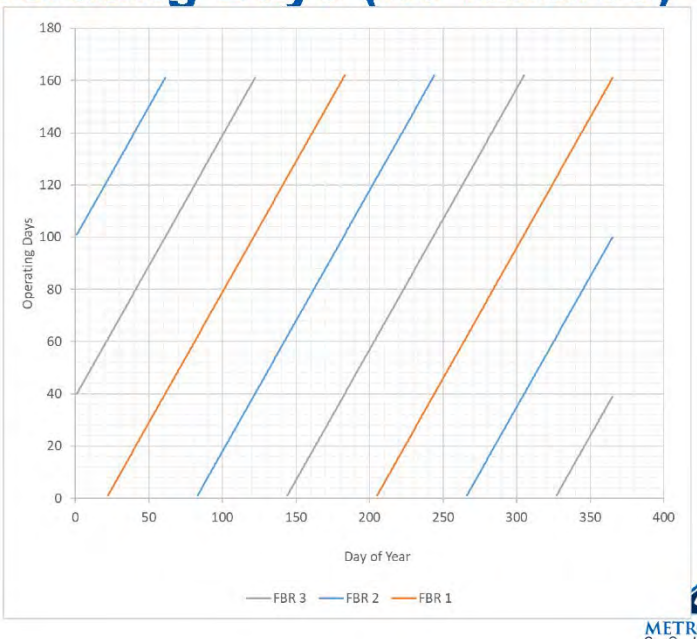
Operating Days (no failures)

40



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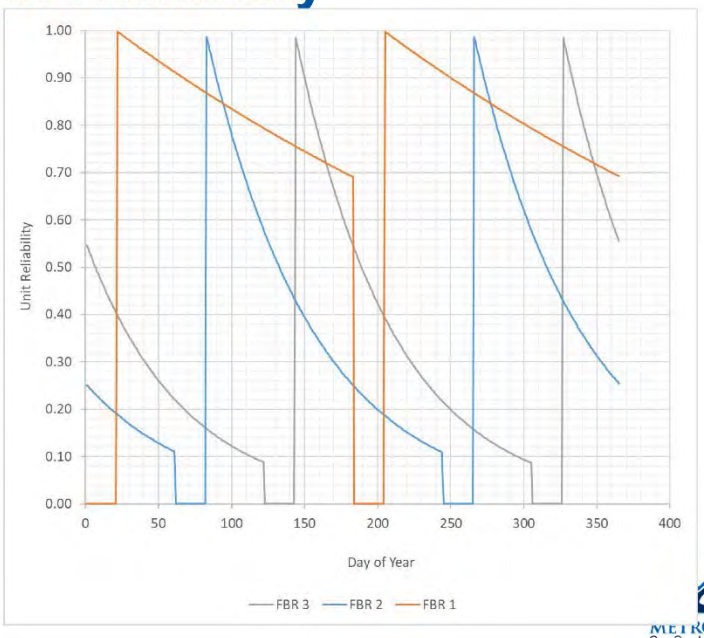
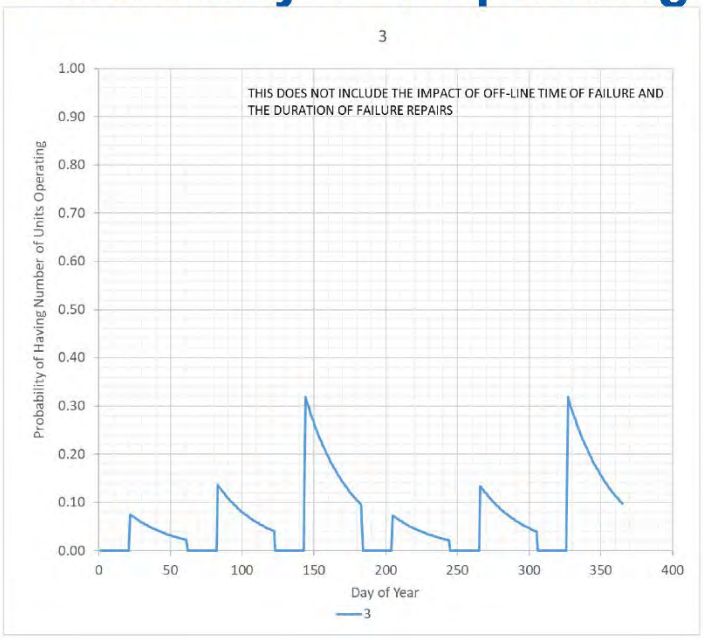
Unit Reliability



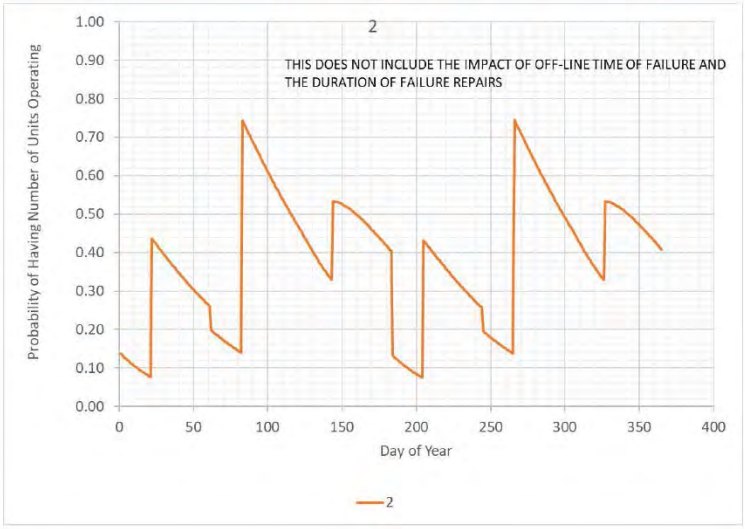
METROPOLITAN COUNCIL

Probability of 3 Operating



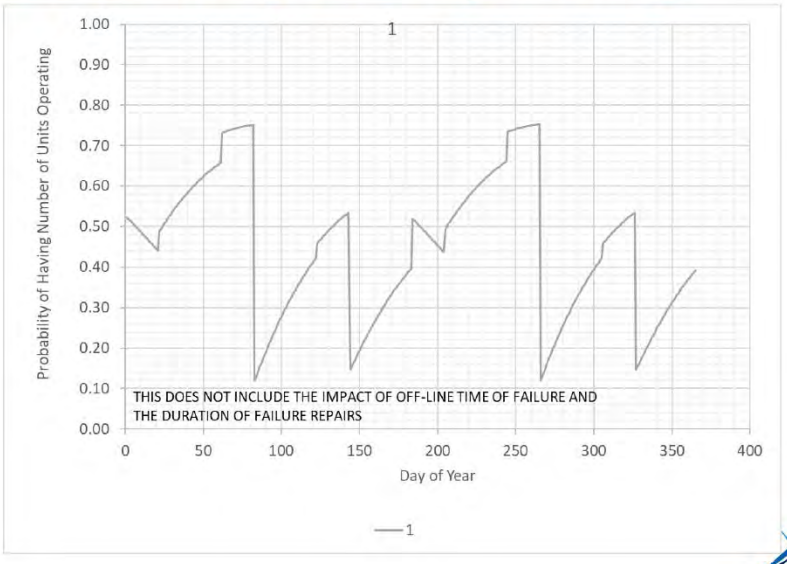
METROPOLITAN COUNCIL

Probability of 2 Operating



METROPOLITAN COUNCIL

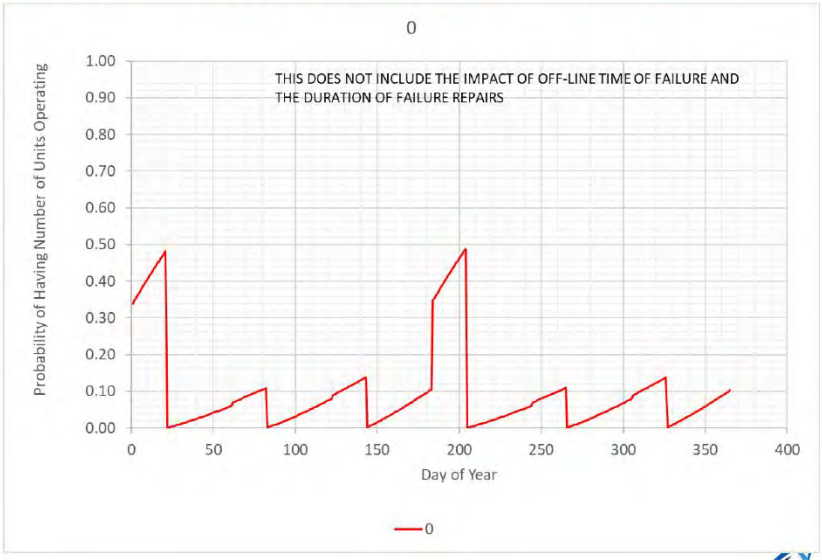
Probability of 1 Operating



METROPOLITAN COUNCIL

Probability of 0 Operating

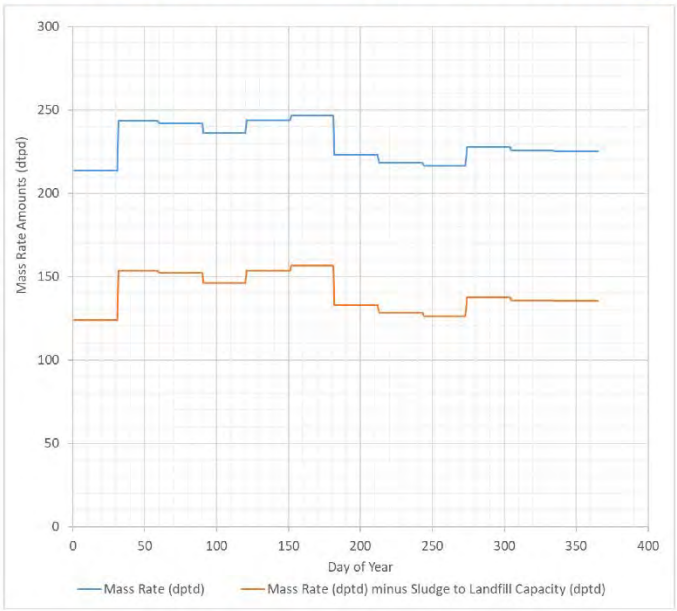
45



METROPOLITAN COUNCIL

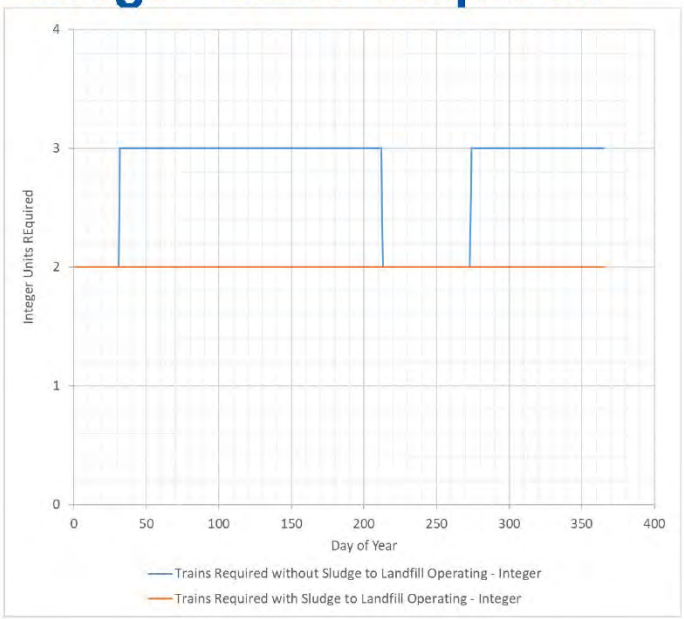
Mass Rates – 2016 Monthly Values

46



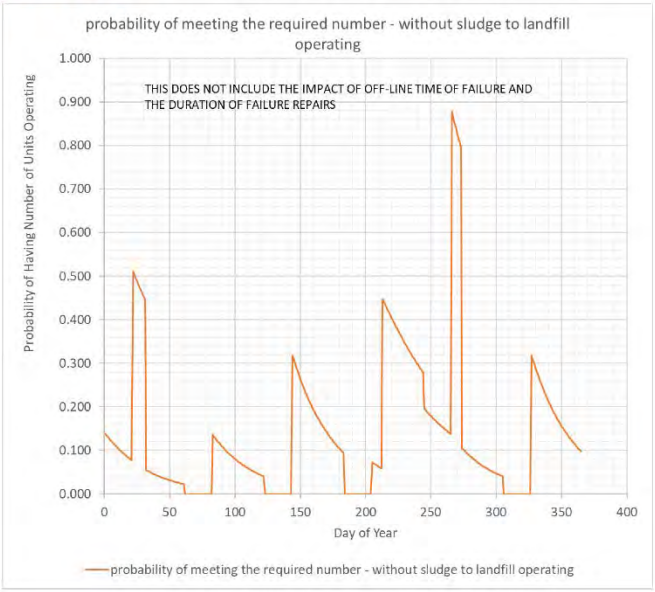
METROPOLITAN COUNCIL

Integer Units Required



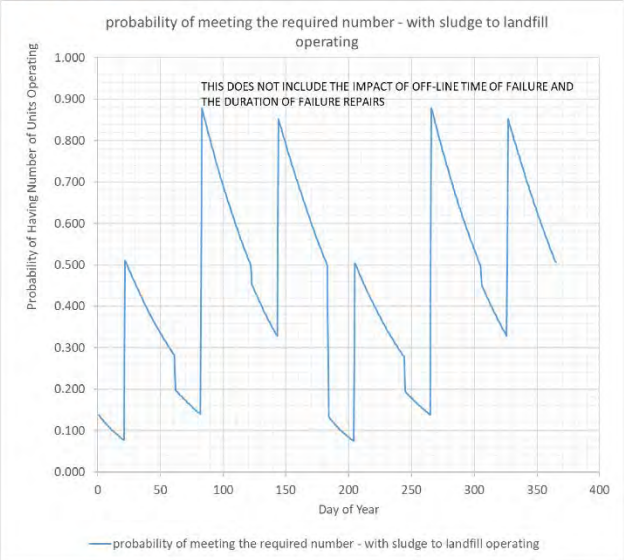
METROPOLITAN COUNCIL

Probability of Having Required Units



METROPOLITAN COUNCIL

Probability of Having Required Units

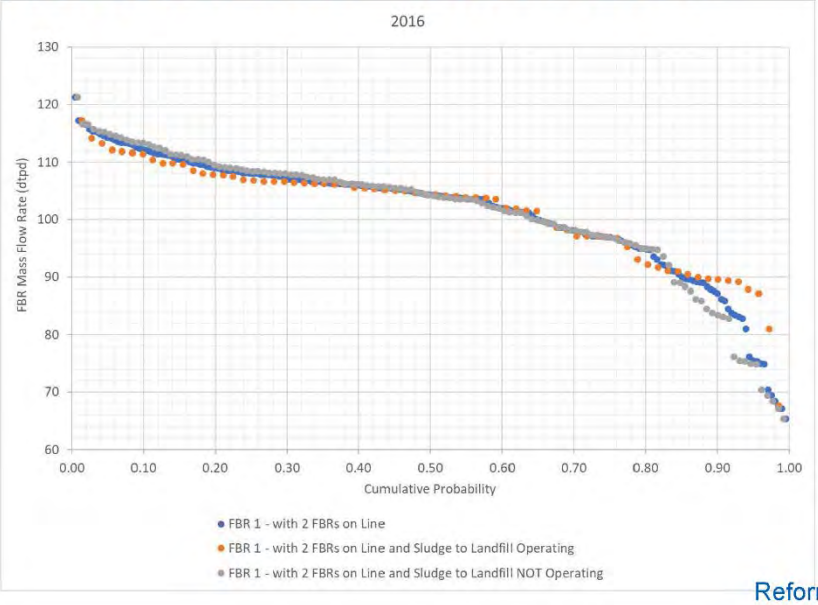


METROPOLITAN COUNCIL

Reformatted 2 FBR On-line Cumulative Probability Graphs

Input – Capacity Characteristics Additional Info – 2016 FBR 1

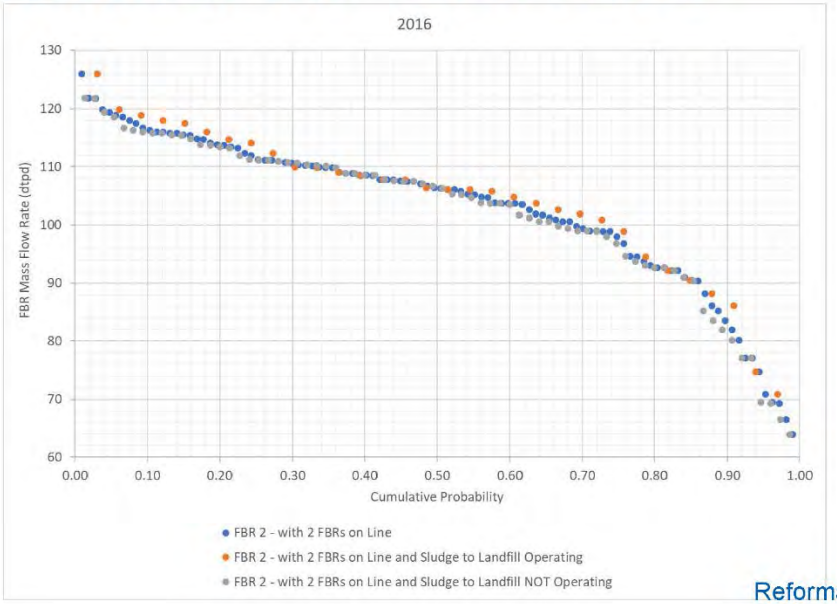
51



Reformatted

Input – Capacity Characteristics Additional Info – 2016 FBR 2

52



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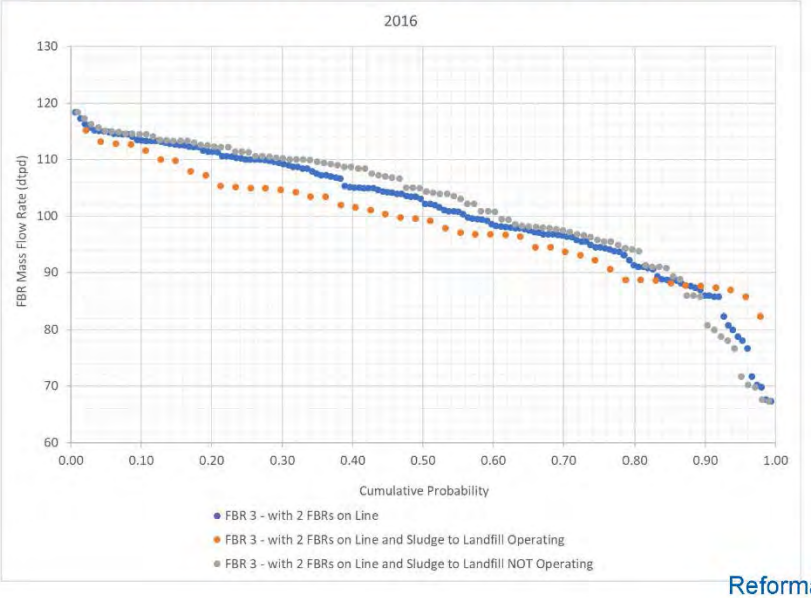
Input – Capacity Characteristics Additional Info – 2016 FBR 3

53



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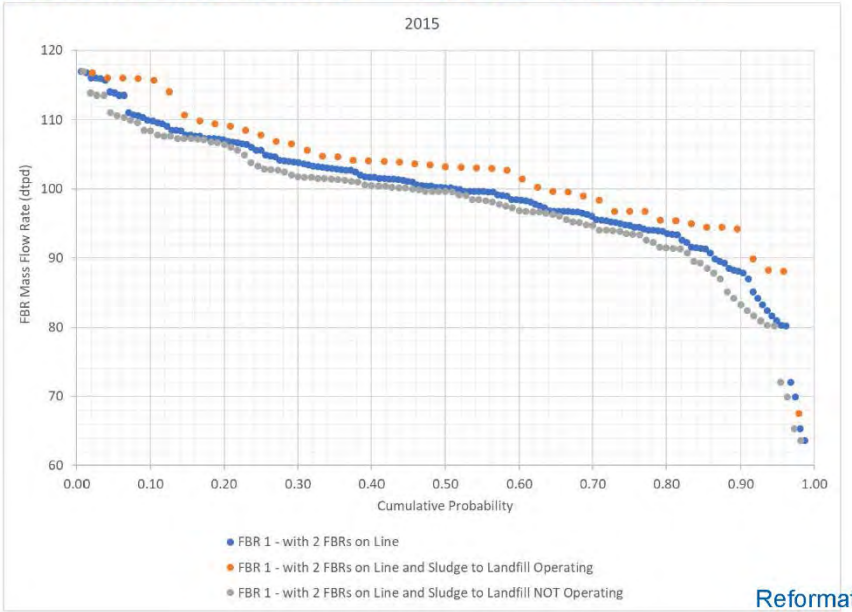
Input – Capacity Characteristics Additional Info – 2015 FBR 1

54



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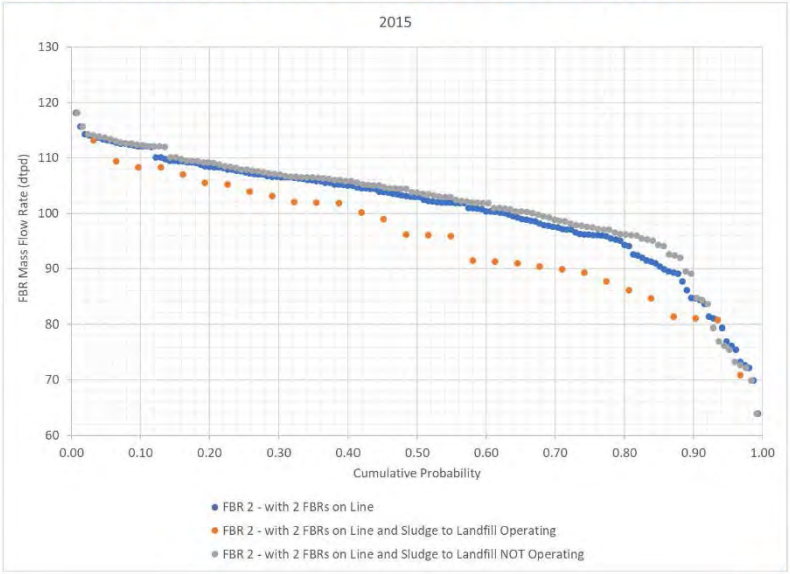
Input – Capacity Characteristics Additional Info – 2015 FBR 2

55



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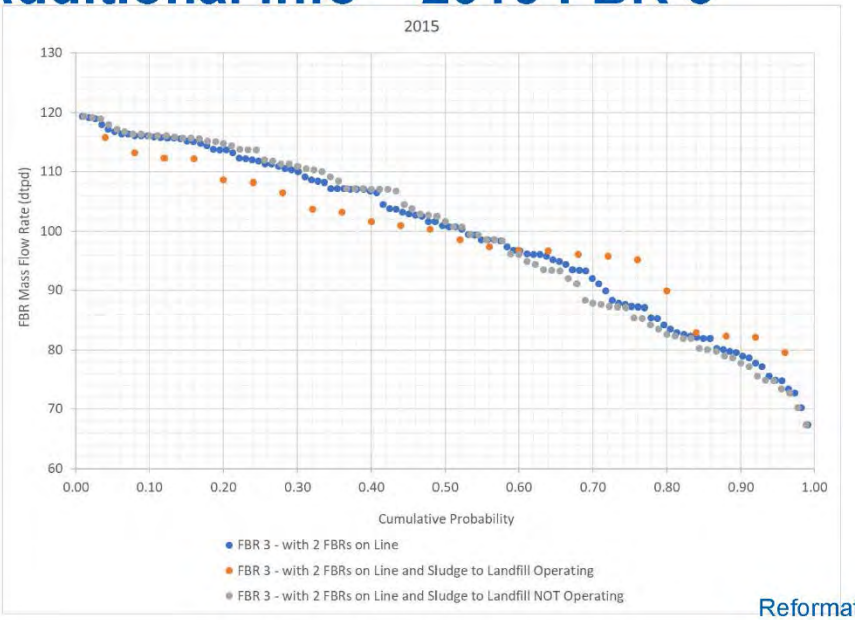
Input – Capacity Characteristics Additional Info – 2015 FBR 3

56



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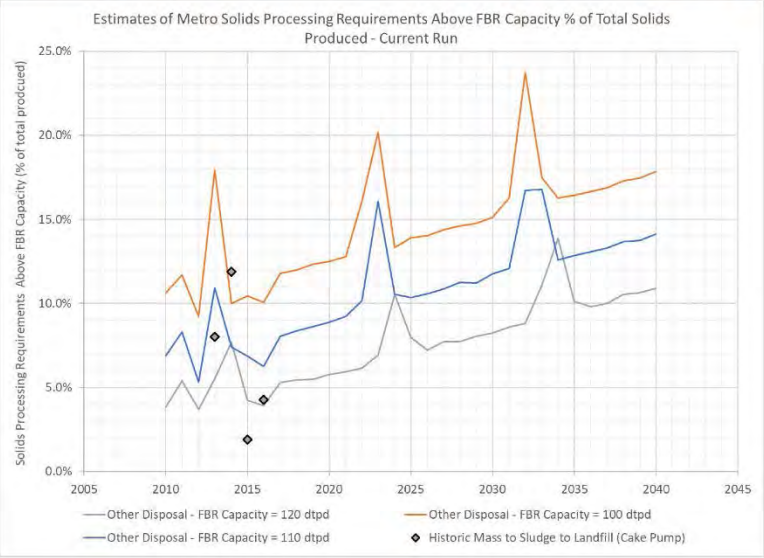
57

Supplemental Info and Slides from Past Weeks

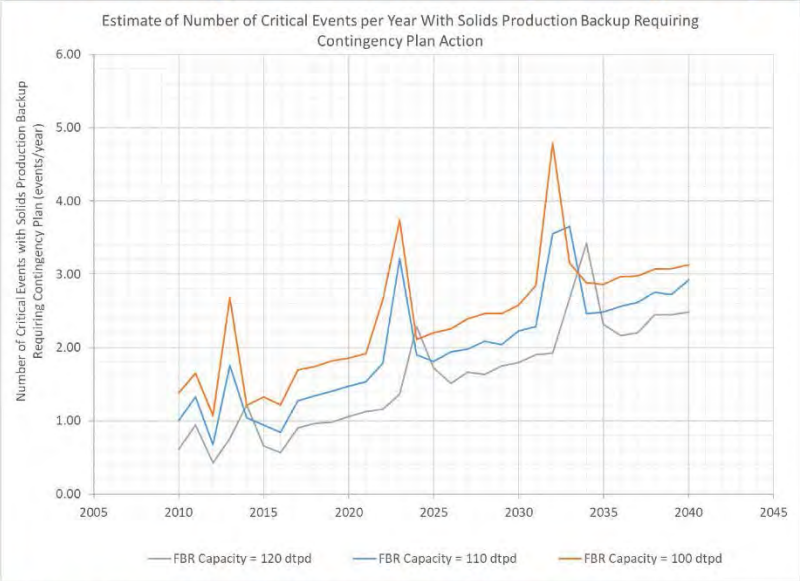
Input – Capacity Characteristics Sensitivity to FBR Capacity Input

58



Input – Capacity Characteristics Sensitivity to FBR Capacity Input

59



All with Alkaline Addition System for Sludge to Landfill at 90 dpth

Input – Maintenance and Renewal Characteristics – System Status

60

Year	Days per Year at Different Numbers of FBRs Operating - Using Criteria of <7.00 wtph Daily Average as Off-Line					Percentage of Days at Different Numbers of FBRs Operating - Using Criteria of <7.00 wtph Daily Average as Off-Line				
	Three Operating	Two Operating	One Operating	Zero Operating	Total	Three Operating	Two Operating	One Operating	Zero Operating	Total
2005	156	195	11	3	365	42.7%	53.4%	3.0%	0.8%	100.0%
2006	189	162	12	2	365	51.8%	44.4%	3.3%	0.5%	100.0%
2007	191	164	10	0	365	52.3%	44.9%	2.7%	0.0%	100.0%
2008	239	123	2	2	366	65.3%	33.6%	0.5%	0.5%	100.0%
2009	187	177	1	0	365	51.2%	48.5%	0.3%	0.0%	100.0%
2010	216	145	0	4	365	59.2%	39.7%	0.0%	1.1%	100.0%
2011	237	125	2	1	365	64.9%	34.2%	0.5%	0.3%	100.0%
2012	167	184	9	6	366	45.6%	50.3%	2.5%	1.6%	100.0%
2013	99	246	20	0	365	27.1%	67.4%	5.5%	0.0%	100.0%
2014	67	266	27	5	365	18.4%	72.9%	7.4%	1.4%	100.0%
2015	165	189	7	4	365	45.2%	51.8%	1.9%	1.1%	100.0%
2016	140	209	16	1	366	38.3%	57.1%	4.4%	0.3%	100.0%
2017	157	100	0	2	259	60.6%	38.6%	0.0%	0.8%	100.0%

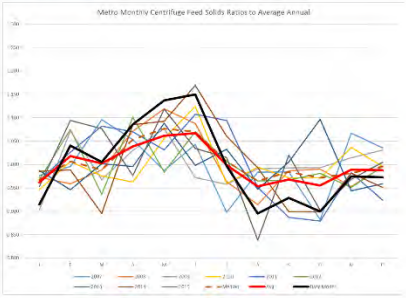
METROPOLITAN COUNCIL

When did the critical conditions happen?

61

Have we been lucky? Yes, Probably.

Luck may be the residue of intent.



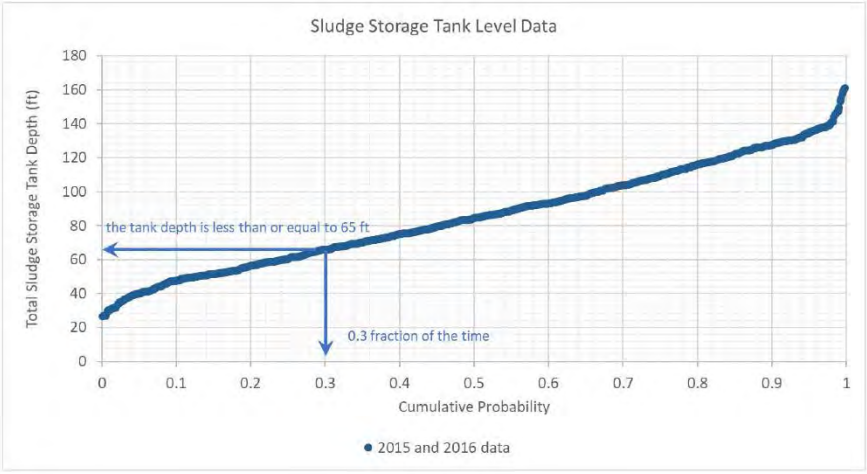
Start	End	Number On-Line	Duration (days)	Month	Month Loading Factor
10/1/2006	10/7/2006	1	7	Oct	nd
10/15/2007	10/18/2007	1	7	Oct	nd
1/9/2014	1/14/2014	1	6	Jan	0.98
8/3/2016	8/8/2016	1	6	Aug	0.95
7/19/2006	7/23/2006	1	5	Jul	nd
12/14/2012	12/18/2012	1	5	Dec	0.98
2/8/2014	2/12/2014	1	5	Feb	0.99
4/14/2013	4/17/2013	1	4	Apr	1.03
4/29/2013	5/2/2013	1	4	Apr - May	1.07
6/23/2013	6/26/2013	1	4	Jun	1.04
12/3/2013	12/6/2013	1	4	Dec	0.96
11/12/2015	11/15/2015	1	4	Nov	1.02
2/29/2016	3/3/2016	1	4	Feb - Mar	1.06
6/28/2005	6/30/2005	0	3	Jun	nd
3/28/2012	3/30/2012	1	3	Mar	0.96
7/30/2013	8/1/2013	1	3	Jul - Aug	0.98
8/16/2014	8/18/2014	1	3	Aug	0.98
10/28/2014	10/30/2014	1	3	Oct	0.94
11/5/2014	11/7/2014	1	3	Nov	0.96
12/20/2015	12/22/2015	1	3	Dec	1.01
12/18/2016	12/20/2016	1	3	Dec	0.98
10/24/2012	10/25/2012	0	2	Nov	1.00
11/7/2012	11/8/2012	0	2	Nov	0.95
3/25/2014	3/26/2014	0	2	Mar	0.93
1/19/2005	1/20/2005	1	2	Jan	nd
11/24/2005	11/25/2005	1	2	Nov	nd
3/29/2014	3/30/2014	1	2	Mar	0.93
11/13/2014	11/14/2014	1	2	Nov	0.96
8/10/2016	8/11/2016	1	2	Aug	0.95

Using full processing day screening criteria of:
-FBR daily average >= 7 wtph (~47 dtpd)

Output – Methods of Conveying Risk

62

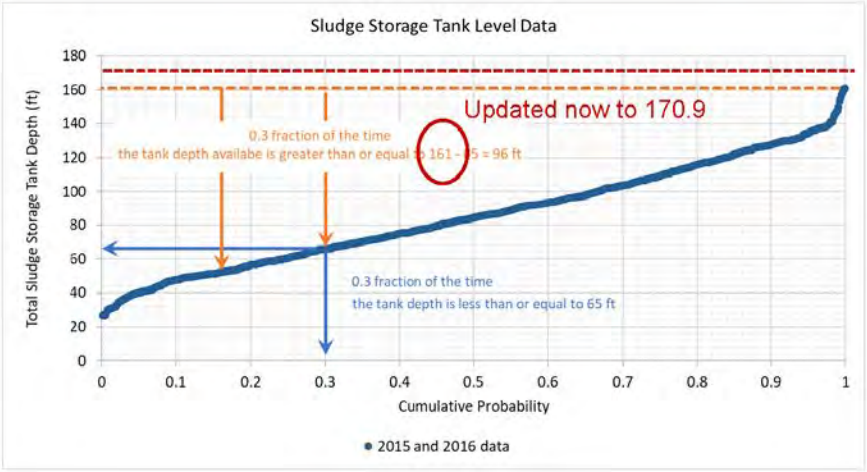
- 3. Total Number of Critical Events Requiring More Storage Volume than is Available



Output – Methods of Conveying Risk

63

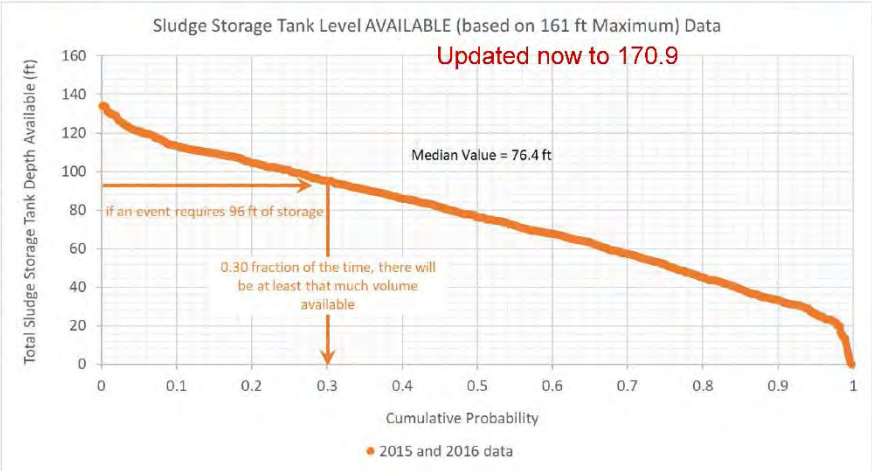
- 3. Total Number of Critical Events Requiring More Storage Volume than is Available



Output – Methods of Conveying Risk

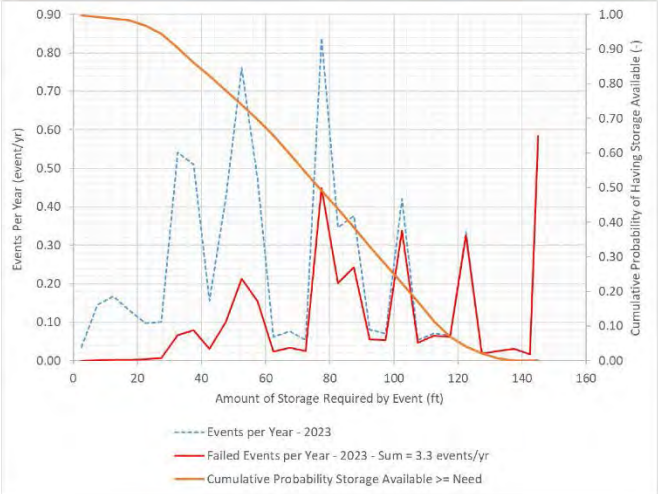
64

- 3. Total Number of Critical Events Requiring More Storage Volume than is Available



Output – Methods of Conveying Risk

- 3. Total Number of Critical Events Requiring More Storage Volume than is Available



Method

- A daily simulation, multi-trial approach
  - Visual basic macro in Excel that generates a day by day simulation from input conditions for a given period
  - Follows a logic flow pattern to establish status of units, with a random process applied to unplanned maintenance
  - Captures information on the status of units, the solids processed by the trains and to landfill, and the critical events related to risk
  - Due to the probability method used to address unplanned maintenance, repeats and averages the results for a lot of runs for the period (i.e. uses a Monte Carlo like method)

General flow diagram provided and code accessible

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Limitations

- Simplification of real conditions
  - Only one mass rate capacity input for an Incineration Train. Each FBR is treated the same.
  - One mass rate capacity for Sludge to Landfill.
    - Doesn't have different treated rates under different conditions.
    - Focus is on critical conditions when processing rate will be at upper limit.
  - Combine all planned maintenance into the two major events per train per year
- Follows logic input rigidly
  - Doesn't use flexibility, judgement, and compromise to alleviate the impact of unfavorable conditions

Now does include curtailment of a PM upon failure

- Comparison versus prediction

Input – Solids Production For Historic Periods

Historic Data Inputs

Annual Mass Rate

Year	Mass Rate (Cake Pump) - dtpd
2010	235
2011	240
2012	225
2013	231
2014	229
2015	232
2016	230

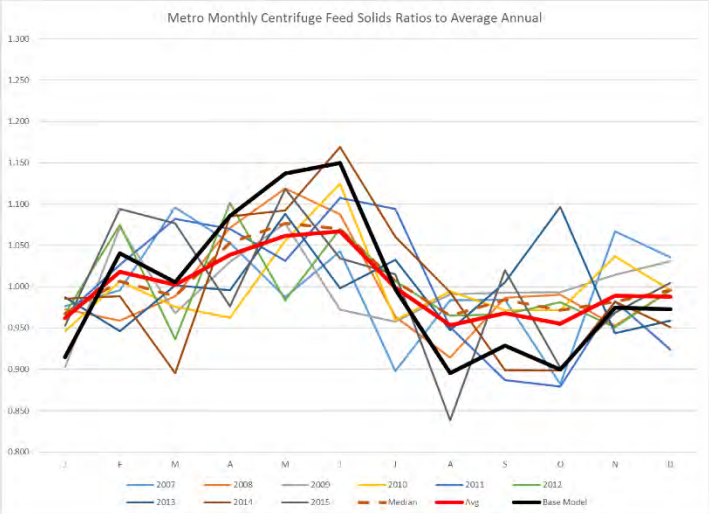
Rate factor = Monthly Avg/Annual Avg

Monthly Rate Factors

Month	Year						
	2010	2011	2012	2013	2014	2015	2016
Jan	0.962	0.974	0.973	0.973	0.984	0.929	0.929
Feb	1.011	1.030	1.074	0.939	0.994	1.088	1.059
Mar	0.985	1.093	0.962	0.985	0.933	1.070	1.052
Apr	0.970	1.067	1.107	1.029	1.085	0.978	1.027
May	1.053	1.038	0.986	1.108	1.097	1.116	1.059
Jun	1.118	1.111	1.095	1.035	1.165	1.069	1.072
July	0.963	1.091	1.010	1.028	1.047	1.016	0.969
Aug	0.987	0.959	0.899	0.930	0.976	0.819	0.949
Sep	0.937	0.871	0.970	0.976	0.912	0.999	0.941
Oct	0.975	0.871	1.004	1.084	0.937	0.902	0.989
Nov	1.024	0.990	0.950	0.947	0.964	1.019	0.981
Dec	1.016	0.909	0.980	0.961	0.908	1.006	0.979

Input - Monthly Variation Projection Period

- Based on historic pattern of centrifuge feed solids rate
- Peak month factor is the adjustable input, pattern is modified to maintain annual average = 1



Input – Converting Mass Rate to Volume Rate and SST Use

Input Needed to Convert for Dewatered Cake to SST Volume and Calculated Values:	
Centrifuge Solids Capture Efficiency [-]:	0.93
Sludge Storage - Average Solids Concentration [% TS]:	5
Sludge Storage - Sludge Bulk Density [lb/gal]:	8.33
Surface Area per Sludge Storage Tank (sq ft):	4050
Unit Conversion gal/cu ft [gal/cu ft]:	7.4805

30 ft x135 ft = 4050 ft^2

Background Info for Input Consideration

SMB Systems Availability/Reliability Tracking Pilot (5/9/16 - 10/17/17)

System	%R	%A	%S	%F	Total
Centrifuges	54.8%	21.6%	3.6%	20.0%	100.0%
Cake Bins	88.6%	9.3%	2.1%	0.0%	100.0%
Cake Pumps	52.2%	36.7%	9.6%	1.6%	100.0%
FBRs	82.1%	0.0%	11.9%	6.0%	100.0%

Status Definitions:

- A - Available, has run less than 12 hours in past 24
- R - Running, has run more than 12 hours in past 24
- S - Scheduled Outage, taken down within past 24 hours
- F - Forced Outage, taken down within past 24 hours

A = Standby
R = Running
S = Scheduled Outage = PM
F = Forced Outrage = UM

System Definitions:

- Centrifuges - Suction line from feed tank through CF to cake bin
- Cake Bin - Bin plus sliding frame (pushes cake to extraction screws)
- Cake Pump - Extraction screws to FBR input
- FBR - FBR through APC equipment train

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Background Info for Input Consideration

Status Tracking Project FBR History Data From 5/9/16 to 9/15/17 - Overall Brief Summary

Item	FBR 1	FBR 2	FBR 3	Total	Total Expressed Per 3 Units	Total - 2 and 3	Total Expressed Per 2 Units
Unplanned Maintenance							
Total Number of Days Without Feed per Year	2.95	34.68	30.25	67.88	22.63	64.93	32.47
Total Number of Events per Year	0.74	4.43	5.17	10.33	3.44	9.59	4.80
Net Days Without Feed per Event	4.00	7.83	5.86	-	6.57	-	6.77
Planned Maintenance						Total - 1 and 2	Total Expressed Per 2 Units
Total Number of Days Without Feed per Year	42.06	41.32	22.87	106.25	35.42	83.38	41.69
Actual Total Number of Events per Year	5.17	4.43	5.90	15.50	5.17	9.59	4.80
Number of Major Events Per Year to Distribute Over	2.00	2.00	2.00	2.00	2.00	4.00	2.00
Net Days per Major Event for Risk Evaluation	21.03	20.66	11.44	53.13	17.71	41.69	20.85

FBR 3 did not have 2 major PMs during this period

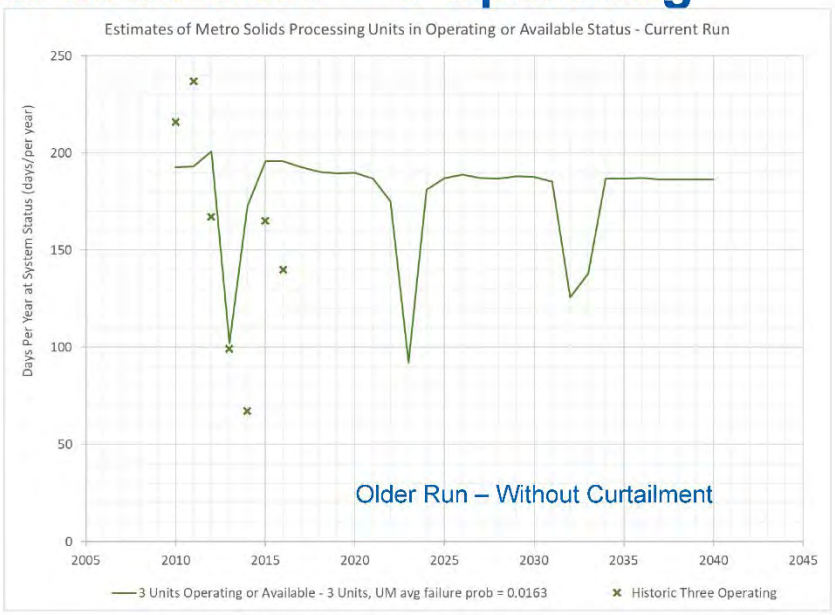
3.44 events per unit per year at ~ 7 day round duration

For simulation 2 major PM events per unit per year ~ 21 day round duration

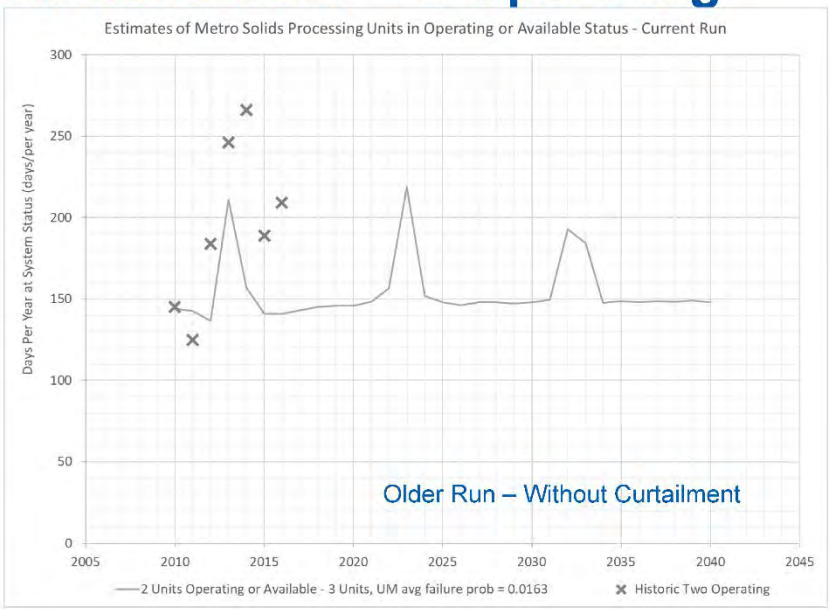
Additional details in separate documents

- *Development of this info*
- *Long term historic trend with background info*

Input – Maintenance and Renewal Characteristics – 3 Operating

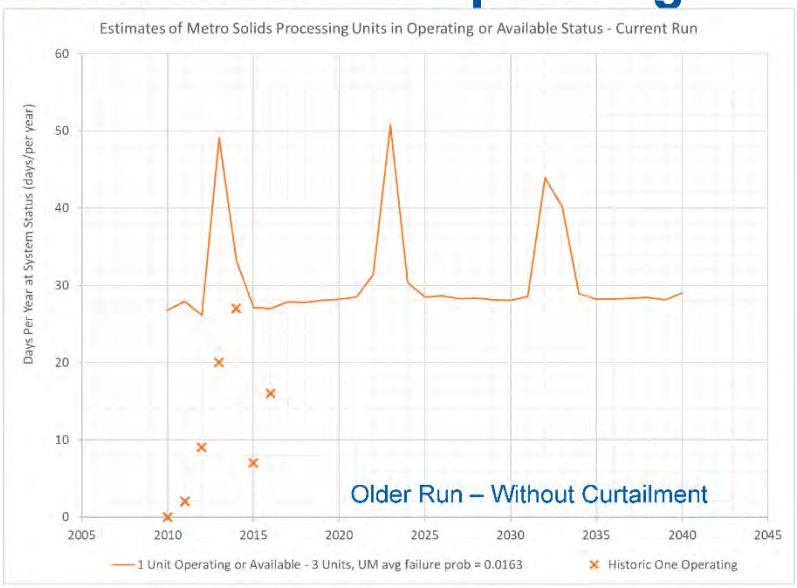


Input – Maintenance and Renewal Characteristics – 2 Operating



Input – Maintenance and Renewal Characteristics – 1 Operating

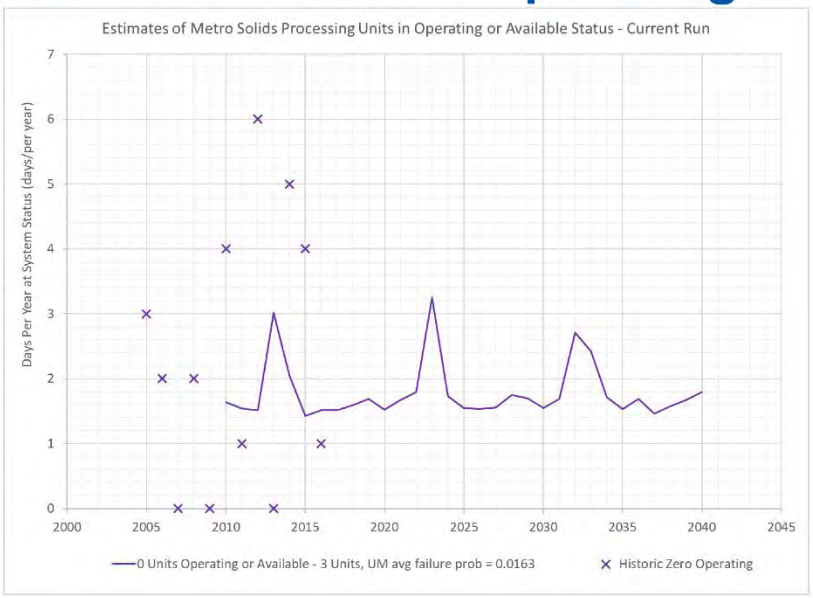
75



Note: See Limitations Discussion and Other Graphs

Input – Maintenance and Renewal Characteristics – 0 Operating

76



Output – Methods of Conveying Risk Events

- **1. Contingency Plan, Number of Critical Events Exceeding a Duration**
  - "The incident we are planning for is a situation where SMBU has only one or zero reactor trains available for five to seven days."
  - Count these incidents per year (used 5 days)

- **2.** ***Number of Critical Events Exceeding a Specific Storage Volume Needed Value***
  - *For the critical condition (one or zero reactor trains available) events, how many exceed a critical value of storage usage*
  - *Count Events >= 76 ft of storage required (the median amount available for 2015-2016)*

- **3. Total Number of Critical Events Requiring More Storage Volume than is Available** (Number of Events with Solids Production Backup)
  - Put the Critical Events into the bins by the amount of storage they need
  - Use an estimate of the probability of having the necessary storage capacity to generate how many events in each bin will fail to have the necessary storage
  - Sum the failed events over all the bins to arrive at an estimate of the total number of events that will backup solids and require the contingency plan to be used

Appendix I. Alternatives Evaluation Cost Data

20 year Present Worth Comparison with 20% Growth through Planning Period							
4% Nominal discount rate 3.50% Escalation rate		M3 A	M3 B	M3 C	M3 D	M3 E	M3 F
		4th Incinerator	74 dtpd VSR PS/WAS Digest/Incinerate	74 dtpd PS/WAS Digest, Dry, Sell	74 dtpd PS/WAS Digest, LA Cake	74 dtpd Lime Stabilize, Store, LA	74 dtpd Dry Raw PS/WAS
Capital Cost Data							
Preliminary Construction Estimates		$ 74,588,000	$ 125,037,694	$ 129,722,980	$ 175,994,372	$ 145,810,384	$ 105,455,414
Engineering (20%)		$ 14,917,600	$ 25,007,539	$ 25,944,596	$ 35,198,874	$ 29,162,077	$ 21,091,083
Contingency Value (50%)		$ 37,294,000	$ 62,518,847	$ 64,861,490	$ 87,997,186	$ 72,905,192	$ 52,727,707
Total Near Term Capital Costs:		**$ 126,799,588**	**$ 212,564,066**	**$ 220,529,052**	**$ 299,190,418**	**$ 247,877,636**	**$ 179,274,187**
PW of Salvage Value		**$ (28,050,000)**	**$ (43,960,000)**	**$ (31,850,000)**	**$ (51,260,000)**	**$ (31,550,000)**	**$ (8,950,000)**
PW of Replacements		**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
PW of Capital with Salvage and Replacements		$ 98,700,000	$ 168,600,000	$ 188,700,000	$ 247,900,000	$ 216,300,000	$ 170,300,000
Operations and Maintenance Cost Data	**2010 Annual Costs**	**Incremental Change In Annual Costs**					
Ash & Sludge Handling	280,000	25,000	32,000	(30,000)	1,957,000	5,780,000	(30,000)
Produced Electricity	(1,800,000)	(400,000)	(1,800,000)	800,000	(500,000)	1,000,000	1,000,000
Consumed Electricity	2,900,000	200,000	(100,000)	-	(400,000)	-	(300,000)
Outside Feedstocks	$0	$0	$0	$0	$0	$0	$0
Natural Gas	(1,370,000)	-	-	260,000	-	-	2,120,000
Incinerator Auxiliary Fuel (No. 2 FO)		-	1,810,000	-	-	-	-
Chemicals	2,440,000	250,000	1,170,000	420,000	710,000	3,250,000	130,000
Labor Cost	6,992,208	360,000	1,420,000	2,610,000	1,660,000	1,070,000	1,780,000
Miscellaneous Additional Maintenance Costs	-	500,000	870,000	650,000	600,000	250,000	800,000
Total Annual Cost	$ 9,442,208	$ 935,000	$ 3,402,000	$ 4,710,000	$ 4,027,000	$ 11,350,000	$ 5,500,000
Present Worth of Annual Costs	$ 180,000,000	$ 18,000,000	$ 65,000,000	$ 90,000,000	$ 77,000,000	$ 216,000,000	$ 105,000,000
Present Worth of Capital and Operating Costs		**$ 117,000,000**	**$ 234,000,000**	**$ 279,000,000**	**$ 325,000,000**	**$ 433,000,000**	**$ 276,000,000**
Future Nitrogen Nutrient Limit	Addl. Cap Cost	-	$ 9,000,000	$ 4,500,000	$ 4,500,000	-	-
	Addl. Op Cost	-	41,100,000.0	$ 20,600,000	$ 20,600,000	-	-
Total Additional Present Worth		**None**	**$ 50,100,000**	**$ 25,100,000**	**$ 25,100,000**	**None**	**None**
Digested Solids Dewatering - Sensitivity Scenarios		-					
Total Additional Present Worth	20% TS	**None**	**$ 16,100,000**	$ 4,400,000	**$ 3,800,000**	**None**	**None**
Total Additional Present Worth	24% TS	**None**	**$ (16,100,000)**	**$ (3,900,000)**	**$ (3,200,000)**	**None**	**None**
Land Application Cost - Sensitivity Scenarios		-					
Total Additional Present Worth	$25/wet ton	**None**	**None**	**None**	**$ (9,000,000)**	**$ (33,000,000)**	**None**
Total Additional Present Worth	$45/wet ton	**None**	**None**	**None**	**$ 10,000,000**	**$ 33,000,000**	**None**

Table below calculates a salvage value based on values from the Capital Cost and Replacement tables.

Salvage Value

			M3-A	M3-B	M3-C	M3-D
	Estimating Unit	Useful Life	4th Incinerator	PS/WAS Digest/Incinerate	PS/WAS Digest, Dry, Sell	PS/WAS Digest, LA Cake
Metro						
Add' Sludge Receiving / Blending	$/dtpd	25	-	-	-	-
Digesters	$/gal	40	-	(32,950,000)	(24,720,000)	(24,720,000)
Digester Piles	sf	40	-	(5,980,000)	(1,990,000)	(1,990,000)
Dryer	$/dtpd	20	-	-	-	-
Pellet Storage/Transport to Loadout	Lump Sum	20	-	-	-	-
Biogas CHP Heat Recovery Unit with Gas Conditioning	$/kW	20	-	-	-	-
Dewatering Capacity Increase	$/dtpd	30	(3,860,000)	-	(1,730,000)	(1,730,000)
Biosolids Storage, Load-out and Odor Control	$/sf	30	-	-	-	(19,920,000)
Biosolids Storage Odor Control	$/cfm	20	-	-	-	-
Cambi Equipment Cost	$/dtpd WAS	25	-	-	-	-
Sidestream Treatment	$/dtpd WAS	25	-	(4,520,000)	(2,390,000)	(2,390,000)
Incineration Train, nominal 120 dtpd	$/dtpd	30	(19,620,000)	-	-	-
Heat Recovery Boiler	$/dtpd	20	-	-	-	-
Steam Turbine	$/dtpd	25	(380,000)	-	-	-
Demolition and Building Modifications	$/sf	40	-	(510,000)	(1,020,000)	(510,000)
Building	$/sf	40	(4,190,000)	-	-	-
			(28,050,000)	(43,960,000)	(31,850,000)	(51,260,000)

Replacement Cost Factor	1
Base Year	2012
End of Planning	2032
Operating Life During Planning Period	20
Discount	4.00%
Inflation	3.50%

Quantities shown in table below denote the sizing of component process based on their estimating unit - dtpd, kW, gal, etc.

Unit Quantities used for Capital Cost Estimating

		M3-A	M3-B	M3-C	M3-D
	Estimating Unit	4th Incinerator	PS/WAS Digest/Incinerate	PS/WAS Digest, Dry, Sell	PS/WAS Digest, LA Cake
Metro					
Add' Sludge Receiving / Blending	$/dtpd				
Digesters	$/gal	-	16,128,000	12,096,000	12,096,000
Digester Piles	sf	-	105,281	35,094	35,094
Dryer	$/dtpd	-	-	70	-
Pellet Storage	Lump Sum	-	-	1	-
Biogas CHP Heat Recovery Unit with Gas Conditioning	$/MW	-	3.1	-	2.4
Dewatering Capacity Increase	$/dtpd	120	-	54	54
Biosolids Storage, Load-out and Odor Control	$/sf	-	-	-	280,094
Biosolids Storage Odor Control	$/cfm				420,141
Cambi Equipment Cost	$/dtpd WAS	-	-	-	-
Sidestream Treatment	$/dtpd WAS	-	79	42	42
Incineration Train, nominal 120 dtpd	$/dtpd	120	-	-	-
Heat Recovery Boiler	$/dtpd	120	-	-	-
Steam Turbine	$/dtpd	120	-	-	-
Demolition and Building Modifications	$/sf	-	7,500	15,000	7,500
Building	$/sf	15,375	-	-	-

MCES Solids Unit Processes - Conceptual Cost Estimates

	Size	Proposed Plant	Representative Unit Cost	Unit	Project Construction Cost	per dtpd at unit process	$/dtpd	Source	Comments
Sludge Transfer and Receiving									
Cake Load-out Modifications		Seneca, Empire			$750,000		Lump Sum		Enlarge, update existing cake load-out facilities. Modest odor control upgrades. Modify Empire building for over-the-road truck dimensions. Modify Nviro load-out for Seneca.
Cake Load-out		Blue Lake			$500,000		Lump Sum		
Foreign Biosolids Cake Receiving		Metro, Blue Lake, Seneca			$5,000,000	50	$100,000	DC Water	
Liquid Sludge Receiving, Pumping		Rosemount			$2,800,000	152	$18,421	MCES Metro	Gravity thickener pump complex. Double for structures.
FOG or Industrial Waste Receiving	Medium	Metro, Blue Lake, Consolidated			$2,000,000		NA	BV HRSD wksht	
Thickening and Dewatering									
Thickening		Medium Plants			$2,720,000	50	$54,400	BL dewatering facility	Assume 20% of BL dewatering facility cost for GBTs and primary sludge screening.
Dewatering		Medium Plants			$10,880,000	50	$217,600	BL dewatering facility	Includes feed pumps and polymer. Subtract 20% for GBTs and primary sludge screening. Empire dewatering building, around 175,000 per dtpd, includes GBTs and relocated BFPs.
Dewatering		Metro			$60,000,000	450	$106,400	DC Water	Pre-dewatering for Cambi, entire dewatering facility. (Still checking on SMB centrifuge costs)
Sludge Conditioning									
Thermal Hydrolysis Process - WAS	Large	Metro			$18,000,000	111	$162,162	Cambi Quote	$12 M Quote from CAMBI plus 50% for sludge screening, etc. BV HRSD used $125,000 per dt
Sidestream Treatment									
Nutrient Recovery	Medium	Metro, Empire			$9,400,000	30	$313,333	Madison	WAS P-release tanks, filtrate wells and handling, struvite harvesting process and building. Madison Nine Springs is a 40 mgd plant, 30 WAS dtpd assumed.
Stabilization									
Anaerobic Digestion	Small	Seneca	$5.50	gal				Various BC Projects	
Anaerobic Digestion	Medium	Consolidated (Metro+2)	$5.00	gal				Various BC Projects	Blue Lake - $25.5 million, 3 tanks, 1.67 MG each, $5 per MG, 58 dtpd
Anaerobic Digestion	Large	Metro	$4.50	gal				Various BC Projects	
Pile supports for Metro PS Digestion		Metro	$125	sf					
Fluid Bed Incineration	Medium	Seneca or Rosemount			$36,000,000	72	$500,000	BV	Single train, no heat recovery
Fluid Bed Incineration	Large	Metro			$65,244,500	120	$540,000	BV HRSD Wksht, CR similar	Single train. No heat recovery
Drying (Simple Paddle Type)	Medium Lg	Metro WAS			$16,600,000	59	$281,000	CR, 19% TS	Komline Sanderson paddle dryer based on 2008 quote for CR, times 2.0 for installation and inflation. Connection to existing steam.
Drying (Rotary Type)	Medium	Blue Lake/Seneca/Emp			$30,000,000	43	$698,000	Winston-Salem	$32 million includes a centrifuge and pipeline
Drying (Belt Type)	Medium	Blue Lake/Seneca/Emp			$20,100,000	14	$1,436,000	Western Wake	$26.8 M BC estimate for Western Wake Krueger dryer with dewatering, pellet incineration, liquid waste receiving.
Pellet Storage	Medium				$1,000,000	50	Lump Sum	Dynamic Air Proposal for CR	Eight 3300 cf silos, pneumatic transfer system, 50% for installation
Solids Storage									
Land Application Enhancements		Empire			$5,000,000	9	$555,556		500 acres at $10,000 per acre, rough estimate based on Empire digested solids quantity
Odor Control		Metro	$ 50.00	cfm					
Cake Storage Enclosed Building		Metro	$ 235.00	sf					Cost from Butch Mathews based on WLSSD building design type
Covered Cake Storage	Small	Empire			$3,200,000	25	$128,000	Iowa City	Fabric roof, concrete bays, 180 days storage, 7-8 ft deep, 23% TS, based on digested sludge quantity
Energy Production									
Hot Oil Heat Recovery Unit and Organic Rankine Cycle Engine	Medium	Consolidated (Metro+2)			$11,680,000	120	$97,000		CR Estimate, includes hot oil system, some bldg expansion
IC Engine with HW Heat Recovery	Medium	Consolidated (Metro+2)	$3,000	kW				Various BC projects	Includes gas treatment, compressors, new CHP bldg, elec
Waste Heat Boiler		Metro			$2,000,000	144	$13,889	CR Estimate	6 dtph, boiler only - reuse existing RO, deaerator, boiler feed
Steam Turbine		Metro			$2,500,000	144	$17,361	CR Estimate	Utilize existing condenser water system
Gas Combustion Turbine with Steam Heat Recovery	Large	Metro	$4,300	kW	$80,000,000			DC Water	Includes gas conditioning, compressors, HRSG, buildings
Gas Combustion Turbine with Steam Heat Recovery, no Gas Treatment	Large	Metro	$2,300	kW	$32,000,000			MMSD	Includes compressors, new CHP bldg, elec, NG mixing, long gas pipeline
Buildings									
Process Building		Several	$600	sf					High bay building with piles, etc
Repurposing of Existing Building		Cambi, WAS drying	$150	sf					

Metro Digestion Alternatives - Preliminary Assumptions

M3-B Nominal Incinerator Capacity 120 dtpd - Offload 74 Metro+Seneca tons via digestion (100 dtpd with peaking and growth), (199 dtpd from centrifuge to incineration)

	Total Solids	Primary Solids In	%VS - PS	WAS Solids In	%VS - WAS	%TS (digester inlet)	Solids Inflow	Water Inflow	Flow	Max Month HRT	VSR - PS	VSR - WAS	Equiv. VSR for 50/50 Blend	VS Destroyed	Solids to Centrifuge	Tank size	Digestion Cap Cost - Prelim Estimate	Cake
	dtpd	dtpd		dtpd		%	lb/hr	lb/hr	gpm	days	%	%		dtpd	dtpd	gal		%TS
Mesophillic - 20 day	263	81	82%	59	75%	5%	11,667	221,667	466	20	67%	35%	51%	60	203	16,000,000	$ 72,000,000	25
Mesophillic - 15 day	263	81	82%	59	75%	5%	11,667	221,667	466	15	64%	30%	47%	56	207	12,000,000	$ 54,000,000	23
Thermophillic	263	81	82%	59	75%	5%	11,667	221,667	466	12	72%	43%	58%	67	196	10,000,000	$ 45,000,000	23
TPAD	263	81	82%	59	75%	5%	11,667	221,667	466	15	72%	50%	61%	70	193	12,000,000	$ 54,000,000	28

M3-C, M3-D Digested Solids to Dryer or Land Application (not Incinerated) - Offload 74 dtpd (100dtpd with 20% growth and 12% peaking)

	Total Solids	Primary Solids In	%VS - PS	WAS Solids In	%VS - WAS	%TS (digester inlet)	Solids Inflow	Water Inflow	Flow	Max Month HRT	VSR - PS	VSR - WAS	Equiv. VSR for 50/50 Blend	VS Destroyed	Solids to Dryer	Tank size	Digestion Cap Cost - Prelim Estimate	Cake
	dtpd	dtpd		dtpd		%	lb/hr	lb/hr	gpm	days	%	%		dtpd	dtpd	gal		%TS
Mesophillic - 20 day	263	43	82%	31	75%	5%	6,167	117,167	246	20	67%	35%	51%	32	42	9,000,000	$ 40,500,000	25
Mesophillic - 15 day	263	43	82%	31	75%	5%	6,167	117,167	246	15	64%	30%	47%	29	45	6,000,000	$ 27,000,000	23
Thermophillic	263	43	82%	31	75%	5%	6,167	117,167	246	12	72%	43%	58%	35	39	5,000,000	$ 22,500,000	23
TPAD	263	69	82%	31	75%	5%	8,382	159,260	335	15	72%	50%	61%	53	48	9,000,000	$ 40,500,000	28

Peaking Factor	1.2	
Growth Factor	1	2030

Literature References

Ohanian et al, Anaerobic Digester Evolution at the Los Angeles Hyperion Plant, 2006

	Full Scale Thermophilic Data (CBTAD)			
Thermo Temp	128	F	53	C
HRT	11	days		
VSR	60%			
Gas Production	12.5	cf/lb VSd		

Wilson et al, Comprehensive Enhanced Digestion Evaluations at Blue Plains Advanced Wastewater Treatment Plant, 2009

	TAD 10	TAD 15	MAD 15	MAD 20	TPAD	TH-MAD	
Thermo Temp	55	49			55		degrees C
HRT	10	15	15	20	5/10	15	days
VSR	48%	58	45-59	52-61	67	68	

Quantities shown in table below denote annual average values.

Pellet Sales and Hauling (Ash, Cake Solids, Pipelines)

	Unit	Current	M3 A 4th Incinerator	M3 B PS/WAS Digest/Incinerate	M3 C PS/WAS Digest, Dry, Sell	M3 D PS/WAS Digest, LA Cake
Metro						
Ash	tpd	49.1	54.4	55.7	44.6	44.6
Ash Haul	trucks per day	2.2	2.5	2.5	2.0	2.0
Cake	wtpd					156
Cake Haul	trucks per day	0				7
Pellets	tpd	0	-		40.1	-
Pellet Haul	trucks per day	0	-	-	1.8	-

METRO ONLY

Ash

Annual Total	tpd	49.09	54.37	55.69	44.63	44.63
Annual Ash Disposal (Cost)	$	275,288	304,881	312,278	250,282	250,282

Pellets

Annual Total	tpd	-	-	-	40.1	-
Annual Pellet Sales	$	$ -	$ -	$ -	$ (40)	$ -

Solids Hauling

Annual Total	$	0	0	0	0	0

Land Application

Annual Total	$	$ -	$ -	$ -	$ -	$ 1,987,075

Total	$	275,000	305,000	312,000	250,000	2,237,000

Assumptions

$	15.36	Per ton ash disposal cost
	52.4	dtpd ash, Metro 2010 average
$	293,844	Metro 2010 ash disposal cost
$	30,000	Seneca 2010 ash disposal cost
	$1.00	Revenue from dried pellets, $/ton
	$15.00	Land Application Cost, $/wet ton
	$125.02	2011 Cost per dry ton
	$13.75	2011 Cost per wet ton
	20	years, BCE duration

56	lb/cf sludge cake
898	cf haul truck volume
25.144	wet ton per truck load
35	$/wet ton land applied - Metro Program
22	wet ton/truckload

Quantities shown in table below denote annual average values.

Energy Balance

	Unit	2010 plus NonCond Turbine	M3 A 4th Incinerator	M3 B PS/WAS Digest/ Incinerate	M3 C PS/WAS Digest, Dry, Sell	M3 D PS/WAS Digest, LA Cake
Metro						
Steam Turbine Power Production (Condensing and Non-Condensing)	MW	2.9	3.5	1.4	1.6	1.2
Steam Export (Net of FBI Process Steam)	MW	4.5	4.5	4.5	4.5	4.5
Auxiliary Fuel	MW	-	-	(2.8)	-	-
Gas Turbine Power Production	MW	-	-	4.4	-	2.4
Gas Turbine Steam Export	MW	-	-	-	-	-
Natural Gas Consumption for Aux Boiler and FBR Bed Heating	MW	(1.4)	(1.4)	(1.4)	(1.4)	(1.4)
Natural Gas Consumption for Dryer	MW	-	-	-	(0.8)	-
SMB and Digester Power Consumption (Dewatering Excluded)	MW	(4.7)	(5.0)	(4.5)	(4.6)	(4.0)
		1.3	1.6	1.7	(0.7)	2.7

Metro Steam Export	SMB	Aux Boiler
Steam to process	30,000	
Deaerator, Soot Blowers, Condenser	15,000	
Exported Steam	15,000	
	1027	
	15.405	5
	0.2931	0.2931
	4.5	**1.4**

	2010 plus Non-Condensing Turbine			4th Incinerator		
	kWh/year	MMBtu/year	Average kW			
ID Fans	10,040,250		1,146	2,317	From Metro Plant Energy Monitoring TM, Project No. 133797, Jan 9, 2012, Fig 10	
Fluidizing Air Blowers	8,295,881		947		ID Fan and FAB kW per train as a function of feed rate:	
Centrifuges	8,184,097		934	1,028	kW=3.317*dtpd+485.94	
Effluent Pumps (Scrubber, Condenser Water)	5,228,337		597	657		
Cake Pumps	3,339,946		381	419		
Heat Recovery Units (FBR HVAC)	2,352,586		269	269		
SMB Compressors	2,295,323		262	262		
Centrifuge Feed Pumps	1,823,254		208	229		
Turbine Cooling Recirculaiton Pumps	1,015,761		116	128		
Centrifuge Feed Tank Blower	293,234		33	37		
20% Miscellaneous Item Estimate	8,573,734		979	979		
Total Electrical Consumption	51,442,403		5,872	6,323		
Backcheck Cost at 0.07/kWh	$ 3,600,968					
Actual 2011 Cost net of turbine credit)	$ 3,661,771					

Electrical Consumption			5,872	6,323	
Condensing Steam Turbine Production			(2,500)	(3,466)	2012 average through October 2.25
Non-condensing Steam Turbine Production	3,700,000		(400)	-	
NG Purchase (2011 $ at $8/MMBTU)		42,676	1,400	1,400	
NG Credit for steam export		204,196	(4,515)	(4,515)	
SMB Net Energy			(143)	(258)	
Net Energy w/o Dewatering			(1,319)	(1,551)	
Dewatering kW				1,293	kW
				1.3	MW

Quantities shown in table below denote annual average values.

Chemicals

	Unit	2010	M3 A 4th Incinerator	M3 B PS/WAS Digest/Incinerate	M3 C PS/WAS Digest, Dry, Sell	M3 D PS/WAS Digest, LA Cake
Metro						
Polymer	$	2,039,212	2,241,233	2,710,419	2,535,929	2,535,929
Biogas Treatment Media, Chemicals	$	-	-	582,102	-	316,674
Lime	$					
Imported Ash	$					
Nutrient Harvesting	$					
Incineration Chemicals	$	403,600	443,807	321,959	326,870	299,554
Total		2,442,812	2,685,040	3,614,480	2,862,798	3,152,157

Assumptions - Polymer

Metro	
$ 2,549,500	provided by Metro 2010 polymer cost
9.00	Polymer dose, lb per dry ton with scum in centrifuge feed
7.20	Polymer dose, lb per dry ton without scum in centrifuge feed
$26.56	2010 calculated polymer cost per ton of dry sludge entering into centrifuges (with scum)
$2.95	Polymer cost per pound
$130,000.00	Estimated Annual Cost from Don Esping Empire Ostara Report - 1.6 FTE less $45,000 in fertilizer revenue
8	Empire raw WAS dtpd
$16,455.70	$/yr/dtpd WAS - ADD ONE FTE TO LABOR - CHEMICALS ARE MINIMAL
Increase in polymer dose with digestion	
2	Meso Digestion
1.5	Partial Digestion (less than 33%)
1.1	Cambi Digestion
0.8	PS Only
Polymer dose for dewatering with WAS drying	
15	lb/dry ton

Assumptions - Other Chemicals

$ 403,600	2010 Metro
263.00	dtpd
$ 1,534.60	Annual Chemical Cost per incinerated dtpd

Quantities shown in table below denote annual average values.

Miscellaneous Changes to Current Maintenance Materials and Outside Services

		M3 A	M3 B	M3 C	M3 D
	Unit	4th Incinerator	PS/WAS Digest/Incinerate	PS/WAS Digest, Dry, Sell	PS/WAS Digest, LA Cake
Metro					
Gas Treatment	$		200,000		200,000
Gas Turbine Maintenance	$		465,273		252,906
Digester Maintenance	$		200,000	150,000	150,000
FBI Maintenance	$	500,000			
Dryer/Alk Stab Maintenance	$			500,000	
		$ 500,000	$ 865,273	$ 650,000	$ 602,906
	Assumptions				
	Metro				
	$ 200,000				
	$ 840,000				
	2010 Metro costs below not included since cost analysis is based on increases or decreases, not absolute costs				
	$ 50,000				
	$ 338,000				
	$ 1,039,400				

Appendix J. Capital Cost Estimate for the Metro Plant Fourth Incinerator

Opinion of Probable Cost: Fourth Incinerator **(Sheet 2/3)**

ITEM	QUANTITY	UNIT	UNIT COST	TOTAL COST
Mobilization, Bonds, Insurance				**$7,697,970**
Mobilization and Bonds	1	%	8.0%	$7,697,970
Demolition				**$250,000**
Relocate Ammonia Tank, Pumps & Carbon Silo	1	LS	$250,000	$250,000
Site Work				**$1,452,000**
Grading / Roads / Excavation / Piles	22,000	SQ FT	$66	$1,452,000
Building Addition				**$6,050,000**
Incinerator Building Addition	22,000	SQ FT	$275	$6,050,000
Dewatering & Cake Pumping				**$5,770,000**
Centrifuges	2	EA	$1,100,000	$2,200,000
Cake Bin	1	EA	$700,000	$700,000
Cake Pumps	2	EA	$700,000	$1,400,000
Polymer Pumps	2	EA	$40,000	$80,000
Centrifuge Feed Pumps	2	EA	$50,000	$100,000
Installation		%	30%	$1,290,000
Incineration				**$26,000,000**
Incinerator	1	EA	$20,000,000	$20,000,000
Installation		%	30%	$6,000,000
Energy Recovery				**$8,099,000**
WH Boiler	1	EA	$2,300,000	$2,300,000
WH Boiler Ash System	1	EA	$250,000	$250,000
Primary Heat Exchanger	1	EA	$750,000	$750,000
Secondary Heat Exchanger	1	EA	$500,000	$500,000
De-superheater	4	EA	$125,000	$500,000
De-aerator	1	EA	$350,000	$350,000
De-aerator Transfer Pumps	2	EA	$25,000	$50,000
Reverse Osmosis System	1	EA	$250,000	$250,000
Boiler Feed Pumps	2	EA	$40,000	$80,000
Steam Piping	1	EA	$500,000	$500,000
Steam Specialties	1	EA	$400,000	$400,000
Chemical Systems for Condensate Cleaning	1	EA	$300,000	$300,000
Installation		%	30%	$1,869,000

Opinion of Probable Cost: Fourth Incinerator (Sheet 2/3)

ITEM	QUANTITY	UNIT	UNIT COST	TOTAL COST
Air Pollution Control Equipment				**$11,295,000**
PAC Injection	1	EA	$200,000	$200,000
Carbon Tower	1	EA	$1,000,000	$1,000,000
Baghouse	1	EA	$1,500,000	$1,500,000
Chemical Injection	1	EA	$400,000	$400,000
Wet ESP	1	EA	$1,000,000	$1,000,000
Scrubber	1	EA	$1,500,000	$1,500,000
Low Temp Duct	300	LF	$2,000	$600,000
CEMS	2	EA	$300,000	$600,000
Sodium Hydroxide System	1	EA	$350,000	$350,000
Vacuum Ash Conveyance System	1	LS	$2,000,000	$2,000,000
Installation		%	30%	$2,145,000
Cake Receiving				**$1,914,500**
Cake Bin	1	EA	$420,000	$420,000
Cake Pumps	1	EA	$315,000	$315,000
Lubrication Pumps	1	EA	$32,500	$32,500
Cake Piping	600	LF	$500	$300,000
Cake Valves	12	EA	$25,000	$300,000
Installation		%	40%	$547,000
Other Equipment & Systems				**$3,640,000**
ID Fan	1	EA	$300,000	$300,000
Effluent Water Pumping	1	EA	$925,000	$925,000
Non-Potable Water Supply Piping	1	EA	$100,000	$100,000
Potable Water Supply Piping	1	EA	$75,000	$75,000
Non-Potable Water Strainers	1	EA	$50,000	$50,000
Grating Floors and Structures	1	LS	$1,000,000	$1,000,000
Drain Piping	1	EA	$150,000	$150,000
Installation		%	40%	$1,040,000

Opinion of Probable Cost: Fourth Incinerator (Sheet 3/3)

ITEM	QUANTITY	UNIT	UNIT COST	TOTAL COST
Plumbing & HVAC				**$9,622,463**
Plumbing & HVAC	1	%	10.0%	$9,622,463
Electrical & Instrumentation & Controls				**$14,433,694**
MCCs / Wiring / Programming / SCADA	1	%	15.0%	$14,433,694
Subtotal				**$96,224,627**
Contingency				**$28,867,388**
Construction Contingency	1	%	15.0%	$14,433,694
General Contingency	1	%	15.0%	$14,433,694
Subtotal Construction Cost Estimate				**$125,092,015**
Design Engineering	1	%	10.0%	$12,509,201
Construction Engineering & Inspection	1	%	10.0%	$12,509,201
Total Project				**$150,110,418**

Opinion of Probable Cost: Renewal of Incinerators 1, 2 and 3 (Sheet 1/2)

ITEM	QUANTITY	UNIT	UNIT COST	TOTAL COST
Mobilization, Bonds, Insurance				**$1,545,366**
Mobilization and Bonds	1	%	8.0%	$1,545,366
Sludge Storage				**$230,000**
Replace two oldest SST progressing cavity pumps	2	EA	$55,000	$110,000
Replace 2 centrifugal transfer pumps	2	EA	$30,000	$60,000
Replace 2 piston transfer pumps	2	EA	$30,000	$60,000
Sludge Feed Equipment				**$2,400,000**
Replace cake bin extraction screws	8	EA	$75,000	$600,000
Retrofit cake pumps for larger capacity and replace level sensors	4	EA	$300,000	$1,200,000
Renew cake bins	4	EA	$150,000	$600,000
Incinerators				**$3,400,000**
Rehabilitate air distribution system	3	EA	$750,000	$2,250,000
Replace spray nozzles and cooling jacket	12	EA	$25,000	$300,000
Restore OFA	1	LS	$100,000	$100,000
Rehabilitate refractory lining and shell	3	EA	$250,000	$750,000
FABs, ID Fans and Ducts				**$610,000**
Replace FAB discharge check valves	3	EA	$20,000	$60,000
Hydraulic Improvements, e.g., baffles	1	LS	$250,000	$250,000
Replace expansion joints	1	LS	$300,000	$300,000
Primary Heat Exchangers				**$2,250,000**
Renew primary heat exchangers	3	EA	$750,000	$2,250,000
Waste Heat Boilers				**$1,500,000**
Replace worn tube segments and sections	3	EA	$500,000	$1,500,000
Baghouse				**$1,125,000**
Renew baghouse hoppers	3	EA	$300,000	$900,000
Replace baghouse inlet valves	9	EA	$25,000	$225,000
Wet Scrubber				**$300,000**
Replace mist eliminator with larger unit	3	EA	$100,000	$300,000
Wet ESP				**$450,000**
Miscellaneous electrical component upgrades	3	EA	$150,000	$450,000

Opinion of Probable Cost: Renewal of Incinerators 1, 2 and 3 (Sheet 2/2)

ITEM	QUANTITY	UNIT	UNIT COST	TOTAL COST
Turbine Generators and Auxiliary Boilers				**$3,575,000**
Steam Turbine	1	EA	$2,500,000	$2,500,000
Surface Condenser	1	EA	$500,000	$500,000
Condenser Cooling Water Pumps	2	EA	$75,000	$150,000
Condensate Recirculation Pumps	2	EA	$50,000	$100,000
Heat Exchangers - Plant Effluent	2	EA	$150,000	$300,000
Condensate Tank	1	EA	$25,000	$25,000
Electrical & I&C				**$1,931,707**
Wiring & MCCs / Programming / SCADA	1	%	10.0%	$1,931,707
Subtotal				**$19,317,073**
Subtotal				$19,317,073
Contingency				**$5,795,122**
Construction Contingency	1	%	15.0%	$2,897,561
General Contingency	1	%	15.0%	$2,897,561
Subtotal Construction Cost Estimate				**$25,112,195**
Design Engineering	1	%	10.0%	$2,511,220
Construction Engineering & Inspection	1	%	10.0%	$2,511,220
Total Project Cost Estimate				**$30,134,634**

Appendix K. Environmental Assessment Worksheet

July 2013 version

ENVIRONMENTAL ASSESSMENT WORKSHEET

This Environmental Assessment Worksheet (EAW) form and EAW Guidelines are available at the Environmental Quality Board's website at:
http://www.eqb.state.mn.us/EnvRevGuidanceDocuments.htm. The EAW form provides information about a project that may have the potential for significant environmental effects. The EAW Guidelines provide additional detail and resources for completing the EAW form.
Cumulative potential effects can either be addressed under each applicable EAW Item, or can be addresses collectively under EAW Item 19.
Note to reviewers: Comments must be submitted to the RGU during the 30-day comment period following notice of the EAW in the *EQB Monitor*. Comments should address the accuracy and completeness of information, potential impacts that warrant further investigation and the need for an EIS.

1. **Project title:** Fourth Fluidized Bed Incinerator at the Metro Wastewater Treatment Plant

2. **Proposer:**
Contact person: Rene Heflin
Title: Manager, Plant Engineering Technical Services
Address: 390 Robert St. North
City, State, ZIP: St. Paul, MN 55101
Phone: 651-602-1077
Fax:
Email: rene.heflin@metc.state.mn.us

3. **RGU:** MN Pollution Control Agency
Contact person: Nancy Drach
Title: Environmental Review
Address: 520 Lafayette Road
City, State, ZIP: St. Paul, MN 55155
Phone: 651-757-2317
Fax:
Email: Nancy.drach@state.mn.us

4. **Reason for EAW Preparation: (check one)**

Required:	Discretionary:
☐ EIS Scoping	☐ Citizen petition
☐ Mandatory EAW	☐ RGU discretion
	☒ Proposer initiated

If EAW or EIS is mandatory give EQB rule category subpart number(s) and name(s):

5. Project Location:

County: Ramsey
City/Township: St. Paul/28 North
PLS Location (¼, ¼, Section, Township, Range): E ½ of the SW ¼-NW ¼ of Section 10, 28N, 22W
Watershed (81 major watershed scale):

Watershed	NHD Hydrologic Unit #	NHD Hydrologic Unit Name
HU_8 -	7010206	Twin Cities
HU_10 -	701020608	City of Saint Paul-Mississippi River
HU_12 -	70102060805	Harriet Island-Mississippi River

GPS Coordinates: Longitude = -93.0419, Latitude = 44.9287
Tax Parcel Number: 123-102822230001

At a minimum attach each of the following to the EAW:

- County map showing the general location of the project;
- U.S. Geological Survey 7.5 minute, 1:24,000 scale map indicating project boundaries (photocopy acceptable); and
- Site plans showing all significant project and natural features. Pre-construction site plan and post-construction site plan.

See Appendix A, Figures 1 through 3.

6. Project Description:

a. **Provide the brief project summary to be published in the *EQB Monitor*, (approximately 50 words).**

The proposed project is to provide additional solids processing capacity by adding an additional fluid bed incinerator train (FBI 4) to the existing FBI complex at the Metropolitan Wastewater Treatment Plant (Metro Plant). The Metro Plant, located in St. Paul on the Mississippi River, is owned and operated by the Metropolitan Council Environmental Services (MCES).

b. **Give a complete description of the proposed project and related new construction, including infrastructure needs. If the project is an expansion include a description of the existing facility. Emphasize: 1) construction, operation methods and features that will cause physical manipulation of the environment or will produce wastes, 2) modifications to existing equipment or industrial processes, 3) significant demolition, removal or remodeling of existing structures, and 4) timing and duration of construction activities.**

The proposed project will construct a fourth FBI train in parallel to three existing FBI trains in the Solids Management Building (SMB) located in the northeast portion of the Metro Plant. Each existing FBI train consists of an incinerator, heat recovery equipment (primary and secondary heat

exchangers, waste heat boiler), flue gas treatment equipment (carbon injection, baghouse, scrubber, and electrostatic precipitator) and a flue gas stack. The proposed FBI train is similar, as shown on Figure 4, Appendix A, and will require a building expansion.

Other major process systems that will be modified and/or expanded to accommodate the new FBI train include dewatered cake conveyance to incineration, ash conveyance and loadout, and steam turbine power generation.

It is anticipated that alkaline stabilization, used as a backup solids stabilization process, will increase during construction due to down time required for tie-ins. Metro Plant currently landfills stabilized bisolids and ash.

Construction will occur within the existing Metro Plant levee and floodwall system. Building expansion will require excavation and dewatering (see 10.b and 11.b.iii for details); excavated materials will be used onsite. Options for recycling of construction demolition debris will be evaluated. Demolition will include 6300 square feet of asphalt. Asphalt removed in the demolition will be recycled.

Construction is scheduled to occur 2021 and 2024.

c. **Project magnitude:**

Total Project Acreage	0.5
Linear project length	N/A
Number and type of residential units	0
Commercial building area (in square feet)	0
Industrial building area (in square feet)	22,000
Institutional building area (in square feet)	0
Other uses – specify (in square feet)	0
Structure height(s)	70 ft
Stack height	150 ft

d. **Explain the project purpose; if the project will be carried out by a governmental unit, explain the need for the project and identify its beneficiaries.**

The project purpose is to increase available incineration capacity at the Metro Plant to more effectively support routine maintenance of solids processing equipment and to accommodate projected increases in solids processing requirements within a 30-year planning window.

The current dewatered cake production of 240 dtpd (2020) is projected to increase to 300 dtpd by 2050 due to population and economic growth in the Metro Plant service area.

e. **Are future stages of this development including development on any other property planned or likely to happen? ☐ Yes ☒ No**
If yes, briefly describe future stages, relationship to present project, timeline and plans for environmental review.

f. **Is this project a subsequent stage of an earlier project? [x] Yes ☐ No**
If yes, briefly describe the past development, timeline and any past environmental review.

The existing three FBI trains at the Metro Plant were installed in 2004; startup was completed in 2005. An EAW was submitted by MCES at that time.

7. Cover types: Estimate the acreage of the site with each of the following cover types before and after development:

	Before	**After**		**Before**	**After**
Wetlands	-	-	Lawn/landscaping	0.1	0
Deep water/streams	-	-	Impervious surface	0.4	0.5
Wooded/forest	-	-	Stormwater Pond	-	-
Brush/Grassland	-	-	Other (describe)	-	-
Cropland	-	-			
			TOTAL	**0.5**	**0.5**

8. Permits and approvals required: List all known local, state and federal permits, approvals, certifications and financial assistance for the project. Include modifications of any existing permits, governmental review of plans and all direct and indirect forms of public financial assistance including bond guarantees, Tax Increment Financing and infrastructure. ***All of these final decisions are prohibited until all appropriate environmental review has been completed. See Minnesota Rules, Chapter 4410.3100.***

Unit of government	**Type of application**	**Status**
Federal Aviation Administration (FAA)	Notification of Proposed Construction or Alteration	To be applied for
National Park Service (NSP)	Plan review and coordination under Mississippi National River and Recreation Area (MNRRA)	
Minnesota Pollution Control Agency (MPCA)	Plan and Specification approval	To be submitted
MPCA	Facility Plan approval	To be submitted
Mn Public Facilities Authority	Minnesota State Loan Funding approval	To be submitted
MPCA	National Pollution Discharge Elimination System/State Disposal System (NPDES/SDS) Permit	To be applied for, if required
MPCA	Major amendment to Title V Permit	To be applied for
MPCA	Construction Stormwater Permit	To be applied for
MPCA	Stormwater Plan	To be amended, if required
MPCA	Toxic Pollution Prevention Plan	To be amended, if required

Unit of government	Type of application	Status
Minnesota Emergency Response Commission and Local Fire Department	SARA Title III Chemical Notification, Planning, and Reporting	To be amended, if required
DNR	Water Appropriation Permit may be required for dewatering if more than 10,000 gpd or one million gpd is proposed	To be applied for, if required
State Historic Preservation Officer (SHPO)	National Historic Preservation Act Section 106 and the Archaeological Resources Protection Act Review and Coordination. Office of the State Archaeologist (OSA) coordinates with the SHPO	
Ramsey County	Hazardous Waste Generator License	To be amended, if required
Ramsey County	Hazardous Waste Contingency Plan	To be amended, if required
Ramsey-Washington County Watershed District	Grading Permit	To be applied for
City of St. Paul	Plan review coordination regarding compliance with St. Paul Critical Area River Corridor Plan and Ordinance	To be submitted
City of St. Paul	Building Permit	To be applied for

Cumulative potential effects may be considered and addressed in response to individual EAW Item Nos. 9-18, or the RGU can address all cumulative potential effects in response to EAW Item No. 19. If addressing cumulative effect under individual items, make sure to include information requested in EAW Item No. 19

9. Land use:

a. Describe:

i. Existing land use of the site as well as areas adjacent to and near the site, including parks, trails, prime or unique farmlands.

See Appendix A, Figure 5, 6 and 7 and Table 1.

ii. Plans. Describe planned land use as identified in comprehensive plan (if available) and any other applicable plan for land use, water, or resources management by a local, regional, state, or federal agency.

See Appendix A, Figure 7.

iii. Zoning, including special districts or overlays such as shoreland, floodplain, wild and scenic rivers, critical area, agricultural preserves, etc.

The Metro Plant is located within the designated Critical Area for the Mississippi River and the Mississippi National River and Recreation Area (MNRRA) corridor.
The Metro Plant property falls within the 100-year floodplain. Figure 8 shows the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map. The base flood elevation is shown as 706 feet National Geodetic Vertical Datum (NGVD). This is the 100

year flood event. The Metro Plant's existing levee and floodwall are FEMA certified and designed to protect the facility from the 500-year flood.

The location of the Metro Plant within the Mississippi River floodplain and Critical Area requires compliance with the City of St. Paul River Corridor District Zoning Code. The Code utilizes hydrologic information provided by the Flood Insurance Study for St Paul, completed under the direction of FEMA. The project area is located within District RC-4-Urban Diversified District and is subject to applicable River Corridor ordinance provisions in Chapter 68. The project is a permitted use in the RC-4 District since it is a permitted use in the underlying I-2 District. Permitted uses are subject to the standards specified in Section 68.400 et. seq, including provisions for grading and filling, protection of wildlife and vegetation, and protection of water quality.

b. Discuss the project's compatibility with nearby land uses, zoning, and plans listed in Item 9a above, concentrating on implications for environmental effects.

This project will occur within the existing Metro Plant site, as expansion of the existing SMB, and will not substantially change the nature of the facility in terms of its effects on nearby adjacent lands.

c. Identify measures incorporated into the proposed project to mitigate any potential incompatibility as discussed in Item 9b above.

Not applicable.

10. Geology, soils and topography/land forms:

a. **Geology - Describe the geology underlying the project area and identify and map any susceptible geologic features such as sinkholes, shallow limestone formations, unconfined/shallow aquifers, or karst conditions. Discuss any limitations of these features for the project and any effects the project could have on these features. Identify any project designs or mitigation measures to address effects to geologic features.**

Most of the soils on the Metro Plant property consist of an old river basin filled with sand and muck. The Chaska Silt Loam and Kerston Muck cover a small portion of the plant property. Soils are generally fine-grained, including silty sand, silt, clay, and organic materials.

b. **Soils and topography - Describe the soils on the site, giving NRCS (SCS) classifications and descriptions, including limitations of soils. Describe topography, any special site conditions relating to erosion potential, soil stability or other soils limitations, such as steep slopes, highly permeable soils. Provide estimated volume and acreage of soil excavation and/or grading. Discuss impacts from project activities (distinguish between construction and operational activities) related to soils and topography. Identify measures during and after project construction to address soil limitations including stabilization, soil corrections or other measures. Erosion/sedimentation control related to stormwater runoff should be addressed in response to Item 11.b.ii.**

The soil survey of Washington and Ramsey Counties, Minnesota (Vinar 1980) shows most of the soils on the Metro Plant property to consist of Unorthadents-wet substratum and Urban Land. The Chaska Silt Loam and Kerston Muck cover a small portion of the plant property. Soils are generally

fine-grained, including silty sand, silt, clay, and organic materials. It is assumed that the buildings would require pilings to an estimated depth of 50 feet.

Topography – There are no steep slopes or highly erodible soils associated with the project.

Soil Excavation and/or grading estimate – 9000 cubic yards of excavation and 0.15 acres of grading.

Temporary erosion controls will be implemented in an effort to curtail erosion and sediment transport and to maintain slope stability until permanent erosion controls have been adequately established. Erosion control will be maintained throughout the construction period by removing accumulated sediment, and by repairing or replacing damaged and deteriorated erosion control devices. Temporary erosion control devices typically include silt fence, straw bales, and storm sewer inlet protection.

Post construction erosion and sedimentation control is typically accomplished by establishing turf. Turf establishment will primarily consist of seeding and mulching. Sod may be placed to restore areas adjacent to maintained lawns, and in areas that may be determined to be particularly susceptible to erosion. Suitable temporary erosion control devices will be placed and maintained until permanent turf has been adequately established.

NOTE: For silica sand projects, the EAW must include a hydrogeological investigation assessing the potential groundwater and surface water effects and geologic conditions that could create an increased risk of potentially significant effects on groundwater and surface water. Descriptions of water resources and potential effects from the project in EAW Item 11 must be consistent with the geology, soils and topography/land forms and potential effects described in EAW Item 10.

11. Water resources:

a. **Describe surface water and groundwater features on or near the site in a.i. and a.ii. below.**

i. Surface water - lakes, streams, wetlands, intermittent channels, and county/judicial ditches. Include any special designations such as public waters, trout stream/lake, wildlife lakes, migratory waterfowl feeding/resting lake, and outstanding resource value water. Include water quality impairments or special designations listed on the current MPCA 303d Impaired Waters List that are within 1 mile of the project. Include DNR Public Waters Inventory number(s), if any.

The Metro Plant is located within the designated Critical Area for the Mississippi River and the Mississippi National River and Recreation Area (MNRRA) corridor. Lands designated for Pigs Eye Park, around Pigs Eye Lake, are located to the south and southeast of the Metro Plant property. Farther to the southeast is the Pigs Eye Lake Scientific and Natural Area (SNA). The undeveloped character of much of the land near the Metro Plant, particularly to the south and east, provides a range of habitat, which includes wetlands, floodplain forest, and grasslands.

All project activity will be within the existing levee and floodwall for the Metro Plant. Buildings, treatment tanks, roads, and storage areas occupy most of the area inside of the levee. With the exception of a stormwater treatment basin colonized by common wetland plants, plant communities inside of the levee and floodwall are limited to landscaped areas planted with grass. Neither project construction nor operation will affect nearby sensitive resources.

ii. **Groundwater – aquifers, springs, seeps. Include: 1) depth to groundwater; 2) if project is within a MDH wellhead protection area; 3) identification of any onsite and/or nearby wells, including unique numbers and well logs if available. If there are no wells known on site or nearby, explain the methodology used to determine this.**

1. Well 603089 is closest to the construction area and the well log shows the depth to groundwater as 21 feet from land surface, measured 10/25/2002.
2. Not applicable.
3. See Appendix A, Figure 9 plus well logs and Figure 10 plus boring logs.

b. Describe effects from project activities on water resources and measures to minimize or mitigate the effects in Item b.i. through Item b.iv. below.

i. **Wastewater - For each of the following, describe the sources, quantities and composition of all sanitary, municipal/domestic and industrial wastewater produced or treated at the site.**

1) If the wastewater discharge is to a publicly owned treatment facility, identify any pretreatment measures and the ability of the facility to handle the added water and waste loadings, including any effects on, or required expansion of, municipal wastewater infrastructure.

The proposed project adds solids processing capacity to an existing wastewater treatment plant, the Metropolitan Wastewater Treatment Plant (Metro Plant). The Metro Plant is an advanced secondary wastewater treatment plant providing removal of carbonaceous biochemical oxygen demand, 5-day ($CBOD_5$), total suspended solids (TSS), phosphorus (P), and ammonia (NH_4-N), as well as disinfection. The project is proposed to improve the Metro Plant and, directly or indirectly, the quality of effluent discharged from that facility to the Mississippi River in accordance with NPDES/SDS Permit Nos. MN 0029815 and MN 0070629.

The proposed project will have no anticipated adverse impacts on the plant's ability to continue to comply with permitted NPDES discharge limits.

2) If the wastewater discharge is to a subsurface sewage treatment systems (SSTS), describe the system used, the design flow, and suitability of site conditions for such a system.
Not applicable.

3) **If the wastewater discharge is to surface water, identify the wastewater treatment methods and identify discharge points and proposed effluent limitations to mitigate impacts. Discuss any effects to surface or groundwater from wastewater discharges**.
Not applicable.

ii. **Stormwater - Describe the quantity and quality of stormwater runoff at the site prior to and post construction. Include the routes and receiving water bodies for runoff from the site (major downstream water bodies as well as the immediate receiving waters).**

Discuss any environmental effects from stormwater discharges. Describe stormwater pollution prevention plans including temporary and permanent runoff controls and potential BMP site locations to manage or treat stormwater runoff. Identify specific erosion control, sedimentation control or stabilization measures to address soil limitations during and after project construction.

The project site is a wastewater treatment plant enclosed within a levee and floodwall. Site runoff is governed NPDES/SDS Permit Nos. MN 0029815 and the Stormwater Pollution Prevention Plan developed in accordance with the requirements of that permit. Stormwater from inside of the levee and floodwall discharges into the pump station to the chlorine contact channel and into the Mississippi River.

Because of the additional impervious surfaces created by new building, the quantity of stormwater runoff will increase. No change is anticipated in the quality of the stormwater runoff. Currently rooftop and impervious areas around the existing incineration building are routed to a stormwater retention pond which is pumped to the Mississippi river.

For post-construction stormwater collection, several options of green infrastructure (GI) designed to collect and treat the additional impervious area will be evaluated. Biofilters, bioswales, rain gardens, or infiltration systems would be ideal for this site.

Temporary erosion controls will be implemented in an effort to curtail erosion and sediment transport and to maintain slope stability until permanent erosion controls have been adequately established. Erosion control will be maintained throughout the construction period by removing accumulated sediment, and by repairing or replacing damaged and deteriorated erosion control devices. Temporary erosion control devices typically include silt fence, straw bales, and storm sewer inlet protection.

iii. **Water appropriation - Describe if the project proposes to appropriate surface or groundwater (including dewatering). Describe the source, quantity, duration, use and purpose of the water use and if a DNR water appropriation permit is required. Describe any well abandonment. If connecting to an existing municipal water supply, identify the wells to be used as a water source and any effects on, or required expansion of, municipal water infrastructure. Discuss environmental effects from water appropriation, including an assessment of the water resources available for appropriation. Identify any measures to avoid, minimize, or mitigate environmental effects from the water appropriation.**

It is anticipated that dewatering will be required during construction and that a DNR Water Appropriation Permit will be required. The design elevation of the basement floor for the Solids Management Building is approximately 684 feet, about 10 feet below ground surface. Allowing for a four-foot thick floor slab, supporting gravel and some extra allowance, site dewatering can be expected to approximate an elevation of 670 feet or about 30 feet below ground surface. The anticipated construction schedule will call for 6 to 12 months of dewatering.

iv. **Surface Waters**

a) Wetlands - Describe any anticipated physical effects or alterations to wetland features such as draining, filling, permanent inundation, dredging and vegetative removal. Discuss direct and indirect environmental effects from physical modification of wetlands, including the anticipated effects that any proposed wetland alterations may have to the host watershed. Identify measures to avoid (e.g., available alternatives that were considered), minimize, or mitigate environmental effects to wetlands. Discuss whether any required compensatory wetland mitigation for unavoidable wetland impacts will occur in the same minor or major watershed, and identify those probable locations.

Not applicable. The are no wetlands located inside the Metro Plant floodwall and berm area, where the proposed project will be constructed. Wetlands will not be impacted by the proposed project.

b) Other surface waters- Describe any anticipated physical effects or alterations to surface water features (lakes, streams, ponds, intermittent channels, county/judicial ditches) such as draining, filling, permanent inundation, dredging, diking, stream diversion, impoundment, aquatic plant removal and riparian alteration. Discuss direct and indirect environmental effects from physical modification of water features. Identify measures to avoid, minimize, or mitigate environmental effects to surface water features, including in-water Best Management Practices that are proposed to avoid or minimize turbidity/sedimentation while physically altering the water features. Discuss how the project will change the number or type of watercraft on any water body, including current and projected watercraft usage.

Not applicable.

12. Contamination/Hazardous Materials/Wastes:

a. **Pre-project site conditions - Describe existing contamination or potential environmental hazards on or in close proximity to the project site such as soil or ground water contamination, abandoned dumps, closed landfills, existing or abandoned storage tanks, and hazardous liquid or gas pipelines. Discuss any potential environmental effects from pre-project site conditions that would be caused or exacerbated by project construction and operation. Identify measures to avoid, minimize or mitigate adverse effects from existing contamination or potential environmental hazards. Include development of a Contingency Plan or Response Action Plan.**

The Metro WWTP is not under any remediation status with the MPCA and therefore does not have a Construction Contingency Plan or Response Action Plan. The Plant does have an active combined SPCC (Spill Prevention, Control and Countermeasure) and Minnesota Spill Bill Plan to address releases of stored petroleum products or stored wastewater treatment chemicals.

At the Metro Plant, petroleum-contaminated soils were investigated and subsequently treated following removal of underground storage tanks in 1990; the MPCA has closed the file on this incident (MPCA Site No. LEAK 00003096). The file for a separate release (MPCA Site No. LEAK 00004071) has also been closed. No further investigation has been required of diesel range organics detected when four USTs were upgraded in 1993 (MPCA Site No. LEAK 00007015). A small release of kerosene reported as MPCA Site No. LEAK 17085 in 2007 was determined to be

insignificant, requiring no action. There are no other environmental hazards known to be associated with past activities at the proposed project location.

b. **Project related generation/storage of solid wastes - Describe solid wastes generated/stored during construction and/or operation of the project. Indicate method of disposal. Discuss potential environmental effects from solid waste handling, storage and disposal. Identify measures to avoid, minimize or mitigate adverse effects from the generation/storage of solid waste including source reduction and recycling.**

Dry ash from the FBIs and air pollution control equipment is hauled offsite for disposal in a MN landfill. In cases of high solids storage level and unavailable incineration capacity, raw wastewater sludge is limed prior to disposal in a MN landfill.

Demolition associated with expansion of existing solids management building will generate construction waste which will be properly disposed offsite.

c. **Project related use/storage of hazardous materials - Describe chemicals/hazardous materials used/stored during construction and/or operation of the project including method of storage. Indicate the number, location and size of any above or below ground tanks to store petroleum or other materials. Discuss potential environmental effects from accidental spill or release of hazardous materials. Identify measures to avoid, minimize or mitigate adverse effects from the use/storage of chemicals/hazardous materials including source reduction and recycling. Include development of a spill prevention plan.**

Sodium hydroxide, aluminum sulfate, sodium hypochlorite and sulfuric acid will be stored in storage tanks during operation of the project. Ammonium hydroxide may be needed (to be determined during design)

The contractor is required to follow MCES' spills reporting and mitigation procedure. MCES defines a spill as a release of wastewater, sludge, treated effluent, chemical, petroleum or other material outside of the contained, conduit or treatment unit in which it is stored, transferred or treated. The procedure requires: (1) Stop and contain the spill, ensuring access to waters and sewers is blocked, (2) Initiate spill response/recovery if it is safe to do so, (3) Notify site manager and CAR, and (4) Notify MCES' Regional Dispatch at (651) 602-4511. MCES Regional Dispatch will coordinate and facilitate appropriate spill responses and immediate corrective action, and complete all the necessary notifications and contacts with both internal and external parties. If the release is of a SARA Title III material or an Industrial Waste, the contractor is additionally required to contact the State Duty Officer at (651) 649-5451.

d. **Project related generation/storage of hazardous wastes - Describe hazardous wastes generated/stored during construction and/or operation of the project. Indicate method of disposal. Discuss potential environmental effects from hazardous waste handling, storage, and disposal. Identify measures to avoid, minimize or mitigate adverse effects from the generation/storage of hazardous waste including source reduction and recycling.**

A number of wastes generated as a result of Metro Plant operation and maintenance activities are classified as hazardous wastes by Minnesota Rules Chapter 7045. These include items such as paint thinner, corrosive laboratory chemicals, heavy metal lab wastes, nonchlorinated lab solvent,

chlorinated solvent, degreasing solvent, paint sludges, COD ampoules and lab-packed hazardous waste. All of the plant's hazardous wastes are managed in compliance with these rules. Universal wastes include household batteries, light ballasts, small capacitors, florescent lamps, spent lead, acid batteries, mercury contaminated material and elemental mercury. Oily wastes include used oil, used oil filters and used oil absorbents.

13. Fish, wildlife, plant communities, and sensitive ecological resources (rare features):

a. Describe fish and wildlife resources as well as habitats and vegetation on or in near the site.

Figure 6 in Appendix A illustrates the ecologically significant areas around the Metro Plant.

The Mississippi River flows along the western edge of the Metro Plant. Lands designated for Pigs Eye Park, around Pigs Eye Lake, are located to the south and southeast of the Metro Plant property. Further to the southeast is the Pigs Eye Lake Scientific and Natural Area (SNA). The undeveloped character of much of the land near the Metro Plant, particularly to the south and east, provides a range of habitat, which includes wetlands, floodplain forest, and grasslands.

All project activity will be confined within the existing levee and floodwall for the Metro Plant. Buildings, treatment tanks, roads, and storage areas occupy most of the area inside of the levee. With the exception of a stormwater treatment basin colonized by common wetland plants, plant communities inside of the levee and floodwall are limited to landscaped areas planted with grass. Neither project construction nor operation will affect nearby sensitive resources.

b. Describe rare features such as state-listed (endangered, threatened or special concern) species, native plant communities, Minnesota County Biological Survey Sites of Biodiversity Significance, and other sensitive ecological resources on or within close proximity to the site. Provide the license agreement number (LA-____) and/or correspondence number (ERDB _____) from which the data were obtained and attach the Natural Heritage letter from the figure. Indicate if any additional habitat or species survey work has been conducted within the site and describe the results.

No rare features were found. See attached letter ERDB 20150106 in Appendix B.

c. Discuss how the identified fish, wildlife, plant communities, rare features and ecosystems may be affected by the project. Include a discussion on introduction and spread of invasive species from the project construction and operation. Separately discuss effects to known threatened and endangered species.

Neither project construction nor operation will affect nearby sensitive resources.

d. Identify measures that will be taken to avoid, minimize, or mitigate adverse effects to fish, wildlife, plant communities, and sensitive ecological resources.

Under the Critical Area Program, Executive Order 79-19 establishes Standards and Guidelines for state and regional agencies with regard to permit regulation and in developing plans within their jurisdiction, and for the MCES regarding plan review, regulations, and development permit applications. In addition, regional and state agencies are directed to develop a capital improvement program or public facilities program, which specifies the sequence of actions consistent with the

standards and guidelines. Standards and Guidelines that are particularly applicable to this project include the following:

- Minimize runoff and improve runoff quality.
- Minimize site alteration.
- Manage vegetation cutting.
- Address standards for site plans:
  - Approval of site plans to determine that plans adequately assess and minimize adverse effects and maximize beneficial effects.
  - Include measures that address adverse environmental effects.
  - Include standards to ensure that structures, roads, screening, landscaping, construction placement, maintenance, and stormwater runoff are compatible with characteristics and use of corridor in that district.
  - Provide opportunities for establishment of open space and public viewing where applicable, and specific conditions with regard to buffering, landscaping, and re-vegetation.
- Address standards for structure site and location to ensure riverbanks, bluffs and scenic overlooks remain in their natural state and minimize interference with views of and from the river, except for specific uses requiring river access.
- Include provisions to retain existing vegetation and landscaping.

FBI 4 will be next to the existing FBIs on land that is currently a parking lot. The new construction will be an expansion of the existing solids management building. No issues with sensitive resources around the construction site are anticipated.

14. Historic properties:

Describe any historic structures, archeological sites, and/or traditional cultural properties on or in close proximity to the site. Include: 1) historic designations, 2) known artifact areas, and 3) architectural features. Attach letter received from the State Historic Preservation Office (SHPO). Discuss any anticipated effects to historic properties during project construction and operation. Identify measures that will be taken to avoid, minimize, or mitigate adverse effects to historic properties.

See attached SHPO letter in Appendix B. The historic property database search was done for the following coordinates: SW NW S10 T28N R22W. No effects on historic properties are anticipated.

Construction will be on previously disturbed land within the existing floodwall and berm area of the plant.

15. Visual:

Describe any scenic views or vistas on or near the project site. Describe any project related visual effects such as vapor plumes or glare from intense lights. Discuss the potential visual effects from the project. Identify any measures to avoid, minimize, or mitigate visual effects.

The incinerator plume will be suppressed by high stack temperatures. Residual heat in the exhaust stream will be captured upstream of the wet scrubbers and added back into the air stream downstream of the wet scrubbers. This elevates the air stream by about 100º F. This addition of heat to the heat produced in the induced draft fan effectively increases exhaust stream temperature to 250º F as it enters the discharge stack.

16. Air:

1. Stationary source emissions - Describe the type, sources, quantities and compositions of any emissions from stationary sources such as boilers or exhaust stacks. Include any hazardous air pollutants, criteria pollutants, and any greenhouse gases. Discuss effects to air quality including any sensitive receptors, human health or applicable regulatory criteria. Include a discussion of any methods used assess the project's effect on air quality and the results of that assessment. Identify pollution control equipment and other measures that will be taken to avoid, minimize, or mitigate adverse effects from stationary source emissions.

16.1 EXISTING CONDITIONS

The existing Metro Plant facility provides treatment of wastewater and combusts wastewater solids. These processes result in air emissions from the facility. Current air emission sources at the facility include three fluidized bed incinerators (FBI), an alkaline stabilization system, liquids treatment processes, sludge tanks, boilers, ash handling and emergency generators. The facility off-permit, insignificant and exempt activities include: fuel tanks, maintenance activities with air emissions such as welding and degreasing, and handling and storage of sand, lime, and ash. The facility is regulated as a major Prevention of Significant Deterioration (PSD) facility, a major Title V facility, but a minor Hazardous Air Pollutant (HAP) facility. The facility is a major PSD facility for NOx.

The Metro Plant is located in the PM10 maintenance area along the Mississippi River in St. Paul. This maintenance area is the area that in the past had not met the PM10 National Ambient Air Quality Standard but now meets the standard. The Metro Plant and nearby facilities have on-going PM10 air permitting requirements for this maintenance area.

The existing facility operates under air permit 12300053-006. The permit expired on February 25, 2015. An air permit renewal application was submitted on August 26, 2014. Minnesota rules and Title V regulations allow operation of a facility on an expired permit if a renewal permit application was received 180 days prior to the expiration date. The MPCA indicated that the application was administratively complete.

The facility completes an air emission inventory each year, which is submitted to MPCA. The 2017 air emission inventory results for the facility's 2017 actual air emissions are shown below.

Table 1-1
Actual 2017 Metro Plant Air Emissions

Pollutant	Actual Emissions (ton/yr)
PM	1.2
PM_{10}	4.5
$PM_{2.5}$	3.8
SO_2	8.0
NO_x	34.8
VOC	1.6
CO	15.2
Lead	0.001
Mercury	0.0002

Acronyms:

PM	Particulate matter
PM_{10}	Particulate matter less than 10 microns in diameter
$PM_{2.5}$	Particulate matter less than 2.5 microns in diameter
SO_2	Sulfur dioxide
NO_x	Nitrogen dioxides, including primarily NO and NO_2
VOC	Volatile organic compound
CO	Carbon Monoxide

The Metro Plant facility has a nominal design capacity of 250 million gallons per day, and operated at an average of 179 million gallons per day during 2017. The existing FBI capacity is restricted to 315 dry ton/day by the air permit. The facility operated the FBIs at an average of 240 dry ton sludge/day total.

The existing FBIs will be regulated under 40 CFR 62 Subpart LLL, Federal Plan Requirements for Sewage Sludge Incinerator Units Constructed On or Before October 1, 2010. The facility demonstrated compliance with this standard by March 21, 2016.

Greenhouse gas emissions from anthropogenic (man-made) sources were also reported on the 2017 Air Emission Inventory Report. These emissions include only emissions from fossil fuel combustion at the facility and do not include greenhouse gases generated from treatment of wastewater. The emissions are shown below in Table 1-2.

Table 1-2
Actual 2017 Metro Plant Fossil Fuel Combustion Greenhouse Gas Emissions

Greenhouse Gas	Fossil Fuel Emissions (tons/yr)	Anthropogenic Emissions from Sludge*	Total Emissions (ton/yr)
Carbon Dioxide, CO2	8,326	Biogenic, non-reportable	8326
Methane, CH4	0.2	31.3	31.5
Nitrous Oxide, N2O	0.02	4.1	4.1
CO_2-e	8,334	2,010	10,345

* Based on emission factors from 40 CFR 98, Subpart C.

16.2 ENVIRONMENTAL CONSEQUENCES

MCES is proposing to expand the capacity of the existing Metro Plant sludge combustion system. This will require additional equipment, including a fourth FBI and associated air pollution control equipment. The project will require a major Minnesota air permit amendment to the facility's existing permit for new PM_{10}.

16.2.1 Proposed Equipment

MCES proposes to add a fourth fluidized bed reactor to the site. The proposed FBI 4 will be approximately the same capacity as the existing three existing incinerators (120-130 dry tons/day). The facility will include cake receiving to provide backup solids treatment for other MCES wastewater treatment facilities. Energy recovery and air pollution control equipment proposed for FBI 4, will be like the three existing incinerators. Further discussion on the air pollution control train at the facility is provided under Mitigation.

The project will convert a part of the dense phase (pressurized) ash transport system to vacuum transport which will add two additional dust collectors.

16.2.2 Regulatory Discussion

The proposed FBI 4 project will trigger a major Minnesota air permit amendment. The facility's existing permit notes that a major amendment is triggered for any new PM_{10} emission source since the site is located in a PM_{10} maintenance area. Air dispersion modeling for PM_{10} will also be completed and included with the facility's air permit amendment application, if needed.

Although Metro Plant is a major PSD source, the project is not expected to trigger PSD review requirements. An emission limit on $PM_{2.5}$, a subset of PM_{10}, will be proposed in the air permit amendment application. Establishing a site-specific limit also triggers a major air permit amendment.

FBI 4 will be subject to the New Source Performance Standard (NSPS) for Sewage Sludge Incinerators under 40 CFR 60 Subpart LLLL. This standard is a Clean Air Act Section 129 standard

that addresses both criteria pollutants as well as hazardous air pollutants. FBI 4 and its control equipment train will be designed to meet the emission limits immediately upon startup.

There are additional federal and state limits that apply to sewage sludge incinerators, but emissions allowed under these standards are less stringent than the Subpart LLLL limits. These standards include EPA's 40 CFR 503, self-implementing, requirements, and 40 CFR 60 Subpart O.

Minnesota Statute 116.85 requires installation of a continuous emission monitoring system (CEMS). The facility will operate CEMS for CO and oxygen (O_2), as well as a continuous opacity monitoring system.

16.2.3 Emissions Discussion

Criteria Pollutants

Criteria pollutant emissions are shown in Table 2-1 for the proposed FBI 4. The project is expected to qualify as a PSD synthetic minor modification. Potential emissions are calculated with the most stringent federal or state rule that applies for each pollutant. Stack testing for the existing FBIs is the basis of VOC emission estimates, and the particulate emission estimate assumes that a synthetic minor limit would be established. The condensable portion of particulates is not regulated under the applicable New Source Performance Standard.

Natural gas is used during startup to minimize emissions and ensure complete combustion. Natural gas emissions are not quantified due to the short time period. Sewage sludge is assumed to generate higher emissions than natural gas for all criteria pollutants; therefore, continuous sewage sludge combustion is assumed with no natural gas emissions as a worst case.

Table 2-1
FBI 4 Potential Criteria Pollutant Emissions (@ 130 dtpd)

Pollutant	Allowable Emissions (ton/yr)
PM, excluding condensable particulates	3.2
PM_{10}	3.8
$PM_{2.5}$	2.4
SO_2	4.7
NO_x	18.9
VOC	0.5
CO	10.4
Lead	2.1×10^{-4}

The project will increase allowable emissions of criteria pollutants at the facility, as the FBI 4 accommodates growth of the overall metropolitan area and would allow the facility to receive sludge from other MCES facilities. However, operation of FBI 4 would likely result in reduced operation of the three existing FBIs.

Greenhouse gases

The carbon dioxide emissions generated from sludge treatment are biogenic or naturally occurring, and would be expected to occur regardless of how the sludge is treated. Methane may also be generated from incomplete combustion. Nitrous oxide is emitted at combustion sources, and is temperature dependent. Nitrous oxide tends to decrease as NOx increases. The N_2O emissions are estimated from stack test results for the existing FBIs.

Table 2-2
FBI 4 Potential Greenhouse Gas Emissions

Greenhouse Gas	Potential Emissions (ton/yr)
CO_2	Biogenic, non-reportable
Methane, CH_4	12
Nitrous Oxide, N_2O	25
CO_2-e	7,814

*Based on emission factors from 40 CFR 98, Subpart C.

HAPs

The hazardous air emissions from FBI 4 are expected to be metals, volatile organics, dioxin/furans compounds, and hydrochloric acid.

Allowable mercury emissions under the NSPS for FBI 4 are approximately 299 grams per year. This emission level is comparable to mercury emissions from accidentally breaking one compact fluorescent light bulb.

Table 2-3
FBI 4 Hazardous Air Pollutant Emissions

Hazardous Air Pollutant	Potential Emissions (ton/yr)
NSPS Regulated HAPs	
Lead	2.2×10^{-4}
Cadmium	3.65×10^{-4}
Mercury	3.32×10^{-4}
Hydrochloric acid	0.12
Total Dioxins/Furans, total mass basis	4.31×10^{-9}
All Other HAPs	
Maximum Individual HAP	0.005
Total HAPs	0.14

The technical support document for the facility's current permit indicates that total HAP emissions are 12.3 ton/year with the highest individual HAP at 3.7 ton/year. With FBI 4 emissions estimated at less than 1.0 ton/year, the facility will remain a minor HAP source after the project.

16.2.4 Air Quality

MCES will complete PM_{10} air dispersion modeling, if required, to support the air permit amendment application. The modeling is triggered by the PM_{10} maintenance area requirements. Air dispersion modeling was completed when the existing three FBIs were installed as well.

Ambient monitors are operated by MPCA for PM_{10} and $PM_{2.5}$ both upwind and downwind of the industrial area that includes the facility. The ambient monitoring in the area, in combination with the air dispersion modeling, ensures that particulate concentrations will remain below levels that would endanger public health.

EPA's 40 CFR 503 regulations require sewage sludge incinerators to identify a dispersion coefficient. MCES identified an annual average dispersion coefficient of 7.2 micrograms per cubic meter concentration, based on 1 gram per second emission rate for the existing facility equipment. FBI 4 will be co-located with the existing three FBI stacks at the same stack height and will have similar exhaust temperature and exit velocity. 40 CFR 503 will require the facility to identify a dispersion coefficient for FBI 4 as well.

FBI 4 is expected to meet all National Ambient Air Quality Standards. The National Ambient Air Quality Standards are intended to protect human health and the environment for criteria pollutants.

MCES will also complete an Air Emissions Risk Assessment (AERA) which evaluates air emissions for potential to impact human health. To quantitatively assess the potential for impacts, MCES will use MPCA's Risk Assessment Screening Spreadsheet (RASS) using the air dispersion modeling results and potential emissions for the changes to the facility. MCES will evaluate the increase in throughput for FBRs 1-3 and potential emissions of FBR 4. Estimates of acute hazard, chronic hazard, and chronic excess lifetime cancer risk will be compared to one-tenth of the Minnesota Department of Health (MDH) threshold levels. The AERA will also look at cumulative potential effects in the surrounding area of the facility. The FBRs are expected to pass the screening-level risk assessment and present no adverse impacts to human

16.3 MITIGATION

The proposed air pollution control train for FBI 4 will be, at minimum, the same as the existing scheme of carbon injection, baghouse, wet scrubber and wet electrostatic precipitator. MCES intends to examine alternatives and may propose an alternate scheme with equal or better control efficiency. The air pollution control train for FBI 4 may include ammonia injection for enhanced NOx control. Caustic addition to the scrubber will be included as with the existing FBIs.
All facility ash handling exhaust points are controlled with fabric filters. Fabric filters would continue to be used for any additional ash handling emissions.

16.4 ALTERNATIVES

The alternatives to incineration of sewage sludge involve stabilization and land disposal. Stabilization alternatives include alkaline treatment or anaerobic conversion to biosolids. Land disposal alternatives include tipping at a regulated landfill site or seasonal land application as soil amendment. Decomposition of the carbon in sludge to form CO_2 and other greenhouse gases would

occur in any of these processes. Volatile organic emissions may be higher than from incineration since organics in the sludge are not combusted. Biosolids handling can generate particulate matter both at the conversion site and at the application site. Moving the biosolids will require additional energy resources and will generate tailpipe emissions through the use of heavy equipment and truck hauling. Odors are more common with landfilling sludge or biosolids conversion /land application. FBI 4 would have energy recovery and offset some energy use at the facility. Biosolids conversion and landfilling may not provide any energy recovery. However, biosolids would be expected to reduce energy use and emissions from the production of synthetic fertilizers.

2. **Vehicle emissions - Describe the effect of the project's traffic generation on air emissions. Discuss the project's vehicle-related emissions effect on air quality. Identify measures (e.g. traffic operational improvements, diesel idling minimization plan) that will be taken to minimize or mitigate vehicle-related emissions.**

   This minimal increase in truck traffic is not anticipated to significantly impact air quality, including CO levels.

3. **Dust and odors - Describe sources, characteristics, duration, quantities, and intensity of dust and odors generated during project construction and operation. (Fugitive dust may be discussed under item 16a). Discuss the effect of dust and odors in the vicinity of the project including nearby sensitive receptors and quality of life. Identify measures that will be taken to minimize or mitigate the effects of dust and odors.**

   The project will occur within the existing Metro Plant site in an area zoned for industrial use. The area in the vicinity of the Metro Plant is not expected to be adversely affected by noise, dust, or odors during construction or operation. Odor is expected to be reduced as a result of the operation of the facilities constructed under this project.

   Generation of dust can be anticipated during the limited amounts of demolition work that will occur. Nuisance levels of dust generated during demolition activities can be controlled though periodic wetting and/or other measures.

17. Noise

Describe sources, characteristics, duration, quantities, and intensity of noise generated during project construction and operation. Discuss the effect of noise in the vicinity of the project including 1) existing noise levels/sources in the area, 2) nearby sensitive receptors, 3) conformance to state noise standards, and 4) quality of life. Identify measures that will be taken to minimize or mitigate the effects of noise.

Varying degrees of noise can be expected during the construction period. Anticipated noise sources are primarily construction equipment and normal construction activities. Mitigative measures would include standard mufflers on engine driven equipment and possible ear protection as necessary for workers engaged in periodic demolition or other short term noise intensive activities.

18. Transportation

a. Describe traffic-related aspects of project construction and operation. Include: 1) existing and proposed additional parking spaces, 2) estimated total average daily traffic generated, 3) estimated maximum peak hour traffic generated and time of occurrence, 4) indicate source of trip generation rates used in the estimates, and 5) availability of transit and/or other alternative transportation modes.

1. Not applicable.
2. Temporary construction traffic will vary, depending upon construction stage, from an estimated 5 to 10 vehicles per day.
3. The average annual daily traffic volume (AADT) on Childs Road is 2850 vehicles per day (from the MN DOT 2013 Publication Traffic Volumes Metro Street Series). The minimal increase in traffic in this industrial area due to the Solids Project is not anticipated to significantly impact traffic flow or patterns or require any traffic improvements.
4. Trip generation rate estimates are based on experience in previous construction projects.
5. The train yard is within close proximity to the Metro Plant and may be available as an alternative transportation mode for shipping.

b. Discuss the effect on traffic congestion on affected roads and describe any traffic improvements necessary. The analysis must discuss the project's impact on the regional transportation system.
If the peak hour traffic generated exceeds 250 vehicles or the total daily trips exceeds 2,500, a traffic impact study must be prepared as part of the EAW. **Use the format and procedures described in the Minnesota Department of Transportation's Access Management Manual, Chapter 5** ***(available at: http://www.dot.state.mn.us/accessmanagement/resources.html)*** **or a similar local guidance.**

The minimal increase in traffic in this industrial area due to the project is not anticipated to significantly impact traffic flow or patterns or require any traffic improvements.

c. Identify measures that will be taken to minimize or mitigate project related transportation effects.

Not applicable.

19. Cumulative potential effects: (Preparers can leave this item blank if cumulative potential effects are addressed under the applicable EAW Items)

a. Describe the geographic scales and timeframes of the project related environmental effects that could combine with other environmental effects resulting in cumulative potential effects.

b. Describe any reasonably foreseeable future projects (for which a basis of expectation has been laid) that may interact with environmental effects of the proposed project within the geographic scales and timeframes identified above.

c. Discuss the nature of the cumulative potential effects and summarize any other available information relevant to determining whether there is potential for significant environmental effects due to these cumulative effects.

20. Other potential environmental effects: If the project may cause any additional environmental effects not addressed by items 1 to 19, describe the effects here, discuss the how the environment will be affected, and identify measures that will be taken to minimize and mitigate these effects.

No effects are anticipated except those addressed in this review. However, in response to growth, regulatory requirements, equipment replacement needs, or rehabilitation, modifications or expansion at the Metro Plant may be proposed in the future.

RGU CERTIFICATION. *(The Environmental Quality Board will only accept **SIGNED** Environmental Assessment Worksheets for public notice in the EQB Monitor.)*

I hereby certify that:

- The information contained in this document is accurate and complete to the best of my knowledge.
- The EAW describes the complete project; there are no other projects, stages or components other than those described in this document, which are related to the project as connected actions or phased actions, as defined at Minnesota Rules, parts 4410.0200, subparts 9c and 60, respectively.
- Copies of this EAW are being sent to the entire EQB distribution list.

Signature _____ Date _____

Title _____

Appendix A

Figure 1. EAW - County Map and Location of Construction
Figure 2. EAW - USGS Map and Location of Construction Boundaries
Figure 3. EAW - Aerial View and Location of Construction
Figure 4. EAW - Metro WWTP Solids Management Building, Plan – 4th Fluid Bed Incinerator
Figure 5. EAW - Parcels and Land Ownership Around Metro WWTP
Table 1. Details of Parcel Information shown on Figure 5
Figure 6. EAW - Ecologically Significant Areas Around Metro WWTP
Figure 7. EAW - Land Use Around Metro WWTP (From MCES - Regional Planned Use Data Set, 2014)
Figure 8. EAW - Flood Insurance Rate Map
Figure 9. EAW – County Well Index, http://mdh-agua.health.state.mn.us/cwi/cwiViewer.htm
Well Log 506894
Well Log 506893
Well Log 501658
Well Log 501657
Well Log 603089
Well Log 226583
Well Log 200052
Well Log 226584
Well Log 151554
Well Log 501659
Figure 10. EAW – Metro Plant Water Table Contour Map, 1994
Boring Log B-201
Boring Log MW-211A

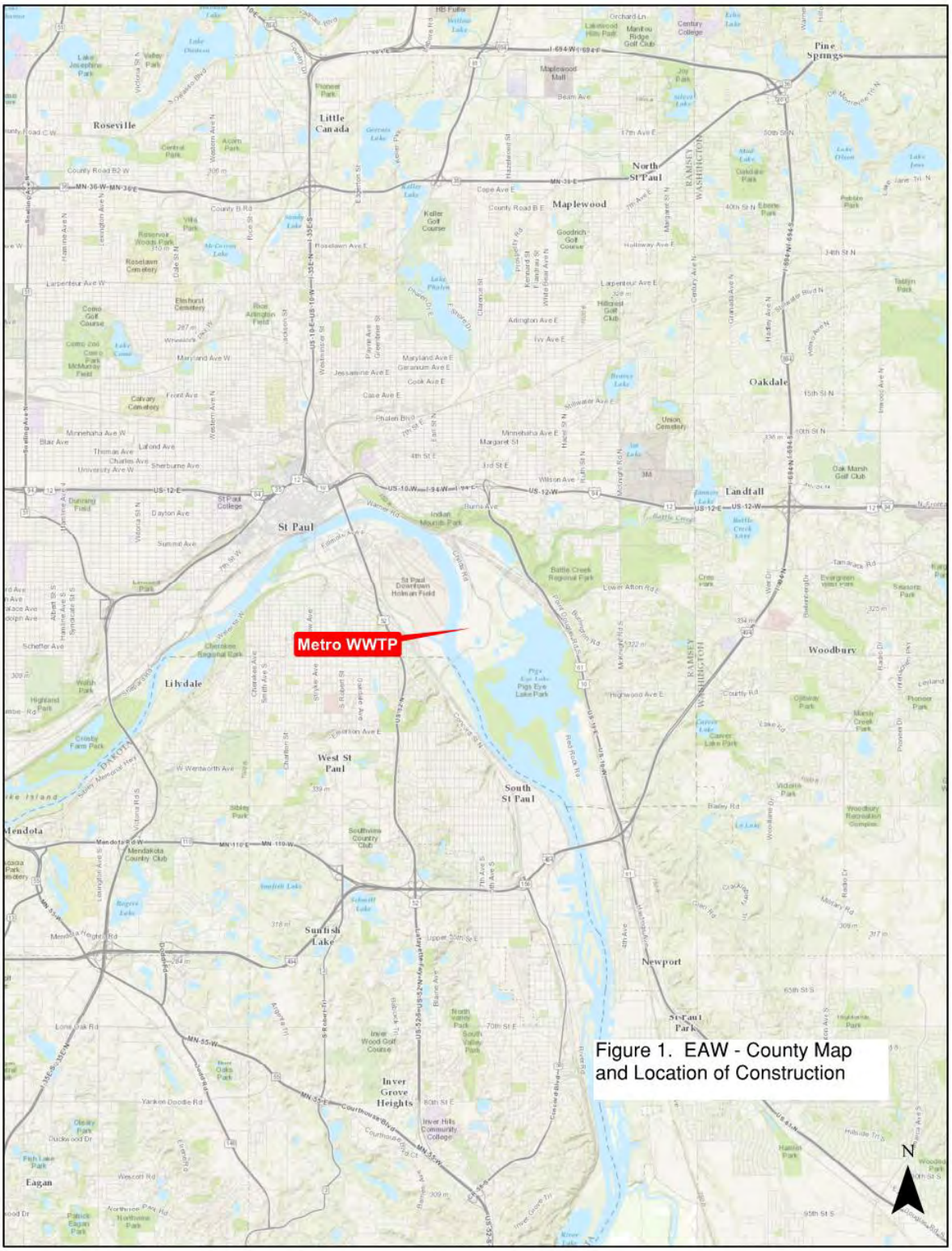


Figure 1. EAW - County Map and Location of Construction

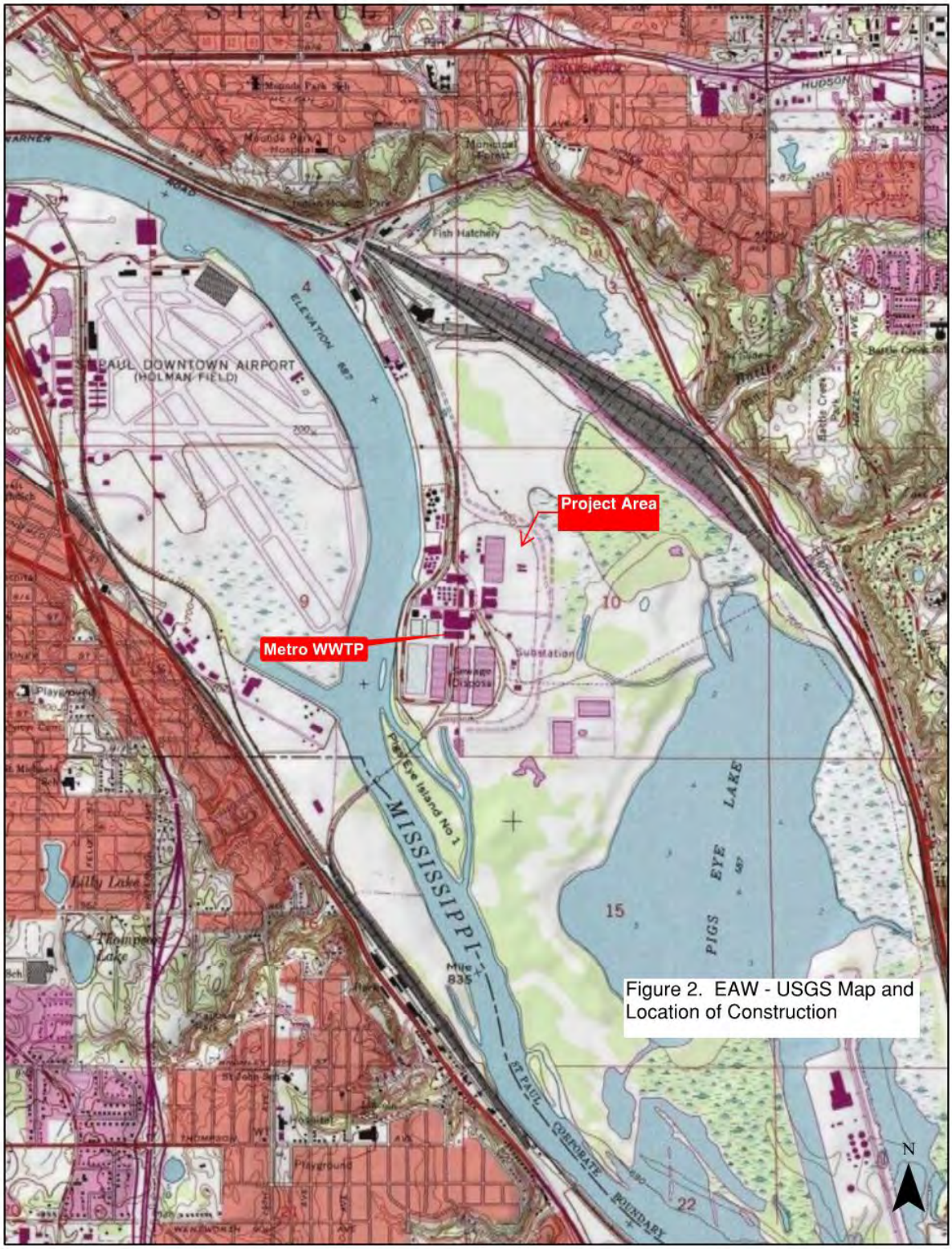
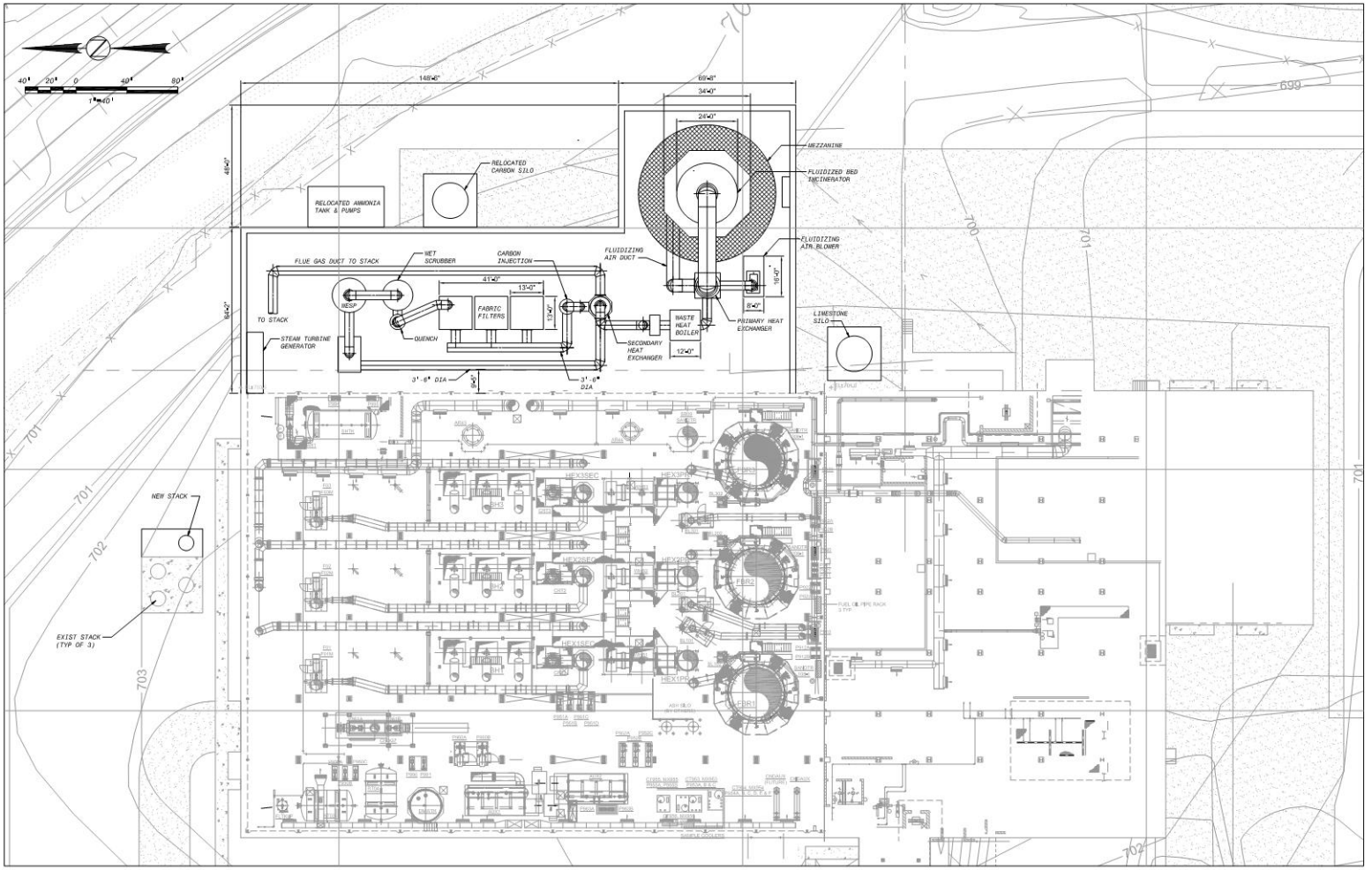


Figure 2. EAW - USGS Map and Location of Construction

Figure 3. EAW - Aerial View and Location of Construction.



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Building a world of difference

BLACK & VEATCH CORPORATION
MINNEAPOLIS, MINNESOTA

Figure 4.

MCES SOLIDS PROCESSING IMPROVEMENTS
METRO WWTP - SOLIDS MANAGEMENT BUILDING
PLAN - 4TH FLUID BED INCINERATOR

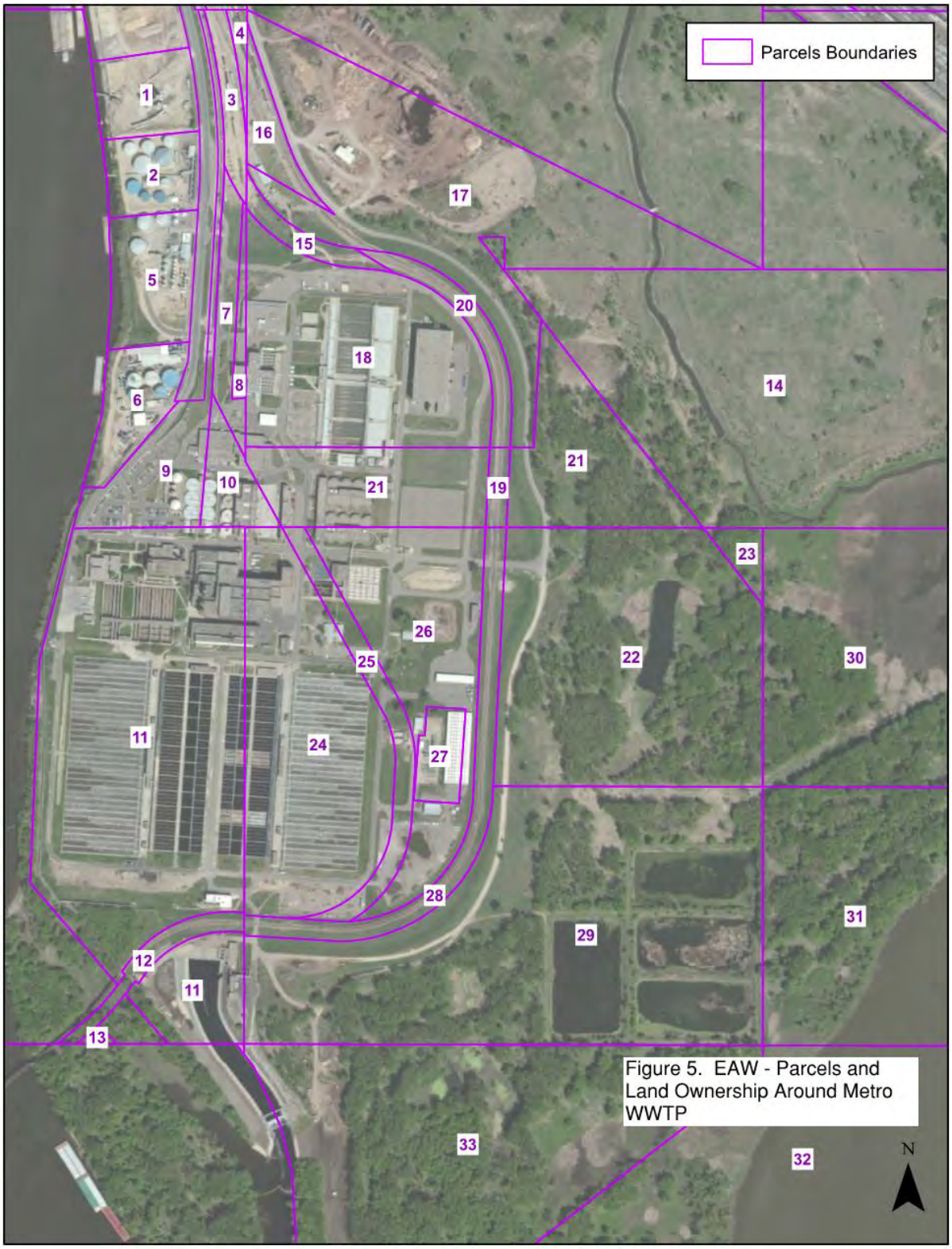


Figure 5. EAW - Parcels and Land Ownership Around Metro WWTP

Metro WWTP EAW Info

SW 1/4 of NW 1/4, Section 10, Township 28N, Range 22W

Longitude = -93.0419
Latitude = 44.9287
(East of incinerator building)

Watershed	NHD Hydrologic Unit #	NHD Hydrologic Unit Name
HU_8 -	7010206	Twin Cities
HU_10 -	701020608	City of Saint Paul-Mississippi River
HU_12 -	70102060805	Harriet Island-Mississippi River

Parcel Info

Map Number	PIN (Tax #)	BLDG_NUM	STREETNAME	STREETTYPE	CITY	ZIP	OWNER_NAME	OWNER_MORE	OWN_ADD_L1	OWN_ADD_L2
1	123-092822110001	2145	CHILDS	RD	Saint Paul	55106	Port Authority Of St Paul	Port Authority Of St Paul	380 St Peter St Ste 850	Saint Paul MN 55102-1313
2	123-092822110002	2175	CHILDS	RD	Saint Paul	55106	Port Authority Of St Paul	Port Authority Of St Paul	380 St Peter St Ste 850	Saint Paul MN 55102-1313
3	123-092822110003	0	CHILDS	RD	Saint Paul	55119	Northwest Chemco Inc	Northwest Chemco Inc	1400 Douglas Stop 1640	Omaha NE 68179-0002
4	123-092822110004	0	CHILDS	RD	Saint Paul	55119	Chicago Nw Trans Co	Chicago Nw Trans Co	1400 Douglas Stop 1640	Omaha NE 68179-0002
5	123-092822140001	2209	CHILDS	RD	Saint Paul	55106	Port Authority Of St Paul	Port Authority Of St Paul	380 St Peter St Ste 850	Saint Paul MN 55102-1313
6	123-092822140002	2229	CHILDS	RD	Saint Paul	55106	Port Authority Of St Paul	Port Authority Of St Paul	380 St Peter St Ste 850	Saint Paul MN 55102-1313
7	123-092822140003	0	CHILDS	RD	Saint Paul	55119	Metro Waste Control Comm	Metro Waste Control Comm	390 Robert St N	Saint Paul MN 55101-1805
8	123-092822140004	0	CHILDS	RD	Saint Paul	55119	Metro Waste Control Comm	Metro Waste Control Comm	390 Robert St N	Saint Paul MN 55101-1805
9	123-092822140005	0	CHILDS	RD	Saint Paul	55119	Metro Sewer Serv Board Comm	Metro Sewer Serv Board Comm	390 Robert St N	Saint Paul MN 55101-1805
10	123-092822140007	0	UNASSIGNED		Saint Paul	55119	Nsp And Metro Waste Control	Nsp And Metro Waste Control	390 Robert St N	Saint Paul MN 55101-1805
11	123-092822410001	2400	CHILDS	RD	Saint Paul	55106	Metropolitan Waste Control	Metropolitan Waste Control	390 Robert St N	St Paul MN 55101-1805
12	123-092822440001	0	PIGSEYE LAKE	RD	Saint Paul	55119	Chicago Nwn Rr Co	Chicago Nwn Rr Co	1400 Douglas Stop 1640	Omaha NE 68179-0002
13	123-092822440002	0	PIGSEYE LAKE	RD	Saint Paul	55119	Great Northern Ry Co	Great Northern Ry Co	4105 Lexington Ave N Ste 20	Arden Hills MN 55126-6109
14	123-102822130006	0	PIGSEYE LAKE	RD	Saint Paul	55119	City Of St Paul	City Of St Paul	25 4th St W Rm 1000	St Paul MN 55102-1692
15	123-102822220007	0	UNASSIGNED		Saint Paul	55119	Metropolitan Council	Metropolitan Council	1400 Douglas Stop 1640	Omaha NE 68179-0002
16	123-102822220010	0	PIGS EYE LAKE	RD	Saint Paul	55119	City Of St Paul	City Of St Paul	25 4th St W Rm 1000	St Paul MN 55102-1692
17	123-102822220011	0	PIGSEYE LAKE	RD	Saint Paul	55119	City Of St Paul	City Of St Paul	25 4th St W Rm 1000	St Paul MN 55102-1692
18	123-102822230001	0	UNASSIGNED		Saint Paul	55119	Metro Waste Control Comm	Metro Waste Control Comm	390 Robert St N	Saint Paul MN 55101-1805
19	123-102822230002	0	PIGSEYE LAKE	RD	Saint Paul	55119	Northwest Chemco Inc	Northwest Chemco Inc	1400 Douglas Stop 1640	Omaha NE 68179-0002
20	123-102822230004	0	UNASSIGNED		Saint Paul	55119	Northwest Chemco Inc	Northwest Chemco Inc	1400 Douglas Stop 1640	Omaha NE 68179-0002
21	123-102822240006	0	PIGSEYE LAKE	RD	Saint Paul	55119	Metro Waste Control Comm	Metro Waste Control Comm	390 Robert St N	St Paul MN 55101-1805
22	123-102822310002	0	UNASSIGNED		Saint Paul	55119	Metropolitan Waste Control	Metropolitan Waste Control	390 Robert St N	St Paul MN 55101-1805
23	123-102822310003	0	UNASSIGNED		Saint Paul	55119	City Of St Paul Parks And Recreation	City Of St Paul Parks And Recreation	25 4th St W Suite 1000	St Paul MN 55102-1692
24	123-102822320001	0	UNASSIGNED		Saint Paul	55119	Metro Waste Control Comm	Metro Waste Control Comm	390 Robert St N	Saint Paul MN 55101-1805
25	123-102822320002	0	PIGSEYE LAKE	RD	Saint Paul	55119	Metro Waste Control Commissio	Metro Waste Control Commissio	390 Robert St N	St Paul MN 55101-1805
26	123-102822320003	0	PIGSEYE LAKE	RD	Saint Paul	55119	Metro Waste Control Commissio	Metro Waste Control Commissio	390 Robert St N	St Paul MN 55101-1805
27	123-102822320004	2898	CHILDS	RD	Saint Paul	55119	Northern States Power Co	Northern States Power Co	414 Nicollet Ave	Mpls MN 55401-1927
28	123-102822330001	0	UNASSIGNED		Saint Paul	55119	Chicago And Northwestern Ry	Chicago And Northwestern Ry	1400 Douglas Stop 1640	Omaha NE 68179-0002
29	123-102822340001	0	UNASSIGNED		Saint Paul	55119	Metropolitan Waste Control	Metropolitan Waste Control	390 Robert St N	St Paul MN 55101-1805
30	123-102822410001	0	PIGSEYE LAKE	RD	Saint Paul	55119	Ramsey County Parks And Rec	Ramsey County Parks And Rec	2015 Van Dyke St N	Maplewood MN 55109-3711
31	123-102822430002	0	PIGSEYE LAKE	RD	Saint Paul	55119	Ramsey County Parks And Rec	Ramsey County Parks And Rec	2015 Van Dyke St N	Maplewood MN 55109-3711
32	123-152822130001	0	UNASSIGNED		Saint Paul	55119	Ramsey County Parks And Rec	Ramsey County Parks And Rec	2015 Van Dyke St N	Maplewood MN 55109-3711
33	123-152822220003	0	UNASSIGNED		Saint Paul	55119	Metropolitan Waste Control	Metropolitan Waste Control	390 Robert St N	St Paul MN 55101-1805

Table 1. Details of Parcel Information shown on Figure 5.

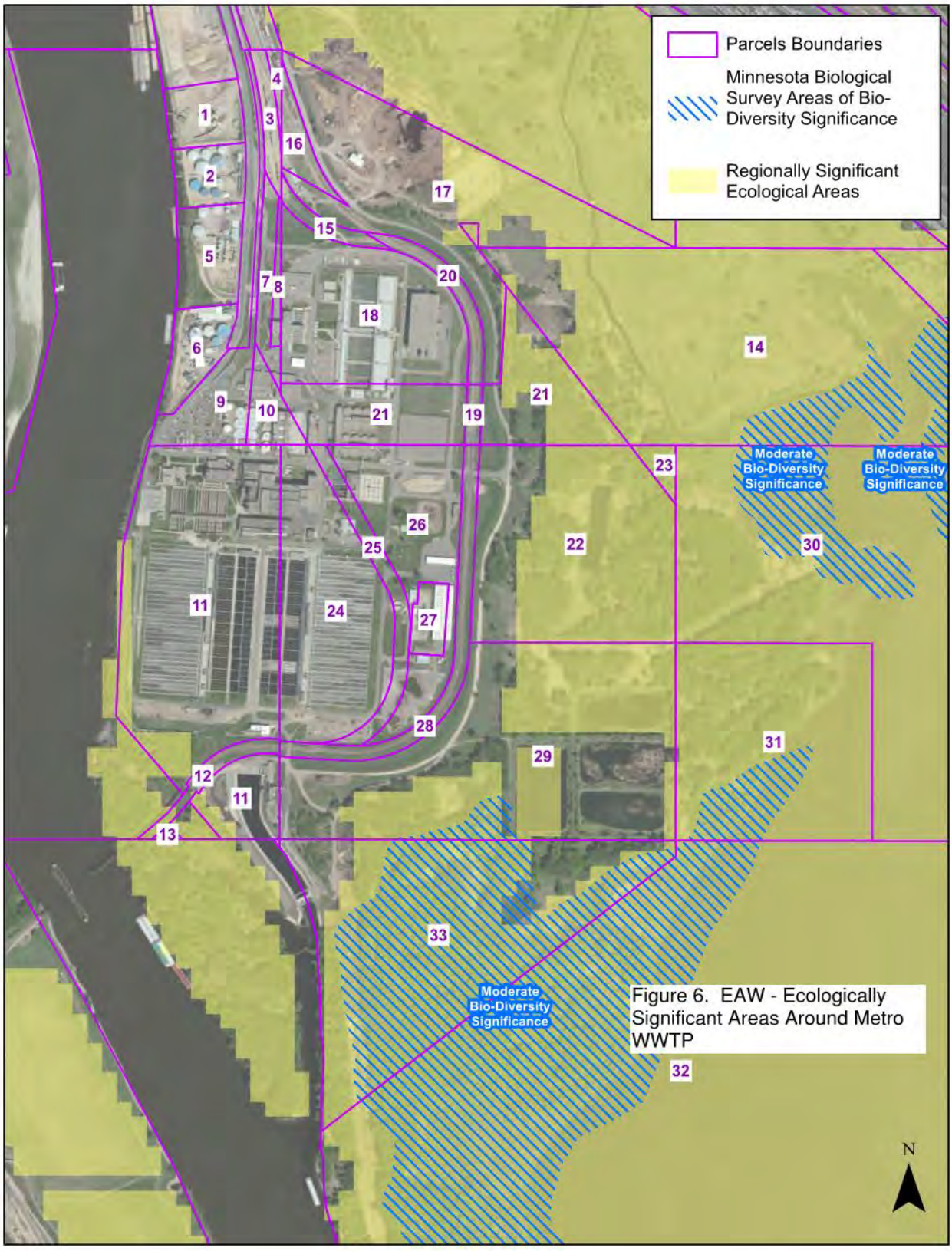


Figure 6. EAW - Ecologically Significant Areas Around Metro WWTP

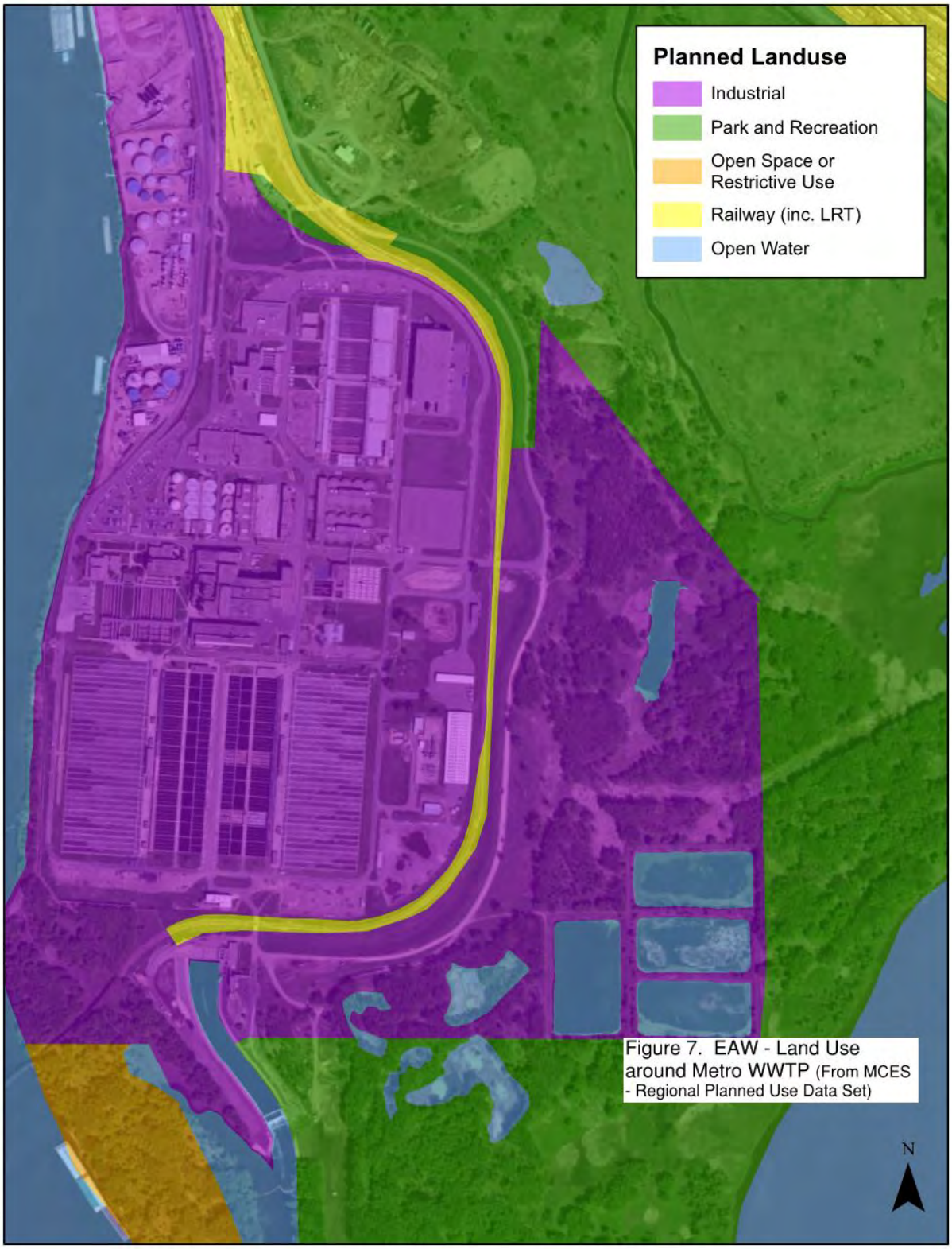


Figure 7. EAW - Land Use around Metro WWTP (From MCES - Regional Planned Use Data Set)

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) Report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS Report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study Report for information on flood control structures for this jurisdiction.

Provisionally Accredited Levee Notes to Users: Check with your local community to obtain more information, such as the estimated level of protection provided (which may exceed the 1-percent-annual-chance level) and Emergency Action Plan, on the levee system(s) shown as providing protection for areas on this panel. To maintain accreditation, the levee owner or community is required to submit the data and documentation necessary to comply with Section 65.10 of the NFIP regulations by May 15, 2010. If the community or owner does not provide the necessary data and documentation or if the data and documentation provided indicate the levee system does not comply with Section 65.10 requirements, FEMA will revise the flood hazard information for this area to reflect de-accreditation of the levee system. To mitigate flood risk in residual risk areas, property owners and residents are encouraged to consider flood insurance and floodproofing or other protective measures. For more information on flood insurance, interested parties should visit the FEMA Website at http://www.fema.gov/business/nfip/index.shtm.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study Report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study Report for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 15. The **horizontal datum** was NAD 27, GRS 1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in mapfeatures across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713- 3242**, or visit its website at http://www.ngs.noaa.gov.

Base Map information shown on this FIRM was provided for Ramsey County by Farm Services Administration, dated 2004 and captured at a resolution of one meter.

The **profile baselines** depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the **profile baseline**, in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://msc.fema.gov.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1- 877- FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip/.

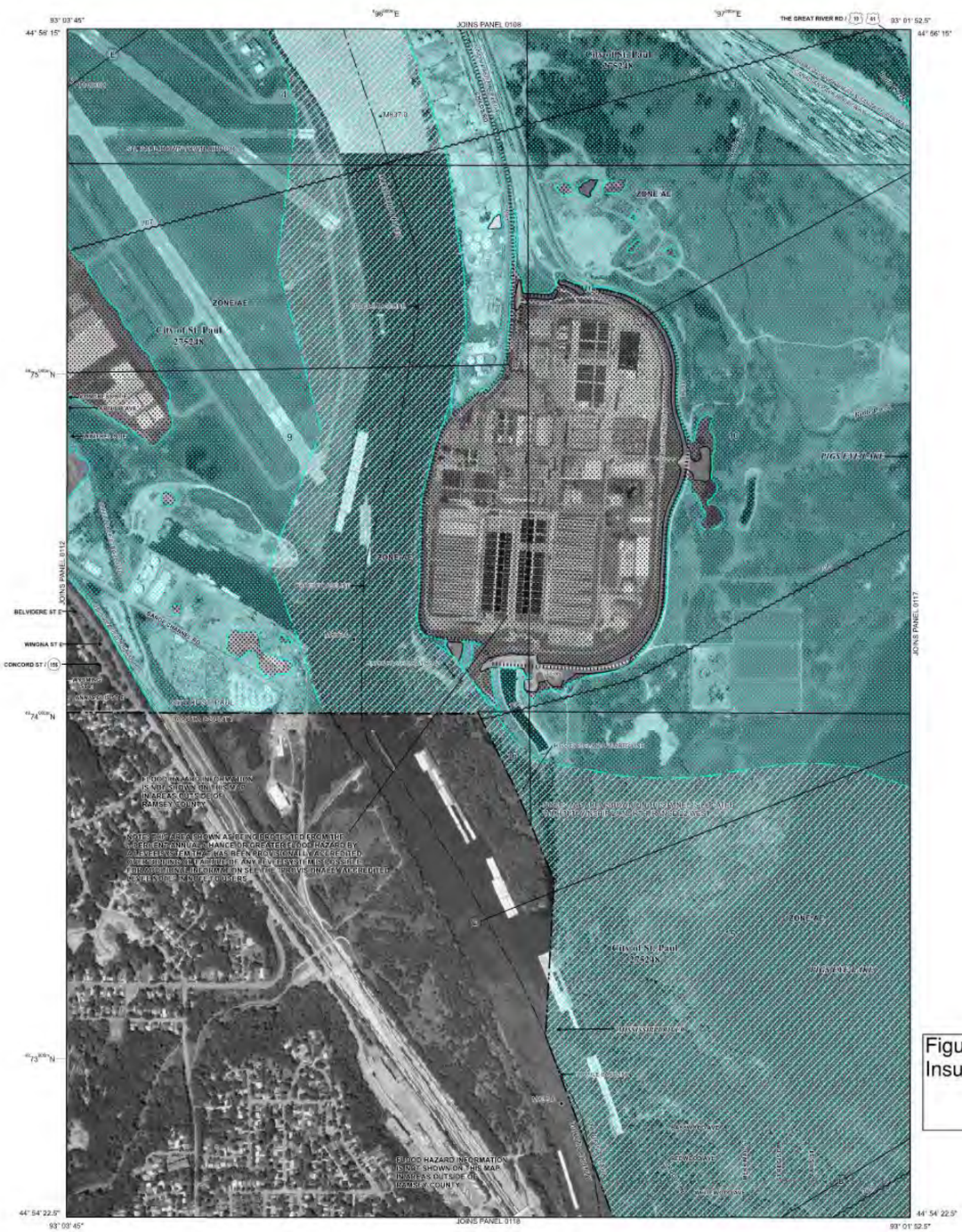


Figure 8. EAW - Flood Insurance Rate Map

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% Annual Chance Floodplain Boundary
- 0.2% Annual Chance Floodplain Boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

- A — A — Cross section line
- 23 — 23 — Transect line
- 45° 02' 08", 93° 02' 12" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83) Western Hemisphere
- 4972000 m N — 1000-meter Universal Transverse Mercator grid values, zone 15N
- 495510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
June 4, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET
150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0116G

FIRM

FLOOD INSURANCE RATE MAP

RAMSEY COUNTY, MINNESOTA
(ALL JURISDICTIONS)

PANEL 116 OF 140
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ST. PAUL, CITY OF	270245	0116	G

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
27123C0116G
EFFECTIVE DATE
June 4, 2010

Federal Emergency Management Agency

Figure 9. County Welll Index

Minnesota Unique Well No. **506894**

County Ramsey
Quad St Paul East
Quad ID 103A

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD
Minnesota Statutes Chapter 103I

Entry Date 05/20/1991
Update Date 02/14/2014
Received Date

Well Name MWCC ASH PONDS MAD 6

Township Range Dir Section Subsections Elevation 701 ft. 7.5 minute topographic map (+/- 5 feet)

28 22 W 10 BAADDD **Elevation Method**

Well Depth	Depth Completed	Date Well Completed
17 ft.	17 ft.	11/02/1989

Drilling Method Power Auger

Drilling Fluid --

Well Hydrofractured? ☐ Yes ☐ No From Ft. to Ft.

Well Address
ST PAUL MN

Use Abandoned **Status** Sealed

Geological Material	Color	Hardness	From	To
FILL SAND, CLAY, PLASTIC, TIRES			0	14
LEAN CLAY	DK. GRY	MEDIUM	14	17

Casing Type Plastic **Joint** No Information **Drive Shoe?** ☐ Yes ☑ No **Above/Below** 2.5 ft.

Casing Diameter	Weight	Hole Diameter
2 in. to 12 ft.	lbs./ft.	7 in. to 17 ft.

Open Hole from ft. to ft.

Screen YES **Make** TIMCO **Type** plastic

Diameter	Slot/Gauze	Length	Set Between
2	10	5	12 ft. and 17 ft.

Static Water Level
8 ft. from Land surface Date Measured 11/02/1989

PUMPING LEVEL (below land surface)
ft. after hrs. pumping g.p.m.

Well Head Completion
Pitless adapter manufacturer Model
☑ Casing Protection Y ☑ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

REMARKS
4220 89-2276, WELL MAD 6.
WELL SEALED 11-04-2004 BY 62012
ORIGINAL USE MW - MONITOR WELL

Grouting Information Well Grouted? ☑ Yes ☐ No ☐ Not Specified

Grout Material: Neat Cement from 0 to 9 ft. 0

Located by: Minnesota Geological Survey **Method:** Digitized - scale 1:24,000 or larger (Digitizing Table)

Unique Number Verification: Information from owner **Input Date:** 01/01/1990

System: *UTM - Nad83, Zone15, Meters* **X:** 497220 **Y:** 4975427

Nearest Known Source of Contamination
_feet _direction _type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name Model number __ HP 0 Volts
Length of drop Pipe _ft. Capacity _g.p.m Type Material

Abandoned Wells Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance Was a variance granted from the MDH for this well? ☐ Yes ☐ No

First Bedrock
Last Strat clay-gray
Aquifer Quat. Water Table Aquifer
Depth to Bedrock ft.

Well Contractor Certification

Gislason, John	M0070	SPERMBAUR, D.
License Business Name	Lic. Or Reg. No.	Name of Driller

County Well Index Online Report **506894** Printed 10/2/2014 HE-01205-07

Unique Well No
393

County Ramsey
Quad St Paul East
Quad ID 103A

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD
Minnesota Statutes Chapter 103I

Entry Date 05/20/1991
Update Date 02/14/2014
Received Date

ASH PONDS MAD 7

Range	Dir	Section	Subsections	Elevation	703 ft.
22	W	10	BADBAD	Elevation Method	7.5 minute topographic map (+/- 5 feet)

Well Depth	Depth Completed	Date Well Completed
15 ft.	15 ft.	11/02/1989

Drilling Method Power Auger

Drilling Fluid
--

Well Hydrofractured? ☐ Yes ☐ No
From Ft. to Ft.

Use Monitor well

erial	Color	Hardness	From	To
ND, WOOD, TIRES			0	12
	DK. GRY	MEDIUM	12	15

Casing Type Plastic Joint No Information Drive Shoe? ☐ Yes ☑ No Above/Below 2.5 ft.

Casing Diameter	Weight	Hole Diameter
2 in. to 10 ft.	lbs./ft.	7 in. to 15 ft.

Open Hole from ft. to ft.

Screen YES Make TIMCO Type plastic

Diameter	Slot/Gauze	Length	Set Between
2	10	5	10 ft. and 15 ft.

Static Water Level
11 ft. from Land surface Date Measured 11/02/1989

PUMPING LEVEL (below land surface)
ft. after hrs. pumping g.p.m.

Well Head Completion
Pitless adapter manufacturer Model
☑ Casing Protection Y ☑ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

0 6

Grouting Information Well Grouted? ☑ Yes ☐ No ☐ Not Specified

Grout Material Neat Cement from 0 to 7 ft. 0

sota Geological Survey
erification: Information from owner
d83, Zone15, Meters

Method Digitized - scale 1:24,000 or larger (Digitizing Table)
Input Date 01/01/1990
X: 497115 Y: 4975370

Nearest Known Source of Contamination
_feet _direction _type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name Model number__ HP 0 Volts
Length of drop Pipe _ft. Capacity _g.p.m. Type Material

Abandoned Wells Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Well Contractor Certification

Gislason John	M0070	SPERMEAUR D
License Business Name	Lic. Or Reg. No	Name of Driller

Aquifer Qual. Water Table Aquifer
ay Depth to Bedrock ft.

Well Index Online Report

506893

Printed 10/2/201
HE-01205-

Minnesota Unique Well No.
501658

County Ramsey
Quad St Paul East
Quad ID 103A

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD
Minnesota Statutes Chapter 103I

Entry Date 05/20/1991
Update Date 06/02/2014
Received Date

Well Name PIGSEYE LANDFILL MW-2

Township	Range	Dir	Section	Subsections	Elevation	700 ft.
28	22	W	10	BACCBD	Elevation Method	7.5 minute topographic map (+/- 5 feet)

Well Depth	Depth Completed	Date Well Completed
23 ft.	23 ft.	12/19/1988

Drilling Method Power Auger

Well Address
WARNER/CHILDS RD
ST PAUL MN

Drilling Fluid
--

Well Hydrofractured? ☐ Yes ☐ No
From Ft. to Ft.

Use Abandoned Status Sealed

Casing Type Stainless Steel Joint No Information Drive Shoe? ☐ Yes ☑ No Above/Below 3.6 ft.

Casing Diameter	Weight	Hole Diameter
2 in. to 17 ft.	lbs./ft.	7 in. to 23 ft.

Open Hole from ft. to ft.

Screen YES Make JOHNSON Type stainless steel

Diameter	Slot/Gauze	Length	Set Between
2	10	5	17 ft. and 22 ft.

Geological Material	Color	Hardness	From	To
NOT SAMPLED			0	15
TRASH IN SANDY & CLAYEY MATRIX			15	19
SWAMP DEPOSITS OR FILL			19	23

Static Water Level
15 ft. from Land surface Date Measured 12/19/1988

PUMPING LEVEL (below land surface)
ft. after hrs. pumping g.p.m.

Well Head Completion
Pitless adapter manufacturer Model
☑ Casing Protector Y ☑ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

REMARKS
WELL SEALED 11-04-2004 BY 62012
ORIGINAL USE:MW - MONITOR WELL

Grouting Information Well Grouted? ☑ Yes ☐ No ☐ Not Specified

Grout Material: Other	from 0 to 2 ft.	0
Grout Material: Neat Cement	from 2 to 15 ft.	0

Located by: Minnesota Geological Survey
Method: Digitized - scale 1:24,000 or larger (Digitizing Table)
Unique Number Verification: Other, note in remarks
Input Date: 01/01/1990
System: UTM - Nad83, Zone15, Meters
X: 490851 Y: 4975315

Nearest Known Source of Contamination
_feet _direction _type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name Model number __ HP 0 Volts
Length of drop Pipe _ ft Capacity _ g.p.m. Type Material

Abandoned Wells Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Well Contractor Certification

Braun Enj Testing	M0015	ZOLAN V
License Business Name	Lic. Or Reg. No.	Name of Driller

First Bedrock
Last Strat Recent deposit
Aquifer Qwat Water Table Aquifer
Depth to Bedrock ft

County Well Index Online Report | **501658** | Printed 10/2/2014 HE-01205-07

Minnesota Unique Well No. **501657**

County Ramsey
Quad St Paul East
Quad ID 103A

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD
Minnesota Statutes Chapter 103I

Entry Date 05/20/1991
Update Date 02/14/2014
Received Date

Well Name PIGSEYE LANDFILL MW-1
Township Range Dir Section Subsections Elevation 695 ft. 7.5 minute topographic map (+/- 5 feet)
28 22 W 10 BDAAAC **Elevation Method**

Well Depth	Depth Completed	Date Well Completed
30 ft.	22 ft.	12/14/1988

Drilling Method Power Auger

Well Address
ST PAUL MN

Drilling Fluid --
Well Hydrofractured? ☐ Yes ☐ No From Ft. to Ft.

Use Abandoned **Status** Sealed

Geological Material	Color	Hardness	From	To
NOT SAMPLED			0	10
TRASH PAPER, WOOD, PLASTIC			10	20
FILL SILT			20	22
SWAMP DEPOSITS OR FILL	DK. BRN		22	30

Casing Type Stainless Steel **Joint** No Information **Drive Shoe?** ☐ Yes ☑ No **Above/Below** 3.8 ft.

Casing Diameter	Weight	Hole Diameter
2 in. to 17 ft.	lbs./ft.	7 in. to 22 ft.

Open Hole from ft. to ft.

Screen YES **Make** JOHNSON **Type** stainless steel

Diameter	Slot/Gauze	Length	Set Between
2	10	5	17 ft. and 22 ft.

Static Water Level
14 ft. from Land surface Date Measured 12/14/1988

PUMPING LEVEL (below land surface)
ft. after hrs. pumping g.p.m.

Well Head Completion
Pitless adapter manufacturer Model
☑ Casing Protection Y ☑ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

REMARKS
WELL SEALED 11-04-2004 BY 62012
ORIGINAL USE MW - MONITOR WELL

Grouting Information Well Grouted? ☑ Yes ☐ No ☐ Not Specified

Grout Material: Other	from 0 to 2 ft.	0
Grout Material: Neat Cement	from 2 to 15 ft.	0

Located by: Minnesota Geological Survey
Method: Digitized - scale 1:24,000 or larger (Digitizing Table)
Unique Number Verification: Other, note in remarks
Input Date: 01/01/1990
System: *UTM - Nad83, Zone15, Meters*
X: 497191 **Y:** 4975162

Nearest Known Source of Contamination
_feet _direction _type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name Model number HP 0 Volts
Length of drop Pipe ft. Capacity g.p.m Type Material

Abandoned Wells Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Well Contractor Certification

License Business Name	Lic. Or Reg. No.	Name of Driller
Braun Enq Testing	M0016	DOLAN, V.

First Bedrock
Last Strat Recent deposit-brown
Aquifer Quat. Water Table Aquifer
Depth to Bedrock ft.

County Well Index Online Report **501657** Printed 10/2/2014 HE-01205-07

Minnesota Unique Well No.
603089

County Ramsey
Quad St Paul East
Quad ID 103A

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD
Minnesota Statutes Chapter 103I

Entry Date 11/22/2002
Update Date 03/10/2014
Received Date 10/11/2002

Well Name METROPOLITAN COUNCIL ENV

Township	Range	Dir	Section	Subsections	Elevation	708 ft.
28	22	W	9	DAA	Elevation Method	Calc from DEM (USGS 7.5 min or equiv.)

Well Depth	Depth Completed	Date Well Completed
110 ft.	110 ft.	09/17/2002

Drilling Method Cable Tool

Well Address
2450 CHILDS RD
MN

Drilling Fluid: Water

Well Hydrofractured? ☐ Yes ☑ No
From Ft. to Ft.

Use Dewatering well

Casing Type Steel (black or low carbon) Joint Unknown Drive Shoe? ☑ Yes ☐ No Above/Below ft.

Casing Diameter	Weight	Hole Diameter
20 in. to 46 ft.	78.6 lbs./ft.	20 in. to 54 ft.
14 in. to 54 ft.	54.57 lbs./ft.	14 in. to 110 ft.

Open Hole from 54 ft. to 110 ft.

Screen NO Make Type

Diameter	Slot/Gauze	Length	Set Between

Static Water Level
21 ft. from Land surface Date Measured 10/25/2002

PUMPING LEVEL (below land surface)
51 ft. after 10 hrs. pumping 720 g.p.m.

Well Head Completion
Pitless adapter manufacturer Model PS14
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Geological Material	Color	Hardness	From	To
TOP SOIL	BLACK	SOFT	0	3
SAND/GRAVEL	BROWN	SOFT	3	13
CLAY & SAND	GRAY	SOFT	13	35
ROCKS/GRAVEL	BROWN	SOFT	35	41
SANDSTONE	BROWN	MEDIUM	41	44
LIMESTONE	GRAY	HARD	44	110

REMARKS
ARW-1

Grouting Information Well Grouted? ☑ Yes ☐ No ☐ Not Specified

Grout Material: Neat Cement from 0 to 54 ft. 52 bags

Located by: Minnesota Department of Health
Method: GPS SA Off (averaged)
Unique Number Verification: Info/GPS from data source
Input Date: 10/22/2001
System: UTM - Nad83, Zone15, Meters
X: 496334 Y: 4974899

Nearest Known Source of Contamination
50 feet S direction Tanks type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed 09/19/2002
Manufacturer's name GOULD Model number 12 GHLC HP 75 Volts 460
Length of drop Pipe 70 ft. Capacity 1700 g.p.m. Type Submersible Material

Abandoned Wells Does property have any not in use and not sealed well(s)? ☐ Yes ☑ No

Variance Was a variance granted from the MDH for this well? ☐ Yes ☑ No

Well Contractor Certification

Keys Well Co.	62012	GALVIN, M
License Business Name	Lic. Or Reg. No.	Name of Driller

First Bedrock
Last Strat
Aquifer
Depth to Bedrock ft.

County Well Index Online Report | **603089** | Printed 1/14/2015
HE-01205-07

Minnesota Unique Well No
226583

County Ramsey
Quad St Paul East
Quad ID 103A

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD
Minnesota Statutes Chapter 103I

Entry Date 08/14/1991
Update Date 03/10/2014
Received Date

Well Name MELS -ST. PAUL SANIT 1

Township	Range	Dir	Section	Subsections	Elevation	Elevation Method
28	22	W	9	DAAABD	703 ft.	7.5 minute topographic map (+/- 5 feet)

Well Depth	Depth Completed	Date Well Completed
287 ft.	287 ft.	10/30/1965

Drilling Method Cable Tool

Well Address
ST PAUL MN

Drilling Fluid
-

Well Hydrofractured? ☐ Yes ☐ No
From Ft. to Ft.

Use Industrial

Geological Material	Color	Hardness	From	To
DRIFT			0	26
BROKEN LIMEROCK			26	34
LIMEROCK			34	192
JORDAN SANDROCK			192	284
GRAY SHALE			284	287

Casing Type Steel (black or low carbon) Joint No Information Drive Shoe? ☐ Yes ☐ No Above/Below 0 ft.

Casing Diameter	Weight	Hole Diameter
30 in. to 34 ft.	lbs./ft.	
24 in. to 87 ft.	lbs./ft.	

Open Hole from 87 ft. to 287 ft.

Screen NO. Make Type

Diameter	Slot/Gauze	Length	Set Between

Static Water Level
19 ft. from Land surface Date Measured 10/30/1965

PUMPING LEVEL (below land surface)
49 ft. after hrs pumping 2765 g.p.m.

Well Head Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

NO REMARKS

Grouting Information Well Grouted? ☑ Yes ☐ No ☐ Not Specified

Located by: Minnesota Geological Survey
Unique Number Verification: Information from owner
System: UTM - Nad83, Zone15, Meters

Method: Digitized - scale 1:24,000 or larger (Digitizing Table)
Input Date: 01/01/1990
X: 496356 Y: 4974778

Nearest Known Source of Contamination
_feet _direction _type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name Model number _ HP 0 Volts
Length of drop Pipe _ ft. Capacity _ g.p.m. Type Material

Abandoned Wells Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Well Contractor Certification
Mueller Well Co. | 66480 | Name of Driller
License Business Name | Lic. Or Reg. No.

First Bedrock Prairie Du Chien Group
Last Strat St Lawrence Formation
Aquifer Multiple
Depth to Bedrock 26 ft.

County Well Index Online Report

226583

Printed 1/14/2015
HE-01205-07

Minnesota Unique Well No.
200052

County Ramsey
Quad St Paul East
Quad ID 103A

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD
Minnesota Statutes Chapter 103I

Entry Date 08/14/1991
Update Date 04/09/2014
Received Date

Well Name ST. PAUL SANIT. ADMIN. B

Township	Range	Dir	Section	Subsections	Elevation	Elevation Method
28	22	W	9	DABAAD	700 ft.	7.5 minute topographic map (+/- 5 feet)

Well Depth	Depth Completed	Date Well Completed
91 ft.	91 ft.	06/06/1936

Drilling Method Cable Tool

Well Address
PIGSEYE ISLAND
ST PAUL MN

Drilling Fluid
--

Well Hydrofractured? ☐ Yes ☐ No
From Ft. to Ft.

Use Commercial

Casing Type Steel (Black or low carbon) Joint No Information Drive Shoe? ☐ Yes ☐ No Above/Below 0 ft.

Casing Diameter	Weight	Hole Diameter
8 in. to 47 ft.	lbs./ft.	8 in. to 91 ft.

Open Hole from ft. to ft.

Screen Make Type

Diameter	Slot/Gauze	Length	Set Between

Static Water Level
20 ft. from Land surface Date Measured 11/27/1991

PUMPING LEVEL (below land surface)
3 ft. after hrs. pumping 200 g.p.m.

Well Head Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Geological Material	Color	Hardness	From	To
SILT			0	8
SAND AND GRAVEL			8	14
ST. PETER SANDROCK			14	28
SHAKOPEE			28	91

NO REMARKS

Grouting Information Well Grouted? ☐ Yes ☐ No ☐ Not Specified

Located by: Minnesota Geological Survey
Unique Number Verification: Information from owner
System: UTM - Nad83, Zone15, Meters

Method: Digitized - scale 1:24,000 or larger (Digitizing Table)
Input Date: 01/01/1990
X: 496210 Y: 4974780

Nearest Known Source of Contamination
_feet _direction _type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name Model number __ HP 0_ Volts
Length of drop Pipe _ft Capacity _g.p.m Type Material

Abandoned Wells Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Well Contractor Certification

First Bedrock St Peter Sandstone
Last Strat Prairie Du Chien Group

Aquifer Prairie Du Chien Group
Depth to Bedrock 16 ft.

Keys Well Co.	62912	
License Business Name	Lic. Or Reg. No.	Name of Driller

County Well Index Online Report | **200052** | Printed 1/14/2015
HE-01205-07

Minnesota Unique Well No.
226584

County Ramsey
Quad St Paul East
Quad ID 103A

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD
Minnesota Statutes Chapter 103I

Entry Date 08/14/1991
Update Date 03/10/2014
Received Date

Well Name MPLS-ST PAUL SANIT. 2

Township	Range	Dir	Section	Subsections	Elevation	703 ft.
28	22	W	9	DAAACA	Elevation Method	7.5 minute topographic map (+- 5 feet)

Well Address
ST PAUL MN

Geological Material	Color	Hardness	From	To
DRIFT			0	26
SOFT SANDROCK & BROKEN LIMEROCK			26	41
HARD LIMEROCK			41	190
JORDAN SANDROCK			190	284

NO REMARKS

Located by: Minnesota Geological Survey
Unique Number Verification: Information from owner
System: UTM - Nad83, Zone15, Meters

Method: Digitized - scale 1:24,000 or larger (Digitizing Table)
Input Date: 01/01/1990
X: 495349 Y: 4974735

First Bedrock St Peter-Prairie Du Chien
Last Strat Jordan Sandstone

Aquifer Multiple
Depth to Bedrock 26 ft.

Well Depth	Depth Completed	Date Well Completed
284 ft.	284 ft.	10/30/1965

Drilling Method Cable Tool
Drilling Fluid --
Well Hydrofractured? ☐ Yes ☐ No
From Ft. to Ft.
Use Industrial
Casing Type Steel (black or low carbon) Joint No Information Drive Shoe? ☐ Yes ☐ No Above/Below 0 ft.

Casing Diameter	Weight	Hole Diameter
30 in. to 41 ft.	lbs./ft.	
24 in. to 85 ft.	lbs./ft.	

Open Hole from 85 ft. to 284 ft.
Screen NO Make Type

Diameter	Slot/Gauze	Length	Set Between

Static Water Level
ft. from Date Measured
PUMPING LEVEL (below land surface)
ft. after hrs pumping g.p.m.

Well Head Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☑ Yes ☐ No ☐ Not Specified

Nearest Known Source of Contamination
_feet _direction _type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name Model number __ HP 0 Volts
Length of drop Pipe _ft Capacity _g.p.m Type Material

Abandoned Wells Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No
Variance Was a variance granted from the MDH for this well? ☐ Yes ☐ No
Well Contractor Certification

Mueller Well Co.	98480	
License Business Name	Lic. Or Reg. No.	Name of Driller

Minnesota Unique Well No.
151554

County Ramsey
Quad St Paul East
Quad ID 103A

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD
Minnesota Statutes Chapter 103I

Entry Date 08/14/1991
Update Date 03/10/2014
Received Date

Well Name METRO WASTE CONTROL NO 3
Township Range Dir Section Subsections Elevation 703 ft.
28 22 W 10 CBBCCC **Elevation Method** 7.5 minute topographic map (+/- 5 feet)

Well Depth	Depth Completed	Date Well Completed
268 ft.	268 ft.	06/18/1980

Drilling Method Cable Tool

Well Address
2500 CHILDS RD
ST PAUL MN

Drilling Fluid --
Well Hydrofractured? Yes No From Ft. to Ft.

Use Industrial

Geological Material	Color	Hardness	From	To
SILT			0	27
ST. PETER		SOFT	27	37
SHAKOPEE			37	185
JORDAN			185	266
SHALE			266	268

Casing Type Steel (black or low carbon) **Joint** Welded **Drive Shoe?** Yes No **Above/Below** 4 ft.

Casing Diameter	Weight	Hole Diameter
30 in. to 46 ft.	lbs./ft.	29 in. to 268 ft.
24 in. to 102 ft.	lbs./ft.	

Open Hole from 102 ft. to 268 ft.

Screen NO **Make** **Type**

Diameter	Slot/Gauze	Length	Set Between

Static Water Level
27 ft. from Land surface Date Measured 06/18/1980

PUMPING LEVEL (below land surface)
63 ft. after hrs. pumping 3072 g.p.m.

Well Head Completion
Pitless adapter manufacturer Model
Casing Protection 12 in. above grade
At-grade (Environmental Wells and Borings ONLY)

REMARKS
M.G.S. NO. 1588 GAMMA LOGGED 6/19/80. CASING IS 4 PT ABOVE GROUND

Grouting Information Well Grouted? Yes No Not Specified
Grout Material: Neat Cement from 0 to 102 ft. 12 yrds.

Located by: Minnesota Geological Survey **Method:** Digitized - scale 1:24,000 or larger (Digitizing Table)
Unique Number Verification: Information from owner **Input Date:** 01/01/1990
System: *UTM - Nad83, Zone15, Meters* **X:** 496447 **Y:** 4974637

Nearest Known Source of Contamination
100 feet S direction Septic tank/drain field type
Well disinfected upon completion? Yes No

Pump Not Installed Date Installed 09/29/1981
Manufacturer's name FAITBANKS MORSE Model number ___ HP 200 Volts 460
Length of drop Pipe 85 ft. Capacity 2800 g.p.m
Type Turbine Material Stainless Steel

Abandoned Wells Does property have any not in use and not sealed well(s)? Yes No

Variance Was a variance granted from the MDH for this well? Yes No

Cuttings Yes **Borehole Geophysics** Yes
First Bedrock St.Peter Sandstone
Last Strat St.Lawrence Formation **Aquifer** Multiple **Depth to Bedrock** 27 ft.

Well Contractor Certification

Keys Well Co.	62012	O'BRIEN, J.
License Business Name	Lic. Or Reg. No.	Name of Driller

County Well Index Online Report **151554** Printed 10/2/2014
HE-01205-07

Minnesota Unique Well No.
501659

County Ramsey
Quad St Paul East
Quad ID 103A

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD
Minnesota Statutes Chapter 103

Entry Date 05/20/1991
Update Date 02/14/2014
Received Date

Well Name PIGSEYE LANDFILL MW-3
Township 28 | Range 22 | Dir W | Section 10 | Subsections DBCCCC
Elevation 690 ft.
Elevation Method 7.5 minute topographic map (+/- 5 feet)

Well Depth: 12 ft. | Depth Completed: 12 ft. | Date Well Completed: 12/19/1989

Drilling Method: Rotary Auger

Well Address
ST PAUL MN

Drilling Fluid: -
Well Hydrofractured? ☐ Yes ☐ No
From Ft. to Ft.

Use: Abandoned Status: Sealed

Casing Type: Stainless Steel Joint: No Information Drive Shoe? ☐ Yes ☑ No Above/Below: 3.6 ft.

Casing Diameter	Weight	Hole Diameter
2 in. to 7 ft.	lbs./ft.	7 in. to 12 ft.

Open Hole: from ft. to ft.

Screen YES Make: JOHNSON Type: stainless steel

Diameter	Slot/Gauze	Length	Set Between
2	10	5	7 ft. and 12 ft.

Geological Material

	Color	Hardness	From	To
NOT SAMPLED			0	2
WEATHERED SOIL OR FILL	BROWN		2	9
FINE ALLUVIUM OR SWAMP DEPOSITS	GRAY		9	12

Static Water Level
9 ft. from Land surface Date Measured: 12/14/1989

PUMPING LEVEL (below land surface)
ft. after hrs. pumping g.p.m.

Well Head Completion
Pitless adapter manufacturer (Model)
☑ Casing Protection Y ☑ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

REMARKS
WELL SEALED 11-04-2004 BY 82012
ORIGINAL USE MW - MONITOR WELL

Grouting Information: Well Grouted? ☑ Yes ☐ No ☐ Not Specified

Grout Material: Other	from 0 to 2 ft.	0
Grout Material: Neat Cement	from 2 to 9 ft.	0

Located by: Minnesota Geological Survey
Unique Number Verification: Other, note in remarks
System: UTM - Nad83, Zone15, Meters

Method: Digitized - scale 1:24,000 or larger (Digitizing Table)
Input Date: 01/01/1990
X: 497227 Y: 4974461

Nearest Known Source of Contamination
_feet _direction _type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name Model number HP 0 Volts
Length of drop Pipe _ft Capacity _g.p.m Type Material

Abandoned Wells: Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance: Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Well Contractor Certification

Braun Enq Testing	MD016	OOLAN, V.
License Business Name	Lic. Or Reg. No.	Name of Driller

First Bedrock
Last Strat: Recent deposit-gray

Aquifer: Quat. Water Table Aquifer
Depth to Bedrock: ft.

County Well Index Online Report | **501659** | Printed: 10/2/2014 HE-01205-07

Figure 10. Metro Plant Water Table Contour Map

BASE MAP SOURCE:
METROPOLITAN COUNCIL WASTEWATER SERVICES (MCWS)
FROM MARKHURD MAY 1993 FLIGHT

BROWN AND CALDWELL
T*E*A*M

FIGURE 9-1
WATER TABLE CONTOUR MAP

METRO PLANT
ENVIRONMENTAL INVENTORY

PEN TABLE= F:\132109\TBL\109LOC.TBL Levels = 1-62 Levels = 1-63
DATE=Mon Nov 13 11:33:57 1995 REFERENCE FILE 02 = F:\132109\GEO\prop.dgn
DGN =r:\132109\geo\gw.pl1 Levels = 1-19,21-52,54-63

LOG OF BORING

PROJECT: BAAX-94-037
SOIL BORINGS & MONITORING WELLS
MWCC Waste Water Treatment Plant
Pigs Eye
St. Paul, Minnesota

BORING: B-201

LOCATION:
Refer to attached Ramsey County survey coordinates.

DRILLER: D. Lovaasen | METHOD: 3 1/4" HSA | DATE: 2/21/94 | SCALE: 1" = 4'

Elev.	Depth	ASTM Symbol	Description of Materials (ASTM D2488)	BPF	WL	Tests or Notes
698.2	0.0	FILL	FILL: Silty Sand, fine- to medium-grained, with Gravel, brown, moist.			An open triangle in the water level (WL) column indicates the depth at which groundwater was observed while drilling. A solid triangle indicates the groundwater level in the boring on the date indicated. Groundwater levels fluctuate.
696.2	2.0	FILL	FILL: Sandy Lean Clay, brown, moist.			
695.7	2.5	FILL	FILL: Poorly Graded Sand, fine- to medium-grained, brown, moist.	5 14 16 7		
692.7	5.5	FILL	FILL: Clayey Sand, fine- to medium-grained, with Gravel, brown, wet.	13 19		
690.7	7.5	CL	LEAN CLAY, slightly organic with fibers, dark gray, wet. (Swamp Deposit)	2 3 3		
689.2	9.0	OL	ORGANIC CLAY, with seams of waterbearing Poorly Graded Silty Sand, brown, wet. (Swamp Deposit)	1 1 2		
685.7	12.5	SM	POORLY GRADED SILTY SAND, fine- to medium-grained, gray, waterbearing, very loose to loose. (Alluvium)	WH 1 1 1 2 2	▽	Jetting water used to wash sand out of the auger between the 16' and 17' depths.
678.7	19.5	OL	ORGANIC CLAY, with fibers, dark brown, wet. (Swamp Deposit)	3 4 4 1 1		
677.2	21.0		END OF BORING. Water observed at 15' while drilling. Bore hole grouted.	1		

LOG OF BORING

PROJECT: BAAX-94-037 SOIL BORINGS & MONITORING WELLS MWCC Waste Water Treatment Plant Pigs Eye St. Paul, Minnesota	BORING: MW-211A LOCATION: Refer to attached Ramsey County survey coordinates.
DRILLER: D. Lovaasen — METHOD: 3 1/4" HSA	DATE: 2/25/94 — SCALE: 1" = 4'

Elev.	Depth	ASTM Symbol	Description of Materials (ASTM D2488)	BPF	WL	Tests or Notes
696.2	0.0	FILL	FILL: Sandy Lean Clay, brown, frozen.			
694.7	1.5	FILL	FILL: Clayey Sand, fine- to medium-grained, with traces of wood, gray, moist.	5 7 8		
691.7	4.5	PT	PEAT, very dark grayish brown, moist. (Swamp Deposit)	4 2 2		
690.2	6.0	SM	SILTY SAND, fine- to medium-grained, with traces of wood, dark brown to dark gray, wet to waterbearing, very loose. (Alluvium)	1 1 1 1 1 1 1 1 1	▽	
681.7	14.5					
681.2	15.0	SC	CLAYEY SAND, mostly fine-grained, gray, wet, very loose. (Alluvium)	1 1 1		
		SM	SILTY SAND, fine- to medium-grained, dark gray, wet to waterbearing, very loose. (Alluvium)	1 1 1 1 1 2		
675.2	21.0					
			END OF BORING. Water observed at 8' while drilling. Water down 14' with 19.5' of hollow-stem auger in the ground. Water down 8' twenty hours after withdrawal of auger. Bore hole overdrilled with 6 1/4" hollow-stem auger. Monitoring well set to 14.5'.			

Appendix B

Letter from MN DNR – Natural Heritage Review
Letter from the State Historic Preservation Office (SHPO)

Minnesota Department of Natural Resources
Division of Ecological and Water Resources, Box 25
500 Lafayette Road
St. Paul, Minnesota 55155-4025
Phone: (651) 259-5109 E-mail: lisa.joyal@state.mn.us

October 31, 2014 **Correspondence # ERDB 20150106**

Ms. Heidi McEllistrem
Brown and Caldwell
30 East 7th St., Suite 2500
St. Paul, MN 55101

RE: Natural Heritage Review of the proposed Metro WWTP Expansion;
T28N R22W Section 10; Ramsey County

Dear Ms. McEllistrem,

As requested, the above project has been reviewed for potential effects to known occurrences of rare features. A search of the Minnesota Natural Heritage Information System did identify rare features within an approximate one-mile radius of the proposed project, but these records did not include any federally listed species and were either historical or not of concern given the project details that were provided with the data request form. As such, I do not believe the proposed project will adversely affect any known occurrences of rare features.

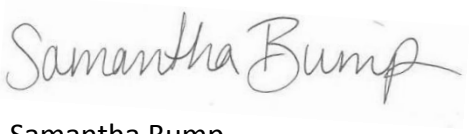
The Natural Heritage Information System (NHIS), a collection of databases that contains information about Minnesota's rare natural features, is maintained by the Division of Ecological and Water Resources, Department of Natural Resources. The NHIS is continually updated as new information becomes available, and is the most complete source of data on Minnesota's rare or otherwise significant species, native plant communities, and other natural features. However, the NHIS is not an exhaustive inventory and thus does not represent all of the occurrences of rare features within the state. Therefore, ecologically significant features for which we have no records may exist within the project area.

For environmental review purposes, the results of this Natural Heritage Review are valid for one year; the results are only valid for the project location (noted above) and project description provided on the NHIS Data Request Form. Please contact me if project details change or if an updated review is needed.

Furthermore, the Natural Heritage Review does not constitute review or approval by the Department of Natural Resources as a whole. Instead, it identifies issues regarding known occurrences of rare features and potential effects to these rare features. Additional rare features for which we have no data may be present in the project area, or there may be other natural resource concerns associated with the proposed project. For these concerns, please contact your DNR Regional Environmental Assessment Ecologist (contact information available at http://www.dnr.state.mn.us/eco/ereview/erp_regioncontacts.html). Please be aware that additional site assessments or review may be required.

Thank you for consulting us on this matter, and for your interest in preserving Minnesota's rare natural resources. An invoice will be mailed to you under separate cover.

Sincerely,



Samantha Bump
Natural Heritage Review Specialist

Heflin, Katherine

Sent:
To:
Cc:
Subject: -
Attachments: -

Hi Rene – Here is your updated letter from the MN DNR. tg

From: Bump, Samantha (DNR) <samantha.bump@state.mn.us>
Sent: Thursday, July 26, 2018 5:33 PM
To: Gilchrist, Therese <Therese.Gilchrist@metc.state.mn.us>
Cc: Horton, Becky (DNR) <becky.horton@state.mn.us>; Parris, Leslie (DNR) <leslie.parris@state.mn.us>
Subject: RE: RE - Correspondence # ERDB 20150106

Therese,

I have reviewed the NHIS regarding the above project. There are no new state-listed species records in the vicinity of the project. However, the rusty patched bumble bee (*Bombus affinis*), a federally-listed endangered species, was documented recently in the vicinity of the proposed project. The rusty patched bumble bee typically occurs in grasslands and urban gardens with flowering plants from April through October. This species nests underground in abandoned rodent cavities or in clumps of grasses. Please reference the guidance at the USFWS rusty patched bumble bee website to determine if the project has the potential to impact this protected species.

The Natural Heritage letter dated October 31, 2014 with this email is valid until July 26, 2019. Thank you for consulting us on this matter. If you have any further questions, please feel free to contact me.

Have a great day,
Samantha Bump
NHIS Review Specialist | Ecological & Water Resources

Minnesota Department of Natural Resources
500 Lafayette Road
St. Paul, MN 55155
Phone: 651-259-5091
Email: samantha.bump@state.mn.us
mndnr.gov

DEPARTMENT OF NATURAL RESOURCES

Links:

From: Gilchrist, Therese <Therese.Gilchrist@metc.state.mn.us>
Sent: Thursday, July 19, 2018 2:19 PM
To: Bump, Samantha (DNR) <samantha.bump@state.mn.us>
Subject: RE: RE - Correspondence # ERDB 20150106

Hi Samantha – we have changed some details but essentially it is the same, we are in the planning stages to add more solids handling capacity, all inside the already built area. Terry

---

From: Bump, Samantha (DNR) [mailto:samantha.bump@state.mn.us]
Sent: Thursday, July 19, 2018 2:16 PM
To: Gilchrist, Therese <Therese.Gilchrist@metc.state.mn.us>
Subject: RE: RE - Correspondence # ERDB 20150106
Hi Therese,

Thanks for getting in touch. Have there been any changes in the project since the previous review?

Thank you,

Samantha Bump
NHIS Review Specialist | Ecological & Water Resources

Minnesota Department of Natural Resources
500 Lafayette Road
St. Paul, MN 55155
Phone: 651-259-5091
Email: samantha.bump@state.mn.us
mndnr.gov

DEPARTMENT OF NATURAL RESOURCES

From: Gilchrist, Therese <Therese.Gilchrist@metc.state.mn.us>
Sent: Wednesday, July 18, 2018 1:16 PM
To: Bump, Samantha (DNR) <samantha.bump@state.mn.us>
Subject: RE - Correspondence # ERDB 20150106

Hi Samantha – You had helped us with a Natural Heritage Review in 2014. We are just getting ready to submit plans for this project. Since the Review was only valid for 1 year, could you let us know what it would take to update for 2017. Attached is a copy of the 1/31/2014 review letter.

Thank-you for your help.

METROPOLITAN COUNCIL

Therese A Gilchrist
Environmental Scientist | Environmental Services - EQA Department
therese.gilchrist@metc.state.mn.us
P. 651.602.1193
390 North Robert Street | St. Paul, MN | 55101 | metrocouncil.org

CONNECT WITH US

Rusty Patched Bumble Bee
Bombus affinis

The U.S. Fish and Wildlife Service listed the rusty patched bumble bee as endangered under the Endangered Species Act. Endangered species are animals and plants that are in danger of becoming extinct. Identifying, protecting and recovering endangered species is a primary objective of the U.S. Fish and Wildlife Service's endangered species program.

What is a rusty patched bumble bee?

Appearance: Rusty patched bumble bees live in colonies that include a single queen and female workers. The colony produces males and new queens in late summer. Queens are the largest bees in the colony, and workers are the smallest. All rusty patched bumble bees have entirely black heads, but only workers and males have a rusty reddish patch centrally located on the back.

Habitat: Rusty patched bumble bees once occupied grasslands and tallgrass prairies of the Upper Midwest and Northeast, but most grasslands and prairies have been lost, degraded, or fragmented by conversion to other uses. Bumble bees need areas that provide nectar and pollen from flowers, nesting sites (underground and abandoned rodent cavities or clumps of grasses), and overwintering sites for hibernating queens (undisturbed soil).

Illustrations of a rusty patched bumble bee queen (left), worker (center), and male (right) by Elaine Evans, The Xerces Society.

Photo courtesy of Christy Stewart

Reproduction: Rusty patched bumble bee colonies have an annual cycle. In spring, solitary queens emerge and find nest sites, collect nectar and pollen from flowers and begin laying eggs, which are fertilized by sperm stored since mating the previous fall. Workers hatch from these first eggs and colonies grow as workers collect food, defend the colony, and care for young. Queens remain within the nests and continue laying eggs. In late summer, new queens and males also hatch from eggs. Males disperse to mate with new queens from other colonies. In fall, founding queens, workers and males die. Only new queens go into diapause (a form of hibernation) over winter - and the cycle begins again in spring.

Feeding Habits: Bumble bees gather pollen and nectar from a variety of flowering plants. The rusty patched emerges early in spring and is one of the last species to go into hibernation.

Why conserve rusty patched bumble bees?

As pollinators, rusty patched bumble bees contribute to our food security and the healthy functioning of our ecosystems. Bumble bees are keystone species in most ecosystems, necessary not only for native wildflower reproduction, but also for creating seeds and fruits that feed wildlife as diverse as songbirds and grizzly bears.

Bumble bees are among the most important pollinators of crops such as blueberries, cranberries, and clover and almost the only insect pollinators of tomatoes. Bumble bees are more effective pollinators than honey bees for some crops because of their ability to "buzz pollinate." The economic value of pollination services provided by native insects (mostly bees) is estimated at $3 billion per year in the United States.

It needs a constant supply and diversity of flowers blooming throughout the colony's long life, April through September.

Range: Historically, the rusty patched bumble bee was broadly distributed across the eastern United States and Upper Midwest, from Maine in the U.S. and southern Quebec and Ontario in Canada, south to the northeast corner of Georgia, reaching west to the eastern edges of North and South Dakota. Its range included 28 states, the District of Columbia and 2 provinces in Canada. Since 2000, this bumble bee has been reported from only 13 states and 1 province: Illinois, Indiana, Iowa, Maine, Maryland, Massachusetts, Minnesota, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, Wisconsin – and Ontario, Canada.

Why is the rusty patched bumble bee declining?

Habitat loss and degradation: Most prairies and grasslands of the Upper Midwest and Northeast have been converted to monoculture farms or developed areas, such as cities and roads. Grasslands that remain tend to be small and isolated.

Intensive farming: Increases in farm size and technology advances improved the operating efficiency of farms but have led to practices that harm bumble bees: increased use of pesticides, loss of crop diversity resulting in flowering crops being available for only a short time, loss of hedgerows with flowering plants, and loss of legume pastures.

Disease: Pathogens and parasites may pose a threat, although their prevalence and effects in North American bumble bees are not well understood.

Pesticides: The rusty patched bumble bee may be vulnerable to pesticides. Pesticides are used widely on farms and in cities and have both lethal and sublethal toxic effects. Bumble bees can absorb toxins directly through their exoskeleton and through contaminated nectar and pollen. Rusty patched bumble bees nest in the ground and may be susceptible to pesticides that persist in agricultural soils, lawns and turf.

Global climate change: Climate changes that may harm bumble bees include increased temperature and precipitation extremes, increased drought, early snow melt and late frost events. These changes may lead to more exposure to or susceptibility to disease, fewer flowering plants, fewer places for queens to hibernate and nest, less time for foraging due to high temperatures, and asynchronous flowering plant and bumble bee spring emergence.

What is being done to conserve rusty patched bumble bees?

U.S. Fish and Wildlife Service: Several Service programs work to assess, protect, and restore pollinators and their habitats. Also, the Service works with partners to recover endangered and threatened pollinators and pollinator-dependent plants. Concern about pollinator declines prompted formation of the North American Pollinator Protection Campaign, a collaboration of people dedicated to pollinator conservation and education. The Service has a Memorandum of Understanding with the Pollinator Partnership to work together on those goals. The Service is a natural collaborator because our mission is to work with others to conserve, fish, wildlife, and plants and their habitats.

Other Efforts: Trusts, conservancies, restoration groups and partnerships are supporting pollinator initiatives and incorporating native plants that support bees and other pollinators into their current activities. For example, the USDA Natural Resource Conservation Service is working with landowners in Michigan, Minnesota, Montana, North Dakota, South Dakota, and Wisconsin to make bee-friendly conservation improvements to their land. Improvements include the practices of planting cover crops, wildflowers, or native grasses and improved management on grazing lands.

Research: Researchers are studying and monitoring the impacts of GMO crops and certain pesticides on pollinators. Efforts by citizen scientists and researchers to determine the status of declining bee species are underway throughout the United States.

What can I do to help conserve the rusty patched bumble bee?

Garden: Grow a garden or add a flowering tree or shrub to your yard. Even small areas or containers on patios can provide nectar and pollen for native bees.

Native plants: Use native plants in your yard such as lupines, asters, bee balm, native prairie plants and spring ephemerals. Don't forget spring blooming shrubs like ninebark and pussy willow! Avoid invasive non-native plants and remove them if they invade your yard. For more information on attracting native pollinators, visit www.fws.gov/pollinators/pdfs/PollinatorBookletFinalrevWeb.pdf.

Natural landscapes: Provide natural areas - many bumble bees build nests in undisturbed soil, abandoned rodent burrows or grasss clumps. Keep some unmowed, brushy areas and tolerate bumble bee nests if you find them. Reduce tilling soil and mowing where bumble bees might nest. Support natural areas in your community, county and state.

Minimize: Limit the use of pesticides and chemical fertilizer whenever possible or avoid them entirely. Pesticides cause lethal and sublethal effects to bees and other pollinators.

Appendix L. Summary of Public Outreach, Public Comments, and Resolutions

Appendix L. Summary of Public Outreach, Public Comments, and Resolutions

Contents:

- Public Outreach and Public Comment Summary
  - Stakeholder List & Outreach
  - Written Public Comments

- Open House, June 13, 2018
  - Email Notification & Mailer
  - Agenda
  - Sign-in Sheet
  - Display Boards
    - How it Works Processing Wastewater Solids at the Metro Plant
    - How it Works The Incineration Process at the Metro Plant
    - How it Works Energy Recovery for Incineration at the Metro Plant
    - How it Works Air Pollution Control for Incineration at the Metro Plant
  - Presentation

- Public Hearing, August 30, 2018
  - Mailing Notice for August 30, 2018, Public Hearing
  - Publication of Public Hearing Notice
    - Pioneer Press, July 29, 2018
    - Star Tribune, July 29, 2018
  - Email Notification & Mailer
  - Agenda
  - Sign-in Sheet
  - Comment Form
  - Display Boards
    - How it Works
    - Alternatives Analysis
    - Recommended Plan
  - Presentation
    - Location of project site, p. 8
    - Alternatives evaluation, p. 16-26
    - Impacts on sewer service rates, p. 32
  - Transcript

- Mailing List
  - The mailing list is also available as an Excel spreadsheet by contacting Tim O'Donnell, Metropolitan Council Environmental Services, at 651-602-1269 or tim.odonnell@metc.state.mn.us

- Metropolitan Council Resolution 2018-19 adopting the Facility Plan.

Metro Plant Solids Management Improvements Facility Plan
Public Outreach & Public Comments Summary

Project Background

The Metro Plant Solids Management Improvements Facility Plan outlines the need and recommended alternative for additional wastewater solids processing capacity at the Metro Plant so it can preserve existing wastewater treatment plant infrastructure and serve regional population growth. Four alternatives which maximized the life of the existing incineration system were evaluated against multiple factors with a focus on economic considerations, sustainability, and community impacts. MCES is proposing to construct a fourth wastewater solids incinerator, followed by renewal of the three existing incinerators. MCES found that adding a fourth incinerator would be the most cost-effective and sustainable alternative to meet the region's wastewater needs. Construction of the fourth incinerator would occur from 2021 to 2024, and renewal of the existing incinerators would occur from 2025 to 2027. The total cost of the project is estimated at $180 million.

Public Outreach

The following general public outreach was conducted for the project:

- Individual emails and phone calls were made to numerous government, community organizations, environmental organizations, and other stakeholders from May 2018 to August 2018.
- In person meetings which were requested and conducted included:
    - June 12, 2018 – City of Saint Paul Public Work Staff
    - June 20, 2018 – City of Saint Paul Mayor's Office
    - June 28, 2018 – Minnesota Center for Environmental Advocacy
    - June 29, 2018 – Ramsey County Commissioner Office
    - July 17, 2018 – Capital River Council Public Realm Committee
    - August 20, 2018 – Metro Cities
- A meeting was held with representatives from the Minnesota Pollution Control Agency on May 31, 2018 about the project, air permitting, and modeling assumptions.
- The project was presented to attending customer communities at MCES Customer Budget Workshops held on May 24, 2018 and June 7, 2018.
- A project summary was emailed to contacts at the Star Tribune, Pioneer Press, MinnPost, and Minnesota Public Radio on June 11, 2018.
- Stories about the project were published by the Pioneer Press and Star Tribune on June 12, 2018 and June 23, 2018 respectively.

The following public outreach was conducted for the Open House which was held on June 13, 2018 at the Wellstone Center in Saint Paul.

- Over 4,000 open house notices were mailed to residents in the immediate vicinity of the Metro Plant on June 5, 2018.
- A notice about the event was emailed via GovDelivery on June 6, 2018 to over 50 government, community organizations, and other stakeholders.

The following public outreach was conducted for the Public Hearing which was held on August 30, 2018 at the Wellstone Center in Saint Paul.

- Over 4,000 public hearing notices were mailed to residents in the immediate vicinity of the Metro Plant on August 4, 2018.
- A paper copy of the Draft Facility Plan was available for the public to review from July 27, 2018 at four libraries in Saint Paul: the George Latimer Central Library, the Sun Ray Library, the Riverview Library, and the Dayton's Bluff Library. The Draft Facility Plan also was available at the Metropolitan Council building in downtown Saint Paul, and on the Metropolitan Council website.
- Legal notices for the public hearing were published in the Star Tribune newspaper and in the St. Paul Pioneer Press on July 29, 2018.
- A public hearing notice was emailed via GovDelivery on July 31, 2018 and reminder email on August 24, 2018 to over 80 numerous government, community organizations, and other stakeholders.
- A public hearing notice was emailed via GovDelivery on August 1, 2018 to over 1,000 MCES industrial waste customers.
- The public comment period ended on September 10, 2018 at 5:00 p.m.

Open House

A public open house for the Metro Plant Solids Management Facility Plan was held from 6:30 p.m. to 8:00 p.m. on Wednesday June 13, 2018 at the Wellstone Center, in St. Paul Minnesota. It included both an informal open house and formal presentation. Attendees were provided an opportunity to learn about the upcoming Metro Plant facility plan, the upcoming August 30 public hearing, and the wastewater treatment process. The event was attended by seven people. The presentation began at 6:55 p.m. and lasted 35 minutes. An additional 20 minutes were spent answering questions that focused on the environmental impacts of the project. Attendees stayed until 8:00 p.m. reviewing the open house boards and videos.

Public Hearing

The public hearing was held from 6:30-8:00pm on Thursday, August 30 at the Wellstone Center, in St. Paul Minnesota. The public hearing began with a 30-minute open house for attendees to view the display boards, watch the project videos, and talk one-on-one with the project team. Following the open house, the Council staff gave a brief presentation to provide information about the Metro Plant Solids Management Improvements Facility Plan. Project team members were available after the presentation to answer questions. Public comments were received during the public hearing. A court reporter was present to record and transcribe the meeting and comments received. Attendees were also given the opportunity to submit written comments using comment forms, email, or fax.

Resolutions

The Metropolitan Council formally approved and adopted the Metro Plant Solids Management Improvements Facility Plan on October 10, 201 through Resolution No. 2018-19.

Public Hearing Verbal Comments

The following comments (bold) were received at the Public Hearing on August 30, 2018 and Council responses (standard font) are provided below.

1. **Steve Greenwood – City of Saint Paul Resident**

   I just have a few brief comments of alternatives to evaluate also that were not on Rene's report. Considering that, you know, we're spending over $150 million capital, that's over $300 million with interest included, and that, you know, my understanding is that the annual landfill costs are about $400,000 when the incinerators are down. I just had a few suggestions for alternatives for when the incinerators are down. Consider trucking biosolids to Seneca to process in their multiple hearth incinerators, truck solids to Seneca and process in the and the Envigo (sic) process. I know you'd need some belt presses and things like that. Back in the late '90s when they had the public hearings, the Met Council promised the public they would land-apply about 15 to 20 percent of the biosolids from Metro, and that's never occurred. So that'd be one way to fulfill that promise. And then the third alternative is to rehab two or more of the multiple hearth incinerators at the Metro Plant. You'd have to install some centrifuges too. And then Number 4 would be to use the landfill as a backup to those three alternatives if they weren't available or something like that. Concerning the cost for rehabilitating multiple hearth incinerators, I'd like to remind everyone that's what they argued for about 18, 19 years ago instead of building a new facility. A few years ago, St. Louis upgraded seven multiple hearth incinerators for a cost of $13 million. Detroit, the nation's largest treatment plant, upgraded eight multiple hearth incinerators for $38 million. So combined, two of the nation's largest treatment plants, St. Louis and Detroit, spent $51 million for 15 multiple hearth incinerators. We have six multiple hearth incinerators that are sitting abandoned, and the six multiple hearth incinerators at the Metro Plant have more capacity than the four fluid bed incinerators. They were abandoned because of the U.S. EPA sued the U.S., or sued the Met Council and the settlement was to build new treatment, new fluid bed incinerators, and I argue for keeping them. So that's a major cost for this new facility. So that's why we've already spent $160 million for this facility plus another what, $18 million, to fix it up after 2012. So that's up to about $180 million. Now we've got to expect to spend another $150 million more. I think we need to look at some more alternatives.

   Response to suggested alternatives 1 and 2, truck solids to Seneca: available incinerator capacity at Seneca is insufficient to handle the required solids loading from the Metro Plant. The N-Viro process at Seneca was decommissioned because incinerating at Seneca was determined to be more cost effective. Increasing solids treatment capacity at the Seneca Plant to treat Metro solids is prohibited by the 1989 development agreement with the City of Eagan. The Council does not consider treatment of Metro Plant solids at the Seneca Plant as a viable alternative for this facility plan.

   Response to suggested alternative 3, rehabilitate Metro multiple hearth incinerators: the 2001 consent decree specifically requires shutdown of the multiple hearth incinerators and replacement with the fluidized bed incinerators. The Council does not consider rehabilitating the existing multiple hearth incinerators a viable alternative for this facility plan.

   Response to suggested alternative 4, landfilling: landfilling sludge is inconsistent with the Council's Wastewater Sustainability Policy (Thrive MSP 2040 Water Resources Policy Plan). Landfilling of sludge is utilized by the Council as an emergency backup for wastewater solids processing technologies such as thermal processing or anaerobic digestion. The Council does not consider

landfilling of sludge as a normal operation to be a viable alternative for processing wastewater solids.

The Metropolitan St. Louis Sewer District (STLMSD) rehabilitated multiple hearth incinerators at the Bissell & Lemay Wastewater Treatment Facility to meet federal air emission standards, and they currently have a consent decree which outlines replacement of the multiple hearth incinerators. STLMSD plans to replace the multiple hearths with fluidized bed incinerators; the estimated project cost of $420 million.

In 2015 Great Lakes Water Authority (GLWA) completed a $680 million design-build-operate-maintain contract for a 316-dry ton per day biosolids dryer facility which replaced six of the 14 multiple hearth incinerators. The GLWA rehabbed eight of the remaining multiple heath incinerators to process excess solids not processed in the dryer facility.

The alternatives analysis completed for this facility plan includes multiple factors with a focus on economic considerations, sustainability, and community impacts. Adding a fourth incinerator was found to cost 50% less to construct, operate, and maintain than any other solids processing alternative.

2. **Tom Dimond – City of Saint Paul Resident**

   I would really like to thank you for the work you've done there. It's expensive work, readily admit it, I'm a taxpayer also. But I would tell you living downwind from the facility, I can tell you the difference for this facility, what it is today versus what it used to be is day and night and greatly appreciated. It has a huge payoff, and it's not just because I live downwind, but it impacts the economic viability of that part of our community as a whole. And there are also other benefits. For example, we're not landfilling in our wetlands ash and stuff, so I won't go into that belabored, but it really has been a significant improvement for livability and the economic vitality of this community because of the work that's been done. And I'm certainly no engineer, but I can tell you personally that it has made a huge difference, and again, greatly appreciated.

   Adding a fourth incinerator at the Metro Plant will help the Council continue to be a good neighbor to surrounding communities.

3. **Carrie Marsh – City of Saint Paul Resident**

   I'm sorry I missed the beginning of the presentation. I was at my school's open house. All the public schools are having open house this evening. He's five; he goes to our local school. And so part of the lack of participation in this meeting, I think, could be attributed to parents being very busy at this time of year particularly this evening. So I don't have any particular comments on the plan per se. I looked over the materials briefly online, but haven't had a lot of time to think about them. And speaking to express my concern about public input and ensure that there really is a true forum for some public comment on the plan. I see that we have about ten days to provide additional comments. I would suggest that that's not enough and perhaps you could extend that time and do some more work with neighborhood groups. I apologize if you've addressed that already in your presentation.

   The Council regrets any scheduling conflicts with back to school events on the night of the public hearing. The Council did not receive any communications from any other residents indicating that the back to school events prohibited them from attending the public hearing.

   Four neighborhood district councils surrounding the Metro Plant were contacted regarding the project including District 1 – Eastview/Conway/Battle Creek/Highwood Hills, District 3 – West Side

Community Organization, District 4 – Dayton's Bluff, and District 17 – Capital River Council. The Council heard back from District 1 and District 17. District 1 did not feel an in-person meeting was needed, and the Council presented to the District 17 Public Realm Committee on June 17th. The West Side Community Organization Executive Director Monica Bravo was emailed individually about the project on May 25th and June 13th. Additionally, she was also notified about the open house and public hearing sent out June 6th, July 31st, and August 24th. The Council did not receive a response from the West Side Community Organization.

The Council feels that sufficient public outreach has been completed for the Draft Metro Plant Solids Management Improvements Facility Plan and that the public comment period does not need to be extended.

Written Public Comments

The following written comments (bold) were received during the public comment period from July 29, 2018 to September 10, 2018 and Council responses (standard font) are provided below.

1. **John Westley – City of Eagan Resident**

   God Recycles-The Devil Burns – RE: Metropolitan Council Environmental Services Public Hearing: Metro Plant Solids Management Improvements Draft Facility Plan

   Please note that I was an active member of the Met.Council/City of Eagan Seneca Plant Citizen Advisory Board for several years in the 1990's. At that time, to obtain expansion development approvals from the City of Eagan, the Met.Council publicly agreed to land apply a substantial portion of the mixed Seneca and Metro plants sludge. At great effort and public expense a land application processing facility was built at the Seneca plant and used to coordinate the distributions of sludge fertilizer to local farmers and agricultural facilities.

   My fellow Citizen Advisory Board members, at great voluntary effort, assisted in the development and coordination of these land application procedures. As part of an extensive community outreach, we developed a long waiting list of local farms and agricultural facilities desiring these valuable public resource land applications. These procedures worked so well that many of these facilities agreed to store these valuable land application materials at their own expense so the processes could be run beyond seasonal time periods.

   As part of the disbanding of Met.Council/City of Eagan Seneca Plan Citizen Advisory Board the members were to be directly noticed to any proposed changes in the Metro/Seneca land application procedures. I was not noticed as to any changes and to the best of my knowledge neither was the other half dozen citizen volunteer board members.

   For the record, the Met.Council/City of Eagan Seneca Plant Citizen Advisory Board, including your public servant staff members Rebecca Flood and Bryce Pickart, met weekly extensively working for several years to directly resolve the land application v. incineration environmental issues. It was then jointly concluded and agreed that:

   1. **Lead, cadmium, mercury and other heavy metals belong on the ground not in the air**
   2. **Ingesting incinerated toxic air borne heavy metals causes brain damage, cancer and disease**
   3. **The economic cost benefits of land application out way those of the incineration of a**

publicly desired and valuable resource that should benefit the local agricultural industry

The proposed 4th Metro plant incinerator, without any previously agreed upon land applications, is governed by an United States District Court of Minnesota (USDC-MN) consent decree which appears to have been fraudulently obtained and executed in additional violation of the National Environmental Policy Act (see enclosed-Docket #16 letter to USDC-MN Judge Frank-Clean Air Act Case-0:99-cv-01105 USA v. Metropolitan Council).

It is my understanding that the cited supplemental environmental project (SEP) presented to the Court and Judge Frank involving carbon injection was in fact rejected and banned by Federal regulators. Rebecca Flood knowing committed perjury in her sworn support affidavit regarding that SEP, consent decree and related environmental regulation compliances thereby obstructing due process justice. As such, I request that those complete Federal case files (including the original complaint, hearing minutes and Flood's affidavit sworn under penalties of perjury-Docket #26) be added to the official record and made available for public review with an extended comment period for 4th incinerator proposal.

From an economic, environmental, and public policy rational viewpoint, there is no logical pending need for 4th Metro Plant incinerator costing the taxpayers $150,000,000 when viable, environmental friendly, less expensive sludge disposal alternatives by land application have already been established. Based upon these facts, I request that all previous land application information and agreements developed by the Met.Council/City of Eagan Seneca Plant Citizen Advisory Board be incorporated and implemented into this plan.

I additionally request that these issues be immediately brought before the City of Eagan and the USDC-MN court of record for compliance reviews of all presiding laws and prior agreements. To mitigate further potential damages regarding these matters, kindly have your attorneys of record at Dorsey & Whitney contact me by telephone at their earliest convenience.

The Council believes that Westley's reference to a Seneca Plant Citizen Advisory Board relate to a 1989 Development Agreement between the City of Eagan and the Metropolitan Waste Control Commission and either the Seneca Odor Advisory Committee or the Seneca Mediation Roundtable. The 1989 development agreement relates to improvements made in the early 1990s to the Seneca Wastewater Treatment Plant, it is not relevant to the proposed improvements to the Metro Plant in this draft facility plan. Similarly, the Seneca Odor Advisory Committee and Seneca Mediation Roundtable (which were disbanded in 1995 and 1994 respectively) were advisory groups that addressed issues at the time at the Seneca Plant and are irrelevant to the Draft Metro Plant Solids Management Improvements Facility Plan. Further, the proposed fourth Metro Plant incinerator will not change the Council's current land application procedures.

The 2001 consent decree between the Metropolitan Council and the EPA is not relevant to the Draft Metro Plant Solids Management Improvements Facility Plan. The 2001 consent decree (which was terminated by the federal court), addresses improvements that have already been made to the Metro Plant. The consent decree does not govern the proposed installation of a fourth incinerator at the Metro Plant. Mr. Westley's claim that the Council did not complete the supplemental environmental project required by the consent decree is false. In January 2002, the federal court approved an amended supplemental environmental project which the Council

completed as set forth in Rebecca Flood's October 17, 2005 affidavit. Accordingly, the Council will not extend the comment period for the draft facility plan.

Because neither of the agreements from the 1990s are relevant to the matter that is open for public comment, the Council will not bring them before Eagan or the federal court for "compliance review" as requested by Mr. Westley or include any previous agreements or understandings with the City of Eagan in the Metro Plant Solids Management Improvements Draft Facility Plan.

The Council plans to add a fourth incinerator at the Metro Plant to preserve existing wastewater treatment plant infrastructure and serve regional population growth. The Council found incineration to be the most cost-effective and sustainable alternative to meet the region's wastewater needs. It has the lowest community impact and will improve the reliability of the wastewater treatment system. The existing Metro Plant incinerators meet all permit requirements, as determined by the EPA to be protective of public health and the environment and have demonstrated emissions lower than the most stringent standards for new incinerators.

2. **Steven Greenwood – City of Saint Paul Resident – (Letter is attached in Appendix D)**
   Re: Metro Plant Fourth Fluid Bed Incinerator Project for $150 million – Delay or Stop It. U.S. Consent Decree Civil Action No.99-CV-1105

   The proposed fourth Metro Plant Fluid Bed Incinerator for the Metro Plant at a capital cost of $150 Million should be stopped or delayed for multiple reasons.

   Alternative means to dispose of biosolids when the FB's are down need evaluation, prior to spending over $300 million for capital & interest costs, considering that the annual landfill costs are about $400,000 per year and the FB maintenance cost is over $1 million/yr.

   1) **Trucking biosolids to Seneca WWTP to be processed using Seneca's back-up multiple hearth incinerator needs to be an alternative. Trucking biosolids to Seneca is a shorter distance than to the landfill, which is west of the Metro Area. What is the 20 year present worth difference between trucking and processing biosolids at the Seneca MHI and building a new $150 million FB, including costs for ash abrasion pipe wear?**

   Available incinerator capacity at Seneca is insufficient to handle the required solids loading from the Metro Plant. Increasing solids treatment capacity at the Seneca Plant to treat Metro solids is prohibited by the 1989 development agreement with the City of Eagan. The Council does not consider treatment of Metro Plant solids at the Seneca Plant as a viable alternative for this facility plan.

   2) **Trucking biosolids to Seneca and using N-Viro, stabilization for land application needs to be evaluated. Seneca has sludge load-in capability, as Seneca took sludge Blue Lake WWTP when it's solids handling facilities where being built. The N-Viro sludge stabilization process has not been used, since the early 1990's. New belt presses would need to be installed, as the original belt presses were moved to Eagan. Using the N-Viro process would fulfill the promise that the Met Council made in the late 1990's after the public hearings on biosolids disposal stating that about 15 to 20% of the Metro Plant biosolids would be land applied. This is why the Council elected to build 3 fluid bed incinerators with supplemental land application, instead of four FB's. Land application of Metro Plant biosolids was never was done by MCES, since 2004. Met Council staff can go back and review the historical decisions on this. I attended the late 1990's public Council hearings on Metro Plant biosolids and know what decisions were made. What is the 20 year present worth difference between biosolids processing at Seneca NVIRO and building a new $150 million FB, including costs for ash abrasion pipe wear?**

The N-Viro process at Seneca was decommissioned because incinerating at Seneca was determined to be more cost effective. Increasing solids processing capacity at Seneca for any other solids other than Seneca is prohibited by a 1989 development agreement with the City of Eagan. The Council does not consider using Seneca N-Viro for Metro Plant solids as a viable alternative for this facility plan.

3) **Another possible means to dispose of biosolids, when the FB's are down would be to rehabilitate one or more of the six (6) multiple hearth incinerators, which were abandoned in 2004 and install high solids centrifuges. St. Louis upgraded 7 MHI's at a nominal cost of $13 million in 2015. Detroit, the nation's largest WWTP with a more complex modifications, upgraded 8 MHI's at a cost of $38 million. Their MHI's date back to the late 1960's and early 1970's. Combined Detroit and St. Louis spent $51 million to upgrade 15 MHI's. The average MHI upgrade cost for Detroit & St, Louis is $3.4 million/MHI (= $51/15), which would be $20.4 million for six MHIs. Now, MCES wants to spend $150 million to build one new fluid bed incinerator; while 6 MHI's sit abandoned and this is on top of having already spent $178 million for the new incinerator complex in 2004 ($160 million) and piping repairs ($17.9 Million) in 2012. MCES should look at rebuilding either MHI 5 or 6, without steam boilers for backup, which is what MHI 5 & 6 were intended for. What is the 20 year present worth difference between processing using a rebuilt MHI at the Metro MHI and building a new $150 million FB, including costs for ash abrasion pipe wear? Are engineers following MHI manufacture's procedures to inspect a MHI and have engineers conducted previous structural & mechanical MHI inspections according to manufactures' procedures?**

   The Metropolitan St. Louis Sewer District (STLMSD) rehabbed their multiple hearths at the Bissell & Lemay Wastewater Treatment Facility to meet federal air emission standards but currently have a consent decree which outlines replacement of the multiple hearth incinerators. STLMSD plans to replace the multiple hearths with fluidized bed incinerators with an estimated project cost of $420 million.

   In 2015 Great Lakes Water Authority (GLWA) completed a $680 million design-build-operate-maintain contract for a 316-dry ton per day biosolids dryer facility which replaced six of the 14 multiple hearth incinerators. The GLWA rehabbed eight of the remaining multiple hearth incinerators to process excess solids not processed in the dryer facility.

   The 2001 consent decree required shutdown of the multiple hearth incinerators and replacement with the fluidized bed incinerators. The Council does not consider rehabilitating the existing multiple hearth incinerators a viable alternative for this facility plan.

4) **Another alternative Is use simply to continue to landfill any excess biosolids, which can't be handled by any combination of using Seneca MHI, Seneca NVIRO and/or Metro MHI. My understanding is that the annual landfill cost is $400,000; while the annual FB maintenance cost is $1+ million. Simply, it is not appear to be cost effective to spend $150 million for a new FB, to eliminate an annual $400,000 landfill cost, when the annual maintenance cost for the FB is greater than the cost of landfilling. What is the 20 year present worth difference between landfill of biosolids disposal and building a new $150 million FB?**

   Landfilling sludge is inconsistent with the Council's Wastewater Sustainability Policy (Thrive MSP 2040 Water Resources Policy Plan). Landfilling of sludge is utilized by the Council as an emergency backup for wastewater solids processing technologies such as thermal processing or anaerobic digestion. The Council does not consider landfilling of sludge to be a viable alternative for processing wastewater solids and it will not be evaluated.

5) **MCES should evaluate using any combination: of landfilling, N-Viro land application, Seneca MHI, Metro MHI before spending $300 million on capital and interest costs for a new FBI. For example, if N-Viro capacity is not sufficient, it would be possible to landfill or process in Seneca MHI any excess biosolids.**

The Council will not evaluate a combination of alternatives that it considers are not viable.

Spending an additional $300+ million (capital + interest) for a new FB is unacceptable and shows a complete disregard for ratepayers, while the N-Viro at Seneca, one MHI at Seneca and six Metro MHI's are not being used.

The alternatives analysis completed for this facility plan considered multiple factors with a focus on economic considerations, sustainability, and community impacts. Adding a fourth incinerator was found to cost 50% less to construct, operate, and maintain than any other solids treatment alternative. Although the fourth incinerator is a large project, the Council spends roughly $140 million per year on its capital program and the fourth incinerator and renewal costs will be spread over multiple years. The projects were carefully timed with other capital projects to not have a significant impact on rates which are estimated at a 0.2% increase or $0.40 per household per year.

The proposed design of the FB air pollution control system is questionable.

6) **The use of carbon injection with bagfilters to remove mercury has been determined by the EPA to be not cost effective. No other city has installed this type of system. What is the benefit cost ratio for the carbon injection system with bagfilters? How does the Metro Plant carbon injection benefit cost ratio compare the EPA's analysis of carbon injection for mercury removal? Why is this being installed, when other cities do not have to install and pay for this process?**

Carbon injection and with bag filters were installed to provide significant net environmental benefit as part of the requirements under the 2001 consent decree. Since that time, this system has demonstrated that it can meet the most stringent air emission standards established for new fluidized bed incinerators while achieving the lowest levels of mercury in the plant effluent.

7) **This air pollution control design system has been proven to have significant ash abrasion and leakage problems. Why is MCES duplicating this air pollution control system, with all these proven ash abrasion and ash leakage problems?**

The Council has implemented improvements on the existing system to address observed erosion and corrosion issues. These and additional improvements that will be implemented for the fourth incinerator are outlined in the Draft Facility Plan.

In the late 1990's the EPA sued the Met Council for its operation of the MHI's and MCES's solution was to build a new $200 million fluid bed incinerator complex. The Honorable Federal Judge Donovan Frank in the case CV No. 99-1105 of United States of America v. Metropolitan Council stated "the proposed settlement will among other things, require the Met to: (i) accelerate its planned installation of new pollution-reducing fluidized bed incinerators at the Metro WWTP, at an estimated cost of $200 million…". Now, it appears that the total capital cost is well in excess of $200 million.

8) **What is the total cost for the four fluid bed incinerator facility in terms of 2001$ and 2018$; costs including, the initial construction for 3 FB (~$160 M), repairs in 2012 (~$18 M), 4th FB ($150 M), repairs ($30M) and consultant engineering planning fees (CDM – Master Plan, Brown & Caldwell – MHI evaluations, CH2MHILL – Facility Plan, and B&V –**

Alternatives Evaluation)? I come up with a total capital cost of about $300M (2001$) and $428M (2018$) is this reasonable? I used the CPI to adjust yearly costs. The Honorable Federal Judge Donovan Frank appears to have been given underestimated capital costs of $200 million for the FB facility. Also, Judge Frank appears to have been given inflated Metro MHI rehab costs of $90+ million for 6 MHI; while Detroit and St. Louis spent $51 million to upgrade 15 MHI.

The installed capital cost of four fluidized bed incinerators would have been less than $200M (2005 dollars) if the fourth incinerator had originally been constructed with the initial project. The increased cost of building a fourth incinerator today is attributed to multiple factors, including additional mobilization and demobilization, building reconstruction, and various market factors. The cost of building four fluidized bed incinerators today is approximately $420M based on the STLMSD estimate given in response to Item 3 above.

9) **The MCES report on the 'Fourth Fluid Bed Incinerator' mentions that the Metro Plant MHI's were abandoned in 2005. The report needs to discuss in detail the complete history of what happened with the six Metro Plant MHIs. In brief, the EPA issued a Notice of Violation and then sued the Met Council in 1999 for not operating and maintaining the MHI's, with the settlement being the construction of the $200 million FB facility in 2001. The EPA never required the construction of the fluid bed incineration facility.**

   Installation of new fluidized bed incinerators and shutdown of the existing multiple hearth incinerators were specified in the 2001 consent decree. The history of the multiple hearth incinerators is not relevant to this facility plan and will not be included.

10) **Installing four fluid bed incinerators for $200 million is part of the Consent Decree, United States Civil Action No. 99-CV-1105. I wrote a public letter to Tom Weaver, Regional Administrator, on June 28, 2007 entitled, "Concealment of Documents to the Honorable Federal Judge Donovan Frank, Department of Justice {Joel Gross, James Lofton, Friedrich Siekert}, EPA {Steven Herman, Francis Lyons, and Mary McAuliffe}, MPCA, Metropolitan Council, & Environmentalists Concerning Federal Lawsuit, Action No. 99-CV-1105, United States vs. Metropolitan Council, Metropolitan Council Procedure 4-6d, Fraud, 9/2006". Tom Weaver never responded in writing to my public letter and I would like to know in writing, what actions were taken on this public letter, with copies sent to Judge Frank, EPA, and DOJ staff who signed the Consent Decree.**

    The 2001 consent decree between the Metropolitan Council and the EPA is not relevant to the Metro Plant Solids Management Improvements Draft Facility Plan. The 2001 consent decree (which was terminated by the federal court), addresses improvements that have already been made to the Metro Plant. The consent decree does not govern the proposed installation of a fourth incinerator at the Metro Plant.

3. **Dana Donatucci, PhD – University of Minnesota – (Letter is attached in Appendix D)**

   Dear Council Members:

   I participated in the public comment period regarding the replacement of the incinerators at the Metro plant in the late 1990's. Several citizens, RAM (Recycling Association of Minnesota) and I encouraged the Met Council to look at alternatives to incineration of the bio-solids particularly land application. This method was encouraged because of the

   growing concern of climate change resulting in increasing carbon dioxide emissions. Four incinerators were proposed at that time, but because of the interest in land application, it was rightly decided to replace only three of the incinerators and in lieu of the fourth incinerator, land application would be used. In the 20 years since that

decision was made, little to no land application of the bio-solids has occurred from the Metro Plant during maintenance of the other incinerators. Instead the solids have been landfilled which is the least desirable option based on the State's Waste Management Hierarchy. According to the Hierarchy, recycling (through Land Application or composting) is a better management strategy than either landfilling or incineration.

I'm writing to encourage the Met Council to reconsider land application of bio-solids instead of building a fourth incinerator to handle the bio-solids. We need to look at all options for sequestering carbon. Land application of bio-solids is a good way of taking recently captured carbon from the atmosphere (via food production) and sequestering the

resulting carbon-based waste (bio-solids) into the soil instead of returning the carbon to the atmosphere.

In the last twenty years local capacity to handle organics has increased significantly. When direct application of bio-solids is not possible, such as during the growing season, bio-solids could be processed through regional composting

operations. These operations did not exist in the late 90's when the Fluid Bed Incinerators were being proposed. I understand that the Seneca Plant does land apply some of their bio-solids so this process is not new regionally. This would be a much preferable option than landfilling of the bio-soilds that has been done in the past. Trucking costs to

move the bio-solids when needed to a composting facility or direct land application would be a much more cost-effective alternative for several centuries than building a fourth incinerator at the cost of $150 million.

One possible operation to consider is the organics processing facility at the Shakopee Mdewakanton Sioux Community's Organics Recycling Facility. They would be interested in discussing the possibilities with the Met Council since they are looking at expanding their operations. https://shakopeedakota.org/enterprises/organics-recycling-facility/

I encourage the Met Council Environmental Services to reconsider the economics of land application as a more sustainable option for our bio-solids and not build another incinerator. If you have questions or need additional information or clarification, feel free to contact me either by email: donat001@umn.edu or by phone: 651-490-9733.

Thank you for your consideration.

A lot has changed with solids processing technologies since the 1998 Facility Plan. The alkaline stabilization system was installed as an emergency backup for the three fluidized bed incinerators, but the cake storage and odor control facilities required for land application were deferred until commissioning of the fluidized bed incinerators was complete. After the fluidized bed incinerators were operational, the Council learned from talking with other wastewater utilities that alkaline stabilization installations at other wastewater utilities were being prematurely abandoned due to high operating costs and environmental concerns. The Council abandoned the land application program and focused increasing incineration efficiency and effectiveness. Note that controlled combustion conditions limit emissions from fluid bed incineration.

For this facility plan, the Council considered all alternatives equivalent with regards to greenhouse gas emissions because greenhouse gas emissions from wastewater treatment plants are insignificant compared to other sources in the Twin Cities Region in the State of Minnesota. Due to the short cycle of agriculture, carbon sequestration was found not to be a delineating factor in comparing the fate of residuals.

There are a lot of factors to evaluate when selecting and recommending a solids treatment technology for a particular wastewater treatment plant. MCES operates two plants that land apply biosolids, Blue Lake and Empire. Land application tends to be better suited for smaller plants which have closer access to agricultural areas. Incineration tends to be better suited for larger wastewater treatment plants located in urban environments. For the Metro Plant, continuing incineration by adding a fourth incinerator is the most cost-effective and sustainable alternative to meet the region's wastewater needs. It has the lowest community impact and will improve the reliability of the wastewater treatment system.

Metro Plant Solids Management Facility Plan

Stakeholders List

METROPOLITAN COUNCIL

Local Governments

Contact	Organization Name	Title	Communication History	Notes
Kathy Lantry 651-266-6099	City of Saint Paul – Public Works	Public Works Director	Open House Email 6/5/18 Open House Mailer 6/5/18 Public Hearing Email 7/31/18 Public Hearing Mailer 8/4/18 Public Hearing Email 8/24/18	
Paul Kurtz 651-266-6203	City of Saint Paul – Public Works	City Engineer	Open House Email 6/5/18 Open House Mailer 6/5/18 Public Hearing Email 7/31/18 Public Hearing Mailer 8/4/18 Public Hearing Email 8/24/18	
Beverly Farraher 651-266-9820	City of Saint Paul – Public Works	Operations Manager	Email - 5/14/18 by JC Open House Email 6/5/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	
Bruce Elder 651-266-6234	City of Saint Paul – Public Works	Sewer Division Manager	Email - 5/14/18 by JC In Person Meeting – 6/12/18 Open House Email 6/5/18 Open House Mailer 6/5/18 Public Hearing Email 7/31/18 Public Hearing Mailer 8/4/18 Public Hearing Email 8/24/18	6/12/18: See meeting notes.
Josh Williams 651-266-6659	City of Saint Paul – Plan & Econ Development	Senior Planner	In Person Meeting – 6/12/18 Public Hearing Email 7/31/18	6/12/18: See meeting notes.
Wes Saunders-Pearce 651-266-9112	City of Saint Paul – Safety and Inspections	Water Resource Coordinator	In Person Meeting – 6/12/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	6/12/18: See meeting notes.
Ricardo Cervantes 651-266-8989	City of Saint Paul – Safety and Inspections	Director	Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	
Jane Prince 651-266-8670	City of Saint Paul – City Council	Council Member – District 7	Email - 5/25/18 by TO Email 6/11/18 by TO Open House Email 6/5/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	
Rebecca Noecker 651-266-8620	City of Saint Paul – City Council	Council Member – District 2	Email - 5/25/18 by TO Email - 6/11/18 by TO Open House Email 6/5/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	6/13/18: Responded that they did not need a presentation at this time.

Metro Plant Solids Management Facility Plan

Stakeholders List

METROPOLITAN COUNCIL

Contact	Organization Name	Title	Communication History	Notes
Russ Stark 651-266-8511	City of Saint Paul – Mayor's Office	Chief Resilience Officer	In Person Meeting – 6/20/18	6/20/18: See meeting notes.
Robin Hutcheson 612-673-2443	City of Minneapolis – Public Works	Director of Public Works	Open House Email 6/5/18 Open House Mailer 6/5/18 Public Hearing Email 7/31/18 Public Hearing Mailer 8/4/18 Public Hearing Mailer 8/24/18	
Lisa Cerney 612-673-3061	City of Minneapolis – Public Works	Interim City Engineer	Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	
Katrina Kessler 612-673-3038	City of Minneapolis – Public Works	Director of Surface Water and Sewers	Email - 5/14/18 by JC Open House Email 6/5/18 Open House Mailer 6/5/18 Public Hearing Email 7/31/18 Public Hearing Mailer 8/4/18 Public Hearing Email 8/24/18	
Rafael Ortega 651-266-8361	Ramsey County	Commissioner – District 5 Ramsey County Commissioner Assistant	Email - 5/25/18 by TO Email - 6/11/18 by TO Open House Email 6/5/18 Open House Mailer 6/5/18 Public Hearing Email 7/31/18 Public Hearing Mailer 8/4/18 Public Hearing Email 8/24/18	
Ken Iosso 651-266-8367	Ramsey County	District 5 Commissioner Assistant	Open House Mailer 6/5/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	6/13/18: Ken attended the open house to gauge interest and feedback about the project. Did not appear to have any issues with the project and it made sense.
Jim McDonough 651-266-8350	Ramsey County	Commissioner – District 6	Email - 5/25/18 by TO Open House Mailer 6/5/18 Open House Email 6/5/18 Email - 6/11/18 by TO In Person Meeting – 6/29/18 Public Hearing Email 7/31/18 Public Hearing Mailer 8/4/18 Public Hearing Email 8/24/18	6/20/18: See meeting notes.
Pat Dunn 651-554-3245	City of South Saint Paul	Public Works Director	Email - 5/14/18 by JC Open House Mailer 6/5/18 Open House Email 6/5/18 Public Hearing Email 7/31/18 Public Hearing Mailer 8/4/18 Public Hearing Email 8/24/18	

Metro Plant Solids Management Facility Plan

Stakeholders List

METROPOLITAN COUNCIL

Contact	Organization Name	Title	Communication History	Notes
Chris Hartzell 651-554-3210	City of South Saint Paul	City Engineer	Email - 5/14/18 by JC Email - 6/4/18 by JC Open House Email 6/5/18 Public Hearing Email 7/31/18 Public Hearing Mailer 8/4/18 Public Hearing Email 8/24/18	5:30/18: Chris responded about impacts to South Saint Paul including odors and future treatment costs. 6/4/18: Jeannine responded with no additional odors will be generated, lowest number of trucks, lowest cost, and no significant rate increase.
Sheldon Johnson 651-296-4201	Minnesota House	State Representative District 67B	Email - 5/25/18 by TO Email - 6/11/18 by TO Open House Email 6/5/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	
Foung Hawj 651-296-5285	Minnesota Senate	State Senator District 67	Email - 5/25/18 by TO Email - 6/11/18 by TO Open House Email 6/5/18 Public Hearing Email 7/31/18 Public Hearing Mailer 8/4/18 Public Hearing Email 8/24/18	

Rate Payer Organizations

David Unmacht 651-281-1205	League of MN Cities	Executive Director	Open House Email 6/5/18 Open House Mailer 6/5/18 Public Hearing Email 7/31/18 Public Hearing Mailer 8/4/18 Public Hearing Email 8/24/18	
Craig Johnson 651-281-1259	League of MN Cities	Government Liaison	Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	
Patricia Nauman 651-215-4002	Metro Cities	Executive Director	Open House Email 6/5/18 Open House Mailer 6/5/18 Public Hearing Email 7/31/18 Public Hearing Mailer 8/4/18 Public Hearing Email 8/24/18 In Person Meeting – 8/20/18	8/20/18: See meeting notes.
Steven Huser 651-215-4003	Metro Cities	Government Relations Specialist	Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	
Kimberly Ciarrocchi 651-215-4004	Metro Cities	Office Manager	Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	
Customer Communities			Project Presented at 5/24/18 and 6/7/18 Customer Budget Workshops	
Industrial Waste Customers			Public Hearing Email 8/1/18	8/1/18: Sent to over 1,000 MCES industrial waste customers

Metro Plant Solids Management Facility Plan

Stakeholders List

METROPOLITAN COUNCIL

Regulatory Agencies

Name	Organization Name	Title	Communication History	Notes
Barb Naramore 651-259-5100	Department of Natural Resources	Assistant Commissioner	Email & Call - 5/23/18 by RJF Email – 6/5/18 by RJF Open House Email 6/5/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	5/23/18: Talked with Barb and sent her a follow-up email with the project brochure. She will let me know if they want a briefing. 6/4/18: Barb responded that did not see any obvious permitting issues from DNR. 6/5/18: Rebecca responded asking who to direct future communication with. 6/5/18: Barb responded and asked if Julie Ekman and Dan Lais could get updates.
Dan Lais 651-259-5766	Department of Natural Resources	Ecological & Water Resources Division	Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	
Julie Ekman 651-259-5674	Department of Natural Resources	Conservation Assistance and Regulations	Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	
Paul Allwood 651-201-5711	Department of Health	Assistant Commissioner	Email & Call - 5/23/18 by RJF Email – 5/29/18 by RJF Open House Email 6/5/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	5/23/18: Left a voicemail. Sent follow-up email with the project brochure. Asked them to let me know if they want a briefing. 5/24/18: Paul responded asking whether the project would go through EAW/EIS. 5/29/18: Responded that MCES would be a discretionary EAW.
Tom Hogan 651-201-4675	Department of Health	Director Environmental Health Division	Email & Call - 5/23/18 by RJF Email – 5/29/18 by RJF Email – 6/5/18 by RJF Open House Email 6/5/18 Open House Mailer 6/5/18 Public Hearing Email 7/31/18 Public Hearing Mailer 8/4/18 Public Hearing Email 8/24/18	5/23/18: Left a voicemail. Sent follow-up email with the project brochure. Asked them to let me know if they want a briefing. 5/24/18: Tom responded asking whether the project would go through EAW/EIS. 5/29/18: Rebecca responded that MCES would be a discretionary EAW. 5/30/18: Tom responded asking what level of public health assessment is included with the EAW. 6/5/18: Rebecca responded that MCES will complete a risk assessment spreadsheet. 6/13/18: Tom attended the open house.
James Kelly 651-201-4910	Department of Health	Environmental Health Division Director	Email – 5/30/18 by RH Email – 6/5/18 by RJF Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	5/25/18: Copied on David's comment 5/30/18: Received Rene's response to David. 5/30/18: Copied on Tom's Email 6/5/18: Received Rebecca's response to Tom.
David Bell 651-201-4907	Department of Health	Environmental Impact Analysis	Email – 5/30/18 by RH	5/25/18: Emailed asking whether an EAW will be completed for the project. 5/30/18: Responded that MCES has completed a voluntary EAW and will be included with the facility plan.

Metro Plant Solids Management Facility Plan

Stakeholders List

METROPOLITAN COUNCIL

Name	Organization Name	Title	Communication History	Notes
Colonel Samuel L. Calkins 651-290-5300	Army Corps of Engineers	District Commander	Email & Call- 5/23/18 by RJF Open House Email 6/5/18 Open House Mailer 6/5/18 Public Hearing Email 7/31/18 Public Hearing Mailer 8/4/18 Public Hearing Email 8/24/18	5/23/18: Talked with Barbara Griffin (Col. Calkins assistant) and provided her with a follow-up email. She will pass it to the Col. And let appropriate USACE staff know.
Charles Wooley 612-713-5302	Fish and Wildlife Service	Deputy Regional Director Midwest Region	Email - 6/6/18 by RJF Open House Email 6/5/18 Open House Mailer 6/5/18 Public Hearing Email 7/31/18 Public Hearing Mailer 8/4/18 Public Hearing Email 8/24/18	6/6/18: Sent email with the project brochure. Asked him to let us know if they want a briefing.
John Anfinson 651-293-8432	National Parks Service	Park Superintendent	Email & Call - 5/23/18 by RJF Open House Email 6/5/18 Open House Mailer 6/5/18 Public Hearing Email 7/31/18 Public Hearing Mailer 8/4/18 Public Hearing Email 8/24/18	5/23/18: Left a voicemail. Sent follow-up email with the project brochure. Asked him to let me know if they want a briefing. 5/25/18: John responded that will discuss with staff and get back.
Alan Robbins-Fenger 651-293-8438	National Parks Service	Natural and Cultural Resources	Email - 6/5/18 by RJF Public Hearing Email 7/31/18 Public Hearing Mailer 8/4/18 Public Hearing Email 8/24/18	6/1/18: via email, Alan asked to be made point of contact and did not have any questions at this time. 6/5/18: Rebecca responded that he would be made point of contact.
Shannon Lotthammer 651-757-2537	Minnesota Pollution Control Agency	Assistant Commissioner	Email - 5/23/18 by RJF Open House Email 6/5/18 Open House Mailer 6/5/18 Public Hearing Email 7/31/18 Public Hearing Mailer 8/4/18 Public Hearing Email 8/24/18	5/23/18: Left a voicemail. Sent follow-up email with the project brochure. Asked them to let me know if they want a briefing.
David Thornton 651-757-2018	Minnesota Pollution Control Agency	Assistant Commissioner	Email - 5/23/18 by RJF Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	5/23/18: Left a voicemail. Sent follow-up email with the project brochure. Asked them to let me know if they want a briefing.
Steve Pak 651-757-2633	Minnesota Pollution Control Agency	Industrial Division	In Person Meeting – 5/24/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	5/24/18: Part of pre-application meeting, see meeting notes.
Helen Waquiu 651-757-2286	Minnesota Pollution Control Agency	Air Modeling	In Person Meeting – 5/24/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	5/24/18: Part of pre-application meeting, see meeting notes.
Bruce Braaten 507-206-2607	Minnesota Pollution Control Agency	Air Quality Permit Writer	In Person Meeting – 5/24/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	5/24/18: Part of pre-application meeting, see meeting notes.

Metro Plant Solids Management Facility Plan

Stakeholders List

METROPOLITAN COUNCIL

Name	Organization Name	Title	Communication History	Notes
Dan Card 651-757-2261	Minnesota Pollution Control Agency	Environmental Review	In Person Meeting – 5/24/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	5/24/18: Part of pre-application meeting, see meeting notes.
Chuck Petersen 651-757-2856	Minnesota Pollution Control Agency	Environmental Review	In Person Meeting – 5/24/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	5/24/18: Part of pre-application meeting, see meeting notes.
Nancy Drach 651-757-2317	Minnesota Pollution Control Agency	Environmental Review	In Person Meeting – 5/24/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	5/24/18: Part of pre-application meeting, see meeting notes.
Christine Steinwand 651-757-2327	Minnesota Pollution Control Agency	Air Policy	In Person Meeting – 5/24/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	5/24/18: Part of pre-application meeting, see meeting notes.
Amanda Smith 651-757-2486	Minnesota Pollution Control Agency	Air Policy	In Person Meeting – 5/24/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	5/24/18: Part of pre-application meeting, see meeting notes.
Hassan Bouchareb 651-757-2653	Minnesota Pollution Control Agency	Air Policy	In Person Meeting – 5/24/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	5/24/18: Part of pre-application meeting, see meeting notes.
Andrew Peek 612-253-4631	Federal Aviation Administration	Manager Minnesota Office	Email & Call - 5/23/18 by RJF Open House Email 6/5/18 Open House Mailer 6/5/18 Public Hearing Email 7/31/18 Public Hearing Mailer 8/4/18 Public Hearing Email 8/24/18	5/23/18: Left a voicemail. Sent follow-up email with the project brochure. Asked him to let me know if they want a briefing.

Metro Plant Solids Management Facility Plan

Stakeholders List

METROPOLITAN COUNCIL

Neighborhood Districts

Contact	Organization Name	Title	Communication History	Notes
Monica Bravo 651-293-1708 x301	Saint Paul District Council 3 – West Side	Executive Director	Email - 5/25/18 by TO Email - 6/11/18 by TO Open House Email 6/5/18 Open House Mailer 6/5/18 Public Hearing Email 7/31/18 Public Hearing Mailer 8/4/18 Public Hearing Email 8/24/18	
Jeanelle Foster 651-772-2075	Saint Paul District Council 4 – Dayton's Bluff	Board Chair	Email - 5/25/18 by TO Email - 6/11/18 by TO Open House Email 6/5/18 Open House Mailer 6/5/18 Public Hearing Email 7/31/18 Public Hearing Mailer 8/4/18 Public Hearing Email 8/24/18	
Jon Fure 651-221-0488	Saint Paul District Council 17 – Downtown	Executive Director	Email - 5/25/18 by TO Open House Email 6/5/18 Open House Mailer 6/5/18 Email – 6/12/18 by TO In Person Meeting – 7/17/18 Public Hearing Email 7/31/18 Public Hearing Mailer 8/4/18 Public Hearing Email 8/24/18	5/31/18: Jon Responded via email and recommended we present to the public realm committee. 7/17/18: Public Realm Committee notes, see meeting notes.
Betsy Mowry Voss 651-578-7600	Saint Paul District Council 1 – Battle Creek	Executive Director	Email - 5/25/18 by TO Open House Email 6/5/18 Open House Mailer 6/5/18 Email - 6/11/18 by TO Email - 6/15/18 by TO Public Hearing Email 7/31/18 Public Hearing Mailer Public Hearing Email 8/24/18	6/13/18: Betsy responded that thought it made sense to present to land use committee meeting in July or August. 6/15/18: Tim responded asking to be put on August 6th land use agenda. 7/27/18: Betsy responded something came up and schedule was too full to present, would follow up. 8/13/18: Betsy responded that they had not received any input from residents and did not need presentation at this time.

Metro Plant Solids Management Facility Plan

Stakeholders List

METROPOLITAN COUNCIL

Community Organizations

Contact	Organization Name	Title	Communication History	Notes
Mitch Lee 651-442-7698	3Hmong TV	Executive Producer	Email & Call - 5/30/18- by RJF Open House Email 6/5/18 Open House Mailer 6/5/18 Public Hearing Email 7/31/18 Public Hearing Mailer 8/4/18 Public Hearing Email 8/24/18	5/30/18: Talked with Mitch. Sent him the project brochure and open house information. He may want to bring cameras to the event.
Bao Vang 651-495-1507	Hmong American Partnership	President	Email & Call - 5/30/18- by RJF Open House Email 6/5/18 Open House Mailer 6/5/18 Public Hearing Email 7/31/18 Public Hearing Mailer 8/4/18 Public Hearing Email 8/24/18	5/30/18: Ms. Vang is out of the country until 6/25/18. Sent Ms. Vang the project brochure and open house info in case she can access it.
Mai Moua 612-245-6665	Hmong American Partnership	Chief Operating Officer	Email & Call - 5/30/18- by RJF Open House Email 6/5/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	5/30/18: Left a voicemail message for Dr. Mai Moua and asked her to call me back for further information. 5/30/18: Mai responded that are unable to provide feedback but keep posted on providing feedback in future.
Jonathan Palmer 651-224-4601	Hallie Q Brown Community Center	Executive Director	Email & Call - 5/30/18- by RJF Open House Email 6/5/18 Open House Mailer 6/5/18 Public Hearing Email 7/31/18 Public Hearing Mailer 8/4/18 Public Hearing Email 8/24/18	5/30:18: Talked with Jonathan. He seemed aware of the project already and said the link to the project info was out of date. Sent him project brochure, open house info and new link.
Alexis Walstad 651-202-3120	Karen Organization of Minnesota	Co-Executive Director	Email & Call - 5/30/18- by RJF Open House Email 6/5/18 Open House Mailer 6/5/18 Public Hearing Email 7/31/18 Public Hearing Mailer 8/4/18 Public Hearing Email 8/24/18	5/30/18: Talked with Alexis. I sent her project brochure, open house info. She asked if interpreters might be available. Did not know but would follow-up. Tim O'Donnell followed up and Spanish and karen interpreters were at the open house.
John Vaughn 651-288-8746	Eastside Neighborhood Development Center	Executive Director	Email & Call - 5/30/18- by RJF Open House Email 6/5/18 Open House Mailer 6/5/18 Public Hearing Email 7/31/18 Public Hearing Mailer 8/4/18 Public Hearing Email 8/24/18	5/30/18: Left John a voice message. Sent her project brochure and open house info.

Metro Plant Solids Management Facility Plan

Stakeholders List

METROPOLITAN COUNCIL

Contact	Organization Name	Title	Communication History	Notes
Daniel Rodriguez 651-771-9339	Merrick Community Center	Executive Director	Email & Call - 5/30/18- by RJF Open House Email 6/5/18 Open House Mailer 6/5/18 Public Hearing Email 7/31/18 Public Hearing Mailer 8/4/18 Public Hearing Email 8/24/18	5/30/18: Talked with Dan. Sent him project brochure and open house info.

Childs Road Businesses

Contact	Organization Name	Title	Communication History	Notes
Tony White 651-774-5937	Northern Metal Recycling	General Manager	Email - 6/5/18- by MK Open House Email 6/5/18 Open House Mailer 6/5/18 Public Hearing Email 7/31/18 Public Hearing Mailer 8/4/18 Public Hearing Email 8/24/18	
Mike Marsollek 651-772-4490	Pigs Eye Wood Recycling	Manager	Open House Mailer 6/5/18 Public Hearing Mailer 8/4/18	
Kyle Nodgaard 402-544-2029	Union Pacific	Manager Industrial & Public Projects	Email - 6/5/18- by MK Open House Email 6/5/18 Open House Mailer 6/5/18 Public Hearing Email 7/31/18 Public Hearing Mailer 8/4/18 Public Hearing Email 8/24/18	
Mark Duncan 651-776-5072	Aggregate Industries	Branch Manager	Email - 6/5/18- by MK Open House Email 6/5/18 Open House Mailer 6/5/18 Public Hearing Email 7/31/18 Public Hearing Mailer 8/4/18 Public Hearing Email 8/24/18	
Jim Krieger 651-778-3628	Canadian Pacific	Manager Public Works	Email - 6/5/18- by MK Open House Email 6/5/18 Open House Mailer 6/5/18 Public Hearing Email 7/31/18 Public Hearing Mailer 8/4/18 Public Hearing Email 8/24/18	
651-774-6600	Contanda			
Rick Remackel 651-774-9604	Hawkins		Email - 6/5/18- by MK Open House Mailer 6/5/18 Public Hearing Email 7/31/18 Public Hearing Mailer 8/4/18	

Contact	Organization Name	Title	Communication History	Notes
Holli VanOverbeke 651-438-5669	Flint Hills	Manager, Communication & Community Relations	Open House Invite 6/5/18	Postcard invitation RTS – attempted not known on 6/28.
Thor Becken 651-688-9520	Cemstone Products	President	Email - 6/5/18- by MK Open House Email 6/5/18 Open House Mailer 6/5/18 Public Hearing Email 7/31/18 Public Hearing Mailer 8/4/18 Public Hearing Email 8/24/18	

Environmental Advocacy Organizations

Contact	Organization Name	Title	Communication History	Notes
Whitney Clark 651-222-2193	Friends of the Mississippi River	Executive Director	Email & Call - 5/30/18 by RJF Open House Email 6/5/18 Open House Mailer 6/5/2018 Public Hearing Email 7/31/18 Public Hearing Mailer 8/4/2018 Public Hearing Email 8/24/18	5:30/18: Left Whitney a voicemail and sent him an email with the brochure and open house info. 5/30/18: Whitney responded and did not think they would have concerns and seemed straight forward.
Margaret Levin 612-659-9124	Sierra Club North Star Chapter	State Director	5/30/18 by RJF Open House Email 6/5/18 Open House Mailer 6/5/18 Public Hearing Email 7/31/18 Public Hearing Mailer 8/4/18 Public Hearing Email 8/24/18	5/30/18: Left Margaret a voicemail and sent her an email with the brochure and open house info.
Deanna White 612-623-3666	Clean Water Action	Minnesota Director	Email & Call - 5/30/10 by RJF Open House Email 6/5/18 Open House Mailer 8/4/2018 Public Hearing Email 7/31/18 Public Hearing Mailer 8/4/2018 Public Hearing Email 8/24/18	5/30/18: Left Deanna a voicemail and sent her an email with the brochure and open house info.
Christine Goepfert 612-270-8564	National Park Conservation Association	Senior Program Manager	Email & Call - 5/30/18 by RJF Open House Email 6/5/18 Open House Mailer 6/5/18 Public Hearing Email 7/31/18 Public Hearing Mailer 8/4/18 Public Hearing Email 8/24/18	5/30/18: Left Chris a voicemail and sent her an email with the brochure and open house info.

Metro Plant Solids Management Facility Plan

Stakeholders List

METROPOLITAN COUNCIL

Contact	Organization Name	Title	Communication History	Notes
Tim Schlagenhaft 651-739-9332	Audubon Society of St. Paul	Community Conservation Coordinator	Email & Call - 5/30/18 by RJF Open House Email 6/5/18 Open House Mailer 6/5/18 Public Hearing Email 7/31/18 Public Hearing Mailer 8/4/18 Public Hearing Email 8/24/18	5/30/18: Was not able to get ahold of Tim by phone. Sent him an email with the brochure and open house info.
Kathryn Hoffman 651-287-4863	MCEA	Chief Executive Officer	Email & Call - 5/30/18 by RJF Open House Email 6/5/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	5/30/18: Talked with Kathryn. She initially confused Metro with the Hennepin Co. Solids Waste Incineration Facility. Sent her an email with the brochure and open house info. She put us in touch with Kevin Lee to schedule an in-person meeting.
Kevin Lee 651-287-4865	MCEA	Staff Attorney	In Person Meeting – 6/28/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	6/28/18: See meeting notes.
Darrell Gerber	MCEA	Policy Analyst	In Person Meeting – 6/28/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	6/28/18: See meeting notes.
John Crampton 952-884-6704	Izaak Walton League Minnesota Valley	President	Email & Call - 5/30/18 by RJF Open House Email 6/5/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	5/30/18: Talked with John. He is no longer the chapter president. Sent him an email with the project brochure and open house info. He will reply with additional names to contact of current Ikes leadership.
Michael Noble 651-726-7563	Fresh Energy	Executive Director	Call – 12/17 Email & Call - 5/30/18 by RJF Open House Email 6/5/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	12/17: Initial outreach made by Trudy. 5/30/18: Left Michael a voicemail message and sent him an email with the project brochure and open house info.
Brendan Jordan 612-210-4703	Great Plains Institute	Vice-President	Call – 12/17 Email & Call - 5/30/18 by RJF Open House Email 6/5/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	12/17: Initial outreach made by Trudy. 5/30/18: Left Brendan a voicemail and sent him an email with the project brochure and open house info.
Nels Paulson 612-767-1567	Conservation Minnesota	Policy Director	Call – 12/17 Email & Call - 5/30/18 by RJF Open House Email 6/5/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	12/17: Initial outreach made by Trudy. 5/30/18: Left Nels a voicemail and sent him an email with the project brochure and open house info. 6/1/18: Nels responded and remembered project from initial outreach and everything made sense to him.
Steve Morse 651-290-0154	Minnesota Environmental Partnership	Executive Director	Email & Call - 5/30/18 by RJF Open House Email 6/5/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	5/30/18: Left Steve a voicemail and sent him an email with the project brochure and open house info.

Metro Plant Solids Management Facility Plan

Stakeholders List

METROPOLITAN COUNCIL

Email List

Contact	Organization Name	Title	Communication History	Notes
Luke Spaj	Rice Lake Construction		Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	Requested added to email list on 6/21/18
Ros Smallman	AcuComm		Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	Requested added to email list on 6/21/18
Greg Copeland	Individual		Public Hearing Email 8/24/18	Requested added to email list on 7/24/18 – Did not see request until 8/14/18

Internal

Contact	Organization Name	Title	Communication History	Notes
Leisa Thompson 651-602-8101	MCES -ESET	General Manager	Open House Email 6/5/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	
Karen Neis 651-602-1012	MCES -ESET	Director Administration	Open House Email 6/5/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	
Dan White 651-602-8299	MCES -ESET	Director Maintenance & Security	Open House Email 6/5/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	
Ned Smith 651-602-1162	MCES -ESET	Director Finance & Revenue	Open House Email 6/5/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	
Larry Rogacki 651-602-8225	MCES -ESET	Assistant General Manager Support Services	Open House Email 6/5/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	
Mike Merenes 651-602-8296	MCES -ESET	Assistant General Manager Operations	Open House Email 6/5/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	
Jeannine Clancy 651-602-1210	MCES -ESET	Assistant General Manager Technical Services	Open House Email 6/5/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	
Sam Paske 651-602-1015	MCES -ESET	Assistant General Manager Environmental Quality Assurance	Open House Email 6/5/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	
Alene Tchourumoff 651-602-1453	Met Council	Chair	Open House Email 6/5/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	

Metro Plant Solids Management Facility Plan

Stakeholders List

METROPOLITAN COUNCIL

Contact	Organization Name	Title	Communication History	Notes
Katie Rodriguez 612-616-3051	Met Council	Council Member	Open House Email 6/5/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	
Lona Schreiber 763-424-8081	Met Council	Council Member	Open House Email 6/5/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	
Jennifer Munt 952-933-1537	Met Council	Council Member	Open House Email 6/5/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	
Deb Barber 612-819-0848	Met Council	Council Member	Open House Email 6/5/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	
Steve Elkins 612-578-2103	Met Council	Council Member	Open House Email 6/5/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	
Gail Dorfman 612-998-5214	Met Council	Council Member	Open House Email 6/5/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	
Gary Cunningham 612-259-6568	Met Council	Council Member	Open House Email 6/5/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	
Cara Letofsky 612-718-3495	Met Council	Council Member	Open House Email 6/5/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	
Edward Reynoso 612-331-3456	Met Council	Council Member	Open House Email 6/5/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	
Marie McCarthy 763-792-2392	Met Council	Council Member	Open House Email 6/5/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	
Sandy Rummel 651-429-5480	Met Council	Council Member	Open House Email 6/5/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	
Harry Melander 612-865-3585	Met Council	Council Member	Open House Email 6/5/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	
Richard Kramer 651-774-4971	Met Council	Council Member	Open House Email 6/5/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	
Jon Commers 651-645-4644	Met Council	Council Member	Open House Email 6/5/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	

Metro Plant Solids Management Facility Plan

Stakeholders List

METROPOLITAN COUNCIL

Contact	Organization Name	Title	Communication History	Notes
Steven Chavez 612-670-8952	Met Council	Council Member	Open House Email 6/5/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	
Wendy Wuff 952-484-3353	Met Council	Council Member	Open House Email 6/5/18 Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	
Lesley Kandaras 651-602-1609	Met Council	Special Projects Manager	Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	
Jennifer O'Rourke 651-602-1576	Met Council	Community Relations Director	Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	
Emily Getty 651-602-1390	Met Council	Executive Assistant	Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	
Meredith Vadis 651-602-1567	Met Council	Regional Administrator	Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	
Kate Brickman 651-602-1518	Met Council	Director Communications	Public Hearing Email 7/31/18 Public Hearing Email 8/24/18	

GOD RECYCLES-THE DEVIL BURNS

August 29, 2018

Metropolitan Council

390 North Robert Street

St. Paul, MN 55101

RE: *Metropolitan Council Environmental Services Public Hearing: Metro Plant Solids Management Improvements Draft Facility Plan*

Please note that I was an active member of the Met.Council/City of Eagan Seneca Plant Citizen Advisory Board for several years in the 1990's. At that time, to obtain expansion development approvals from the City of Eagan, the Met.Council publicly agreed to land apply a substantial portion of the mixed Seneca and Metro plants sludge. At great effort and public expense a land application processing facility was built at the Seneca plant and used to coordinate the distributions of sludge fertilizer to local farmers and agricultural facilities.

My fellow Citizen Advisory Board members, at great voluntary effort, assisted in the development and coordination of these land application procedures. As part of an extensive community outreach, we developed a long waiting list of local farms and agricultural facilities desiring these valuable public resource land applications. These procedures worked so well that many of these facilities agreed to store these valuable land application materials at their own expense so the processes could be run beyond seasonal time periods.

As part of the disbanding of Met.Council/City of Eagan Seneca Plan Citizen Advisory Board the members were to be directly noticed to any proposed changes in the Metro/Seneca land application procedures. I was not noticed as to any changes and to the best of my knowledge neither was the other half dozen citizen volunteer board members.

For the record, the Met.Council/City of Eagan Seneca Plant Citizen Advisory Board, including your public servant staff members Rebecca Flood and Bryce Pickart, met weekly extensively working for several years to directly resolve the land application v. incineration environmental issues. It was then jointly concluded and agreed that:

1. Lead, cadmium, mercury and other heavy metals belong on the ground not in the air

2. Ingesting incinerated toxic air borne heavy metals causes brain damage, cancer and disease

3. The economic cost benefits of land application out way those of the incineration of a publicly desired and valuable resource that should benefit the local agricultural industry

The proposed 4th Metro plant incinerator, without any previously agreed upon land applications, is governed by an United States District Court of Minnesota (USDC-MN) consent decree which appears to have been fraudulently obtained and executed in additional violation of the National Environmental Policy Act (see enclosed-Docket #16 letter to USDC-MN Judge Frank-Clean Air Act Case-0:99-cv-01105 USA v. Metropolitan Council).

It is my understanding that the cited supplemental environmental project (SEP) presented to the Court and Judge Frank involving carbon injection was in fact rejected and banned by Federal regulators. Rebecca Flood knowing committed perjury in her sworn support affidavit regarding that SEP, consent decree and related environmental regulation compliances thereby obstructing due process justice. As such, I request that those complete Federal case files (including the original complaint, hearing minutes and Flood's affidavit sworn under penalties of perjury-Docket #26) be added to the official record and made available for public review with an extended comment period for 4th incinerator proposal.

From an economic, environmental, and public policy rational viewpoint, there is no logical pending need for 4th Metro Plant incinerator costing the taxpayers $150,000,000 when viable, environmental friendly, less expensive sludge disposal alternatives by land application have already been established. Based upon these facts, I request that all previous land application information and agreements developed by the Met.Council/City of Eagan Seneca Plant Citizen Advisory Board be incorporated and implemented into this plan.

I additionally request that these issues be immediately brought before the City of Eagan and the USDC-MN court of record for compliance reviews of all presiding laws and prior agreements. To mitigate further potential damages regarding these matters, kindly have your attorneys of record at Dorsey & Whitney contact me by telephone at their earliest convenience.

Sincerely,

s/John Westley
3432 Denmark Ave. #188
Eagan MN 55123
305-731-5500

UNITED STATES DISTRICT COURT
DISTRICT OF MINNESOTA

United States of America,

Plaintiff,

vs.

Metropolitan Council,

Defendant.

Civil File No. 99-CV-1105

AFFIDAVIT IN SUPPORT OF PETITION FOR TERMINATION OF CONSENT DECREE

STATE OF MINNESOTA)
) ss.
COUNTY OF RAMSEY)

REBECCA J. FLOOD, being duly sworn, deposes and states as follows:

1. I am Environmental Compliance Section Manager for the Metropolitan Council ("Met"), located at 230 East Fifth Street, Saint Paul, Minnesota 55101. I have been directly involved in implementing the Consent Decree requirements in the above-captioned proceeding. I have personal knowledge of all facts set forth below, except where indicated otherwise.

2. Met certified compliance with all requirements of the Consent Decree in writing to the United States by letter dated June 9, 2005 ("Compliance Certificate"). The Compliance Certificate was sent by certified mail, return receipt requested, to the following persons as designated in Section XVII (Notices), paragraph 66, of the Consent Decree:

Chief
Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
P.O. Box 7611, Ben Franklin Station
Washington D.C. 20044

and

Chief
Air Enforcement and Compliance Assurance Branch
Air and Radiation Division, AE-17J
U.S. Environmental Protection Agency
Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

The certified mail return receipts indicate that the Department of Justice and the Environmental Protection Agency received the written Compliance Certificate on June 13 and June 16, 2005, respectively. Attached to this affidavit as Exhibit 2B are true and correct photocopies of the certified mail return receipts.

3. As of the date of this affidavit, the United States has not provided Met with any notice (written or otherwise) of opposition to the Met's Compliance Certificate.

4. Attached to this affidavit as Exhibit 2A is a true and correct photocopy of the Metropolitan Council's Compliance Certificate with respect to the requirements of the Consent Decree in the above-captioned matter.

s/ Rebecca J. Flood
REBECCA J. FLOOD

Subscribed and sworn to before me
this 17th day of October, 2005.

s/ Lu Anne L. Major
Notary Public

formed –

JUL 16 2001

ALL FOR THE EARTH

1747 Blue Bill Dr.
St. Paul MN 55122

July 14, 2001

Judge Donovan Frank
US District Court
316 Robert St.
St. Paul MN 55101

Re: Civil Action #99-CV-1105
USA v. Met. Council

Please note that we are dismayed to learn about the consent degree approval. For many years we have worked with other citizen groups and environmental organizations, including Earth Protector, to facilitate the reduction of harmful emissions and pollutants by the Met. Council.

Enclosed are some of the numerous requests made for information regarding the violations of the Clean Air Act and EPA findings based in the complaint. Also, enclosed are the denials for access to this information by the Met. Council citing legal protections under this civil litigation. The attempt to suppress opposing viewpoints using the proceedings in your court as justification for continued environmental degradations and pollution undermines the basic protections of our democracy.

We have met with the Met. Council Environmental Services on dozens of occasions and I have personally sat on public advisory committees and mediation boards with them. The records clearly show the interest in this project and the legal proceedings. Frustratingly, we were never told of the opportunity to provide the court public comments until after the execution of the decree. Also. their refusal to provide us with the information necessary to make informative public comments to your court is simply unjust and requires corrective action.

The consent decree entered by the court included a SEP for dry ESP's that had already been documented, detailed and planned for in the Met. Council's Facility Master Plans well prior to the start of this case. The Met. Council's fraudulent misrepresentations that it would not otherwise be implementing this so-called 'supplemental' environmental project must be exposed. Their attempts to dupe the EPA, your court, and the general public is cause for strong legal sanctions, further civil penalties, and criminal prosecutions.

It is unfortunate that these matters must be brought to your attention now but good conscience demands a court ordered review to insure that the integrity of our environmental laws and judicial systems are preserved. A court order allowing access to the complete Met. Council case records is respectfully requested so that we may finally be allowed to provide informed public comment to the court. We are available at the court's convenience to submit the specific concerns with the decree. Your consideration of these difficult issues is appreciated.

Sincerely,

John Westley
Director

16

8/7/01

FILED
RICHARD D. SLETTEN, CLERK
JUDGMENT ENTD
DEPUTY CLERK

September 6, 2018

To: Metropolitan Council

Re: Metro Plant Fourth Fluid Bed Incinerator Project for $150 million – Delay or Stop It.
U.S. Consent Decree Civil Action No.99-CV-1105

The proposed fourth Metro Plant Fluid Bed Incinerator for the Metro Plant at a capital cost of $150 Million should be stopped or delayed for multiple reasons.

Alternative means to dispose of biosolids when the FB's are down need evaluation, prior to spending over $300 million for capital & interest costs, considering that the annual landfill costs are about $400,000 per year and the FB maintenance cost is over $1 million/yr.

1. Trucking biosolids to Seneca WWTP to be processed using Seneca's back-up multiple hearth incinerator needs to be an alternative. Trucking biosolids to Seneca is a shorter distance than to the landfill, which is west of the Metro Area. What is the 20 year present worth difference between trucking and processing biosolids at the Seneca MHI and building a new $150 million FB, including costs for ash abrasion pipe wear?

2. Trucking biosolids to Seneca and using N-Viro, stabilization for land application needs to be evaluated. Seneca has sludge load-in capability, as Seneca took sludge Blue Lake WWTP when it's solids handling facilities where being built. The N-Viro sludge stabilization process has not been used, since the early 1990's. New belt presses would need to be installed, as the original belt presses were moved to Eagan. Using the N-Viro process would fulfill the promise that the Met Council made in the late 1990's after the public hearings on biosolids disposal stating that about 15 to 20% of the Metro Plant biosolids would be land applied. This is why the Council elected to build 3 fluid bed incinerators with supplemental land application, instead of four FB's. Land application of Metro Plant biosolids was never was done by MCES, since 2004. Met Council staff can go back and review the historical decisions on this. I attended the late 1990's public Council hearings on Metro Plant biosolids and know what decisions were made. What is the 20 year present worth difference between biosolids processing at Seneca NVIRO and building a new $150 million FB, including costs for ash abrasion pipe wear?

3. Another possible means to dispose of biosolids, when the FB's are down would be to rehabilitate one or more of the six (6) multiple hearth incinerators, which were abandoned in 2004 and install high solids centrifuges. St. Louis upgraded 7 MHI's at a nominal cost of $13 million in 2015. Detroit, the nation's largest WWTP with a more complex modifications, upgraded 8 MHI's at a cost of $38 million. Their MHI's date back to the late 1960's and early 1970's. Combined Detroit and St. Louis spent

$51 million to upgrade 15 MHI's. The average MHI upgrade cost for Detroit & St, Louis is $3.4 million/MHI (= $51/15), which would be $20.4 million for six MHIs. Now, MCES wants to spend $150 million to build one new fluid bed incinerator; while 6 MHI's sit abandoned and this is on top of having already spent $178 million for the new incinerator complex in 2004 ($160 million) and piping repairs ($17.9 Million) in 2012. MCES should look at rebuilding either MHI 5 or 6, without steam boilers for backup, which is what MHI 5 & 6 were intended for. What is the 20 year present worth difference between processing using a rebuilt MHI at the Metro MHI and building a new $150 million FB, including costs for ash abrasion pipe wear? Are engineers following MHI manufacture's procedures to inspect a MHI and have engineers conducted previous structural & mechanical MHI inspections according to manufactures' procedures?

4. Another alternative Is use simply to continue to landfill any excess biosolids, which can't be handled by any combination of using Seneca MHI, Seneca NVIRO and/or Metro MHI. My understanding is that the annual landfill cost is $400,000; while the annual FB maintenance cost is $1+ million. Simply, it is not appear to be cost effective to spend $150 million for a new FB, to eliminate an annual $400,000 landfill cost, when the annual maintenance cost for the FB is greater than the cost of landfilling. What is the 20 year present worth difference between landfill of biosolids disposal and building a new $150 million FB?

5. MCES should evaluate using any combination: of landfilling, N-Viro land application, Seneca MHI, Metro MHI before spending $300 million on capital and interest costs for a new FBI. For example, if N-Viro capacity is not sufficient, it would be possible to landfill or process in Seneca MHI any excess biosolids.

Spending an additional $300+ million (capital + interest) for a new FB is unacceptable and shows a complete disregard for ratepayers, while the N-Viro at Seneca, one MHI at Seneca and six Metro MHI's are not being used.

The proposed design of the FB air pollution control system is questionable.

6. The use of carbon injection with bagfilters to remove mercury has been determined by the EPA to be not cost effective. No other city has installed this type of system. What is the benefit cost ratio for the carbon injection system with bagfilters? How does the Metro Plant carbon injection benefit cost ratio compare the EPA's analysis of carbon injection for mercury removal? Why is this being installed, when other cities do not have to install and pay for this process?

7. This air pollution control design system has been proven to have significant ash abrasion and leakage problems. Why is MCES duplicating this air pollution control system, with all these proven ash abrasion and ash leakage problems?

In the late 1990's the EPA sued the Met Council for its operation of the MHI's and MCES's solution was to build a new $200 million fluid bed incinerator complex. The Honorable Federal Judge Donovan Frank in the case CV No. 99-1105 of United States of America v. Metropolitan Council stated "the proposed settlement will among other things, require the Met to: (i) accelerate its planned installation of new pollution-reducing fluidized bed incinerators at the Metro WWTP, at an estimated cost of $200 million…". Now, it appears that the total capital cost is well in excess of $200 million.

8. What is the total cost for the four fluid bed incinerator facility in terms of 2001$ and 2018$; costs including, the initial construction for 3 FB (~$160 M), repairs in 2012 (~$18 M), 4th FB ($150 M), repairs ($30M) and consultant engineering planning fees (CDM – Master Plan, Brown & Caldwell – MHI evaluations, CH2MHILL – Facility Plan, and B&V – Alternatives Evaluation) ? I come up with a total capital cost of about $300M (2001$) and $428M (2018$) is this reasonable? I used the CPI to adjust yearly costs. The Honorable Federal Judge Donovan Frank appears to have been given underestimated capital costs of $200 million for the FB facility. Also, Judge Frank appears to have been given inflated Metro MHI rehab costs of $90+ million for 6 MHI; while Detroit and St. Louis spent $51 million to upgrade 15 MHI.

9. The MCES report on the 'Fourth Fluid Bed Incinerator' mentions that the Metro Plant MHI's were abandoned in 2005. The report needs to discuss in detail the complete history of what happened with the six Metro Plant MHIs. In brief, the EPA issued a Notice of Violation and then sued the Met Council in 1999 for not operating and maintaining the MHI's, with the settlement being the construction of the $200 million FB facility in 2001. The EPA never required the construction of the fluid bed incineration facility.

10. Installing four fluid bed incinerators for $200 million is part of the Consent Decree, United States Civil Action No. 99-CV-1105. I wrote a public letter to Tom Weaver, Regional Administrator, on June 28, 2007 entitled, "Concealment of Documents to the Honorable Federal Judge Donovan Frank, Department of Justice {Joel Gross, James Lofton, Friedrich Siekert}, EPA {Steven Herman, Francis Lyons, and Mary McAuliffe}, MPCA, Metropolitan Council, & Environmentalists Concerning Federal Lawsuit, Action No. 99-CV-1105, United States vs. Metropolitan Council, Metropolitan Council Procedure 4-6d, Fraud, 9/2006". Tom Weaver never responded in writing to my public letter and I would like to know in writing, what actions were taken on this public letter, with copies sent to Judge Frank, EPA, and DOJ staff who signed the Consent Decree.

Sincerely,

Steven Greenwood
1111 Argyle St.
St. Paul, MN 55103

September 9, 2018

Metropolitan Council
390 Robert Street N
Saint Paul, MN

Dear Council Members:

I participated in the public comment period regarding the replacement of the incinerators at the Metro plant in the late 1990's. Several citizens, RAM (Recycling Association of Minnesota) and I encouraged the Met Council to look at alternatives to incineration of the bio-solids particularly land application. This method was encouraged because of the growing concern of climate change resulting in increasing carbon dioxide emissions. Four incinerators were proposed at that time, but because of the interest in land application, it was rightly decided to replace only three of the incinerators and in lieu of the fourth incinerator, land application would be used. In the 20 years since that decision was made, little to no land application of the bio-solids has occurred from the Metro Plant during maintenance of the other incinerators. Instead the solids have been landfilled which is the least desirable option based on the State's Waste Management Hierarchy. According to the Hierarchy, recycling (through Land Application or composting) is a better management strategy than either landfilling or incineration.

I'm writing to encourage the Met Council to reconsider land application of bio-solids instead of building a fourth incinerator to handle the bio-solids. We need to look at all options for sequestering carbon. Land application of bio-solids is a good way of taking recently captured carbon from the atmosphere (via food production) and sequestering the resulting carbon-based waste (bio-solids) into the soil instead of returning the carbon to the atmosphere.

In the last twenty years local capacity to handle organics has increased significantly. When direct application of bio-solids is not possible, such as during the growing season, bio-solids could be processed through regional composting operations. These operations did not exist in the late 90's when the Fluid Bed Incinerators were being proposed. I understand that the Seneca Plant does land apply some of their bio-solids so this process is not new regionally. This would be a much preferable option than landfilling of the bio-soilds that has been done in the past. Trucking costs to move the bio-solids when needed to a composting facility or direct land application would be a much more cost effective alternative for several centuries than building a fourth incinerator at the cost of $150 million.

One possible operation to consider is the organics processing facility at the Shakopee Mdewakanton Sioux Community's Organics Recycling Facility. They would be interested in discussing the possibilities with the Met Council since they are looking at expanding their operations. https://shakopeedakota.org/enterprises/organics-recycling-facility/

I encourage the Met Council Environmental Services to reconsider the economics of land application as a more sustainable option for our bio-solids and not build another incinerator. If you have questions or need additional information or clarification, feel free to contact me either by email: donat001@umn.edu or by phone: 651-490-9733.

Thank you for your consideration.

Sincerely,

Dana A. Donatucci

Dana A Donatucci, PhD
Waste Recovery and Recycling

Norton, Stephen

From: Metropolitan Council <METC@public.govdelivery.com>
Sent: Wednesday, June 6, 2018 3:33 PM
To: Norton, Stephen
Subject: Open House: Metropolitan Council Environmental Services Metro Plant Solids Management Facility Plan

Metropolitan Council Environmental Services Metro Plant Solids Management Facility Plan Open House

Open House

Wednesday, June 13, 2018
6:30 to 8:00 PM

Wellstone Center
Room 212
179 Robie Street East
Saint Paul, MN 55107

Metropolitan Council Environmental Services (MCES) will host an open house to discuss the upcoming Metro Plant Solids Management Facility Plan.

The Metropolitan Wastewater Treatment Plant (Metro Plant) is located three miles southeast of downtown Saint Paul. It treats 180 million gallons of wastewater every day for 66 communities and processes 850 wet tons of solids every day for 73 communities. The Metro Plant needs additional solids processing capacity to preserve existing wastewater treatment plant infrastructure and serve regional population growth. MCES proposes to construct a fourth incinerator, followed by renewal of existing incineration facilities which was found to be the most cost-effective and sustainable alternative to meet the region's wastewater needs.

Interested persons are encouraged and welcome to attend the open house. An invitation to the open house with more information about the project and event is attached. Free parking is available at the Wellstone Center in the attached parking garage. A formal presentation will begin at 6:45 PM and last for approximately 30 minutes. The rest of the open house, attendees are free to visit different stations, ask questions, and review informational materials. The open house will cover:

- Background and need for additional solids processing capacity at the Metro Plant
- Preliminary recommendations from Metro Plant Solids Management Facility Plan
- Community impact of additional solids processing capacity at the Metro Plant
- Schedule for Metro Plant Solids Management Facility Plan
- How solids processing works at the Metro Plant

More information about the project is available at the project website at www.metrocouncil.org/metrosolids.

Interested persons can also provide feedback, ask questions, and find out more information by:

- Project E-mail: info@metrosolids.com
- Project Hotline: 651-691-9124
- Mail: Tim O'Donnell - MCES, 390 Robert St. N., Saint Paul, MN 55101

Upon request, the Council will provide reasonable accommodations to persons with disabilities and interpretive resources at the open house. Please submit such requests to the project hotline or project email address stated above by June 11th.

- Metro+Solids+Open+House+Invitation+ADA.pdf -

STAY CONNECTED:

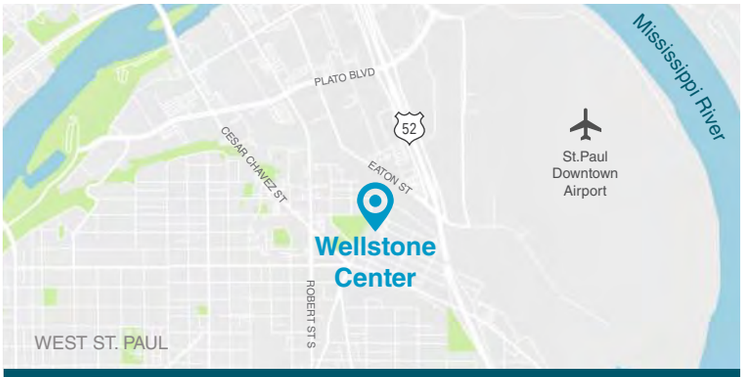
QUESTIONS? Contact Us

SUBSCRIBER SERVICES:
Manage Subscriptions | Unsubscribe All | Subscriber Help

Open House

Join Us!

Join Metropolitan Council Environmental Services for an open house on June 13th to learn about how solids are processed at the Metropolitan Wastewater Treatment Plant and plans to increase solids processing capacity.



Free parking available in the attached parking garage

June 13th
6:30 - 8:00 PM
Presentation begins at 6:45 PM

Wellstone Center
Room 212
179 Robie St. E.
St. Paul, MN 55107

METROPOLITAN COUNCIL

Metropolitan Council Environmental Services
390 Robert Street North
Saint Paul, MN 55101

Residents - Customers - Stakeholders

Join us for the Metro Plant Solids Management Facility Plan Open House

Learn More

(651) 691-9124

info@metrosolids.com

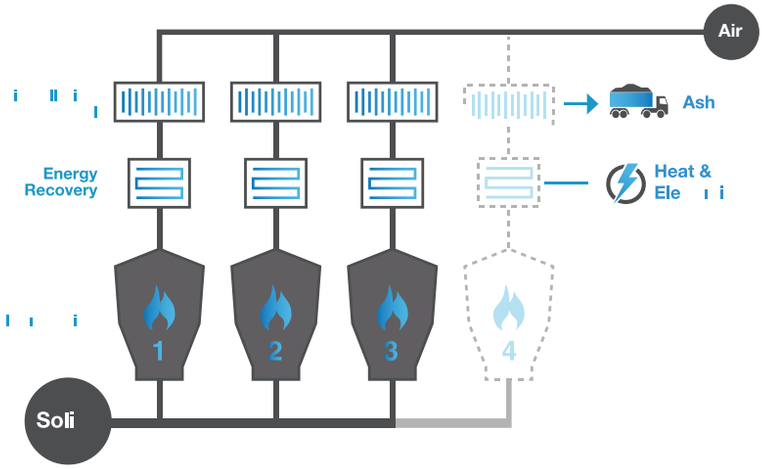
metrocouncil.org/metrosolids

Metro Plant Solids Management Facility Plan

Metropolitan Council Environmental Services (MCES) proposes to continue sustainable incineration at its Metropolitan Wastewater Treatment Plant (Metro Plant).

Project Overview

The project includes construction of a fourth incinerator, followed by renewal of existing incineration facilities. The fourth incinerator includes energy recovery, air pollution control, and related solids processing equipment.



Project Background

MCES employs the newest environmentally sustainable methods for processing solids removal from wastewater at the Metro Plant. The process eliminates bacteria, generates energy, and reduces solids disposal. The Metro Plant incineration system continues to have an exceptional track record of environmental compliance.

Project Need

The Metro Plant needs additional wastewater solids processing capacity to:

Preserve Existing Wastewater Treatment Plant Infrastructure

Planned renewal projects will require extended downtime of the existing incinerators.

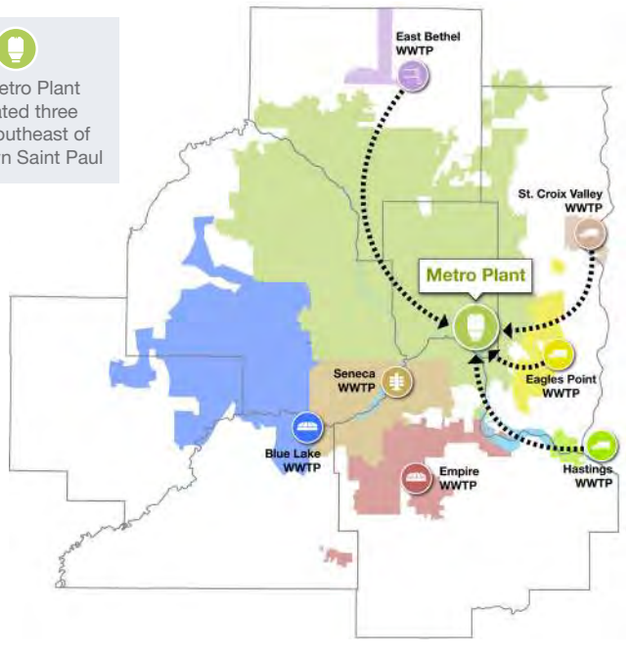
Serve Regional Population Growth

500,000 new residents in the Metro Plant service area by 2050 in the Twin Cities area.

Project Location

The Metro Plant treats 180 million gallons of wastewater every day for 66 communities (green area on map) and processes 850 wet tons of solids every day for 73 communities.

The Metro Plant is located three miles southeast of downtown Saint Paul



Project Schedule

MCES began planning in 2015. The fourth incinerator would be constructed by 2024, followed by renewal of existing facilities.

Learn More

Hotline: 651.691.9124 **Email:** info@metrosolids.com
Web: metrocouncil.org/metrosolids

MCES Mission

Provide wastewater services and integrated planning to ensure sustainable water quality and water supply for the region.

METROPOLITAN COUNCIL

METROPOLITAN COUNCIL

Metropolitan Council Environmental Services

OPEN HOUSE

Metro Plant Solids Management Facility Plan

Wednesday, June 13th, 2018
6:30 - 8:00 PM

Wellstone Center
Room 212
179 Robie St. E., Saint Paul

Agenda

6:30 PM **Open House**

Attendees are free to visit each station, ask questions, and review informational materials.

6:45 PM **Presentation**

The presentation will cover the following topics:

- Facility Plan
- How it Works (Wastewater Solids, Incineration, Energy Recovery, Air Pollution Control)
- Summary & Questions

7:15 PM **Open House**

Attendees are free to visit each station, ask questions, and review informational materials.

Submit Comments:

Hotline:
651.691.9124

Email:
info@metrosolids.com

Web:
metrocouncil.org/metrosolids

MCES Mission

Provide wastewater services and integrated planning to ensure sustainable water quality and water supply for the region.

METROPOLITAN COUNCIL

Metro Plant Solids Management Facility Plan
Open House Sign-In Sheet
June 13, 2018

Name	Organization
George Sprouse	MCES
Ken Iosso	Rausey County
Tom Hogan	MDH
Mike Austin +1	N/A
Harvey Dundas	N/A
Rosie Bunger	a wk before

METROPOLITAN COUNCIL

METRO PLANT SOLIDS MANAGEMENT BUILDING

HOW IT WORKS

Processing Wastewater Solids at the Metro Plant

1 DEWATERING CENTRIFUGE

A dewatering centrifuge spins at 2,600 rpm to increase solids concentration from 5% to 30% (a consistency similar to moist soil).

2 CAKE BIN | 3 CAKE PUMP

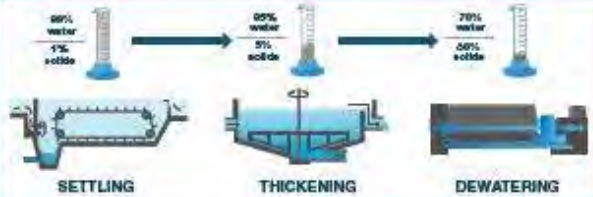
Dewatered "cake" falls into a cake bin and a hydraulically powered piston pump feeds cake to the fluidized bed incinerator.

Renewable Fuel

Dewatered wastewater solids have the same heating value as wood or low-grade coal. Wastewater solids have enough energy that the incinerators normally operate without the need for supplemental fuel.

Solids Collection

At the Metro Plant, we collect wastewater solids from the bottom of settling tanks. The solids are then thickened in gravity and flotation thickeners and held in storage tanks. Solids are then sent to the Solids Management Building where they are dewatered before being incinerated.

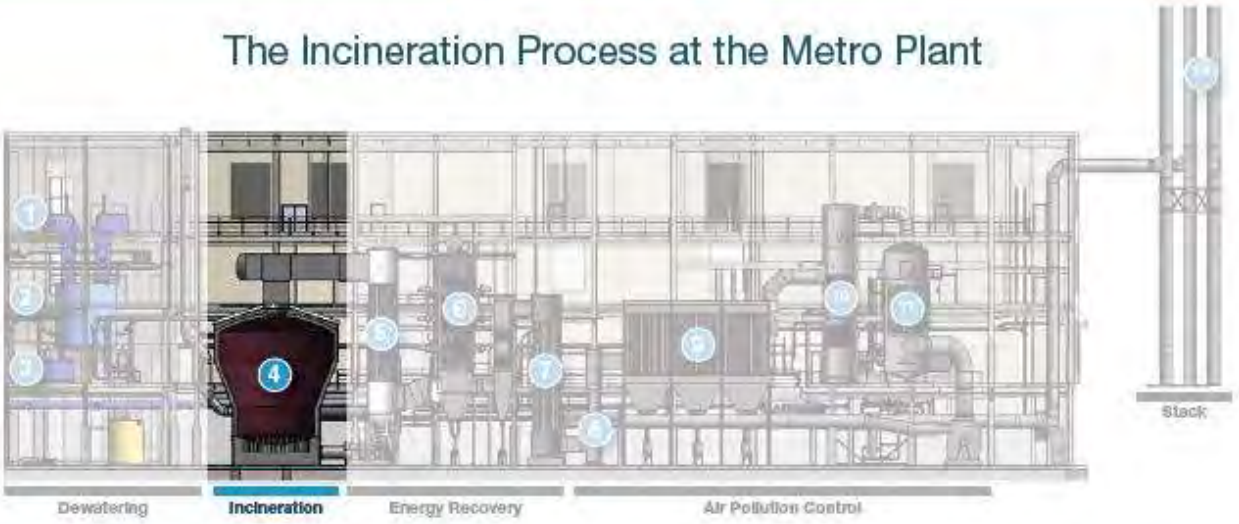


METROPOLITAN COUNCIL

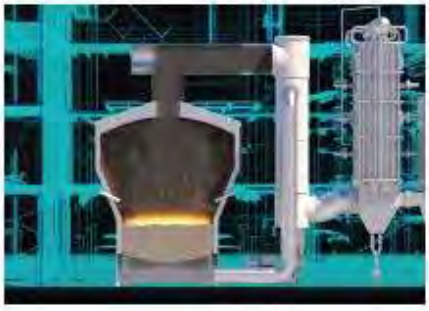
METRO PLANT SOLIDS MANAGEMENT BUILDING

HOW IT WORKS

The Incineration Process at the Metro Plant



4 FLUIDIZED BED INCINERATOR



Combustion requires fuel and air, and the cake has enough energy that the incinerator normally burns cake without needing supplemental natural gas fuel.

ELIMINATES BACTERIA

Wastewater solids combust at 1,375° F which eliminates odor and disease-causing bacteria.

MINIMAL TRUCKING

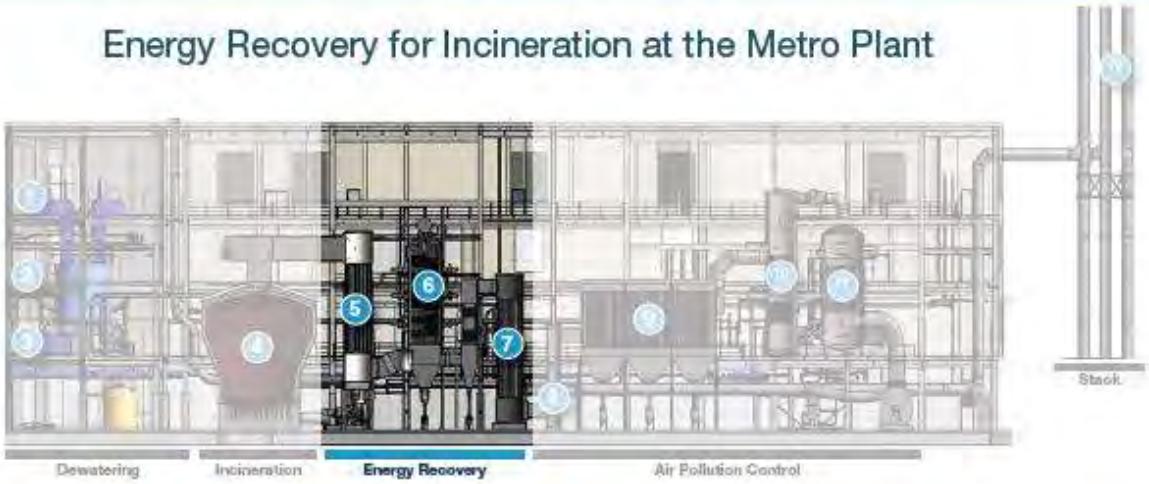
Incineration reduces the quantity of material to be hauled offsite for disposal by 95%.

METROPOLITAN COUNCIL

METRO PLANT SOLIDS MANAGEMENT BUILDING

HOW IT WORKS

Energy Recovery for Incineration at the Metro Plant



5 PRIMARY HEAT EXCHANGER

The primary heat exchanger recovers heat from the flue gas to preheat the fluidizing air.

Heat recovered through the primary heat exchanger minimizes the need for supplemental fuel.

6 WASTE HEAT BOILER

The waste heat boiler recovers heat from the flue gas to convert water into steam.

Steam recovered through the waste heat boiler is used for building heat in the winter and sent to a steam turbine to generate electricity in the summer.

7 SECONDARY HEAT EXCHANGER

The secondary heat exchanger recovers heat from the flue gas to evaporate water vapor in the stack removing any visible plume.

Energy recovered from the wastewater solids reduces natural gas and/or electricity use within the plant saves customers money.

Equivalent to:

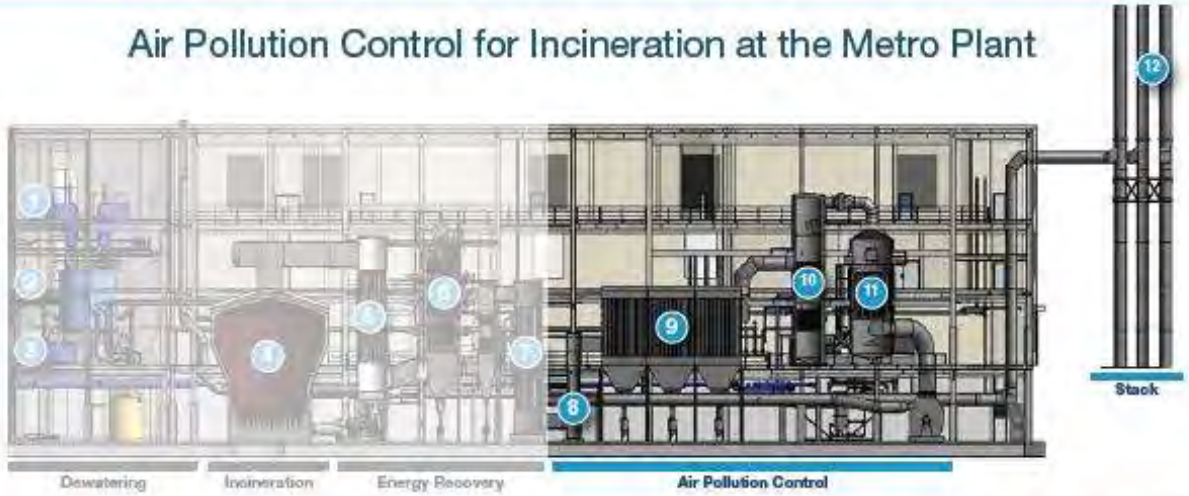
Heating 2,700 HOMES + Heating 2,400 HOMES + Powering 2,400 HOMES = Saving $2.5M PER YEAR

METROPOLITAN COUNCIL

METRO PLANT SOLIDS MANAGEMENT BUILDING

HOW IT WORKS

Air Pollution Control for Incineration at the Metro Plant



8 CARBON TOWER

Powdered carbon is injected into the flue gas.

REMOVES: Hg

9 BAGHOUSE

Each baghouse has 816 filter bags that remove ash.

REMOVES: TSP Cd Hg Pb

10 WET SCRUBBER

Water sprays cool the flue gas and caustic addition neutralizes acid gases.

REMOVES: TSP SO_2 NOx Cd Hg Pb HCl Dioxin/Furan

11 WET ELECTROSTATIC PRECIPITATOR

Electrically charged metal rods remove very fine particulates.

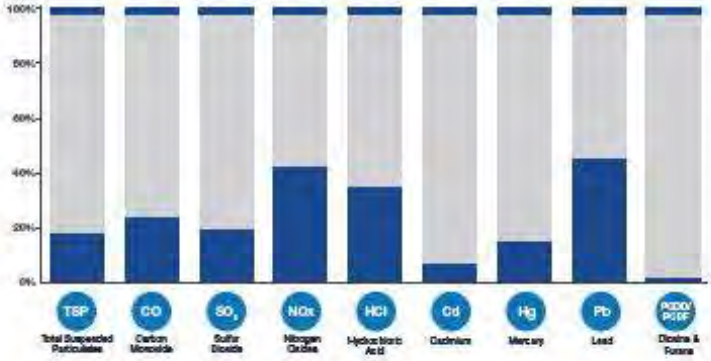
REMOVES: TSP Cd Hg Pb

12 STACK

Emissions leaving the stacks are clean, odorless, colorless, and have no visible plume.

EXCEPTIONAL AIR QUALITY & EMISSION PERFORMANCE

Metro Plant Incinerator Performance Compared to EPA Emission Standards for New Fluidized Bed Incinerators



The existing incinerators have consistently been 50% below the emission standards for new incinerators.

Metro Plant Solids Management Facility Plan

June 13, 2018 Open House

METROPOLITAN COUNCIL

Welcome

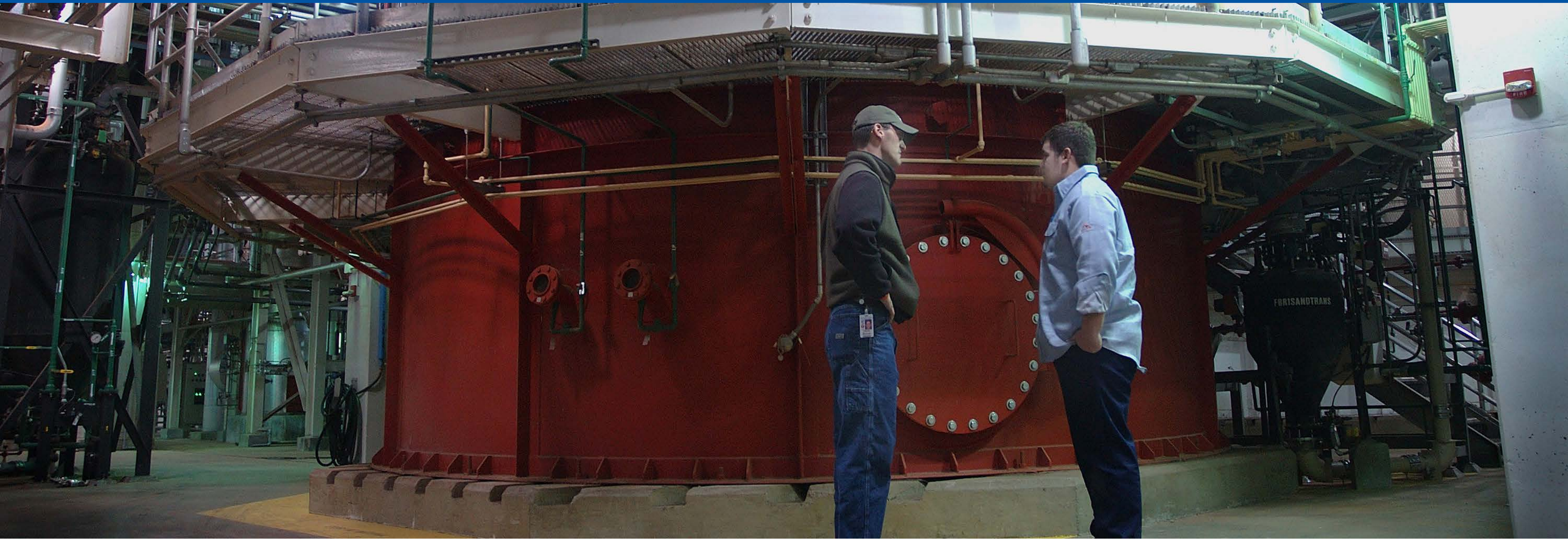
Tim O’Donnell

Project Citizen Liaison

METROPOLITAN COUNCIL

Open House Objectives

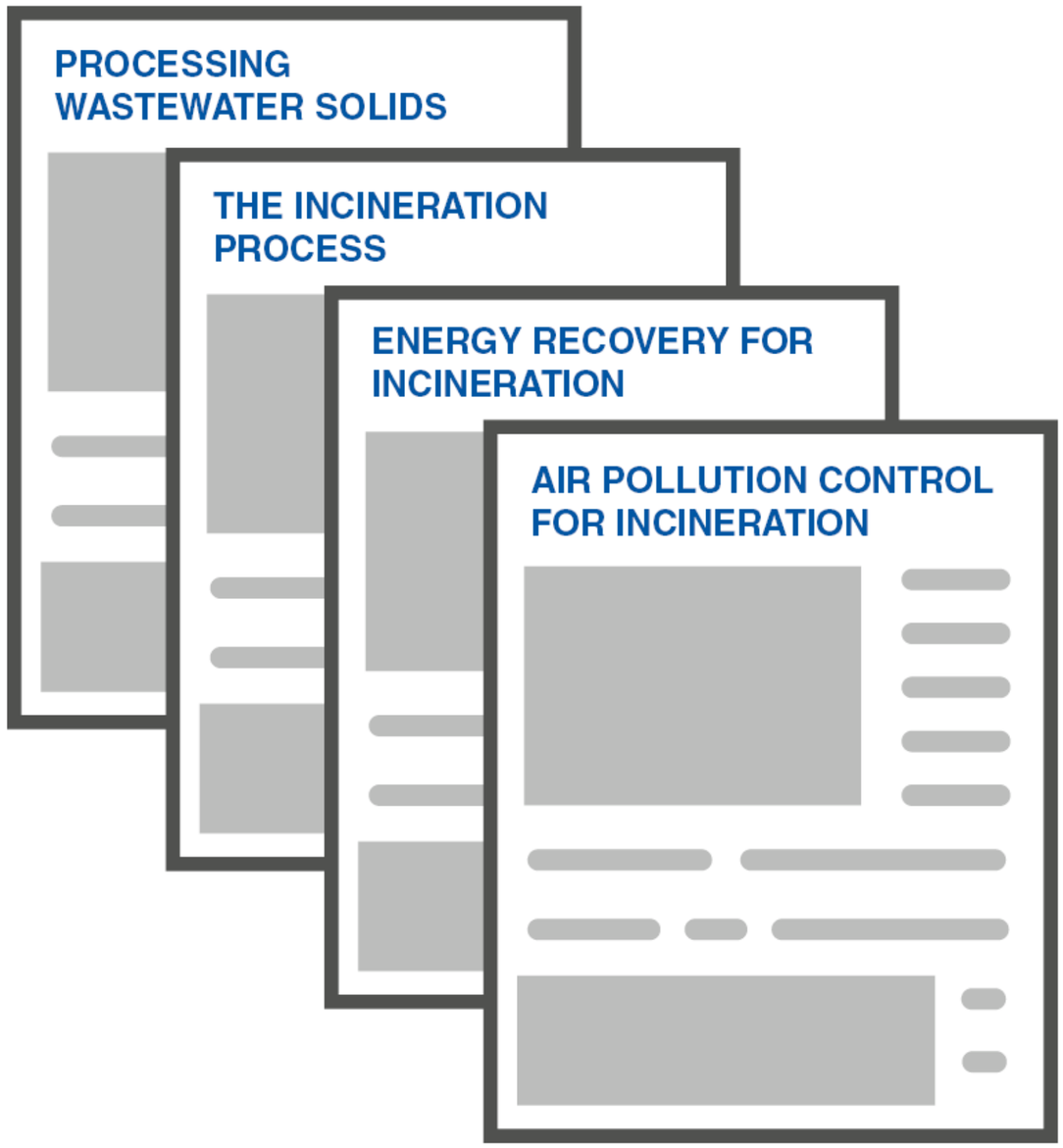
Share information about the Metro Plant Solids Management Facility Plan and how solids are processed at the Metro Plant



Open House Agenda

Open House	15 Min	**Stations**
Presentation	30 Min	

- Facility Plan
- How it Works
  - Wastewater Solids
  - Incineration
  - Energy Recovery
  - Air Pollution Control
- Summary & Questions



Metro Plant
Solids Management
Facility Plan

Project Overview

Jeannine Clancy
Assistant General Manager

METROPOLITAN COUNCIL

Environmental Services

Protects public health and safety

Protects the environment

Fosters the economic growth of the region

WHO WE SERVE

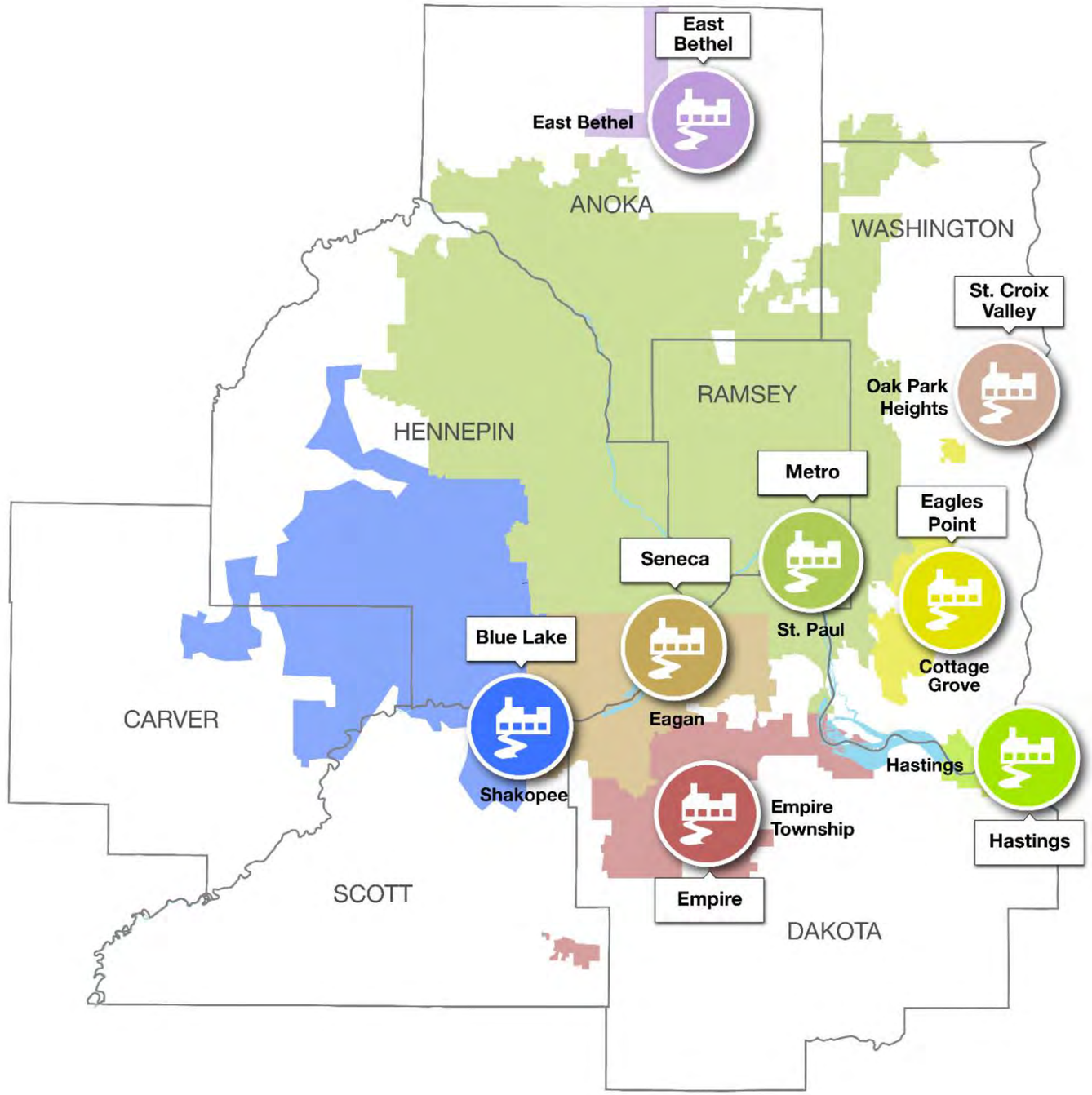
7-county Twin Cities Metro Area
109 communities
2,600,000 people

OUR FACILITIES

8 wastewater treatment plants
610 miles of interceptors
250 million gallons per day (avg)

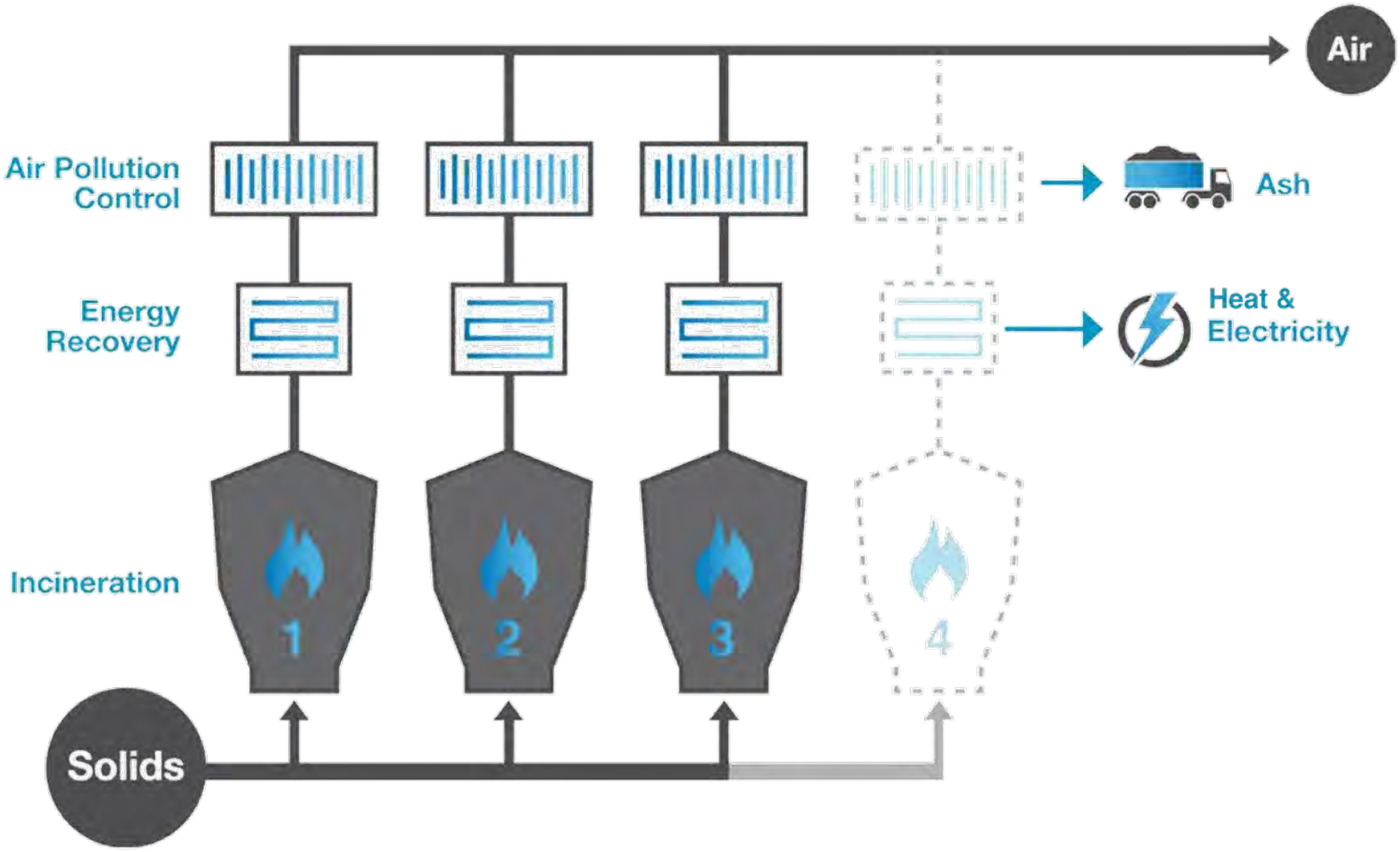
OUR ORGANIZATION

600+ employees
$7 billion in valued assets
$140 million / yr capital program



Project Overview

MCES proposes construction of a fourth incinerator followed with renewal of existing incinerator facilities.

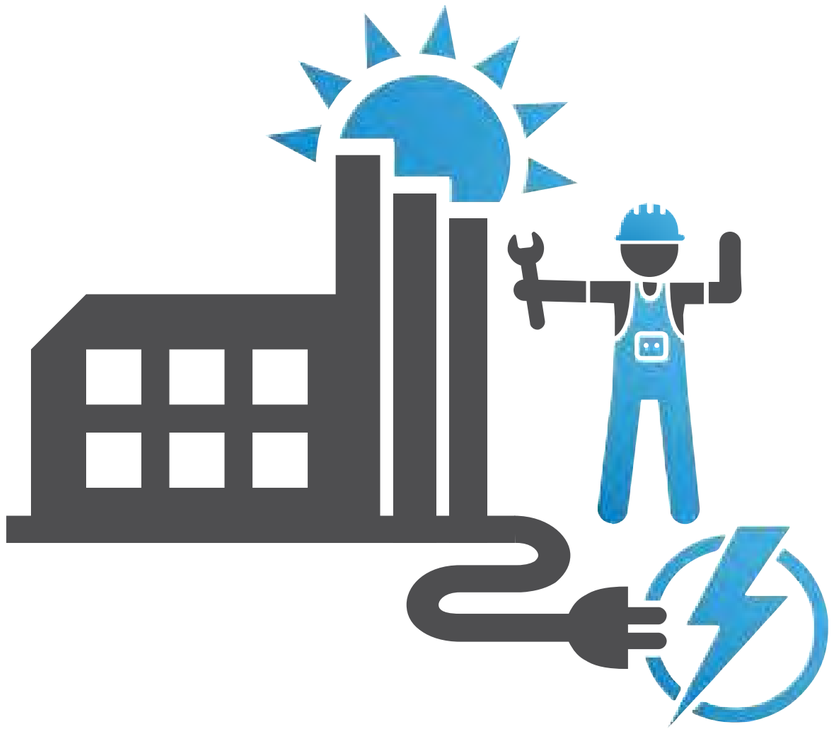


The Metro Plant has one of the most advanced and highest performing incineration systems in the country.

Project Drivers

The Metro Plant needs additional solids processing capacity to:

Preserve Existing Wastewater Treatment Plant Infrastructure



Serve Regional Population Growth

The existing incinerators will be 20 years old in 2025.

Project Overview

Metro Plant Solids Management Facility Plan

Project Overview

Video

Alternatives Analysis and How it Works

Processing Wastewater Solids at the Metro Plant

Rene Heflin

Plant Engineering Manager

METROPOLITAN COUNCIL

Alternative Analysis

Fourth Incinerator

Digest / Incinerate

Digest / Dry / Sell Product

Digest / Land Apply Cake

Adding a fourth incinerator costs 50% less to construct, operate, and maintain than any other alternative.

Sustainability

Lowest Air Emissions

Superior Energy Recovery

Similar GHG Emissions

Ash Reuse Potential

The fourth incinerator was found to be the most sustainable alternative.

Wastewater Solids

METROPOLITAN COUNCIL

Metro Plant Solids Management Facility Plan

How it Works

Processing Wastewater Solids at the Metro Plant

Video

How it Works

The Incineration Process at the Metro Plant

Peter Sandberg

Metro Plant Solids Business Unit Manager

METROPOLITAN COUNCIL

Incineration

METROPOLITAN
COUNCIL

Metro Plant Solids Management Facility Plan

How it Works

The Incineration Process at the Metro Plant

Video

How it Works

Energy Recovery for Incineration at the Metro Plant

Stephen Norton

Senior Engineer

METROPOLITAN COUNCIL

Energy Recovery

METROPOLITAN
COUNCIL

Metro Plant Solids Management Facility Plan

How it Works

Energy Recovery for Incineration at the Metro Plant

Video

How it Works

Air Pollution Control for Incineration at the Metro Plant

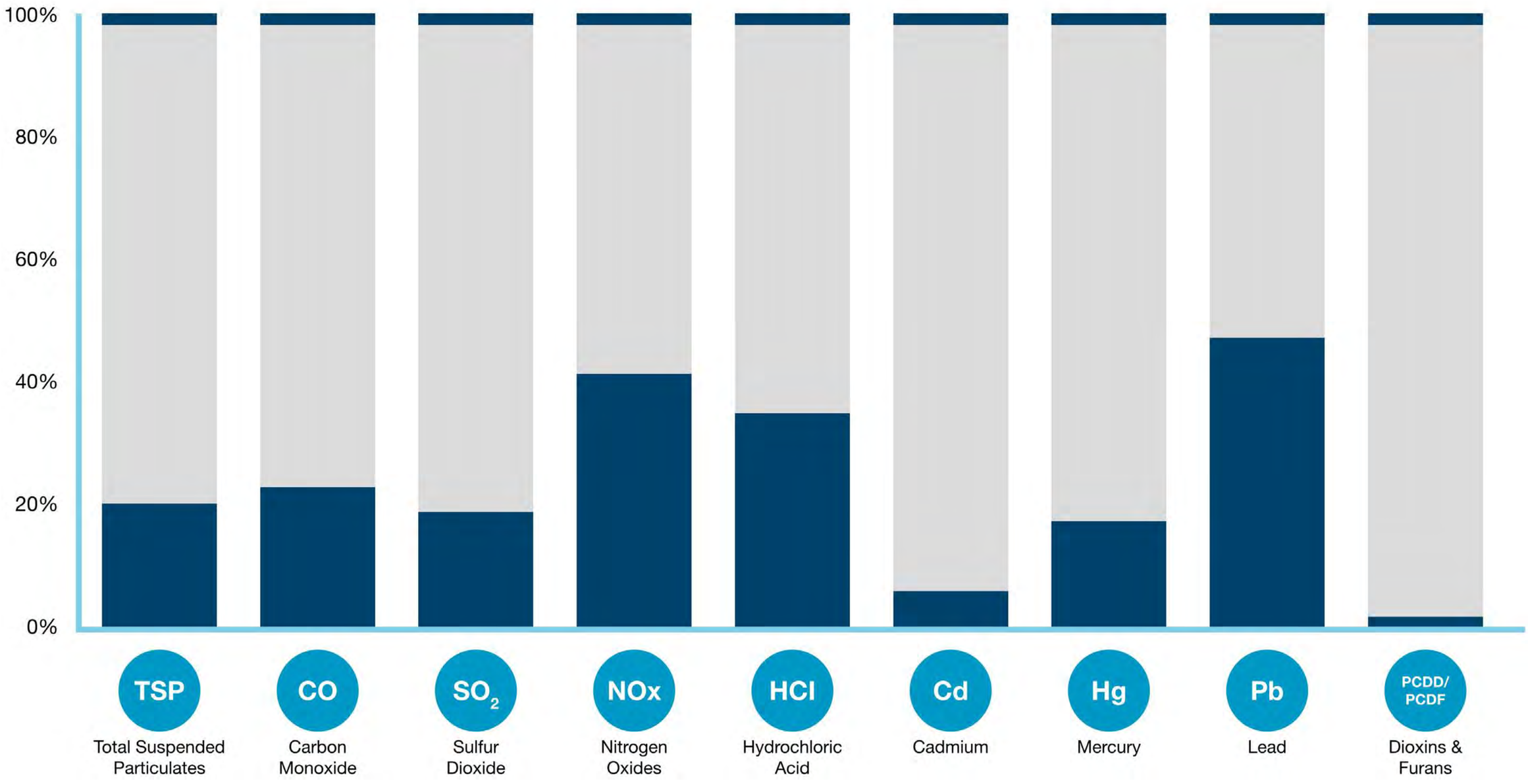
Dave Quast

Principal Engineer

METROPOLITAN COUNCIL

Exceptional Air Quality

Metro Plant Incinerator Performance Compared to EPA Emission Standards for New Fluidized Bed Incinerators



Existing incinerators meet EPA emission standards for existing and new fluidized bed incinerators.

Air Pollution Control

METROPOLITAN COUNCIL

Metro Plant Solids Management Facility Plan

How it Works

Air Pollution Control for Incineration at the Metro Plant

Video

SUMMARY

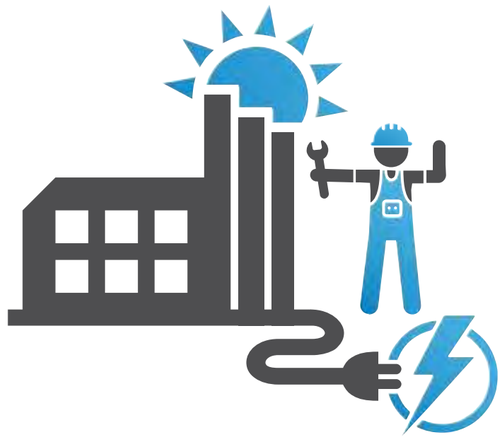
Jeannine Clancy

Assistant General Manager

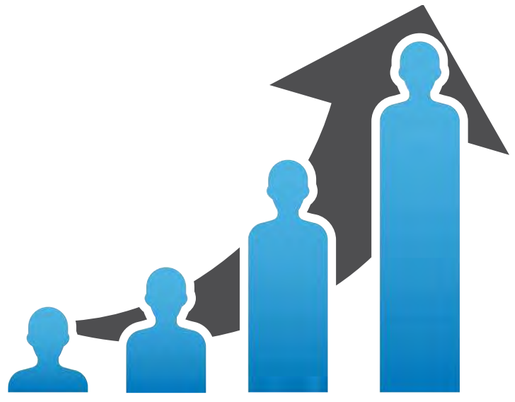
METROPOLITAN COUNCIL

Project Need

Preserve Existing Wastewater Treatment Plant Infrastructure



Serve Regional Population Growth



Adding Solids Processing Capacity at the Metro Plant is Important for the Region.

Community Impact

No Impact to Air Quality

No Additional Odors

No Offsite Land Impacts

Fewest Trucks

A fourth incinerator provides the lowest impact to surrounding communities.

Benefits

The fourth incinerator is the most **cost-effective** and **sustainable** alternative to meet the region's wastewater needs.

It will have the **lowest community impact**, and will improve the **reliability** of the wastewater treatment system.

Project Schedule

Action	Timeframe
Public Outreach	4/23/18 – 6/26/18
Public Hearing for Facility Plan	8/30/18
Council Adopts Facility Plan	9/26/18
Design & Permitting	2019-2020
Fourth Incinerator Construction	2021-2024
Existing Incinerator Renewal	2025-2027

Providing Feedback

Web	**www.metrocouncil.org/metrosolids**
Email	**info@metrosolids.com**
Voice	**651-691-9124**
Mail	**Tim O'Donnell - MCES** **390 Robert St. North** **Saint Paul, MN 55101**
Public Hearing	**August 30, 2018*** **Pending Council Approval**

Questions?

METROPOLITAN
COUNCIL

Metropolitan Council Environmental Services Public Hearing:

Metro Plant Solids Management Improvements Draft Facility Plan

Wellstone Center – Room 212
179 Robie St. E., Saint Paul, Minnesota
Thursday, August 30, 2018
6:30 p.m.

Metropolitan Council Environmental Services (MCES) will hold a public hearing to inform the public about and accept comments on its Draft Facility Plan for the Metro Plant Solids Management Improvements Project.

MCES owns and operates the Metropolitan Wastewater Treatment Plant (Metro Plant), which is located three miles southeast of downtown Saint Paul. The Metro Plant treats 180 million gallons of wastewater every day for 66 communities and processes 850 wet tons of wastewater solids every day for 73 communities. MCES has prepared a Draft Facility Plan, outlining the need and recommended alternative for additional wastewater solids processing capacity so it can preserve existing wastewater treatment plant infrastructure and serve regional population growth. MCES proposes to construct a fourth wastewater solids incinerator, followed by renewal of the three existing incinerators. MCES found that adding a fourth incinerator would be the most cost-effective and sustainable alternative to meet the region's wastewater needs. Construction of the fourth incinerator would occur from 2021 to 2024, and renewal of the existing incinerators would occur from 2025 to 2027. The total cost of the project is estimated at $180 million.

The Draft Facility Plan for this project is available for the public to review at:

- Online
  - Metro Solids Project Website (*www.metrocouncil.org/metrosolids*)
- Paper copies are located at:
  - Metropolitan Council Building, 390 Robert St. N., Saint Paul
  - George Latimer Central Library, 90 W. Fourth St., Saint Paul
  - Sun Ray Library, 2105 Wilson Ave., Saint Paul
  - Riverview Library, 1 George St., Saint Paul
  - Dayton's Bluff Library (Metro State University Library & Learning Center) 645 E. Seventh St., Saint Paul

All interested persons are encouraged to attend the public hearing on August 30 and provide comments. You also may submit comments, which must be received by MCES no later than September 10, 2018, as follows:

- Send written comments to: Metro Solids, Metropolitan Council Environmental Services, 390 Robert St. N., Saint Paul, MN 55101-1805
- Record comments on: Metro Solids Project Hotline at 651-691-9124
- Send TTY text telephone comments to 651-291-0904
- E-mail comments to: info@metrosolids.com

Free parking is available at the Wellstone Center in the attached parking ramp. A formal presentation will begin at 6:45 p.m. and last for approximately 30 minutes. During the public hearing, attendees will be able to provide comments, review informational materials, and visit with MCES project staff. Upon request, MCES will provide reasonable accommodations to persons with disabilities and interpretation services at the public hearing. Please submit such requests to Tim O'Donnell at tim.odonnell@metc.state.mn.us or 651-602-1269 before August 16, 2018.

AFFIDAVIT OF PUBLICATION

STATE OF MINNESOTA

COUNTY OF RAMSEY

270 Legal Notices

Metropolitan Council Environmental Services Public Hearing:

Metro Plant Solids Management Improvements Draft Facility Plan

Wellstone Center – Room 212
179 Robie St. E., Saint Paul, Minnesota
Thursday, August 30, 2018
6:30 p.m.

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Amy Hamilton-Warwick,
being duly sworn on oath, says: that she is, and during all times herein states has been, Clerk of Northwest Publications, Inc., Publisher of the newspaper known as the Saint Paul Pioneer Press, a newspaper of general circulation within the Counties of Chisago, Dakota, Ramsey and Washington in Minnesota and Pierce and St. Croix in Wisconsin.

That the notice hereto attached was from the columns of said newspaper and was printed and published therein on the following date(s):

July 29 of 2018
Newspaper Ref./Ad # 71413704

Amy Hamilton-Warwick

Subscribed and sworn to before me this 30 of July 2018

Zachary B. Stengel

NOTARY PUBLIC

Hennepin County, Minnesota

My commission expires January 31, 2022

ZACHARY B. STENGEL
Notary Public-Minnesota
My Commission Expires Jan 31, 2022

The Draft Facility Plan for this project is available for the public to review at:

- Online
  - Metro Solids Project Website (www.metrocouncil.org/metrosolids)
- Paper copies are located at:
  - Metropolitan Council Building, 390 Robert St. N., Saint Paul
  - George Latimer Central Library, 90 W. Fourth St., Saint Paul
  - Sun Ray Library, 2105 Wilson Ave., Saint Paul
  - Riverview Library, 1 George St., Saint Paul
  - Dayton's Bluff Library (Metro State University Library & Learning Center) 645 E. Seventh St., Saint Paul

All interested persons are encouraged to attend the public hearing on August 30 and provide comments. You also may submit comments, which must be received by MCES no later than September 10, 2018, as follows:

- Send written comments to: Metro Solids, Metropolitan Council Environmental Services, 390 Robert St. N., Saint Paul, MN 55101-1805
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- E-mail comments to: info@metrosolids.com

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AFFIDAVIT OF PUBLICATION

STATE OF MINNESOTA)
COUNTY OF HENNEPIN)

650 3rd Ave. S, Suite 1300 | Mineapolis, MN | 55488

Terri Swanson, being first duly sworn, on oath states as follows:

1. (S)He is and during all times herein stated has been an employee of the Star Tribune Media Company LLC, a Delaware limited liability company with offices at 650 Third Ave. S., Suite 1300, Minneapolis, Minnesota 55488, or the publisher's designated agent. I have personal knowledge of the facts stated in this Affidavit, which is made pursuant to Minnesota Statutes §331A.07.

2. The newspaper has complied with all of the requirements to constitute a qualified newspaper under Minnesota law, including those requirements found in Minnesota Statutes §331A.02.

3. The dates of the month and the year and day of the week upon which the public notice attached/copied below was published in the newspaper are as follows:

Dates of Publication		Advertiser	Account #	Order #
StarTribune	07/29/2018	METROPOLITAN COUNCIL ENVIRONMENTA	1000359432	267069

4. The publisher's lowest classified rate paid by commercial users for comparable space, as determined pursuant to § 331A.06, is as follows: **$688.80**

5. Mortgage Foreclosure Notices. Pursuant to Minnesota Statutes §580.033 relating to the publication of mortgage foreclosure notices: The newspaper's known office of issue is located in Hennepin County. The newspaper complies with the conditions described in §580.033, subd. 1, clause (1) or (2). If the newspaper's known office of issue is located in a county adjoining the county where the mortgaged premises or some part of the mortgaged premises described in the notice are located, a substantial portion of the newspaper's circulation is in the latter county.

FURTHER YOUR AFFIANT SAITH NOT.

Terri Swanson

Subscribed and sworn to before me on: 07/30/2018

Wilma Finn

WILMA L. FINN
NOTARY PUBLIC - MINNESOTA
My Commission Expires
January 31, 2020

Notary Public

StarTribune
Sunday, July 29, 2018

Ad Number:	0000267069-01	Advertiser:	N/A
Insertion Number:	N/A	Agency:	N/A
Size:	1 Col x 10.76 in	Section-Page-Zone(s):	K-4-All
Color Type:	0	Description:	Metropolitan Council Environment...

Mortgage Foreclosures

Mortgage Foreclosures

Mortgage Foreclosures

Mortgage Foreclosures

Mortgage Foreclosures

Legal Notices

Metropolitan Council Environmental Services Public Hearing:

Metro Plant Solids Management Improvements Draft Facility Plan

Wellstone Center – Room 202

179 Robie St. E., Saint Paul, Minnesota

Thursday, August 30, 2018

6:00 p.m.

Metropolitan Council Environmental Services (MCES) will hold a public hearing to inform the public about and accept comments on its Draft Facility Plan for the Metro Plant Solids Management Improvements Project.

MCES owns and operates the Metropolitan Wastewater Treatment Plant (Metro Plant), which is located three miles southeast of downtown Saint Paul. The Metro Plant treats 180 million gallons of wastewater every day for 66 communities and processes 850 wet tons of wastewater solids every day for 73 communities. MCES has prepared a Draft Facility Plan, outlining the need and recommended alternative for additional wastewater solids processing capacity so it can preserve existing wastewater treatment plant infrastructure and serve regional population growth. MCES proposes to construct a fourth wastewater solids incinerator, followed by renewal of the three existing incinerators. MCES found that adding a fourth incinerator would be the most cost effective and sustainable alternative to meet the region's wastewater needs. Construction of the fourth incinerator would occur from 2021 to 2024, and renewal of the existing incinerators would occur from 2025 to 2027. The total cost of the project is estimated at $180 million.

The Draft Facility Plan for this project is available for the public to review at:

Online:
Metro Solids Project Website (www.metrocouncil.org/metrosolids)

Paper copies are located at:

Metropolitan Council Building, 390 Robert St. N., Saint Paul

George Latimer Central Library, 90 W. Fourth St., Saint Paul

Sun Ray Library, 2105 Wilson Ave., Saint Paul

Riverview Library, 1 George St., Saint Paul

Dayton's Bluff Library (Metro State University Library & Learning Center) 645 E. Seventh St., Saint Paul

All interested persons are encouraged to attend the public hearing on August 30 and provide comments. You also may submit comments, which must be received by MCES no later than September 10, 2018 as follows:

Send written comments to: Metro Solids, Metropolitan Council Environmental Services, 390 Robert St. N., Saint Paul, MN 55101 1805

Record comments on Metro Solids Project Hotline at 651 602 9134.

Send TTY text telephone comments to 651 291 0904.

E-mail comments to: metrosolids.com

Free parking is available at the Wellstone Center in the attached parking ramp. A formal presentation will begin at 6:45 p.m. and last for approximately 30 minutes. During the public hearing, attendees will be able to provide comments, review informational materials, and visit with MCES project staff. Upon request, MCES will provide reasonable accommodations to persons with disabilities and interpretation services at the public hearing. Please submit such requests to Tim O'Donnell at timodonnell@metc.state.mn.us or 651 602 1288 before August 16, 2018.

From: Metropolitan Council <METC@public.govdelivery.com>
Sent: Tuesday, July 31, 2018 2:27 PM
To: Norton, Stephen
Subject: Metropolitan Council Environmental Services Metro Plant Solids Management Improvements Facility Plan Public Hearing 8/30/18, 6:30-8 PM

Metropolitan Council Environmental Services

Metro Plant Solids Management Improvements Facility Plan

Public Hearing

Public Hearing

Thursday, August 30, 2018
6:30 to 8:00 PM
(Presentation at 6:45 PM)

Wellstone Center - Room 212
179 Robie Street East, Saint Paul, MN 55107

Metropolitan Council Environmental Services (MCES) will hold a public hearing to discuss and receive comments on its proposed Metro Plant Solids Management Improvements Facility Plan.

The Metropolitan Wastewater Treatment Plant (Metro Plant) is located three miles southeast of downtown Saint Paul. It treats 180 million gallons of wastewater every day for 66 communities and processes 850 wet tons of wastewater solids every day for 73 communities. The Metro Plant needs additional solids processing capacity so it can preserve existing wastewater treatment plant infrastructure and serve regional population growth. MCES proposes to construct a fourth incinerator, followed by renewal of the three existing incinerators. MCES found that adding a fourth incinerator would be the most cost-effective and sustainable alternative to meet the region's wastewater needs. Construction of the fourth incinerator would occur from 2021 to 2024, and renewal of the existing incinerators would occur from 2025 to 2027. The total cost of the project is estimated at $180 million.

A draft of the facility plan can be reviewed at the following locations:

- Online
  - Project Website (www.metrocouncil.org/metrosolids)
- Paper copies located at:
  - Metropolitan Council Building, 390 Robert St. N., Saint Paul
  - George Latimer Central Library, 90 W. Fourth St., Saint Paul
  - Sun Ray Library, 2105 Wilson Ave., Saint Paul
  - Riverview Library, 1 George St., Saint Paul
  - Dayton's Bluff Library (Metro State University Library & Learning Center) 645 E. Seventh St., Saint Paul

Interested persons are encouraged to provide and submit comments, which must be received by MCES no later than September 10, 2018, as follows:

- Offer comments at the public hearing on August 30, 2018
- Send written comments to: Metro Solids, Metropolitan Council Environmental Services, 390 Robert St. N., St. Paul, MN 55101-1805
- Record comments on: Project Hotline at 651-691-9124
- Send TTY text telephone comments to 651-291-0904
- E-mail comments to: info@metrosolids.com

Free parking is available at the Wellstone Center in the attached parking ramp. A formal presentation will begin at 6:45 PM and last for approximately 30 minutes. During the public hearing, attendees will be able to provide comments, review informational materials, and visit with

MCES project staff. Upon request, MCES will provide reasonable accommodations to persons with disabilities and interpretation services. Please submit such requests to Tim O'Donnell at tim.odonnell@metc.state.mn.us or 651-602-1269 before August 16, 2018.

Public Hearing

Join Us!

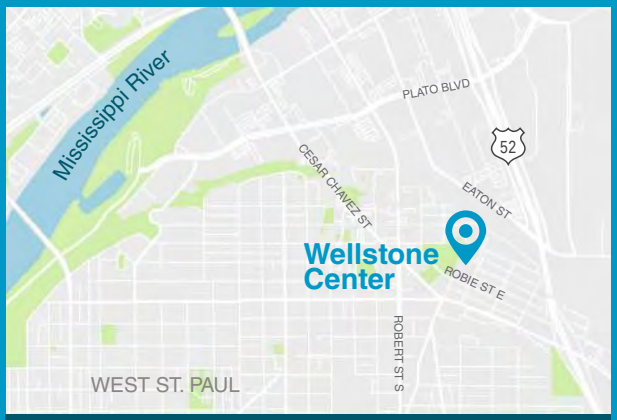
Join Metropolitan Council Environmental Services for a public hearing on August 30 to discuss and provide comments on plans to increase solids processing capacity at the Metropolitan Wastewater Treatment Plant.

Thursday, August 30th

6:30 - 8:00 PM
6:45 PM Presentation

Wellstone Center

Room 212
179 Robie St. E.
Saint Paul



Free parking available in the attached parking ramp

Review the Draft Facility Plan

Online: www.metrocouncil.org/metrosolids

Paper copies located at:

- Metropolitan Council Building, 390 Robert St. N., Saint Paul
- George Latimer Central Library, 90 W. Fourth St., Saint Paul
- Sun Ray Library, 2105 Wilson Ave., Saint Paul
- Riverview Library, 1 George St., Saint Paul
- Dayton's Bluff Library (Metro State University Library & Learning Center) 645 E. Seventh St., Saint Paul

Provide Public Comments

MCES will collect public comments on this project through September 10, 2018 as follows:

- Offer comments at the public hearing on August 30, 2018
- Send written comments to: Metro Solids, Metropolitan Council Environmental Services, 390 Robert St. N., St. Paul, MN 55101-1805
- Record comments on: Project Hotline at 651-691-9124
- Send TTY text telephone comments to: 651-291-0904
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Upon request, MCES will provide reasonable accommodations to persons with disabilities and interpretation services. Please submit such requests by August 16, 2018, to Tim O'Donnell at tim.odonnell@metc.state.mn.us or 651-602-1269.

METROPOLITAN COUNCIL

Metropolitan Council Environmental Services
390 Robert Street North
Saint Paul, MN 55101-1805

Residents - Customers - Stakeholders

Join us for the Metro Plant Solids Management Improvements Facility Plan Public Hearing

Learn More

(651) 691-9124

info@metrosolids.com

metrocouncil.org/metrosolids

Metro Plant Solids Management Improvements Facility Plan

Metropolitan Council Environmental Services (MCES) proposes to continue sustainable incineration at its Metropolitan Wastewater Treatment Plant (Metro Plant).

Project Overview

The project includes construction of a fourth incinerator, followed by renewal of existing incineration facilities. The fourth incinerator includes energy recovery, air pollution control, and related solids processing equipment.

Project Background

MCES employs the newest environmentally sustainable methods for processing solids removal from wastewater at the Metro Plant. The process eliminates bacteria, generates energy, and reduces solids disposal. The Metro Plant incineration system continues to have an exceptional track record of environmental compliance.

Project Need

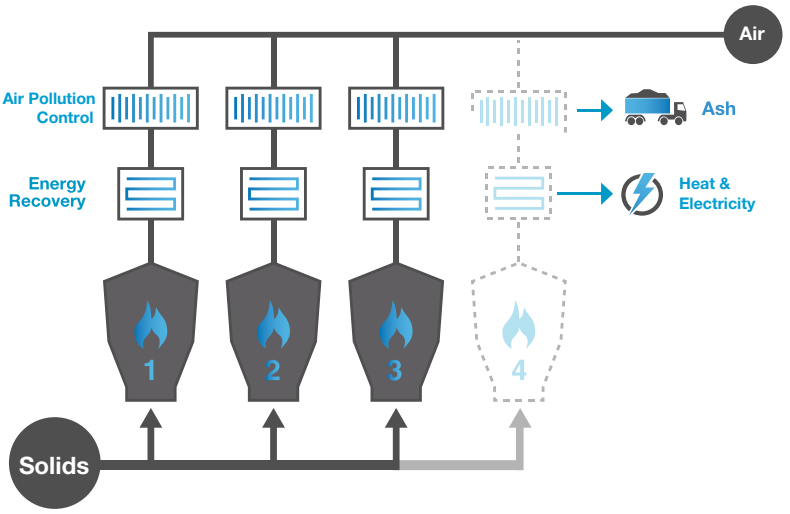
The Metro Plant needs additional wastewater solids processing capacity to:

Preserve Existing Wastewater Treatment Plant Infrastructure

Planned renewal projects will require extended downtime of the existing incinerators.

Serve Regional Population Growth

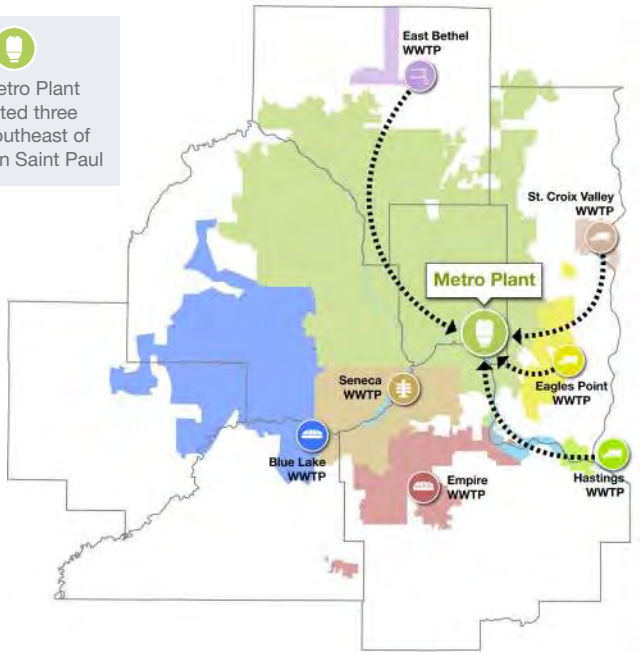
500,000 new residents in the Metro Plant service area by 2050 in the Twin Cities area.



Project Location

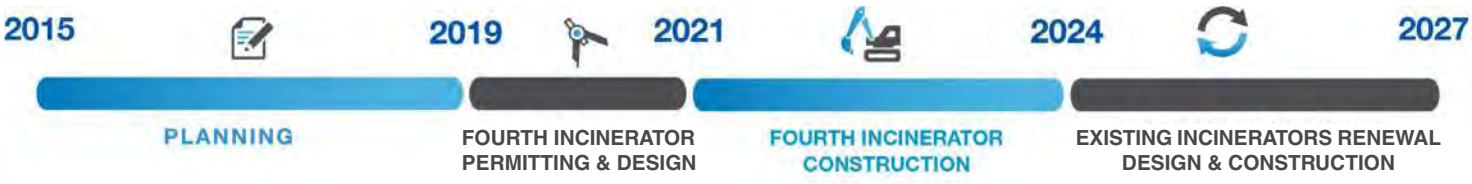
The Metro Plant treats 180 million gallons of wastewater every day for 66 communities (green area on map) and processes 850 wet tons of solids every day for 73 communities.

The Metro Plant is located three miles southeast of downtown Saint Paul



Project Schedule

MCES began planning in 2015. The fourth incinerator would be constructed by 2024, followed by renewal of existing facilities.



Learn More

Hotline: 651.691.9124 **Email:** info@metrosolids.com
Web: metrocouncil.org/metrosolids

MCES Mission

Provide wastewater services and integrated planning to ensure sustainable water quality and water supply for the region.

METROPOLITAN COUNCIL

Metropolitan Council Environmental Services

PUBLIC HEARING

Metro Plant Solids Management Improvements Facility Plan

Thursday, August 30, 2018
6:30 - 8:00 PM

Wellstone Center
Room 212
179 Robie St. E., Saint Paul

Agenda

6:30 PM **Open House**

Attendees are free to review informational materials and visit with MCES project staff.

6:45 PM **Presentation**

The presentation will cover the following topics:

- Overview
- Existing Facilities
- Alternative Evaluation
- Recommended Plan
- Summary

7:15 PM **Comment Period**

Attendees are welcome to provide formal comments on the facility plan.

7:45 PM **Open House**

Attendees are free to review informational materials and visit with MCES project staff.

Provide Comments:

Phone:
651-691-9124

Text:
651-291-0904

Email:
info@metrosolids.com

Website:
www.metrocouncil.org/metrosolids

Mail:
Metro Solids, Metropolitan Council Environmental Services
390 Robert St North
Saint Paul, MN 55101-1805

MCES Mission

Provide wastewater services and integrated planning to ensure sustainable water quality and water supply for the region.

Metro Plant Solids Management Improvements Plan
Public Hearing Sign-In Sheet
August 30, 2018, Wellstone Center, 179 Robie Street, Saint Paul, MN 55107

Name	Organization
George Sprouse	MCES
Steve Greenwood	N/A
Bob Craft	WJCO
Bob Moberg	AEZS
Tom Dimond	N/A
Harold Voth	Brown and Caldwell
Joe Plumbo	citizen
Carrie Marsh	citizen

Metro Plant Solids Management Improvements Plan

Comment Form

The Project Team wants to better understand your questions and concerns. Please take a moment to ˜ll out this comment form at the event or mail it in from home. You can also submit inquiries through the Project hotline and email:

- Email: info@metrosolids.com
- Call: 651.691.9124
- Text: 651.291.0904
- Web: www.metrocouncil.org/metrosolids
- Mail: Metro Solids, Metropolitan Council Environmental Services
  390 Robert Street North, Saint Paul, MN 55101-1805

COMMENT: _____

CONTACT INFORMATION

Please ˜ll out your contact information so the Project Team can document your comment.

First and Last Name: _____

Phone Number: _____ Email: _____

Business/Organization (if any): _____

Street Address: _____ Suite/Apt: _____

City: _____ State: _____ Zip: _____

Do you want to receive email updates? Yes ☐ No ☐ Do you want a response to your comment? Yes ☐ No ☐

Please fold, fasten, and mail. No envelope necessary

_____
_____
_____

Place
Stamp
Here

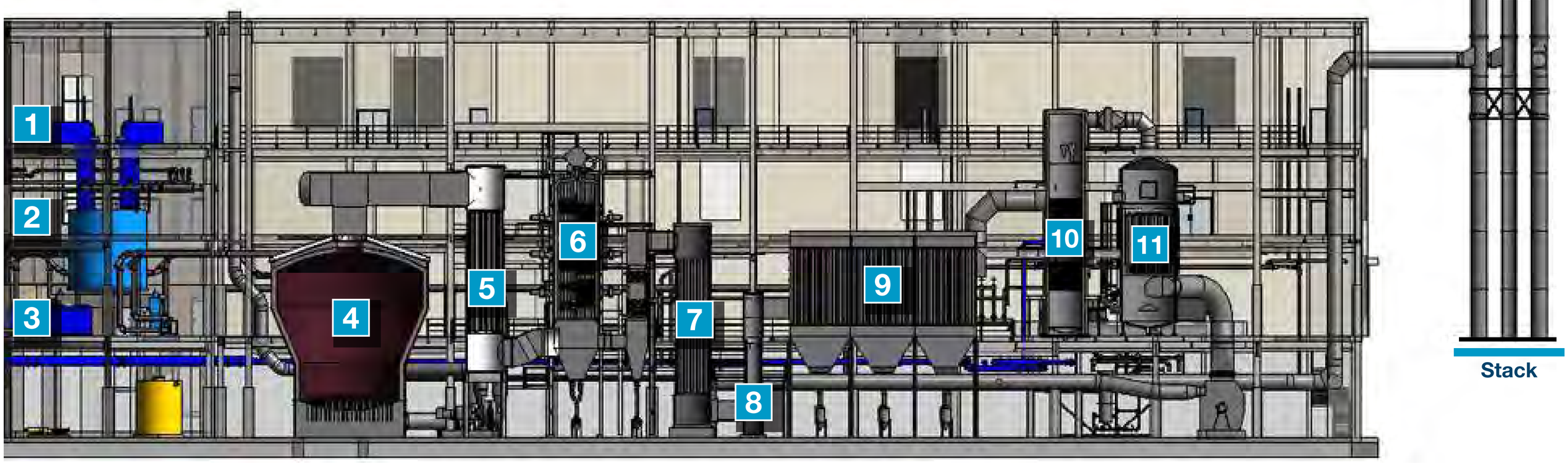
Metro Plant Solids Management Facility Plan
Metro Plant Solids Management Improvements Plan
Attn: Molly Kennedy
701 Xenia Ave. S. #600
Minneapolis, MN 55416

Metro Plant Solids Management Improvements Facility Plan

HOW IT WORKS

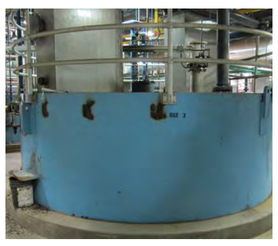
The existing incineration system includes state of the art air pollution control equipment designed to exceed regulatory requirements. The air pollution control equipment removes over 99% of particulates and heavy metals.

Air Pollution Removed Legend: TSP Total Suspended Particulates; CO Carbon Monoxide; SO_2 Sulfur Dioxide; NO_x Nitrogen Oxides; HCl Hydrochloric Acid; Cd Cadmium; Hg Mercury; Pb Lead; PCDD/PCDF Dioxins & Furans



1 DEWATERING CENTRIFUGE

Thickened sludge is pumped into a dewatering centrifuge which spins at 2,600 rpm to increase solids concentration from 5% to 28% to a consistency similar to moist soil.



CAKE BIN

Dewatered “cake” falls into a cake bin. A sliding frame and an extraction screw conveyor feeds cake into the cake pump.

CAKE PUMP

A hydraulically powered piston pump feeds cake through pipes to the fluidized bed incinerator.

FLUID BED INCINERATOR

The cake combusts at a temperature of 1,375^{O}F in a bubbling sand bed. Combustion reduces the volume of cake by 95% and eliminates bacteria. The fluid bed incinerators are operated within specified temperature ranges to meet nitrogen oxide standards. Complete combustion minimizes carbon monoxide.

REMOVES: NO_x CO

PRIMARY HEAT EXCHANGER

Hot flue gas leaving the incinerator is recovered to preheat the fluidizing air entering the bottom of the incinerator.

WASTE HEAT BOILER

The waste heat boiler recovers heat from the flue gas by converting water pumped through hundreds of metal tubes into steam.

7 SECONDARY HEAT EXCHANGER

The secondary heat exchanger recovers heat from the flue gas to evaporate water vapor in the stack, which removes any visible plume.

CARBON TOWER

Carbon is injected into the flue gas to remove mercury.

REMOVES: Hg

BAGHOUSE

The baghouse uses 816 filter bags to remove particulates which include injected carbon and heavy metals. The particles collected on the outside of the bags fall to bottom in the form of ash.

REMOVES: TSP Cd Hg Pb

WET SCRUBBER

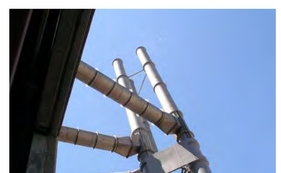
Water is sprayed into the wet scrubber to cool the flue gas and remove remaining particulates. Caustic is added to neutralize acid gases.

REMOVES: TSP SO_2 NOx Cd Hg HCl Pb PCDD/PCDF

WET ELECTROSTATIC PRECIPITATOR

Electrically charged metal rods remove any remaining very fine particulates and heavy metals from the flue gas.

REMOVES: TSP Cd Hg Pb



STACK

Emissions leaving the stacks are clean, odorless, colorless, and have no visible plume.

Metro Plant Solids Management Improvements Facility Plan

ALTERNATIVES ANALYSIS

Four alternatives which maximized the life of the existing incineration system were evaluated against multiple factors with a focus on economic considerations, sustainability, and community impacts.

Alternative 1: Fourth Incinerator

$117
MILLION NPV

Most Cost Effective & Sustainable Alternative

This alternative constructs a fourth incinerator with energy recovery and air pollution control equipment similar and parallel to the existing incinerators. The fourth incinerator was found to be the most cost effective and sustainable alternative with the lowest community impact and will improve the reliability of the wastewater treatment system.

Alternative 2: Digest/Incinerate

$234
MILLION NPV

This alternative constructs anaerobic digesters with energy recovery. Digested solids are dewatered and fed to the existing incinerators. This alternatives energy production was offset by supplemental fuel needed for incineration.

Alternative 3: Digest/Dry/Sell

$279
MILLION NPV

This alternative constructs anaerobic digesters with energy recovery and dryers. Digested solids are dewatered and dried to pellet type product and sold as a fertilizer. This alternative produces the least amount of net energy and twice the amount of solids to be disposed of.

Alternative 4: Digest/Land Apply

$325
MILLION NPV

This alternative constructs anaerobic digesters with energy recovery. Digested solids are dewatered and land applied. This alternative produces the most amount of net energy and has three times the amount of solids to be disposed of.

Metro Plant Solids Management Improvements Facility Plan

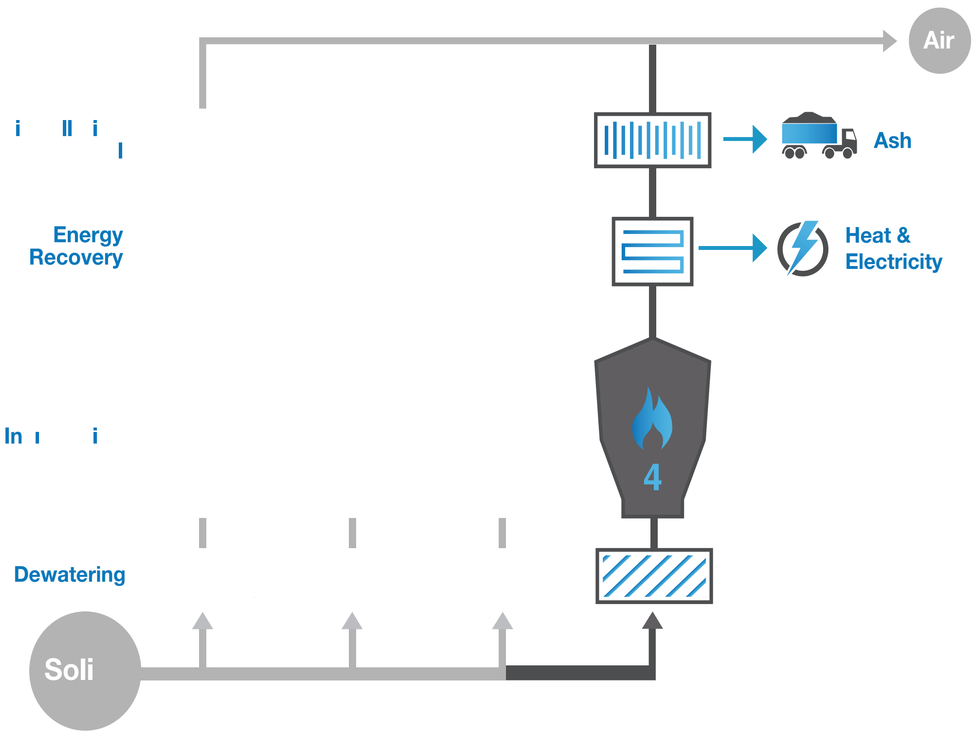
RECOMMENDED PLAN

SUSTAINABLE INCINERATION

Metropolitan Council Environmental Services (MCES) proposes to continue sustainable incineration at its Metropolitan Wastewater Treatment Plant (Metro Plant).

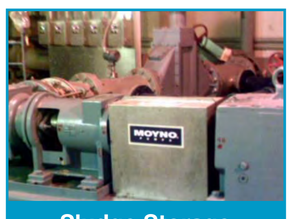
Project Overview

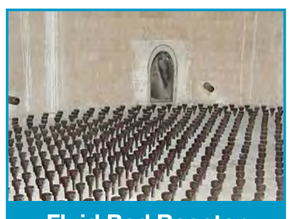
The project includes construction of a fourth incinerator, followed by renewal of existing incineration facilities.

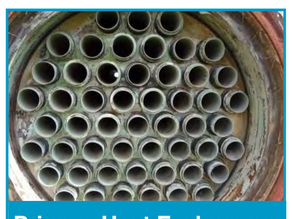


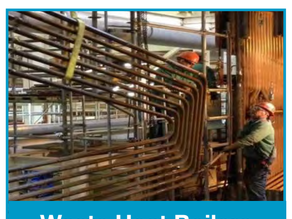
Existing Incinerators Renewal

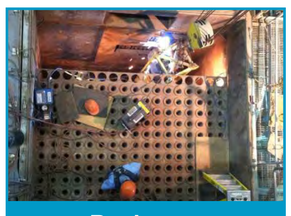
With the additional capacity of the fourth incinerator, the existing incinerators can be taken down for renewal lasting between six months to a year, per incinerator. Below is a list of some of items to be performed during the renewal.


Sludge Storage


Fluid Bed Reactor

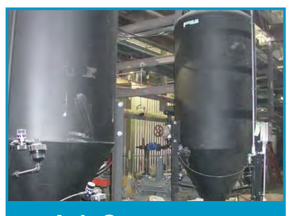

Primary Heat Exchangers


Waste Heat Boilers


Baghouse


Wet ESP


Expansion Joints


Ash Conveyance

Fourth Incinerator

The first phase of the project will increase solids processing capacity by constructing a fourth incinerator similar and parallel to the existing incinerators. A summary of the fourth incinerator project scope is outlined below.

Cake Receiving | **Dewatering** | **Fourth Incinerator** | **Energy Recovery** | **Air Pollution Control**

The fourth incinerator will require a small addition to the existing solids management building and will be constructed entirely within the Metro Plant property boundary.

Project Schedule & Costs

2019 — **PERMITTING & DESIGN**

2021 — **FOURTH INCINERATOR**
$150 million

2024 — **RENEWAL PROJECT**
$30 million

2027

Metro Plant Solids Management Improvements Facility Plan

August 30, 2018 Public Hearing

METROPOLITAN COUNCIL

Welcome

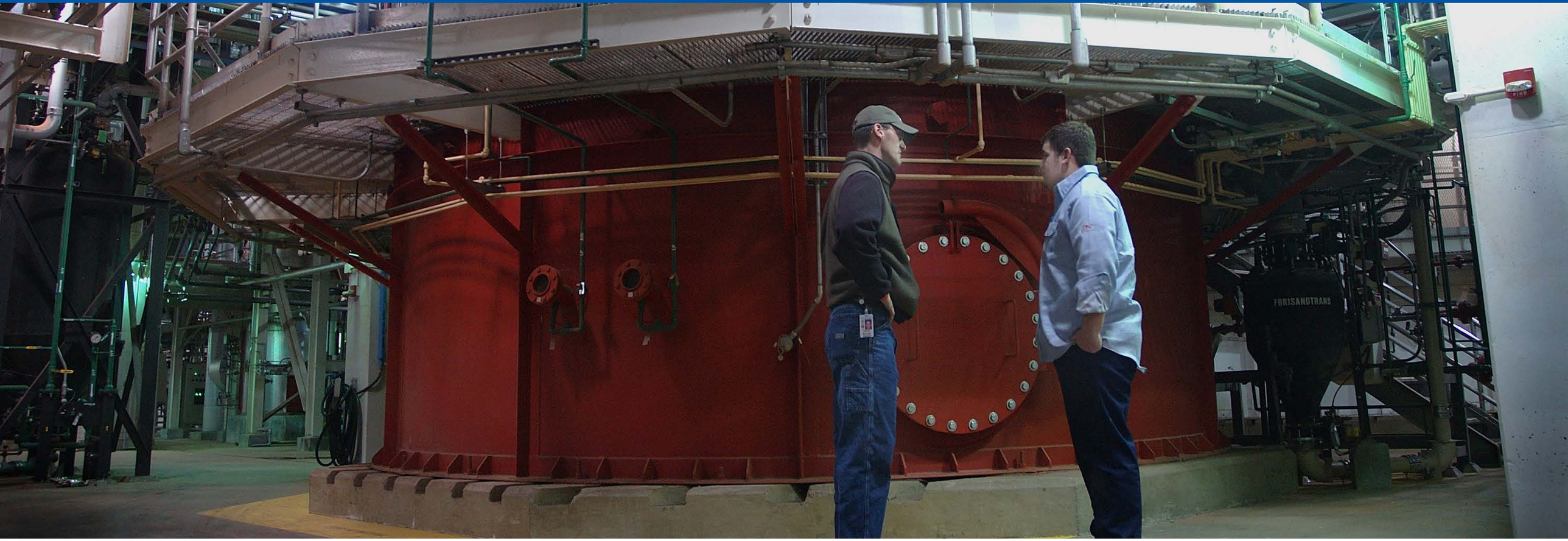
Wendy Wulff

Metropolitan Council Member – District 16

METROPOLITAN COUNCIL

Public Hearing Objectives

Share information and receive comments on the Metro Plant Solids Management Improvements Facility Plan



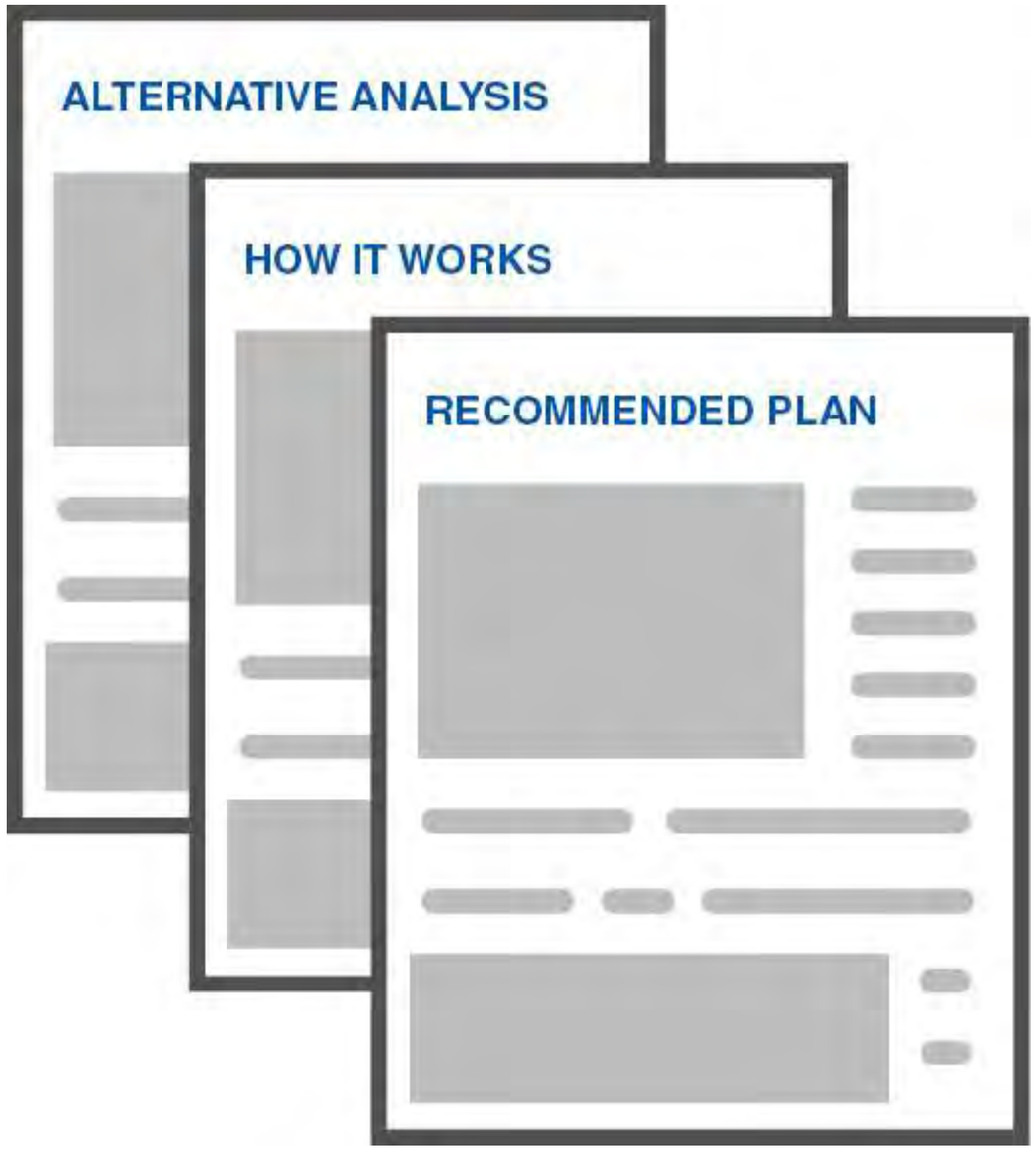
Public Hearing Agenda

Open House — 15 Min

Boards

Presentation — 30 Min

- Overview
- Existing Facilities
- Alternative Evaluation
- Recommended Plan
- Summary



Comments — 30 Min

Open House — 15 Min

Overview

Jeannine Clancy

Assistant General Manager

METROPOLITAN COUNCIL

Environmental Services

Protects public health and safety

Protects the environment

Fosters the economic growth of the region

WHO WE SERVE

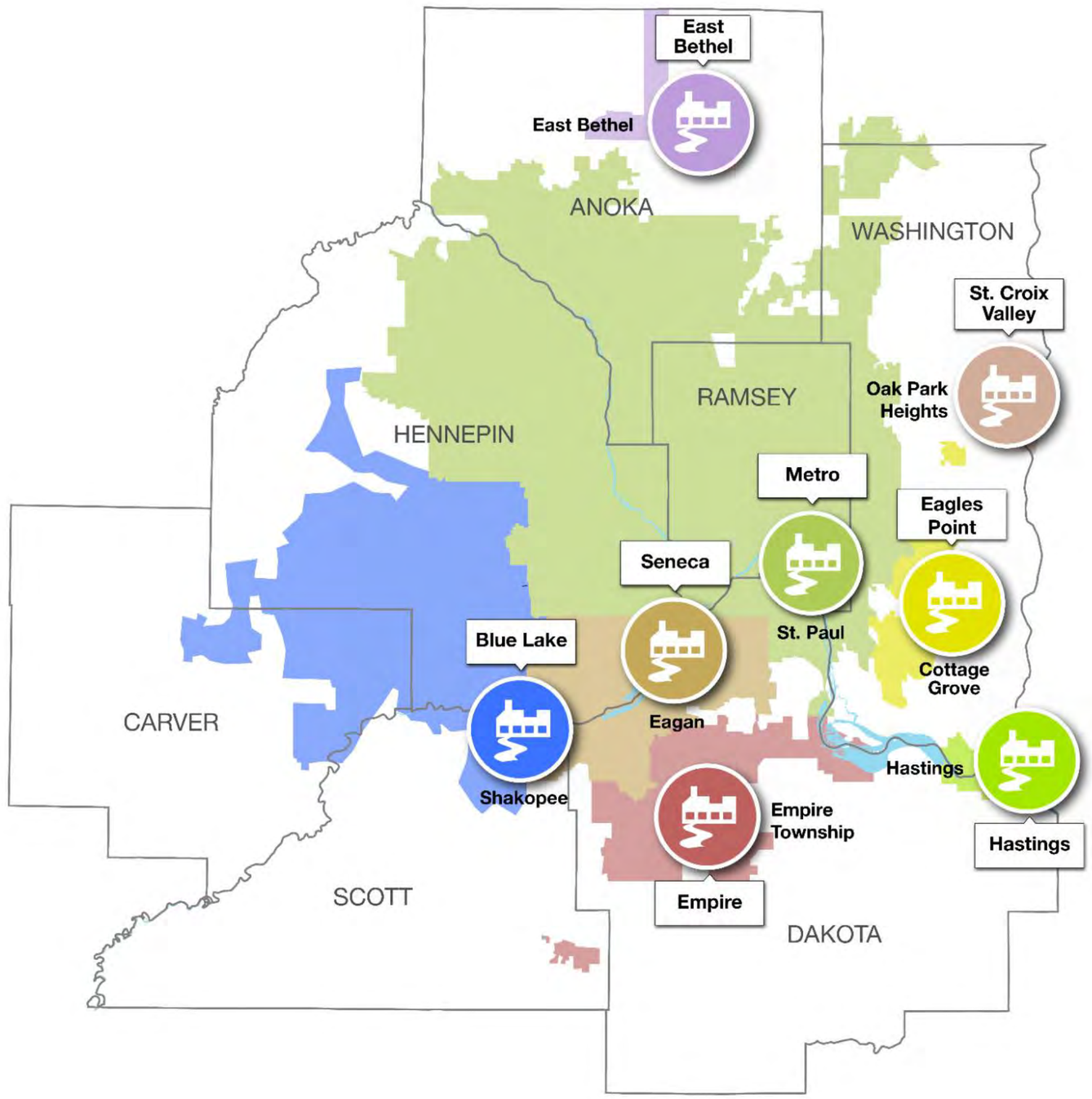
7-county Twin Cities Metro Area
109 communities
2,600,000 people

OUR FACILITIES

8 wastewater treatment plants
610 miles of interceptors
250 million gallons per day (avg)

OUR ORGANIZATION

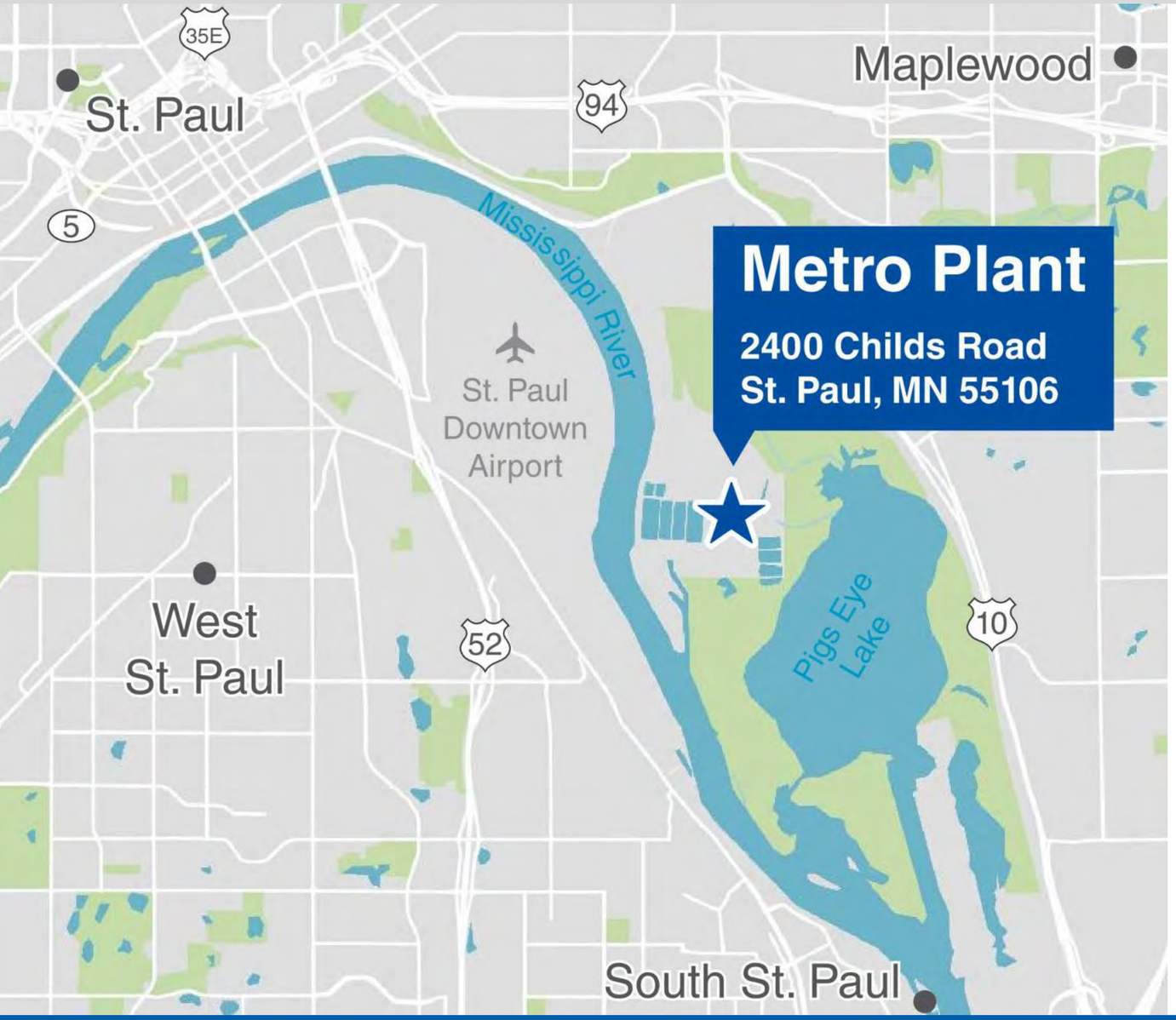
600+ employees
$7 billion in valued assets
$140 million / yr capital program



Project Overview Video

Project Location

The Metro Plant is located southeast of downtown Saint Paul.



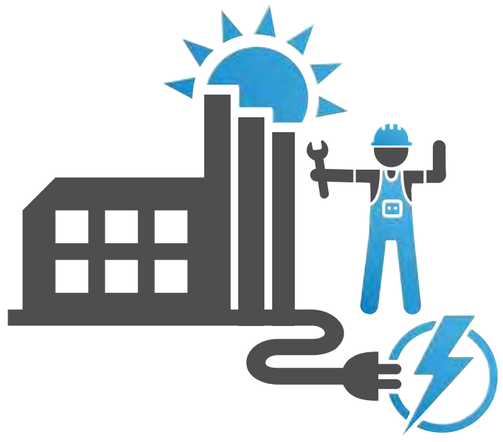
Metro Plant

- Treats 180 million gallons of wastewater every day for 66 communities
- Processes 850 wet tons of wastewater solids every day for 73 communities.

The Metro Plant processes 75% of the region's wastewater solids including solids from four other treatment plants.

Project Need

Preserve Existing Wastewater Treatment Plant Infrastructure



Serve Regional Population Growth

Adding Solids Processing Capacity at the Metro Plant is Important for the Region.

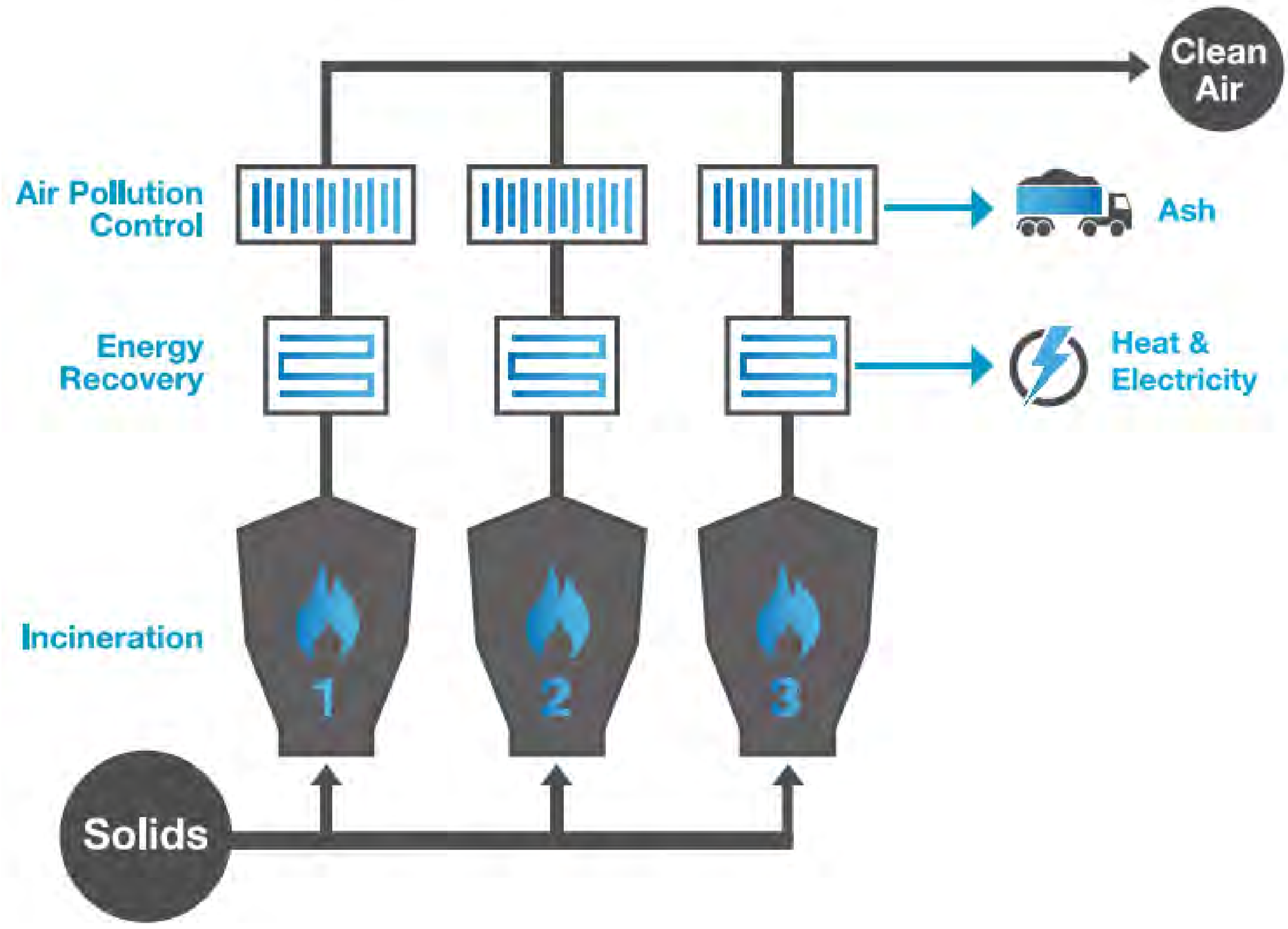
Existing Facilities

Stephen Norton

Senior Engineer

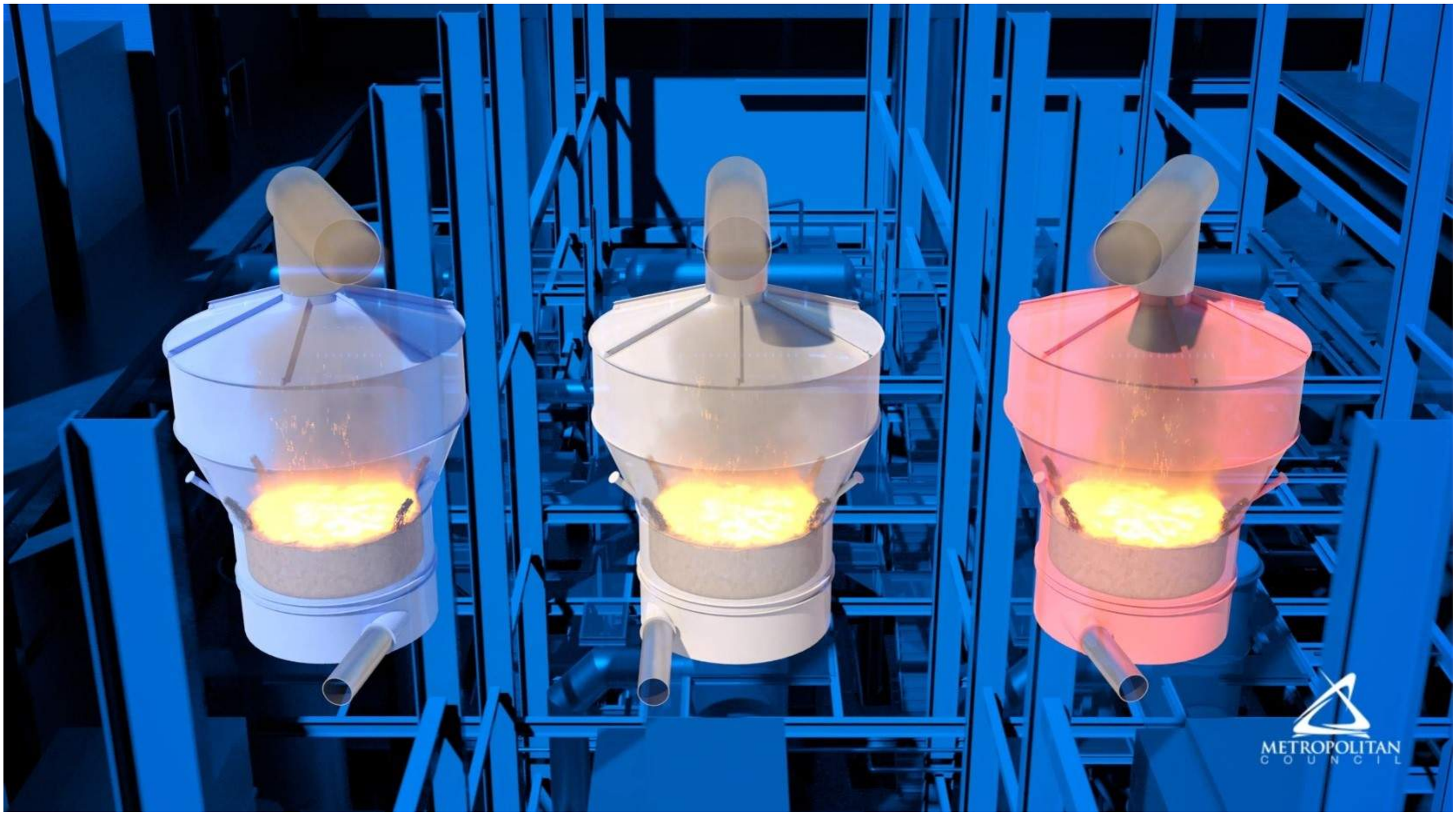
METROPOLITAN COUNCIL

Existing System

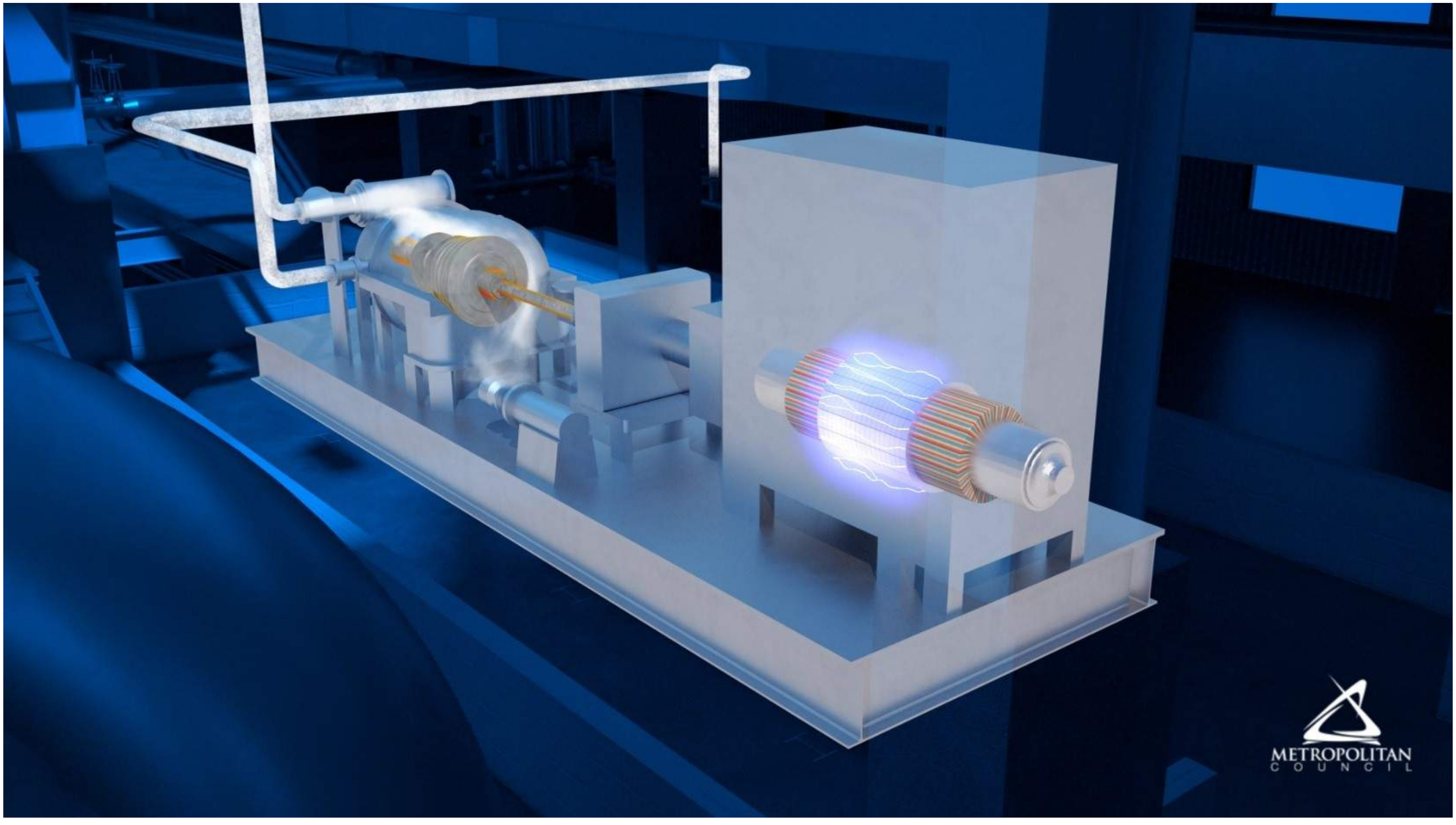


The Metro Plant has one of the most advanced and highest performing incineration systems in the country.

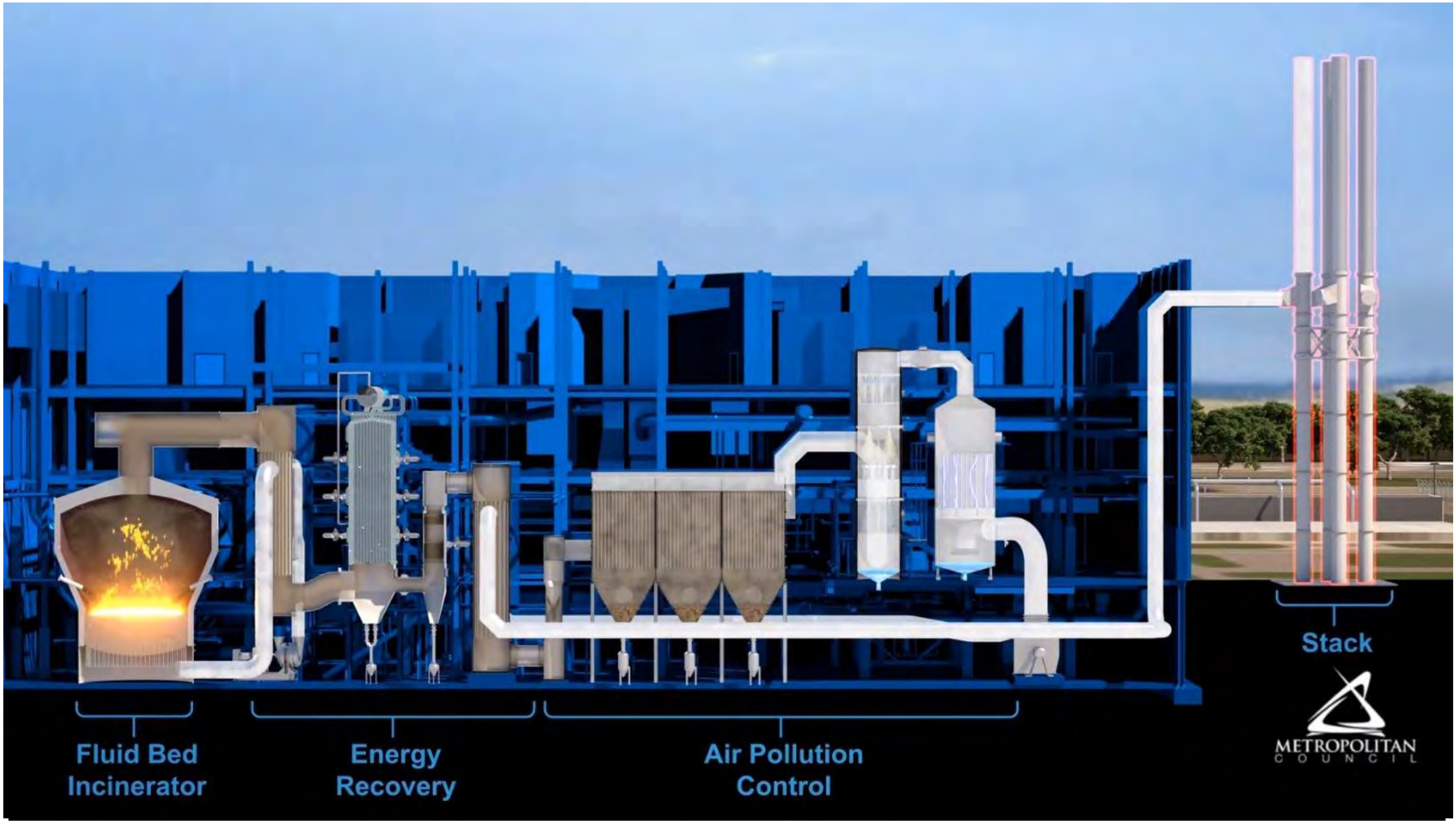
Incineration Video



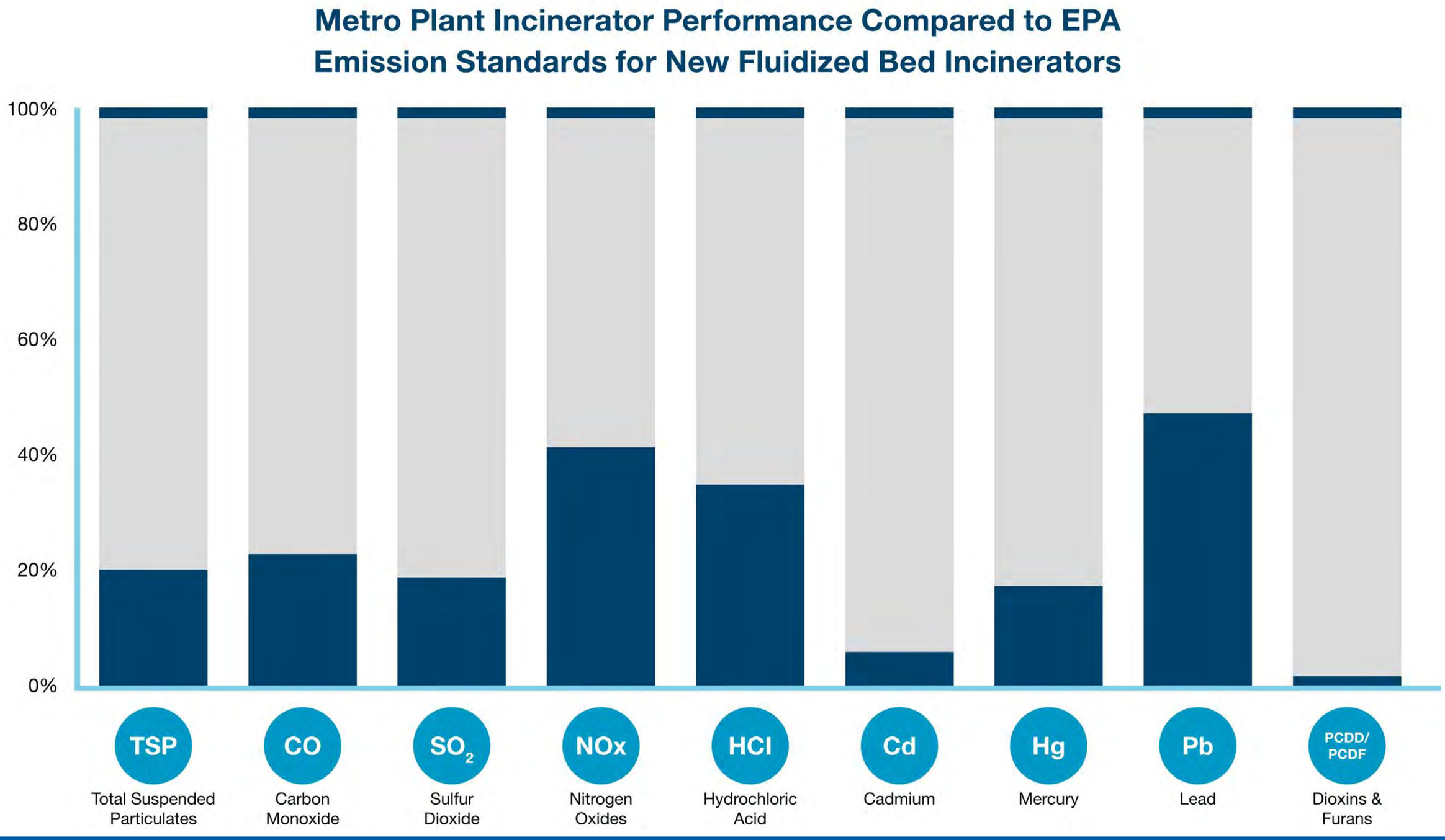
Energy Recovery Video



Air Pollution Control Video



Exceptional Air Quality



Existing incinerators meet EPA emission standards for existing and new fluidized bed incinerators.

Alternative Evaluation Recommended Plan

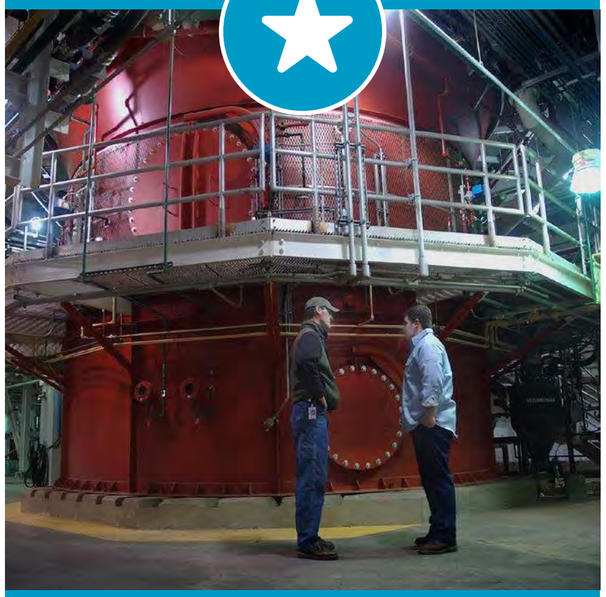
Rene Heflin

Plant Engineering Manager

METROPOLITAN COUNCIL

Alternative Analysis

Alternative 1



Fourth Incinerator

Alternative 2

Digest / Incinerate

Alternative 3

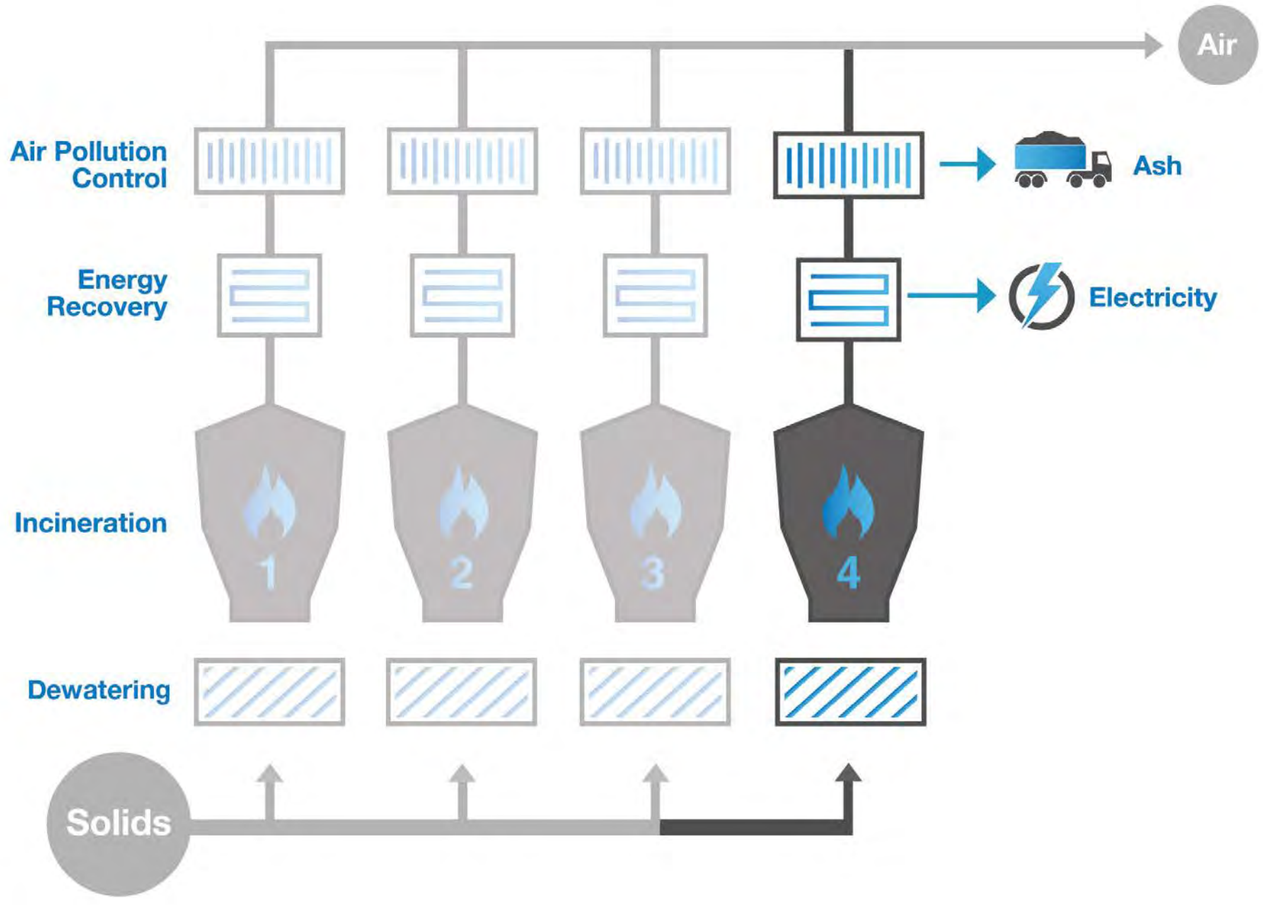
Digest / Dry / Sell Product

Alternative 4

Digest / Land Apply Cake

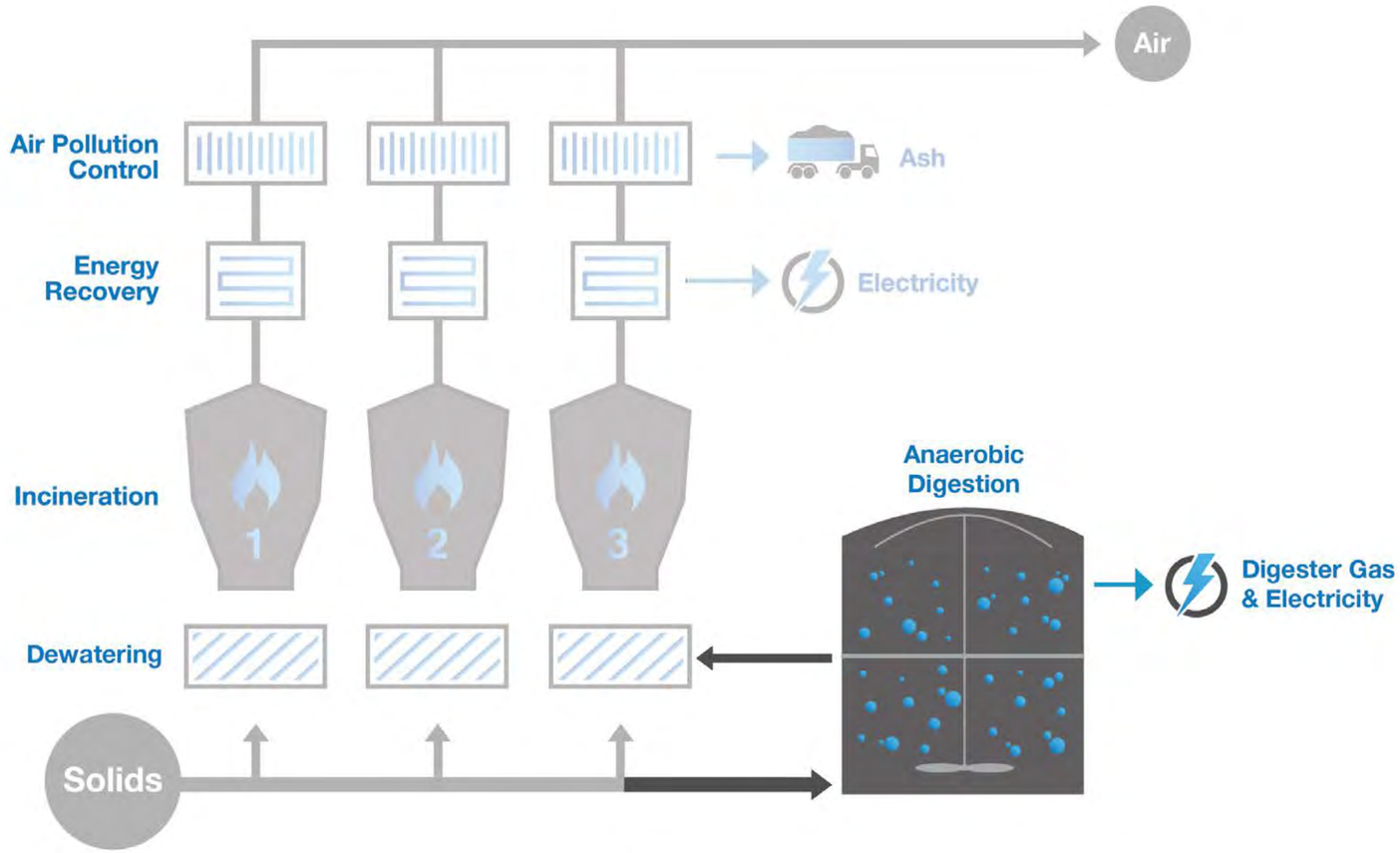
Adding a fourth incinerator is the recommended alternative.

Alternative 1: Fourth Incinerator



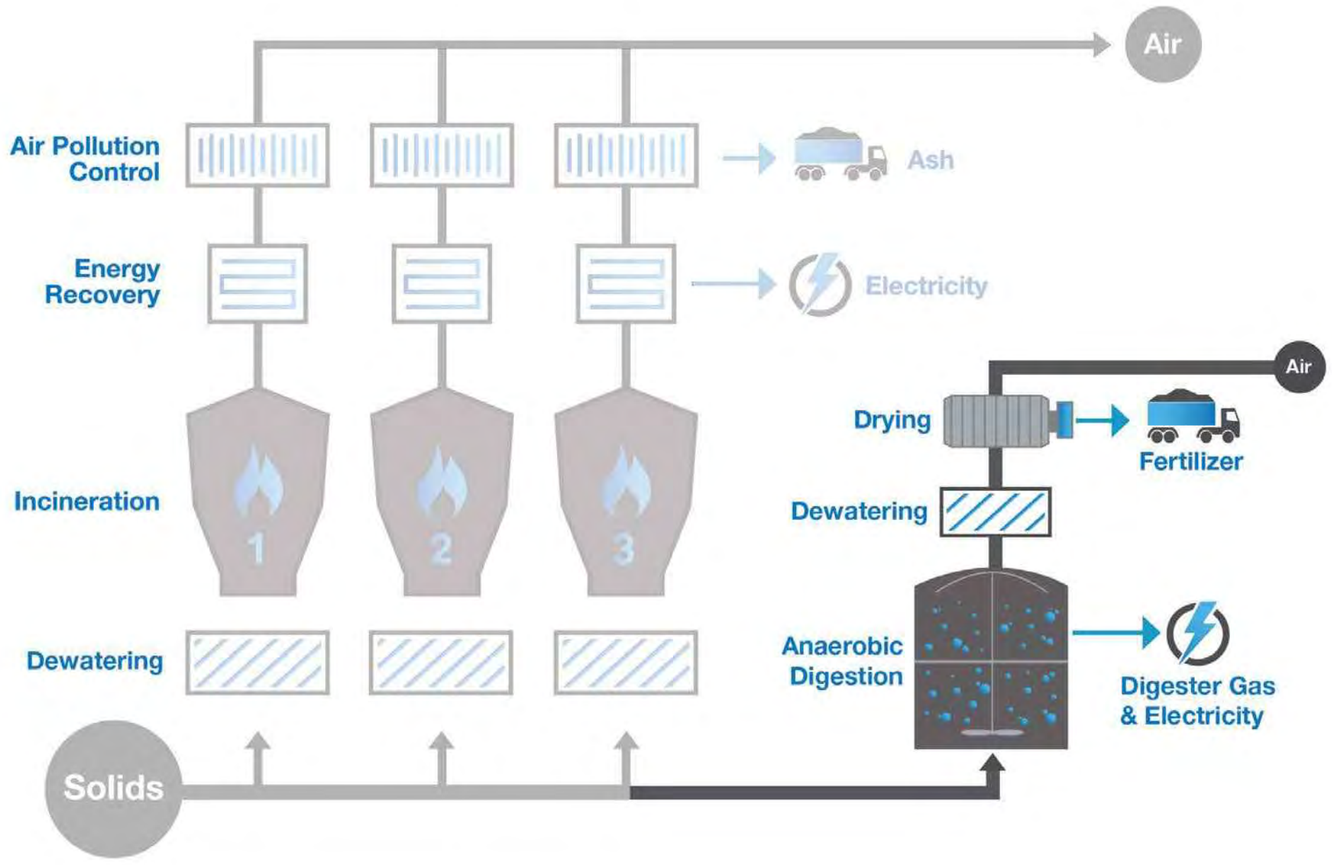
A fourth incinerator with energy recovery and air pollution control equipment similar and parallel to the existing incinerators.

Alternative 2: Digest / Incinerate



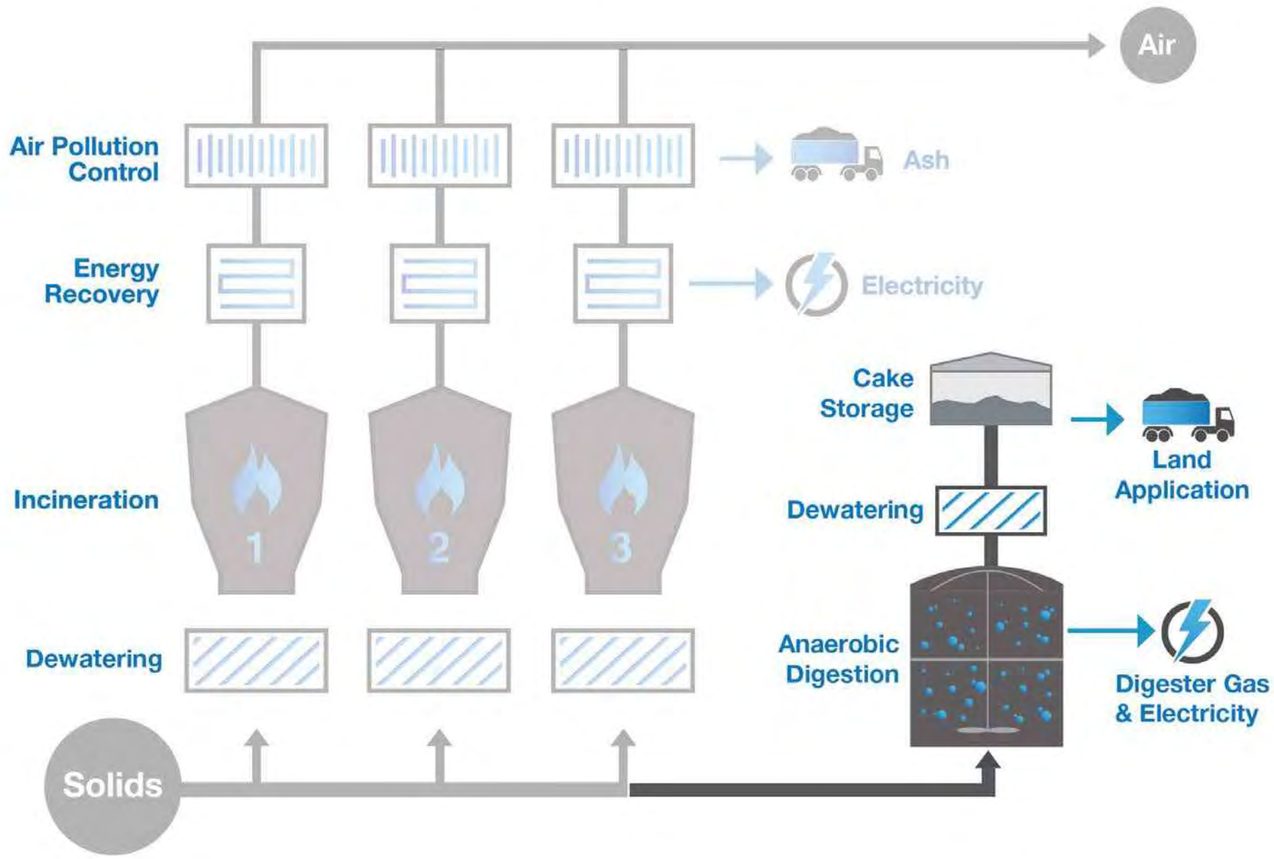
Anaerobic digesters with energy recovery for a portion of Metro's solids which are then dewatered and fed to the existing incineration process.

Alternative 3: Digest / Dry / Sell



Anaerobic digesters with energy recovery for a portion of Metro's solids which are then dried to a pellet type product and offered for sale.

Alternative 4: Digest / Land Apply



Anaerobic digesters with energy recovery for a portion of Metro's solids which are then dewatered and land applied.

Summary Cost Table

Cost	Alt 1: Fourth Incinerator	Alt 2: Digest / Incinerate	Alt 3: Digest / Dry / Sell	Alt 4: Digest / Land Apply
Capital Present Worth	$99M	$169M	$189M	$248M
O&M Present Worth	$18M	$65M	$90M	$77M
Total Present Worth	$117M	$234M	$279M	$325M

The fourth incinerator cost 50% less to construct, operate and maintain than the next lowest cost alternative.

Sustainability

Air Emissions

Energy Recovery

GHG Emissions

Nutrient Recovery

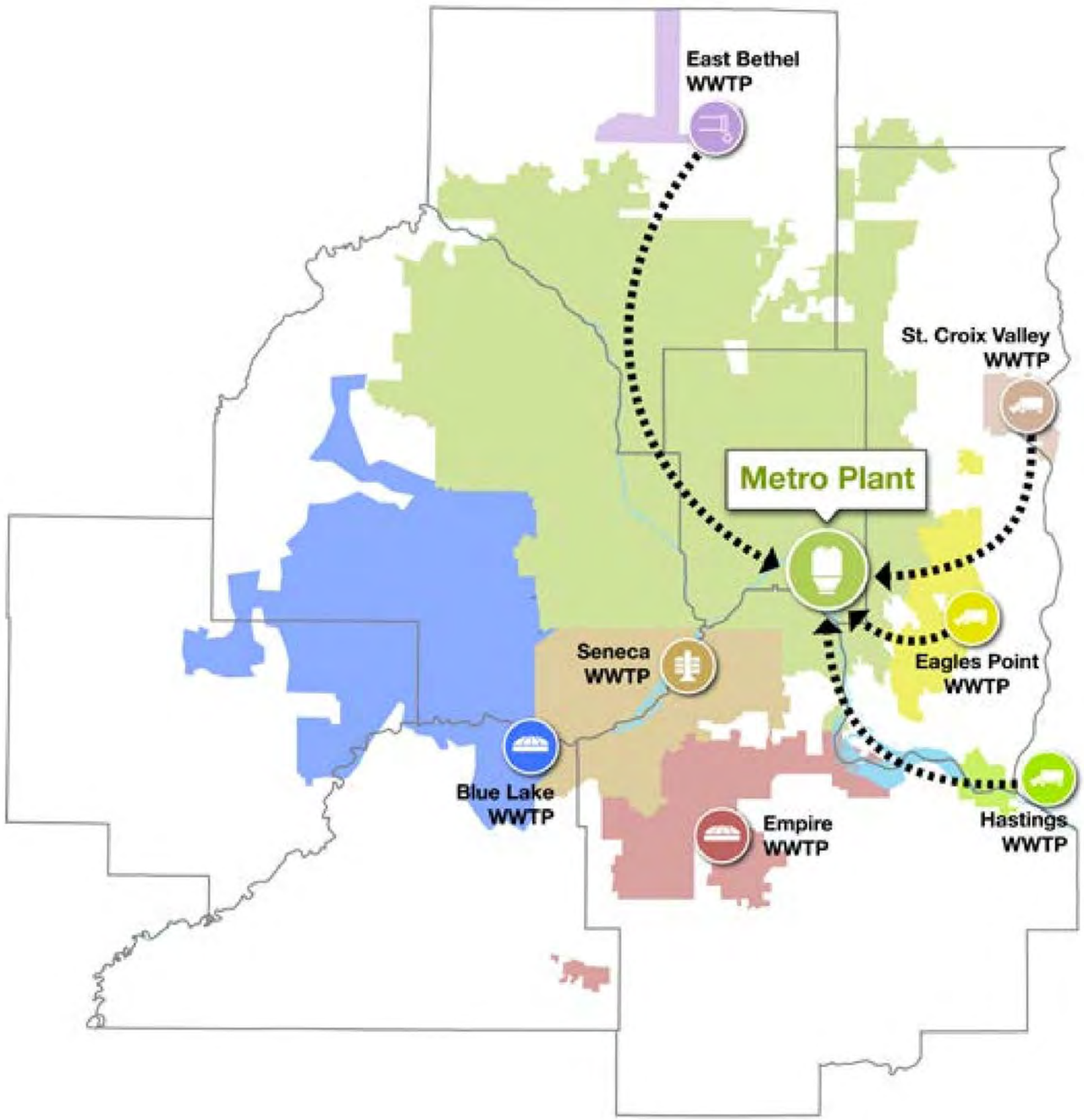
The fourth incinerator was found to be the most sustainable alternative.

Community Impact

- **Air Quality**
- **Odors**
- **Offsite Land Impacts**
- **Trucking**

A fourth incinerator provides the lowest impact to surrounding communities.

Reliability



- **Fourth incinerator allows Metro to backup other MCES facilities**
- **Fourth incinerator provides continuity of operations**

A fourth incinerator allows Metro to perform renewals and preserve existing infrastructure.

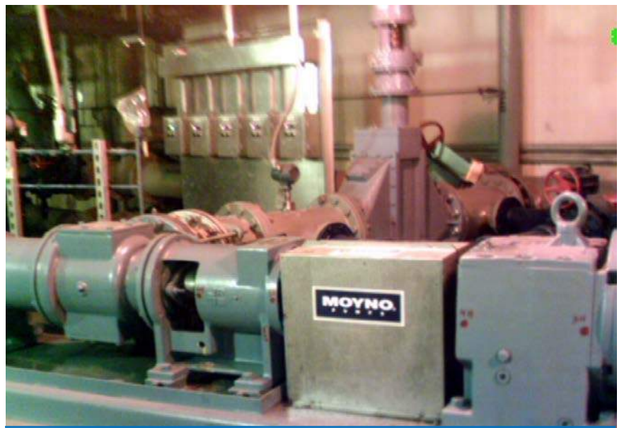
Fourth Incinerator

Cake Receiving | Dewatering | Fourth Incinerator | Energy Recovery | Air Pollution Control

Fourth Incinerator Cost Estimate

Item	Costs
Mobilization / General	$7.7M
Site Work / Building	$31.8M
Cake Receiving	$1.9M
Dewatering	$5.8M
Incineration	$29.6
Energy Recovery	$8.1M
Air Pollution Control	$11.3M
Contingencies	$28.9M
Engineering	$25.0M
Total	**$150.1M**

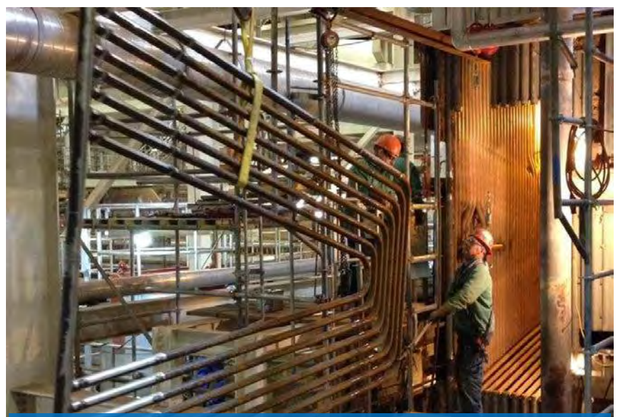
Renewal of Existing Incinerators



Sludge Storage

Fluid Bed Reactor

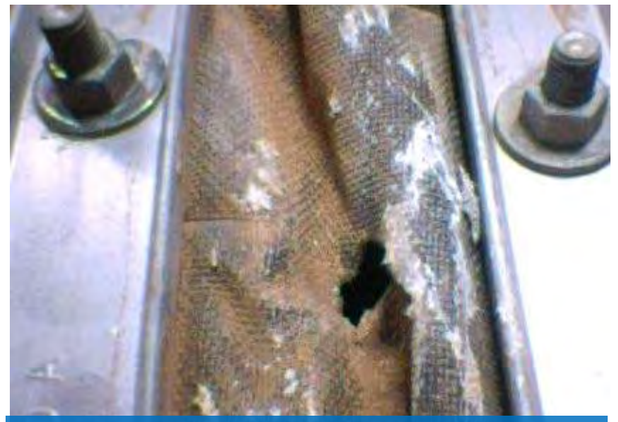
Primary Heat Exchangers



Waste Heat Boilers

Baghouse

Wet ESP



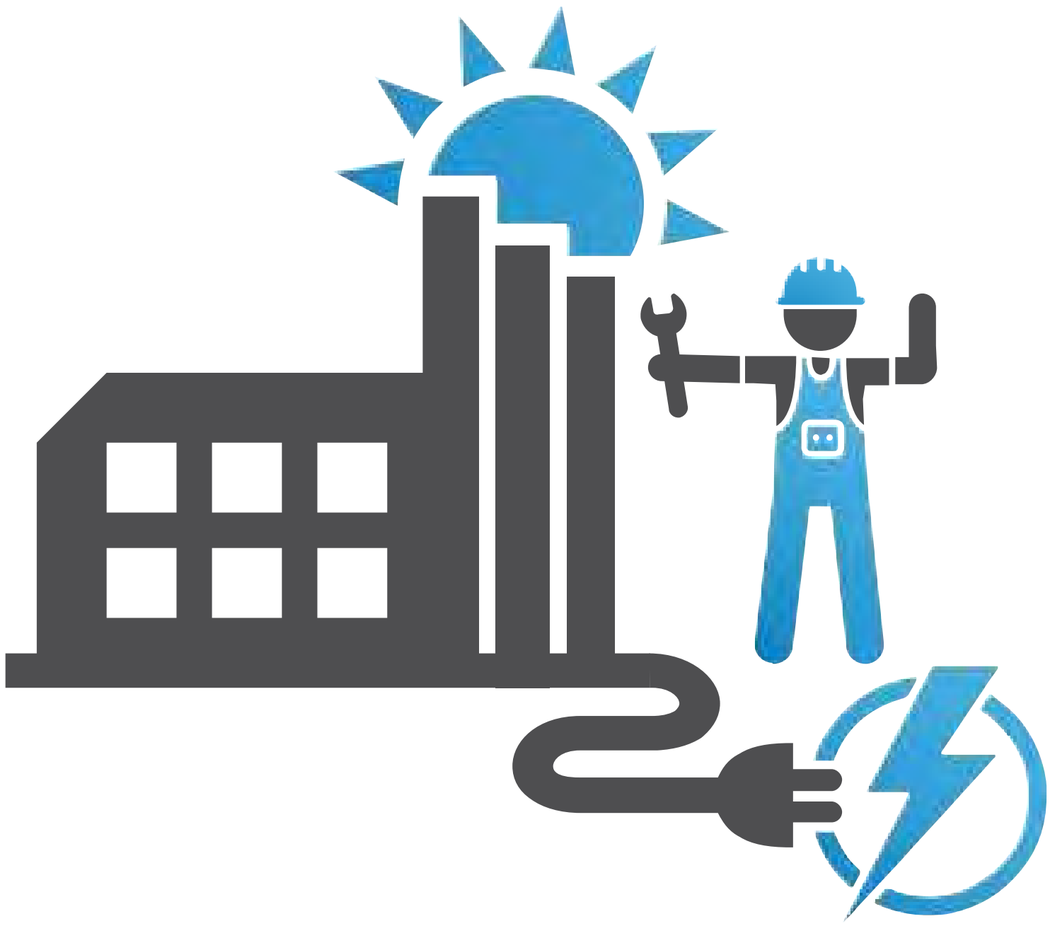
Expansion Joints

Ash Conveyance

Estimated Downtime Per Incinerator

Six-months → One-year

Renewal Cost Estimate



Item	Costs
Mobilization / General	$1.6M
Sludge Feed	$2.6M
Incineration	$4.0M
Energy Recovery	$7.3M
Air Pollution Control	$1.9M
Electrical / Instruments	$1.9M
Contingencies	$5.8M
Engineering	$5.0M
Total	**$30.2M**

SUMMARY

Jeannine Clancy

Assistant General Manager

METROPOLITAN COUNCIL

Fourth Incinerator Benefits

The fourth incinerator is the most **cost-effective** and **sustainable** alternative to meet the region's wastewater needs.

It will have the **lowest community impact**, and will improve the **reliability** of the wastewater treatment system.

Impacts on Rates

Municipal Wastewater Charge Rate Impact

+ $0.40 to $145.26/year

MCES charges communities a **wholesale** fee for annual volume

Communities charge businesses/ residents a **retail** fee

On average, **60%** of a resident or business's sewer fee is MWC.

Sewer Availability Charge Rate Impact

+ $5.27 to $2,485.00/connection

MCES uses SAC to pay a portion of debt service incurred by financing capital improvements

Local governments pay SAC to MCES

Resident/business owner pays SAC + local fees to their local government

The timing of the fourth incinerator was carefully coordinated with other capital projects to not have a significant impact on rates.

Project Schedule

Facility Plan Adoption in October

Design & Permitting
2019 - 2021

Fourth Incinerator Construction
2021 - 2024

Renewal of Existing Incinerators
2024 - 2027

The existing incinerators will be 20 years old in 2025.

Providing Feedback

Web	**www.metrocouncil.org/metrosolids**
Email	**info@metrosolids.com**
Voice	**651-691-9124**
Mail	**Metro Solids - MCES** **390 Robert St. North** **Saint Paul, MN 55101**
Receiving Comments	**September 10, 2018**

Comments

METROPOLITAN
COUNCIL

METROPOLITAN COUNCIL ENVIRONMENTAL SERVICES

Metro Plant Solids Management Improvements Facility Plan

PUBLIC HEARING
Thursday, August 30, 2018
6:30 p.m.

Wellstone Center, Room 212
179 Robie Street East, Saint Paul, Minnesota

PRESENT:

Wendy Wulff, Metropolitan Council Member
Metropolitan Council Member, District 16

Rene Heflin
Plant Engineering Manager, Technical Services
Metropolitan Council Environmental Services

Jeannine Clancy
Assistant General Manager, Technical Services
Metropolitan Council Environmental Services

Stephen Norton
Senior Engineer
Metropolitan Council Environmental Services

Tim O'Donnell
Senior Information Coordinator/Citizen Liaison
Metropolitan Council Environmental Services

* * *

* * *

(The following proceedings transpired.)

* * *

MS. WULFF: Good evening, and welcome to the Metropolitan Council Environmental Services Public Hearing. We appreciate you taking time out from your busy schedules to come and give us feedback on our project.

My name is Wendy Wulff, and I'm a member of the Metropolitan Council Governing Board and a member of the Environment Committee and Community Development Committee.

At this time, I would like to call the Public Hearing to order. The subject of this Public Hearing is the Metropolitan Council Environmental Services Draft Facility Plan for our Metro Plant Solids Management Improvements Project.

Our purpose tonight, is somebody going to be doing the clicker for me?

MS. CLANCY: Sure.

MS. WULFF: Our purpose tonight is to summarize our proposed wastewater solids processing improvements to the Metro Wastewater Treatment Plant, explain the next steps in the process, and then we'll listen to and collect your comments.

Our staff will make a presentation in a few minutes, focusing on our existing facilities at the Metro Plant, alternatives we evaluated for improving these facilities, and our recommended plan.

Following the presentation, we will provide ample time for you to offer your comments. And then staff will be available to meet informally with you one-on-one at the display boards to answer any questions you may have.

This is a formal, legal, public hearing whose purpose is to receive your comments. Council representatives are limited in the ability to respond to questions or comments directly during the Hearing.

Counsel staff will compile all comments and provide responses in a summary documentation they present to the Council itself. That summary documentation will be mailed to all who provide formal comments and will be available on the Council Website.

MCES Metro Plant Solids Management Improvement Facility Plan includes these key activities and dates.

We conducted an Open House about the project on June 13, 2018; we published a Legal Notice of the Public Hearing in the Star Tribune newspaper and the St. Paul Pioneer Press on July 29, 2018; we mailed over

4,000 Public Hearing Notices to residents in the immediate vicinity of the Metro Plant on July 27, 2018; we emailed the Public Hearing Notice via .gov delivery on July 31, 2018, to numerous government, community organizations,and other stakeholders.

For the last several weeks, the Draft Facility Plan has been available for the public to review at four libraries in St. Paul; the George Latimer Central Library, the Sun Ray Library, the Riverview Library, and the Dayton's Bluff Library.

The Draft Facility Plan has also been available at the Metropolitan Council building in downtown St. Paul and on the Metropolitan Council Website.

We're holding this Public Hearing today on August 30, 20118, and the public comment period ends on Monday September 10, 2018, at 5:00 p.m. Staff expects to present a summary of public comments and responses to the comments to the Council's Environment Committee in September 2018, and Council decision-making on the Facility Plan is expected in October 2018.

As a brief background, our Draft Facility Plan for this project outlines the need for additional wastewater solids processing capacity at the Metro Plant so that we can preserve existing wastewater

infrastructure and serve regional population growth.

The Draft Facility Plan also discusses the alternatives that we evaluated and our recommendation to move forward.

Joining me tonight to present the Draft Facility Plan for this project in more detail are Jeannine Clancy, Assistant Manager for Technical Services at MCES; Rene Heflin, Plant Engineering Manager for MCES; and Stephen Norton, a Senior Engineer and Project Manager for MCES. Where'd Stephen go? There you are, I couldn't see you around Jeannine, okay, sorry.

Jeannine, Rene, and Stephen will explain the proposed project in more detail in just a few minutes. Bear with me that I have a script that I have to read.

As we conduct the Public Hearing, there are a few things I'd like to point out. If you are interested, there is a review copy of the Draft Facility Plan at the registration table. All interested persons may present comments or opinions as they relate to the Draft Facility Plan.

If you wish to speak at this hearing but have not signed up yet, please do so at the registration table. We will call people to speak in the order in which they have signed up, and each speaker should come

forward to the speakers' table and state their name, address, and the organization they represent, if any, because the hearing is being recorded for the official Public Record. That's why we have a Court Reporter here.

Written statements in addition to verbal comments are also welcome, and all comments are weighted the same so don't feel like you have to speak or have to do things in writing. You can present your information in whatever manner is most comfortable for you.

Individuals will have three minutes to offer their remarks, and designated representatives of groups or organizations will have five minutes.

Because this is a public hearing, questions about the presentation would need to come in the form of a public comment in that part of the hearing which will follow the presentation. Staff will not be able to respond to questions during the presentation itself.

And at this time, I turn it over to Jeannine Clancy to begin our presentation.

MS. CLANCY: Hello, everybody, thank you for coming this evening. Again, my name is Jeannine Clancy. I'm the Assistant General Manager for Technical Services.

In Technical Services, our group is responsible for the MCES, the Environmental Services capital program, as well as regional wastewater system planning. And then we are also responsible for the allocation of how we operate our cost to the 109 cities that we serve.

So a little bit about Environmental Services. We serve the seven-county Twin Cities metropolitan area. Again, 109 cities are connected to our system, and that equates to 2.6 million people, I guess I should stand in front of the microphone, 2.6 million people who are served by the regional wastewater system.

Our facilities include eight wastewater treatment plants located throughout the metropolitan area. We own 610 interceptors which intercept wastewater from the local community collection system in the 109 cities, and we treat on average 250 million gallons of wastewater every single day.

Our organization is made up of about 600 employees. We have about $7 billion in assets that we the manage, and again, our capital program ranges in about the vicinity of $140, sometimes it dips to $130 up to $150, but generally in that $140 million every single year.

When you think about the wastewater system, our Environmental Services, we exist to promote, to protect public health, protect the environmental health of the region, and the wastewater system serves as part of the Council's overall mission which is to promote the economic growth of the region.

So with that, I'd like to give a quick project overview.

(A video was played.)

VIDEO SPEAKER: When wastewater is produced in the Twin Cities region, it flows through an underground network of local and regional sanitary sewers to one of eight wastewater treatment plants owned and operated by Metropolitan Council Environmental Services.

The largest wastewater treatment plant in our system is the Metropolitan Wastewater Treatment Plant, or what we commonly call the Metro Plant.

Not only does the Metro Plant treat 65 percent of the region's wastewater, it also processes 75 percent of all solids removed from the region's wastewater. Solids primarily include sanitary waste and residues from home cleaning and industrial processes.

The Metro Plant is located along the

Mississippi River, three miles southeast of downtown St. Paul. The plant uses three incinerators to process wastewater solids.

We propose adding a fourth incinerator. This will increase our solids processing capacity, which will cover the downtime of rehabilitating existing incinerators and serve future regional population growth.

Adding a fourth incinerator at the Metro Plant is the most cost effective and sustainable solids processing capacity alternative. It has the lowest community impact and improves reliability of our region's wastewater treatment system.

To learn more, please visit our project Website or contact our project team.

(Video ended.)

MS. CLANCY: So I'll just go over some highlights from the video. Again, the project is located in downtown St. Paul at 2400 Childs Road. The Metro Plant has been there since about 1934. The Metro Plant itself treats about 180 million gallons of wastewater everyday from 66 communities in the region.

We also process 850 wet tons of wastewater solids everyday from 73 communities as was noted in the video. We actually transport some of our wastewater

solids from some of our smaller plants to the Metro Plant for efficiency purposes. And again, the Metro Plant processes about 75 percent of the region's wastewater solids.

The project need is to preserve existing wastewater treatment plant infrastructure. The fourth incinerator is needed so that we have added capacity to rehabilitate and conduct renewal projects on the existing three incinerators, which will be about 20 years old in 2025, as well as to serve regional growth.

By 2050, we anticipate an additional half-million residents will be joining the metropolitan area, and frankly, as we can see, much of that growth is occurring in the urban core as opposed to any outer areas of the region.

And so with that, I'd like to turn it over to Stephen Norton.

MR. NORTON: Thanks, Jeannine. My name is Stephen Norton, and I'm a Senior Engineer and Project Manager for MCES. Tonight, I'll be talking about the existing facility, solids processing facilities, at the Metro Plant.

The Metro Plant has been incinerating solids for 80 years and has one of the most advanced and highest performing incineration systems in the country.

Each incinerator system includes a fluidized bed incinerator, energy recovery, and air pollution control equipment. Next, we'll show a series of three videos that illustrate how these systems work to reduce solids, recover energy, and protect the environment.

The first of these videos shows how the incineration process works.

(A video was played.)

VIDEO SPEAKER: This module will explain incineration at the Metro Plant. The Metro Plant has been incinerating solids since it opened in 1938, and has used fluid bed incineration technology since 2005.

Incineration of wastewater biosolids is an efficient thermal combustion process that reduces solids by 95 percent. A fluid bed incinerator contains a bed of sand that has specific granular and chemical properties.

Air distributed under the bed causes the sand to swirl and act like a fluid, much like a boiling pot of water.

We use natural gas for heat-up when turning on an incinerator that has been shut off for maintenance. Like adding wood to a campfire, biosolids fed into the fluid bed incinerator combust when it reaches 1375 °F. That's hot.

Biosolids combustion releases flue gas containing water vapor, carbon dioxide, and fine ash particles through the top of the incinerator, which all go through further treatment.

The three fluid bed incinerators at the Metro Plant operate most of the time without the need for supplemental fuel. This is called autogenous combustion. As long as biosolids are fed, the combustion continues.

To learn more, please visit our project Website or contact our project team.

(The video ended.)

MR. NORTON: The next video will outline how the energy recovery system works.

(A video was played.)

VIDEO SPEAKER: This module will explain energy recovery at the Metro Plant. Energy recovery saves the Metro Plant and its customers over $2.5 million per year in electricity and heating costs.

We capture the heat released from incinerating wastewater biosolids. Recovered heat energy preheats combustion air in the incinerators, which reduces startup fuel use.

Water in the waste heat boilers is converted into steam. During the winter, steam is used to heat

plant buildings.

During the summer, a turbine converts steam into electricity, reducing the plant's purchased electricity by 2.4 megawatts, which is enough to power 2,400 homes.

And finally, recovered heat energy evaporates moisture, so there was no visible plume coming from the incinerator stacks.

To learn more, please visit our project Website or contact our project team.

(The video ended.)

MR. NORTON: And lastly, I will outline air pollution control system.

(A video was played.)

VIDEO SPEAKER: This module will explain air pollution control at the Metro Plant.

The Metro Plant incinerators use state-of-the-art pollution control equipment to treat the gas produced during incineration.

Carbon is used to eliminate mercury. The baghouse filters out particulate and metals using cloth filter bags.

In the wet scrubber, water cooling sprays remove particulates and acid gases. A little caustic solution is added when needed.

The scrubber water is returned to the plant for treatment. A wet electrostatic precipitator collects fine particles onto electrically charged tubes.

Emissions are regulated by the Minnesota Pollution Control Agency and the U.S. Environmental Protection Agency.

Our Metro Plant incinerators have an exceptional environmental compliance record. Emissions are clean, colorless, odorless, and have no visible plume.

To learn more, please visit our project Website or contact our project team.

(The video ended.)

MR. NORTON: So like the video mentioned before, the Metro Plant, the existing Metro Plant incinerators have an exceptional track record of environmental compliance, and MCES is proud of their performance.

The fourth incinerator considered wants to meet very stringent air emission regulations. In 2010, new federal air emission standards were set for existing incinerators constructed before 2010. At that time, more stringent standards were also set for new incinerators after 2010.

The Metro Plant incinerators have performed so well that the emissions data from the Metro Plant was actually used in establishing the more stringent standards for new incinerators.

This graph compares the emission data from the Metro Plant incinerators represented as a percentage of the corresponding federal standard for new incinerators.

The graph shows that the emissions from the existing incinerators are well below the more stringent standards for new incinerators.

The graph also demonstrates the capability that the fourth incinerator would have in meeting the new lower emission limits and continue the Metro Plant's exceptional air quality performance.

With that, Rene Heflin will present the alternative evaluation and recommended plan.

MS. HEFLIN: Thank you, Stephen. My name is Rene Heflin. I'm the Manager of Plant Engineering for Technical Services.

I'm responsible for the proposed Facility Plan. I'm here to present the alternative evaluation and also the plan for capital projects.

A wide range of solids treatment alternatives were narrowed down to the four shown here. These

alternatives maximize the region's investment in the existing incinerator facilities at the Metro Plant.

The first alternative adds a fourth incinerator; the second adds a large digestion complex that incinerates the digested solids in the existing incinerators.

Alternative 3 adds a digestion complex and dryer facilities to produce fertilizer pellets. Alternative 4 adds a digestion complex, adds a digestion complex to produce biosolids for land application.

Alternative 1, the fourth incinerator, is sized to treat 125 dry tons per day of solids. That's the equivalent to the existing units.

Alternatives 2 through 4 are sized to offload the incinerators by 75 dry tons per day. This is the minimum required to accommodate equipment renewal and population growth through the year 2050.

We have projected a population increase of 500,000 new residents by the year 2050. That's an additional 60 dry tons per day. The 75 is the minimal for the growth and the equipment renewal, equipment renewal needs.

The alternative evaluation considered cost and non-cost factors. The non-cost factors included

sustainability, community impacts, and also reliability. Adding a fourth incinerator is the recommended alternative based on both cost and non-cost factors.

This is a concept schematic for Alternative 1, adding the fourth incinerator. It is basically a replicate of the existing units and consist of dewatering, an incinerator, energy recovery, and air pollution control equipment. I'd like you to note that this alternative has the least amount of remaining solids to be trucked off-site.

Alternative 2 keeps the existing three incinerators and adds a large 150 dry-ton-per-day digestion complex to reduce the solids loaded into the incinerators by 75 dry tons per day. Digested solids are incinerated.

This alternative includes a combined heat and power engine generator to recover energy from the digester gas. The solids remaining after incineration is about the same as the first alternative adding a fourth incinerator.

Alternative 3 keeps the existing three incinerators and add a digestion complexion smaller than Alternative 2. It treats 75 dry tons per day, and the digested solids are sent to a dryer facility to

produce pellets that can be sold as a fertilizer.

This alternative is similar to our Blue Lake Wastewater Treatment Plant which is much smaller than Metro. Based on our experience at the Blue Lake Wastewater Treatment Plant, the dryer will consume all of the digested gas plus some supplemental fuel. The solids remaining after treatment is two times that of the fourth incinerator alternative.

Alternative 4 also keeps the existing three incinerators and installs a 75 dry ton per day digestion complex. But the digested solids are land-applied as a soil amendment.

This alternative has a combined heat and power engine generator for to recover energy from digester gas. This alternative is similar to our Empire Plant, which is also much smaller than Metro. The solids remaining after treatment is four times more than the fourth incinerator alternative.

The cost alternative, the cost evaluation of alternatives is based on 20-year net present worth reference to the existing three-incinerator system. The fourth incinerator costs less, 50 percent less than the lowest cost digestion alternative to construct, operate, and maintain.

All digestion alternatives are more capital

intensive than the fourth incinerator. That's because it takes eight digesters compared to one incinerator to treat 75 dry tons per day of solids.

Looking at the operating and maintenance costs, Alternative 2 is higher due to increased supplemental fuel required to incinerate digested solids.

Alternative 3 is higher due to lower electricity cost savings. All of the digester gas plus supplemental fuel is used in the dryers.

Alternative 4 is higher due to high cost of solids' handling. Alternative 4 is actually the highest producer of electricity, but the fourfold increase in solids' handling outweighs energy cost savings.

Next, I will present our evaluation of the non-cost factors, starting with sustainability. For this analysis, we defined sustainability as protective of the environment, and we considered the following categories: air emissions, energy recovery, greenhouse gas emissions, and nutrient recovery.

The fourth incinerator has, was found to be the most sustainable alternative. It has the lowest air emissions due to controlled combustion and advanced air pollution control, and it has excellent energy

recovery.

We found all alternatives to be equal with respect to greenhouse gas emissions. Greenhouse gas emissions from wastewater treatment plants are insignificant compared to other sources in the Twin Cities region, such as transportation.

We considered phosphorus to be the most important nutrient to recover because it is non-renewable. Due to the potential to beneficially use ash as a phosphorus fertilizer, we found all alternatives equal with respect to phosphorus recovery.

The Council is currently investigating the beneficial use of Metro Plant ash as a phosphorus fertilizer with the University of Minnesota. We're about two years into a three-year crop study, and results thus far are promising.

Included in your folders, and everybody's picked up one, if you would like to look at additional information, we've included an insert on this, about this study with the University of Minnesota.

The fourth incinerator has the lowest community impact. It will have no detectable impact to the quality of air in the surrounding communities. No odors are associated with incineration.

The fourth incinerator is the lowest, has the

lowest off-site land impacts. It can be constructed within the existing plant boundaries, and it has minimum off-site trucking.

The Metro Plant has incinerated, has used incineration technology since 1938. We all three have said that. Adding a fourth incinerator increases reliability.

First, it provides continuity with existing operations. Second, it is the only alternative that provides reserve capacity that can back up solids treatment at our other solids processing plants. Those are Seneca, Empire, and Blue Lake.

The recommended plan is two parts; adding a fourth incinerator and renewing the existing three.

For the first part, the fourth incinerator would be installed in a 26,000 square foot addition to the existing Solids Management building.

We did add cake receiving facilities so that we could load in solids from the other plants as a backup. The estimated cost of the fourth incinerator is $150 million.

The second part of the recommended plan is to renew the existing three incinerators. When construction for the renewal starts, the existing incinerators will be 20 years old.

We need to construct the fourth incinerator first so that we can take each of the existing units out of service for an extended period of time.

This slide shows the type of work we have planned. I will point out just a few of those.

It is an extremely harsh environment inside the incinerator chambers. We need to rehabilitate the refractory lining, and also, I'll just point and say where I'm starting, we need to rehabilitate the refractory lining and also the air distribution system.

At the baghouses, we need to address corrosion and erosion issues. At the waste heat boilers, we will be prepared to replace large sections of waste heat boiler twos.

We have scheduled a one-year shutdown period for each incinerator for construction of the renewal work.

The estimated cost of renewal is $30 million. The estimated cost of the total program, add the fourth incinerator plus the renewal work, is $180 million.

Thank you. At this time, I would like to return the presentation to our Assistant General Manager, Jeannine Clancy.

MS. CLANCY: Thanks, Rene. So I'll wrap up the presentation with our summary, a schedule, a very

high-level schedule, impact on rates, and how to provide feedback.

So as Rene mentioned, she went through the alternatives analysis, and we found that the fourth incinerator is the most cost effective and sustainable alternative to meet the region's wastewater needs, and it will have the lowest community impact, and will improve the reliability of the wastewater treatment system.

First of all, impact on our rates. So MCES, as you can see on the top, MCES charges the 109 communities that we serve a wholesale fee for the annual volume of our wastewater service.

We charge that fee to 109 communities, and in turn the communities charge the businesses and residents for retail fee. That's generally wrapped into the water and sewer bill that each of you most likely pays if you are in the region area.

I think there may be one community that actual wraps it up into their property tax fees, but out of 109, I think all of them use a utility-based fee.

And on average, our wholesale fee is about 60 percent of a resident or business's sewer fee. So if you take the utility fee and total the water and

sewer together, which is often more, it would be 60 percent of the sewer portion only.

So the project would increase our municipal wastewater rates by about 40 cents per household per year, or 0.2 of a cent increase.

So it doesn't seem like a lot, I saw the expressions. But the reason for that is because there are -- it's spread over 2.6 million people in addition to the number of businesses that are in the region.

The second way that we collect these is through the sewer availability charge. So we often call that the SAC fee, or the sewer availability fee.

MCES uses the SAC fee to pay a portion of debt service incurred by financing capital improvements. So SAC fees are paid by local governments to MCES based on connections to the regional wastewater system.

Typically speaking, residents and businesses only pay SAC and local fees to their local government.

So this project would increase the sewer availability charge by roughly $5.27 per SAC unit, or again, a 0.2 percent increase. So these increases are based and estimates are based on the 2018 flow data and expenditure data.

In any given year, some existing debt is paid

off and some new debt is added, which all impacts the final proposed rate increases.

The project was specifically timed so that we would not have a significant impact on our wastewater rates.

So in other words, I mentioned to you earlier that our capital program runs around $140 to $150 million a year. This is a very large project, and will be constructed over a period of years.

So we have managed our capital expenditures, our anticipated capital expenditures so that we won't have a significant change in that expenditure rate over that period of time.

Here's our project schedule. We've been working on quite a bit of outreach the last three months, including meetings with local government units, regulatory agencies, and neighborhood groups. We've also met the Chair of the Ramsey County Board and some environmental advocacy groups.

We are asking for the Council to consider and adopt this Facility Plan in October of this year. If the Facility Plan is adopted, we would begin the design and permitting process in 2019, and we anticipate that that would take about two years.

So designing and permitting would run from

2019 to 2021. As Rene mentioned, we would construct the fourth incinerator first. It would take about three years, 2021 to 2024, which would be followed by the renewal of our existing incinerators over a three-year period.

So there's a number of ways as Councilmember Wulff mentioned, there's a number of ways to provide feedback on the project.

You can visit our project Website, and that's noted up here, and if you pick up a folder, all of this information is in the folder.

On the Website, you can also see the videos from our presentation posted there and there are some other interactive features to learn about the project.

You can email our project team at Info@metrosolids.com. If you use that general email address, Tess over here and Stephen will make sure that the right people get the email and respond to you accordingly.

You can leave a comment on our project hotline at 651-691-9124, and you can send in your written comments via mail to Metro Solids at 390 Robert Street North, St. Paul, Minnesota 55101.

And finally, I would just want, I wanted to pass on that we will be receiving comments until

September 10, 2018.

So with that, I'd like to pass it back to Councilmember Wulff who will facilitate the Public Hearing process.

MS. WULFF: Thank you, Jeannine, Rene, and Stephen. At this time, we'll open it up for your comments on the Draft Facility Plan.

I'd like to remind you to come up to the speakers' table and state your name, address, and organization you represent, if any, for the Public Hearing record.

We did not have anybody sign up on the list to say that they wanted to speak tonight. But you still have that opportunity. If you want to, you can go up to the podium and make a comment.

So I'll ask one more time; would anybody like to come up and make a comment? We've got a couple of people. You can go ahead first.

MR. GREENWOOD: Hi, I'm Steve Greenwood. Nice to see one of the old staff that's here. My name is Steve Greenwood. I live at 1111 Argyle Street, St. Paul, Minnesota 55103.

Do you need my phone number?

MS. WULFF: No, that's fine.

MR. GREENWOOD: Okay.

MS. WULFF: Now you can give your comments.

MR. GREENWOOD: I just have a few brief comments of alternatives to evaluate also that were not on Rene's report.

Considering that, you know, we're spending over $150 million capital, that's over $300 million with interest included, and that, you know, my understanding is that the annual landfill costs are about $400,000 when the incinerators are down.

I just had a few suggestions for alternatives for when the incinerators are down. Consider trucking biosolids to Seneca to process in their multiple hearth incinerators, truck solids to Seneca and process in the and the Envigo (sic) process. I know you'd need some belt presses and things like that.

Back in the late '90s when they had the public hearings, the Met Council promised the public they would land-apply about 15 to 20 percent of the biosolids from Metro, and that's never occurred. So that'd be one way to fulfill that promise.

And then the third alternative is to rehab two or more of the multiple hearth incinerators at the Metro Plant. You'd have to install some centrifuges too.

And then Number 4 would be to use the

landfill as a backup to those three alternatives if they weren't available or something like that.

Concerning the cost for rehabilitating multiple hearth incinerators, I'd like to remind everyone that's what they argued for about 18, 19 years ago instead of building a new facility.

A few years ago, St. Louis upgraded seven multiple hearth incinerators for a cost of $13 million. Detroit, the nation's largest treatment plant, upgraded eight multiple hearth incinerators for $38 million.

So combined, two of the nation's largest treatment plants, St. Louis and Detroit, spent $51 million for 15 multiple hearth incinerators.

We have six multiple hearth incinerators that are sitting abandoned, and the six multiple hearth incinerators at the Metro Plant have more capacity than the four fluid bed incinerators.

They were abandoned because of the U.S. EPA sued the U.S., or sued the Met Council and the settlement was to build new treatment, new fluid bed incinerators, and I argue for keeping them.

So that's a major cost for this new facility. So that's why we've already spent $160 million for this facility plus another what, $18 million, to fix it up after 2012. So that's up to about $180 million.

Now we've got to expect to spend another $150 million more. I think we need to look at some more alternatives.

Anyway, thank you so much. I appreciate your time.

MS. WULFF: Thank you.

MR. DIMOND: Thank you. My name is Tom Dimond, 2119 Skyway Drive, St. Paul. Thank you, Councilmember Wulff and everybody for coming to the meeting.

I would really like to thank you for the work you've done there. It's expensive work, readily admit it, I'm a taxpayer also. But I would tell you living downwind from the facility, I can tell you the difference for this facility, what it is today versus what it used to be is day and night and greatly appreciated.

It has a huge payoff, and it's not just because I live downwind, but it impacts the economic viability of that part of our community as a whole.

And there are also other benefits. For example, we're not landfilling in our wetlands ash and stuff, so I won't go into that belabored, but it really has been a significant improvement for liveability and the economic vitality of this community because of the

work that's been done.

And I'm certainly no engineer, but I can tell you personally that it has made a huge difference, and again, greatly appreciated.

And I'll just touch on that, I would like to explore further. It's a separate piece, but the interrelationship between this facility and the regional park that abuts this property, and I think, again, it makes the usability of that park as it's developed much more attractive than it would've been in the past.

Thank you, I appreciate it.

MS. WULFF: Thank you. Is there anybody else who would like to provide comments?

MS. MARSH: Good evening, I'm Carrie Marsh, 530 Belvedere Street East, which is right up the hill from here. Thank you for coming.

I'm sorry I missed the beginning of the presentation. I was at my school's open house. All the public schools are having open house this evening. He's five; he goes to our local school. And so part of the lack of participation in this meeting, I think, could be attributed to parents being very busy at this time of year particularly this evening.

So I don't have any particular comments on

the plan per se. I looked over the materials briefly online, but haven't had a lot of time to think about them.

And speaking to express my concern about public input and ensure that there really is a true forum for some public comment on the plan.

I see that we have about ten days to provide additional comments. I would suggest that that's not enough and perhaps you could extend that time and do some more work with neighborhood groups. I apologize if you've addressed that already in your presentation.

MS. WULFF: Thank you. Is there anybody else who would like to speak? Going once, going twice, okay.

Since there are no further comments, I'd like to remind you that the Public Hearing record will remain open until 5:00 p.m. on Monday, September 10, 2018.

You may submit comments through any of the methods shown here on the screen. These are also listed on the information sheets available at the registration table.

I'll make one more call, is there anybody else who would like to speak on this matter this evening?

Seeing no further comments, we will adjourn the Public Hearing. Thank you for coming, and staff will remain around, and we've got the little video thing over there and some information boards so you can feel free to have more discussion and questions if you would like for the next 15 minutes to half-an-hour, however long you need.

And thank you very much for coming.

(The hearing was adjourned at 7:30 p.m.)

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STATE OF MINNESOTA)
)
COUNTY OF SHERBURNE)

Be it known that the foregoing Metropolitan Council Environmental Services Public Hearing proceedings were taken by Heather Eckstein, Court Reporter, on the 30th of August, 2018, at the Wellstone Center, Room 212, 179 Robie Street East, St. Paul, Minnesota.

That I was then and there a Notary Public in and for the County of Sherburne, State of Minnesota;

That the proceedings were recorded in stenotype by myself and transcribed into writing by computer-aided transcription, and that the transcript is a true and accurate record of the proceedings to the best of my ability;

Dated and signed the 5th day of September, 2018.

_____
Heather Eckstein
Court Reporter

MR. DIMOND: [1] 30/6
MR. GREENWOOD: [3] 27/18 27/24 28/1
MR. NORTON: [4] 10/17 12/12 13/11 14/14
MS. CLANCY: [4] 2/19 6/21 9/16 22/23
MS. HEFLIN: [1] 15/17
MS. MARSH: [1] 31/14
MS. WULFF: [8] 2/2 2/20 27/4 27/23 27/25 30/5 31/12 32/11
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Minnesota Pollution Control Agency
520 Lafayette Road
St. Paul, MN 55155-4194

State Environmental Review Process (SERP) Mailing List Form

Clean Water State Revolving Fund Program

Minnesota Rules 7077.0272, subp. 2.a.A.
Minnesota Rules 7077.0277, subp. 3.B.

Doc Type: Wastewater Point Source

Instructions: This is the complete mailing list that the Minnesota Pollution Control Agency (MPCA) will use to public notice the Environmental Summary or other environmental review documents. Please type names and addresses on this form and return to the MPCA staff engineer. This list should be considered minimum. If a more substantial mailing list is available for the Public Participation Program, it should be added to this mailing list. **Please return this mailing list in MS Word format only.**

Example address blocks:

The Honorable Mark Anderson
Minnesota State Senator
135 State Office Building
St. Paul, MN 55113

Marv Johnson, City Administrator
City of Willmar
236 Oriole Avenue
Willmar, MN 55699

Municipality name: Metropolitan Council Environmental Services **Project number:** 806210

Contact name: Tim O'Donnell **Phone number:** 651-602-1269
(person completing the form)

Public notice address information

1.	**The Honorable State Senator:**	**6.**	**City Administrator/Clerk:**
	See attached stakeholder mailing list		See attached stakeholder mailing list
2.	**The Honorable State Representative:**	**7.**	**Engineering Consultant:**
	See attached stakeholder mailing list		N/A (facility plan completed in house)
3.	**The Honorable County Board Chair:**	**8.**	**County Planning and Zoning Office:**
	See attached stakeholder mailing list		See attached stakeholder mailing list
4.	**The Honorable Mayor:**	**9.**	**Watershed District (if established):**
	See attached stakeholder mailing list		See attached stakeholder mailing list
5.	**Township Board Clerk:***	**10.**	**Regional Development Commission:**
	See attached stakeholder mailing list		Metropolitan Council Attn: Lisa Barajas 390 Robert St. N. St. Paul, MN 55101-1805

***Include if any portion of the project (including the facility, interceptor, influent or outfall lines) will be located in the township(s).*

To add rows, place your cursor in the last row of the second column and hit tab.

Interested citizens:	**Interested groups:** (i.e., homeowners associations, environmental, business, civic, etc., organizations)
See attached stakeholder mailing list	See attached stakeholder mailing list

To add rows, place your cursor in the last row of the second column and hit tab.

Property owners:

Property owner list should include all property owners of the site to be, or which has been previously acquired. For pond systems, include the property owner(s) of the pond site, spray irrigation site(s) and all property owners of homes within one-fourth mile of the pond site and any clusters of homes within one-half mile of the pond site.

See attached stakeholder mailing list	

Federal agencies:

ATTN: Field Supervisor
U.S. Fish and Wildlife Service
Twin Cities Field Office
4101 American Boulevard East
Bloomington, MN 55425-1665

ATTN: Environmental Compliance Chief
U.S. Army Corps of Engineers
St. Paul District
180 Fifth Street East, Suite 700
St. Paul, MN 55101-1678

ATTN: Regional Environmental Officer
Federal Emergency Management Agency
Region V Office
536 South Clark Street, 6th Floor
Chicago, IL 60605

State agencies:

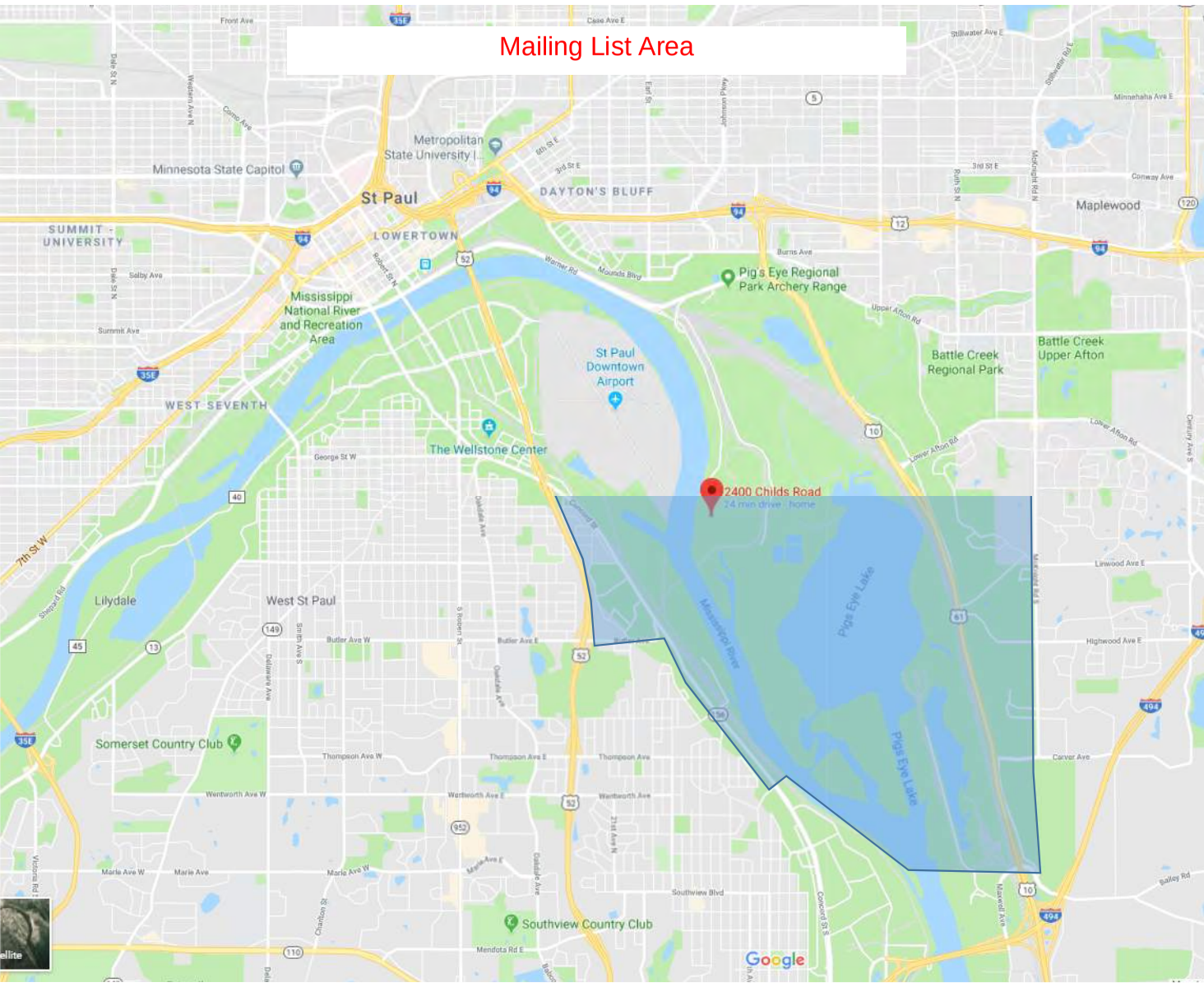
ATTN: Environmental Review Supervisor
MN Department of Natural Resources
Division of Ecological and Water Resources
500 Lafayette Road, Box 25
St. Paul, MN 55155 -4025

ATTN: Manager of Government Programs and Compliance
MN Historical Society
Minnesota Historic Preservation Office
345 West Kellogg Boulevard
St. Paul, MN 55102-1906

ATTN: Cultural Resource Director
MN Indian Affairs Council
161 St. Anthony Avenue, Suite 919
St. Paul, MN 55103

MPCA regional office(s):

Mailing List Area



Full Name	Organization - Primary	Mailing Street	Mailing Street 2	Mailing City	Mailing State	Mailing Zip
DIANE F NORMAN		1 BATTLE CREEK RD		SAINT PAUL	MN	55119
SHELLEY L HARRIS		1 BATTLE CREEK RD		SAINT PAUL	MN	55119
JODY SHERMAN		1 KENNARD CT		SAINT PAUL	MN	55106
KA LOR		1 LINDER CT		SAINT PAUL	MN	55106
SIGH PROPERTIES LLC		1 RIDDER CIR		SAINT PAUL	MN	55107
Tim Schlagenhaft	Audubon Society of St. Paul	1 W. Water Street	Suite 200	St. Paul	MN	55107
CYNTHIA L MCRAE		10 FLANDRAU PL		SAINT PAUL	MN	55106
YEE THAO		100 FLANDRAU PL		SAINT PAUL	MN	55106
CHAD & LANEE M ELLINGSON		100 HOMER ST		SOUTH ST PAUL	MN	55075
DUANE P ROUB		100 LYON ST		SAINT PAUL	MN	55106
GINA MARIE SOCHA		100 MARIA AVE		SAINT PAUL	MN	55106
RICHARD J KIEMEN		100 MOUNDS BLVD		SAINT PAUL	MN	55106
ANN M NORDSTROM		1000 BURNS AVE		SAINT PAUL	MN	55106
1000 MCLEAN LLC		1000 MCLEAN AVE		SAINT PAUL	MN	55106
SOO LINE RAILROAD CO		1000 SHOP RD		SAINT PAUL	MN	55106
MOUNDS PARK UNITED METHODIST		1000 WAKEFIELD AVE		SAINT PAUL	MN	55106
GEORGE T POWELL		1000 WILSON AVE		SAINT PAUL	MN	55106
DRAKE WILLIS		1001 CONWAY ST		SAINT PAUL	MN	55106
AARON SCOTT		1001 EUCLID ST		SAINT PAUL	MN	55106
FERNANDO FRAIRE		1001 MCLEAN AVE		SAINT PAUL	MN	55106
JOSHUA URIAH ZENTZ TRUSTEE		1001 OAK BLUFF CIR		SAINT PAUL	MN	55119
ANNA M JASZEWSKI		1001 TERRACE LN		SOUTH ST PAUL	MN	55075
ALEXANDER BODE		1001 THORN ST		SAINT PAUL	MN	55106
LAURA JEANNE RECK GAYNER		1001 WAKEFIELD AVE		SAINT PAUL	MN	55106
MAI V THOR		1001 WILSON AVE		SAINT PAUL	MN	55106
TERRENCE LEE EGGUM		1002 CENTRAL AVE		SOUTH ST PAUL	MN	55075
SCOTT A GUNDERSON		1002 CONWAY ST		SAINT PAUL	MN	55106
GERARDO PERALES		1002 EUCLID ST		SAINT PAUL	MN	55106
US BANK NATIONAL ASSOC TRUSTEE		1002 PACIFIC ST		SAINT PAUL	MN	55106
ROBERT LACOURSIERE		1002 TERRACE LN		SOUTH ST PAUL	MN	55075
BAZYL KOWALENKO & LEE WALTON		1003 CENTRAL AVE		SOUTH ST PAUL	MN	55075
SARA FLEMMING		1003 EUCLID ST		SAINT PAUL	MN	55106
HIEN M NGUYEN		1003 WAKEFIELD AVE		SAINT PAUL	MN	55106
DAVID J MURPHY		1004 BURNS AVE		SAINT PAUL	MN	55106
JESSICA H BAKER		1004 EUCLID ST		SAINT PAUL	MN	55106
VUTHY VICHET		1004 MCLEAN AVE		SAINT PAUL	MN	55106
SUSAN M BENOLKEN		1004 WAKEFIELD AVE		SAINT PAUL	MN	55106
YIA CHANG		1004 WILSON AVE		SAINT PAUL	MN	55106
WENDY D FREDRICKSON		1005 CONWAY ST		SAINT PAUL	MN	55106
ROBERT QUINN		1005 MCLEAN AVE		SAINT PAUL	MN	55106
PERRY A CANTON		1005 THORN ST		SAINT PAUL	MN	55106
LAURIE E DIETHELM		1005 WILSON AVE		SAINT PAUL	MN	55106
JEFFERY JOHN WINTER		1006 SUMMIT AVE		SOUTH ST PAUL	MN	55075
VERNON RICHARD FINANDER		1006 TERRACE LN		SOUTH ST PAUL	MN	55075
BR FIKE		1007 CONWAY ST		SAINT PAUL	MN	55106
JENNIFER M ATHEN		1007 HUDSON RD		SAINT PAUL	MN	55106
CARLA STEEN		1007 WAKEFIELD AVE		SAINT PAUL	MN	55106
MARK W NAGEL		1008 CENTRAL AVE		SOUTH ST PAUL	MN	55075
SILVIA G BREUCOP DE FLORES		1008 CONWAY ST		SAINT PAUL	MN	55106
LEONARD E MEALEY		1008 MCLEAN AVE		SAINT PAUL	MN	55106
MICHAEL R BUTCHKO		1008 PACIFIC ST		SAINT PAUL	MN	55106
TXERLEE MOUA		1009 EUCLID ST		SAINT PAUL	MN	55106
MICHAEL SPREHE		1009 OAK BLUFF CIR		SAINT PAUL	MN	55119
THEODORE B URSCHEL		1009 WILSON AVE		SAINT PAUL	MN	55106
Whitney Clark	Friends of the Mississippi River	101 East Fifth Street	Suite 2000	St. Paul	MN	55101
MATTHEW S OMAN		101 FLANDRAU PL		SAINT PAUL	MN	55106
Kyle Nodgaard	Union Pacific	101 N Wacker Drive	Suite 1920	Chicago	IL	60606
KAREN MONNO LOCKWOOD		1010 BURNS AVE		SAINT PAUL	MN	55106
KOMLAN R AHOSSOUDE		1010 EUCLID ST		SAINT PAUL	MN	55106
DERIK C MANTEL		1010 OAK BLUFF CIR		SAINT PAUL	MN	55119
RICHARD S & ANN G DEHN		1010 SUMMIT AVE		SOUTH ST PAUL	MN	55075
ROBERT W HOLLINSHEAD & BONNIE J		1010 TERRACE LN		SOUTH ST PAUL	MN	55075
NOUA VANG		1010 WAKEFIELD AVE		SAINT PAUL	MN	55106
SCOTT CARVER DAKOTA CAP AGENCY		1011 BRYANT AVE		SOUTH ST PAUL	MN	55075
VICTORIA D CREE		1011 BURNS AVE		SAINT PAUL	MN	55106
CRUZ M SALCEDO		1011 CONWAY ST		SAINT PAUL	MN	55106
PEDRO ROMAN		1011 EUCLID ST		SAINT PAUL	MN	55106
NENG CHARLES VANG		1011 HUDSON RD		SAINT PAUL	MN	55106
ERNEST ZACHARY HASE		1011 WAKEFIELD AVE		SAINT PAUL	MN	55106
JEFFREY R GEDATUS		1011 WILSON AVE		SAINT PAUL	MN	55106
MA CRECENCIA MARTINEZ		1012 CONWAY ST		SAINT PAUL	MN	55106
GER VANG		1012 EUCLID ST		SAINT PAUL	MN	55106
LEONARD E MEALEY		1012 MCLEAN AVE		SAINT PAUL	MN	55106
DAVID T DUFFEY		1012 WILSON AVE		SAINT PAUL	MN	55106
BERGMAN PAGE PROPERTIES LLC		1013 MCLEAN AVE		SAINT PAUL	MN	55106
ELIZABETH H BARNARD		1013 THORN ST		SAINT PAUL	MN	55106
SIU LUI FUNG		1014 EUCLID ST		SAINT PAUL	MN	55106
RANDY T FELD		1014 PACIFIC ST		SAINT PAUL	MN	55106
KEVIN L ASBERRY		1014 WAKEFIELD AVE		SAINT PAUL	MN	55106
JOSEPH HOOVER		1015 BURNS AVE		SAINT PAUL	MN	55106
OSTERBAUER LLC		1015 MCLEAN AVE		SAINT PAUL	MN	55106
MATTHEW BECKMAN		1016 BURNS AVE		SAINT PAUL	MN	55106
CINDY L LEE		1016 EUCLID ST		SAINT PAUL	MN	55106
SASS INC		1016 MCLEAN AVE		SAINT PAUL	MN	55106
ALISSA K SPECKEL		1016 PACIFIC ST		SAINT PAUL	MN	55106
STEVEN E KIRCHOFF		1017 CONWAY ST		SAINT PAUL	MN	55106
DEBORAH K SCHNEIDER		1017 EUCLID ST		SAINT PAUL	MN	55106
SHEFFEY N MASSEY III		1017 OAK BLUFF CIR		SAINT PAUL	MN	55119
EVON E MIERVA		1017 THORN ST		SAINT PAUL	MN	55106
QUYEN H LA		1017 WILSON AVE		SAINT PAUL	MN	55106
DEBORAH A MITCHELL		1018 CONWAY ST		SAINT PAUL	MN	55106
BRIAN D URLAUB		1018 OAK BLUFF CIR		SAINT PAUL	MN	55119
ADAM R CARTER		1018 SUMMIT AVE		SOUTH ST PAUL	MN	55075
MARGARITA E URGELLO		1018 WAKEFIELD AVE		SAINT PAUL	MN	55106
TED REIS		1018 WILSON AVE		SAINT PAUL	MN	55106
EVAN SANDERS		1019 BURNS AVE		SAINT PAUL	MN	55106
TIMOTHY J SHAUGHNESSY		1019 CENTRAL AVE		SOUTH ST PAUL	MN	55075
P & E PROPERTIES LLC		1019 CONCORD ST N		SOUTH ST PAUL	MN	55075
ROBERT R FUITH		1019 MCLEAN AVE		SAINT PAUL	MN	55106
CYNTHIA A PALMER		1019 WAKEFIELD AVE		SAINT PAUL	MN	55106
MARY E JOHNSON		1020 BRYANT AVE		SOUTH ST PAUL	MN	55075
JOEL C COLUMBUS		1020 BURNS AVE		SAINT PAUL	MN	55106
KARI L BARBER		1020 CONWAY ST		SAINT PAUL	MN	55106
ROBERT K HOSKINS TRUSTEE		1020 MCKNIGHT RD S		MAPLEWOOD	MN	55119
MARK T SIMEON		1020 MCLEAN AVE		SAINT PAUL	MN	55106
DYLAN GRIGG		1020 PACIFIC ST		SAINT PAUL	MN	55106
STANLEY M & ANNE KOICH		1020 TERRACE LN		SOUTH ST PAUL	MN	55075
MSR I ASSETS COMPANY LLC		1020 WILSON AVE		SAINT PAUL	MN	55106
EDUARDO DIAZ		1021 BRYANT AVE		SOUTH ST PAUL	MN	55075
ROY FRED JOHNSON		1021 CONWAY ST		SAINT PAUL	MN	55106
CHENG XIONG		1021 EUCLID ST		SAINT PAUL	MN	55106
BECHAMP PROPERTIES LLC		1021 HUDSON RD		SAINT PAUL	MN	55106
PETER RODD BOEHLKE		1021 THORN ST		SAINT PAUL	MN	55106
XENG XIONG		1021 WILSON AVE		SAINT PAUL	MN	55106
JACOB JOHNSON		1022 SUMMIT AVE		SOUTH ST PAUL	MN	55075
CHRISTINE M BUCHY		1022 WAKEFIELD AVE		SAINT PAUL	MN	55106
KASEY ORILEY GUYER		1023 BURNS AVE		SAINT PAUL	MN	55106
RICKY L SCHWEIGART		1023 CONWAY ST		SAINT PAUL	MN	55106
J JESUS AYON MAGALLANES		1023 EUCLID ST		SAINT PAUL	MN	55106
LANCE CHRISTOPHER TLUSTY		1023 WILSON AVE		SAINT PAUL	MN	55106
REYNETTA R MISHLER		1024 CONWAY ST		SAINT PAUL	MN	55106
1024 EUCLID ST LLC		1024 EUCLID ST		SAINT PAUL	MN	55106
MOJISOLA OLAFESO		1024 MCLEAN AVE		SAINT PAUL	MN	55106
YER LEE		1024 PACIFIC ST		SAINT PAUL	MN	55106
CHRISTOPHER R HARRIS		1024 WAKEFIELD AVE		SAINT PAUL	MN	55106
MELON INVESTMENTS LLC		1025 HUDSON RD		SAINT PAUL	MN	55106
JON M FRENCH		1025 MCKNIGHT RD S		SAINT PAUL	MN	55119
DONNA M PERSONS		1025 MCLEAN AVE		SAINT PAUL	MN	55106
LAURA M DOBBS		1025 OAK BLUFF CIR		SAINT PAUL	MN	55119
GARY HIPPLE		1025 WAKEFIELD AVE		SAINT PAUL	MN	55106
JEFFREY E & DEBORAH SCHULTZ		1026 SUMMIT AVE		SOUTH ST PAUL	MN	55075
ERICH S EHRLER		1026 WILSON AVE		SAINT PAUL	MN	55106
MICHAEL P & JULIE L RUSH		1027 CONCORD ST N		SOUTH ST PAUL	MN	55075
KATHLEEN A MISENER		1027 CONWAY ST		SAINT PAUL	MN	55106
STEVEN P SANTONI		1027 EUCLID ST		SAINT PAUL	MN	55106
HERBERT A HOWE		1027 THORN ST		SAINT PAUL	MN	55106

Full Name	Organization - Primary	Mailing Street	Mailing Street 2	Mailing City	Mailing State	Mailing Zip
DOUGLAS F ZIOLKOWSKI		1027 WILSON AVE		SAINT PAUL	MN	55106
DANIEL J VILLARREAL		1028 BURNS AVE		SAINT PAUL	MN	55106
CHONG XIONG		1028 EUCLID ST		SAINT PAUL	MN	55106
VERNA M HENNEBRY		1028 MCLEAN AVE		SAINT PAUL	MN	55106
CHRISTOPHER VARRO		1028 OAK BLUFF CIR		SAINT PAUL	MN	55119
MOUNDS THEATRE COMPANY		1029 HUDSON RD		SAINT PAUL	MN	55106
ERIK SEGER FOGG		1029 SUBURBAN AVE		SAINT PAUL	MN	55106
LEONARD P JAROSIEWICZ		1029 THORN ST		SAINT PAUL	MN	55106
KELA CALDWELL		103 BATES AVE		SAINT PAUL	MN	55106
JEFFREY MICHAEL WATNE & CHRISTINA		103 STANLEY AVE		SOUTH ST PAUL	MN	55075
MIKE WOOD		1030 CONWAY ST		SAINT PAUL	MN	55106
WONDWOSSEN HAILE		1030 PACIFIC ST		SAINT PAUL	MN	55106
JOEY & KATIE FERGUSON		1030 SUMMIT AVE		SOUTH ST PAUL	MN	55075
LOR ANTHONY LEE		1030 WAKEFIELD AVE		SAINT PAUL	MN	55106
LOIS SMITH		1030 WILSON AVE		SAINT PAUL	MN	55106
DEBORAH MARTIN		1031 BURNS AVE		SAINT PAUL	MN	55106
PORT AUTHORITY OF ST PAUL		1031 CHILDS RD		SAINT PAUL	MN	55106
HEIDI KULT		1031 CONWAY ST		SAINT PAUL	MN	55106
SEAN ARTHUR MALONE		1031 THORN ST		SAINT PAUL	MN	55106
CHARLES J STANTON III		1031 WILSON AVE		SAINT PAUL	MN	55106
APRIL D GRANBERRY		1032 CONWAY ST		SAINT PAUL	MN	55106
CHAI YONG VANG		1032 WAKEFIELD AVE		SAINT PAUL	MN	55106
TONG PAO VANG		1033 EUCLID ST		SAINT PAUL	MN	55106
CAROL J RODRIGUEZ		1033 MCLEAN AVE		SAINT PAUL	MN	55106
SPENCER P ABBE		1033 WAKEFIELD AVE		SAINT PAUL	MN	55106
REEM ENTERPRISES INC		1034 EUCLID ST		SAINT PAUL	MN	55106
JONATHAN I ONEY		1034 MCLEAN AVE		SAINT PAUL	MN	55106
YEE YANG		1034 PACIFIC ST		SAINT PAUL	MN	55106
FINNISH LLC		1034 SUBURBAN AVE		SAINT PAUL	MN	55106
TAMMY M ROMINE		1035 BURNS AVE		SAINT PAUL	MN	55106
C-4 INDUSTRIES LLC		1035 CONCORD ST N		SOUTH ST PAUL	MN	55075
VIOLET R KULT		1035 CONWAY ST		SAINT PAUL	MN	55106
BENJAMIN J PETERS		1035 MCLEAN AVE		SAINT PAUL	MN	55106
JESUS ADAMEZ		1035 SUBURBAN AVE		SAINT PAUL	MN	55106
ELLA R WILSEY		1035 WAKEFIELD AVE		SAINT PAUL	MN	55106
SHARALYN R VILLAREAL		1036 BURNS AVE		SAINT PAUL	MN	55106
CHAD & NICOLE MARTIN		1036 SUMMIT AVE		SOUTH ST PAUL	MN	55075
TODD E JOHNSON		1036 WAKEFIELD AVE		SAINT PAUL	MN	55106
HTEE DOH		1037 EUCLID ST		SAINT PAUL	MN	55106
ERINN STALLONS		1037 HUDSON RD		SAINT PAUL	MN	55106
MICHAEL P HERNANDEZ		1037 THORN ST		SAINT PAUL	MN	55106
CHARLES NOSIE		1037 WILSON AVE		SAINT PAUL	MN	55106
JOHN M GLADD		1038 BURNS AVE		SAINT PAUL	MN	55106
STEFANIE MORGAN		1038 CONWAY ST		SAINT PAUL	MN	55106
KATHLEEN WIEBUSCH		1038 EUCLID ST		SAINT PAUL	MN	55106
WILLIAM J HOLZEMER		1038 MCLEAN AVE		SAINT PAUL	MN	55106
ANTHONY JAMES LERUD		1038 PACIFIC ST		SAINT PAUL	MN	55106
PA HOUA VANG		1038 WILSON AVE		SAINT PAUL	MN	55106
MARTIN POLOGNIOLI		1039 BURNS AVE		SAINT PAUL	MN	55106
DANIEL J MENARD		1039 CONWAY ST		SAINT PAUL	MN	55106
MAIKER XIONG THAO		1039 MCLEAN AVE		SAINT PAUL	MN	55106
A HOME 4U LLC		1039 WAKEFIELD AVE		SAINT PAUL	MN	55106
PHILIP R DAY		1039 WILSON AVE		SAINT PAUL	MN	55106
SEAN SPOONER		104 BATES AVE		SAINT PAUL	MN	55106
CHRISTOPHER S ANDERSON		104 FLANDRAU PL		SAINT PAUL	MN	55106
MARK S WANDERSEE		104 MOUNDS BLVD		SAINT PAUL	MN	55106
ROBERT SEGOVIA		1040 CONWAY ST		SAINT PAUL	MN	55106
CASA DE ESPERANZA		1040 EUCLID ST		SAINT PAUL	MN	55106
ROBERT J & ELIZABETH WESTRUP		1040 SUMMIT AVE		SOUTH ST PAUL	MN	55075
BENJAMIN PLATTES		1041 EUCLID ST		SAINT PAUL	MN	55106
CHARLES V NELSON		1041 MCKNIGHT RD S		SAINT PAUL	MN	55119
DANG XIONG		1042 MCLEAN AVE		SAINT PAUL	MN	55106
ALICIA B NICHOLS		1042 WAKEFIELD AVE		SAINT PAUL	MN	55106
JOHN A ROSS		1042 WILSON AVE		SAINT PAUL	MN	55106
BROOK MARTIN		1043 BURNS AVE		SAINT PAUL	MN	55106
ASHA RALEIGH		1043 CONWAY ST		SAINT PAUL	MN	55106
STAXX LLC		1043 HUDSON RD		SAINT PAUL	MN	55106
MARK R DRUTOWSKI		1043 MCKNIGHT RD S		SAINT PAUL	MN	55119
DAVID R WEITZEL		1043 SUBURBAN AVE		SAINT PAUL	MN	55106
MARGARET SCHILLER		1043 THORN ST		SAINT PAUL	MN	55106
PHILIP R XIONG		1043 WILSON AVE		SAINT PAUL	MN	55106
HEATHER MORCOMB		1044 BURNS AVE		SAINT PAUL	MN	55106
ALAN W SWEARINGEN		1044 CONWAY ST		SAINT PAUL	MN	55106
LINDA LEE BIGGS		1044 MCLEAN AVE		SAINT PAUL	MN	55106
NICHOLAS P DUNCAN		1044 WILSON AVE		SAINT PAUL	MN	55106
MOUNDS PARK UNITED METHODIST		1045 EUCLID ST		SAINT PAUL	MN	55106
POLLY L ST MARTIN		1045 MCKNIGHT RD S		SAINT PAUL	MN	55119
CHER CHA XIONG		1045 SUBURBAN AVE		SAINT PAUL	MN	55106
T E SMITH PROPERTIES LLC		1046 PACIFIC ST		SAINT PAUL	MN	55106
VICTORIA RIOS		1046 WAKEFIELD AVE		SAINT PAUL	MN	55106
KARI AANENSON		1047 CONWAY ST		SAINT PAUL	MN	55106
CRAFTSMANSHIP FIRST LLC		1047 HUDSON RD		SAINT PAUL	MN	55106
ARVILLA D NELSON		1047 MCKNIGHT RD S		SAINT PAUL	MN	55119
JAMES GESCHKE		1047 MCLEAN AVE		SAINT PAUL	MN	55106
STEPPING STONES SUPPORTIVE		1047 WAKEFIELD AVE		SAINT PAUL	MN	55106
RYAN ERICKSON		1047 WILSON AVE		SAINT PAUL	MN	55106
JOHN R WENTZ		1048 CONWAY ST		SAINT PAUL	MN	55106
BRADLEY S BOWMAN		1048 MCLEAN AVE		SAINT PAUL	MN	55106
EVON C HAUGEN & MARTHA G		1048 SUMMIT AVE		SOUTH ST PAUL	MN	55075
MOUNDS PARK UNITED METHODIST		1049 EUCLID ST		SAINT PAUL	MN	55106
WILLIAM J BEST		1049 MCKNIGHT RD S		SAINT PAUL	MN	55119
GR HOLDINGS LLC		105 HARDMAN CT		SOUTH ST PAUL	MN	55075
MICHAEL JAMES ETHEN		105 MARIA AVE		SAINT PAUL	MN	55106
BRENT WILLIAM FLOREN		1050 BURNS AVE		SAINT PAUL	MN	55106
CHUE XIONG		1050 EUCLID ST		SAINT PAUL	MN	55106
WILLIAM J KORTUS		1050 MCKNIGHT RD S		MAPLEWOOD	MN	55119
SHARON BROWN ROWE		1050 PACIFIC ST		SAINT PAUL	MN	55106
PIPER RENTALS LLC & C/O BRUGGEMAN		1050 WILSON AVE		SAINT PAUL	MN	55106
EMMISA LLC		1051 HUDSON RD		SAINT PAUL	MN	55106
WARD J WHEELER		1051 MCKNIGHT RD S		SAINT PAUL	MN	55119
LOWELL FRANCISCO		1051 MCLEAN AVE		SAINT PAUL	MN	55106
TIMBER PROPERTIES LLC		1051 SUBURBAN AVE		SAINT PAUL	MN	55106
JUDITH GESKE		1051 WAKEFIELD AVE		SAINT PAUL	MN	55106
QUE T VU		1051 WILSON AVE		SAINT PAUL	MN	55106
HEATHER RANDAL BRIER		1052 CONWAY ST		SAINT PAUL	MN	55106
JEREMY YFF		1053 CONWAY ST		SAINT PAUL	MN	55106
RACHEL A LEUTHARD		1054 BURNS AVE		SAINT PAUL	MN	55106
ANTONE CUMPIAN		1054 CONWAY ST		SAINT PAUL	MN	55106
CERISANO ENTERPRISE LLC		1054 EUCLID ST		SAINT PAUL	MN	55106
JOAN D FIGGS		1054 PACIFIC ST		SAINT PAUL	MN	55106
PISETH TEP		1054 WAKEFIELD AVE		SAINT PAUL	MN	55106
KIM M RYAN		1055 CONWAY ST		SAINT PAUL	MN	55106
DAVID J GATES		1055 MCKNIGHT RD S		SAINT PAUL	MN	55119
AMANDA KULINSKI		1055 MCLEAN AVE		SAINT PAUL	MN	55106
LYLE D WHITE		1055 WAKEFIELD AVE		SAINT PAUL	MN	55106
MEGHAN L TSCHIDA		1055 WILSON AVE		SAINT PAUL	MN	55106
MARQUEIA L FOSTER		1056 EUCLID ST		SAINT PAUL	MN	55106
LUIS BONGABONG		1056 PACIFIC ST		SAINT PAUL	MN	55106
CANDICE L RICCI		1056 WILSON AVE		SAINT PAUL	MN	55106
JORGE A CHAVEZ		1059 WILSON AVE		SAINT PAUL	MN	55106
JOE J WENDL		1060 MCKNIGHT RD S		MAPLEWOOD	MN	55119
LEO NG		1061 HUDSON RD		SAINT PAUL	MN	55106
PORT AUTHORITY CITY OF ST PAU		1061 RED ROCK RD		SAINT PAUL	MN	55119
WILLIAM R SIMENSON		1062 MCLEAN AVE		SAINT PAUL	MN	55106
ST PAUL PUBLIC HOUSING AGENCY		1062 PACIFIC ST		SAINT PAUL	MN	55106
MARK D DASSIER		1063 BURNS AVE		SAINT PAUL	MN	55106
EDWARD A DEVALERIO		1063 WILSON AVE		SAINT PAUL	MN	55106
KATHRYN L DRISCOLL		1064 MCLEAN AVE		SAINT PAUL	MN	55106
QUINTIN L KOGER KIDD		1064 PACIFIC ST		SAINT PAUL	MN	55106
STEPHANIE J STUTZ		1065 MCLEAN AVE		SAINT PAUL	MN	55106
ANTHONY REED		1067 BURNS AVE		SAINT PAUL	MN	55106
CYNTHIA HAWKINS		1067 CONWAY ST		SAINT PAUL	MN	55106
WILLIAM J SPIESS		1067 HUDSON RD		SAINT PAUL	MN	55106
TRISH MAI		1067 WILSON AVE		SAINT PAUL	MN	55106
STEPHEN P & MARY M TRURAN		1068 SUMMIT AVE		SOUTH ST PAUL	MN	55075
ANDREA M MROZEK		1069 HUDSON RD		SAINT PAUL	MN	55106
AARON VOREIS		1069 SUBURBAN AVE		SAINT PAUL	MN	55106

Full Name	Organization - Primary	Mailing Street	Mailing Street 2	Mailing City	Mailing State	Mailing Zip
THORA L THOMAS TRUSTEE		107 FLANDRAU PL		SAINT PAUL	MN	55106
DRAKE D WILEY		1070 MCKNIGHT RD S		MAPLEWOOD	MN	55119
HOOYO HUNO HOUSING LLC		1070 MCLEAN AVE		SAINT PAUL	MN	55106
ANTHONY BENUSA		1071 BURNS AVE		SAINT PAUL	MN	55106
DAVID RODRIGUEZ		1071 HUDSON RD		SAINT PAUL	MN	55106
ERIC ELIZA PERTTULA PERTTULA		1071 WILSON AVE		SAINT PAUL	MN	55106
XANG XIONG		1072 PACIFIC ST		SAINT PAUL	MN	55106
CRAIG B JOHNSON		1072 SUBURBAN AVE		SAINT PAUL	MN	55106
CHARLES A JOSWIAK & CHRISTINE L		1072 SUMMIT AVE		SOUTH ST PAUL	MN	55075
JOHN P GIESE		1072 WAKEFIELD AVE		SAINT PAUL	MN	55106
STEVEN E TUSA		1072 WILSON AVE		SAINT PAUL	MN	55106
JEFFERY M CHAMBERLAIN		1073 BURNS AVE		SAINT PAUL	MN	55106
1073 SUBURBAN LLC		1073 SUBURBAN AVE		SAINT PAUL	MN	55106
Bao Vang	Hmong American Partnership	1075 Arcade St.		St. Paul	MN	55106
HUDSON AND EARL PROPERTIES LLC		1075 HUDSON RD		SAINT PAUL	MN	55106
LUKE C YANG		1075 MCLEAN AVE		SAINT PAUL	MN	55106
ST PAUL PUBLIC HOUSING AGENCY		1075 SUBURBAN AVE		SAINT PAUL	MN	55106
ST PAUL PUBLIC HOUSING AGENCY		1075 WILSON AVE		SAINT PAUL	MN	55106
DENDEN HAILE		1076 CONWAY ST		SAINT PAUL	MN	55106
BLIA JULIE LEE		1076 PACIFIC ST		SAINT PAUL	MN	55106
VICTOR HUGO CRUZALTA ZARATE		1076 SUBURBAN AVE		SAINT PAUL	MN	55106
MORROW PARTNERS INC		1076 WAKEFIELD AVE		SAINT PAUL	MN	55106
JESUS A HERRERA		1076 WILSON AVE		SAINT PAUL	MN	55106
JEFFREY M BORNE		1077 CONWAY ST		SAINT PAUL	MN	55106
PAUL GODFREAD		1077 WAKEFIELD AVE		SAINT PAUL	MN	55106
JOHN P VANG		1078 EUCLID ST		SAINT PAUL	MN	55106
SARAH BURDI		1078 MCLEAN AVE		SAINT PAUL	MN	55106
LYNN M SEUBERTH		1079 BURNS AVE		SAINT PAUL	MN	55106
DONALD A STODDARD		1079 CONWAY ST		SAINT PAUL	MN	55106
MIKE BALROOP		1079 EUCLID ST		SAINT PAUL	MN	55106
JOEL P LARSON		1079 MCLEAN AVE		SAINT PAUL	MN	55106
CASEY C CAPLES		1079 SUBURBAN AVE		SAINT PAUL	MN	55106
ANTHONY CYRIL REDING		1079 WILSON AVE		SAINT PAUL	MN	55106
KEVIN HER		108 BATTLE CREEK RD		SAINT PAUL	MN	55119
TOUA LOR		108 LYON ST		SAINT PAUL	MN	55106
NANCY HEDQUIST		108 MOUNDS BLVD		SAINT PAUL	MN	55106
RICHARD CARL DUSHAW III		1080 WILSON AVE		SAINT PAUL	MN	55106
JULIE E STROTHMAN		1081 MCLEAN AVE		SAINT PAUL	MN	55106
LESLEY A LORENZ		1082 CONWAY ST		SAINT PAUL	MN	55106
AMERICAN MEDICAL RESEARCH INC		1082 EUCLID ST		SAINT PAUL	MN	55106
BRITTANY CYGAN		1082 MCLEAN AVE		SAINT PAUL	MN	55106
CORRINE L ERICKSON		1082 SUBURBAN AVE		SAINT PAUL	MN	55106
DZU DOAN		1083 CONWAY ST		SAINT PAUL	MN	55106
TIMOTHY PARMER		1083 MCLEAN AVE		SAINT PAUL	MN	55106
JASON R TRUPE		1083 WILSON AVE		SAINT PAUL	MN	55106
TONG XIONG		1084 PACIFIC ST		SAINT PAUL	MN	55106
GORDON A SCHWARTZ		1084 WAKEFIELD AVE		SAINT PAUL	MN	55106
SALVADOR JIMENEZ ROMERO		1085 CONWAY ST		SAINT PAUL	MN	55106
ROBERT J CHALMERS		1085 EUCLID ST		SAINT PAUL	MN	55106
CHARLES S FENTON		1085 MCKNIGHT RD S		SAINT PAUL	MN	55119
ZOUA THAO		1085 WAKEFIELD AVE		SAINT PAUL	MN	55106
GEORGE A LEWIS		1086 EUCLID ST		SAINT PAUL	MN	55106
TYLER G GILES		1086 MCLEAN AVE		SAINT PAUL	MN	55106
THOMAS W CORNWELL		1086 WILSON AVE		SAINT PAUL	MN	55106
AMY JO THOMPSON DRAZ		1087 HUDSON RD		SAINT PAUL	MN	55106
ZULEMA GIESE		1087 WAKEFIELD AVE		SAINT PAUL	MN	55106
GEE LEE		1088 CONWAY ST		SAINT PAUL	MN	55106
RICHARD H WANSCHURA		1088 PACIFIC ST		SAINT PAUL	MN	55106
JESUS FLORES TIJERA		1088 SUBURBAN AVE		SAINT PAUL	MN	55106
JONATHAN T STEFFENS		1089 HUDSON RD		SAINT PAUL	MN	55106
WANDA PUFPAFF TRUSTEE		1089 MCLEAN AVE		SAINT PAUL	MN	55106
JMW INVESTMENTS LLC		1089 SUBURBAN AVE		SAINT PAUL	MN	55106
AMY STORBAKKEN		109 BATES AVE		SAINT PAUL	MN	55106
SAMUEL JAMES HANDZIAK		109 MARIA AVE		SAINT PAUL	MN	55106
MAY NOU LOR		1090 EUCLID ST		SAINT PAUL	MN	55106
BRIAN M REMBISH		1090 MCKNIGHT RD S		MAPLEWOOD	MN	55119
JOHN MICHAEL ACKERMAN		1090 WAKEFIELD AVE		SAINT PAUL	MN	55106
JACK JORGENSEN		1090 WILSON AVE		SAINT PAUL	MN	55106
SHAWN LAROSE		1091 BURNS AVE		SAINT PAUL	MN	55106
VA REAL ESTATE LLC		1091 CONWAY ST		SAINT PAUL	MN	55106
RALPH CANNATA		1091 WAKEFIELD AVE		SAINT PAUL	MN	55106
DAVID U ALFARO		1091 WILSON AVE		SAINT PAUL	MN	55106
CRAIG S ROGERS		1092 MCLEAN AVE		SAINT PAUL	MN	55106
MICHELE CHOUINARD		1092 SUBURBAN AVE		SAINT PAUL	MN	55106
CHARLES NOSIE		1093 EUCLID ST		SAINT PAUL	MN	55106
GARY POOLE		1093 SUBURBAN AVE		SAINT PAUL	MN	55106
PATRICIA A HUBERTY		1093 WAKEFIELD AVE		SAINT PAUL	MN	55106
JOAN WILLIAMS		1094 CONWAY ST		SAINT PAUL	MN	55106
KER MOUA		1094 WILSON AVE		SAINT PAUL	MN	55106
MARK F NELSON		1094 WINTHROP ST S		SAINT PAUL	MN	55119
PAO LEE VUE		1095 WILSON AVE		SAINT PAUL	MN	55106
KIMBERLY ANN BAILEY		1096 EUCLID ST		SAINT PAUL	MN	55106
STEVEN E IRONS		1096 SUBURBAN AVE		SAINT PAUL	MN	55106
PANGHOUA MOUA		1097 EUCLID ST		SAINT PAUL	MN	55106
DAVID C GUSTAFSON		1097 HUDSON RD		SAINT PAUL	MN	55106
DONALD P ANDERSON		1097 MCLEAN AVE		SAINT PAUL	MN	55106
SUSAN M RICHARDS		1097 SUBURBAN AVE		SAINT PAUL	MN	55106
CATHERINE FOSTER		1098 MCLEAN AVE		SAINT PAUL	MN	55106
REID NELSON		1098 PACIFIC ST		SAINT PAUL	MN	55106
ST PAUL PUBLIC HOUSING AGENCY		1098 WAKEFIELD AVE		SAINT PAUL	MN	55106
JEAN LORRAINE BEFORT		1099 MCLEAN AVE		SAINT PAUL	MN	55106
SONG VANG		1099 WAKEFIELD AVE		SAINT PAUL	MN	55106
QUINN HAWLEY		110 BATES AVE		SAINT PAUL	MN	55106
FRANKIE J ABTS		110 FLANDRAU PL		SAINT PAUL	MN	55106
MICHAEL A & JEAN M HAFNER		1100 CONCORD ST N		SOUTH ST PAUL	MN	55075
JAMES SWARTWOOD		1100 CONWAY ST		SAINT PAUL	MN	55106
TRUNG HOANG		1100 EUCLID ST		SAINT PAUL	MN	55106
MICHAEL J HURLEY		1100 MCKNIGHT RD S		MAPLEWOOD	MN	55119
LORA LOR VANG		1100 MCLEAN AVE		SAINT PAUL	MN	55106
CHRISTINA E ESPARZA		1100 SUBURBAN AVE		SAINT PAUL	MN	55106
TIFFANY M EMERSON		1100 WILSON AVE		SAINT PAUL	MN	55106
WILLIAM W KING		1101 BURNS AVE		SAINT PAUL	MN	55106
FAIR HOUSING LLC		1101 HUDSON RD		SAINT PAUL	MN	55106
ROBERT L ERICKSON		1101 MCKNIGHT RD S		SAINT PAUL	MN	55119
MARY L WAGNER		1101 SUBURBAN AVE		SAINT PAUL	MN	55106
Barb Naramore	Minnesota Department of Natural Resources	1101 W. River Parkway	#250	Minneapolis	MN	55415
Nels Paulsen	Conservation Minnesota	1101 West River Parkway	Suite 250	Minneapolis	MN	55415
JENNIFER L LANGER		1102 PACIFIC ST		SAINT PAUL	MN	55106
SCOTT L & DIANE M HIRSCHEY		1102 SUMMIT AVE		SOUTH ST PAUL	MN	55075
DONALD R WILSON		1102 WAKEFIELD AVE		SAINT PAUL	MN	55106
HUA YANG		1103 BURNS AVE		SAINT PAUL	MN	55106
YER MOUA		1103 EUCLID ST		SAINT PAUL	MN	55106
KEITH A HANSON		1103 MCLEAN AVE		SAINT PAUL	MN	55106
AARON LITTLE		1103 SUBURBAN AVE		SAINT PAUL	MN	55106
ETHAN A ABLY		1103 WAKEFIELD AVE		SAINT PAUL	MN	55106
SYRSTAD PROPERTIES PLUS LLC		1104 PACIFIC ST		SAINT PAUL	MN	55106
DONALD A EVANS		1104 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
STEVEN B ANDERSON		1104 SUBURBAN AVE		SAINT PAUL	MN	55106
ERICA ASHERAH PASCALINE ROGERS		1105 HUDSON RD		SAINT PAUL	MN	55106
STEVEN H CLASEN		1105 WAKEFIELD AVE		SAINT PAUL	MN	55106
SERENITY HOLDINGS LLC		1105 WILSON AVE		SAINT PAUL	MN	55106
MAI YER SOUNG		1106 SUBURBAN AVE		SAINT PAUL	MN	55106
BOBBY HOEPPNER		1106 WAKEFIELD AVE		SAINT PAUL	MN	55106
KEITH HANSON		1107 MCLEAN AVE		SAINT PAUL	MN	55106
JEANNE CHRISTINE SORELL		1107 SUBURBAN AVE		SAINT PAUL	MN	55106
NESSIB S NEGUSSE		1108 EUCLID ST		SAINT PAUL	MN	55106
KOJO K CHEATHAM		1108 PACIFIC ST		SAINT PAUL	MN	55106
MELINDA ROSE TAPP		1108 SUMMIT AVE		SOUTH ST PAUL	MN	55075
SOUA XIONG		1108 WILSON AVE		SAINT PAUL	MN	55106
KENNETH M KRIEGLMEIER		1109 EUCLID ST		SAINT PAUL	MN	55106
ROBIN J KINNEY		1109 HUDSON RD		SAINT PAUL	MN	55106
MATTHEW A KOUKOL		1109 THORN ST		SAINT PAUL	MN	55106
STARR OLSON		1109 WILSON AVE		SAINT PAUL	MN	55106
Alan Robbins	National Parks Service	111 East Kelloff Blvd	Suite 105	St. Paul	MN	55101
John Anfinson	National Parks Service	111 East Kelloff Blvd	Suite 105	St. Paul	MN	55101
JACOB KOSTICHKA		111 FLANDRAU PL		SAINT PAUL	MN	55106
MUKTAR M ADEM		111 LYON ST		SAINT PAUL	MN	55106

Full Name	Organization - Primary	Mailing Street	Mailing Street 2	Mailing City	Mailing State	Mailing Zip
RALPH J CURELLA		1110 MCKNIGHT RD S		MAPLEWOOD	MN	55119
MORROW PARTNERS INC		1110 WAKEFIELD AVE		SAINT PAUL	MN	55106
TRACY ANNE HAVRON		1111 BURNS AVE		SAINT PAUL	MN	55106
PORT AUTHORITY OF ST PAUL		1111 CHILDS RD		SAINT PAUL	MN	55106
RYAN PRIGGE		1111 MCKNIGHT RD S		SAINT PAUL	MN	55119
DAYTONS BLUFF NGHBRHD HOUSING		1111 MCLEAN AVE		SAINT PAUL	MN	55106
JACLYNN TRANTANELLA		1112 EUCLID ST		SAINT PAUL	MN	55106
SHELLY B PETTIT		1112 SUBURBAN AVE		SAINT PAUL	MN	55106
TARJA ANDERSON		1113 HUDSON RD		SAINT PAUL	MN	55106
LILA M SCHUE		1113 SUBURBAN AVE		SAINT PAUL	MN	55106
JEFFREY D JONES		1113 THORN ST		SAINT PAUL	MN	55106
PHYLLIS J MOSTROM		1114 MCLEAN AVE		SAINT PAUL	MN	55106
CARIBE SCHREIBER		1114 PACIFIC ST		SAINT PAUL	MN	55106
XEE XIONG		1114 WAKEFIELD AVE		SAINT PAUL	MN	55106
SUSAN K RHEA		1115 BURNS AVE		SAINT PAUL	MN	55106
S & R CONSULTING LLC		1115 EUCLID ST		SAINT PAUL	MN	55106
ROSS A JOHNSON		1115 SUBURBAN AVE		SAINT PAUL	MN	55106
RICHARD D VAUGHT		1115 WAKEFIELD AVE		SAINT PAUL	MN	55106
DARCIE MASON		1116 EUCLID ST		SAINT PAUL	MN	55106
LEA M DOOLEY		1116 MCLEAN AVE		SAINT PAUL	MN	55106
CHRISTINA CAPECCHI		1116 PACIFIC ST		SAINT PAUL	MN	55106
MATTHEW H RYDER		1116 SUBURBAN AVE		SAINT PAUL	MN	55106
JUDY LANORE CARLSON		1116 WAKEFIELD AVE		SAINT PAUL	MN	55106
HEATHER M STEVENS		1118 BURNS AVE		SAINT PAUL	MN	55106
RAYMOND RICCI		1118 PACIFIC ST		SAINT PAUL	MN	55106
JOEL J GAWRISCH		1119 MCKNIGHT RD S		SAINT PAUL	MN	55119
HAILEE BEVERLY HREN		112 HOMER ST		SOUTH ST PAUL	MN	55075
A & P PROPERTIES		1120 BRYANT AVE		SOUTH ST PAUL	MN	55075
BENJAMIN D WOOD		1120 BURNS AVE		SAINT PAUL	MN	55106
TERIN MEYERS		1120 MCLEAN AVE		SAINT PAUL	MN	55106
ANN SCHLEY		1120 WINTHROP ST S		SAINT PAUL	MN	55119
TARA S MERKT		1121 MCLEAN AVE		SAINT PAUL	MN	55106
WADE E JOHNSON		1121 SUBURBAN AVE		SAINT PAUL	MN	55106
MICHAEL J LEWIS		1121 THORN ST		SAINT PAUL	MN	55106
JILL M CADE		1122 BURNS AVE		SAINT PAUL	MN	55106
JENNIFER M ZAHN		1123 BURNS AVE		SAINT PAUL	MN	55106
MARK L WELNA		1124 MCLEAN AVE		SAINT PAUL	MN	55106
BRET W STOCKE		1124 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
DENNIS P PLADSON		1124 SUMMIT AVE		SOUTH ST PAUL	MN	55075
TRUDY OHNSORG		1125 BURNS AVE		SAINT PAUL	MN	55106
PORT AUTHORITY OF ST PAUL		1125 CHILDS RD		SAINT PAUL	MN	55106
MY VUE VANG		1125 EUCLID ST		SAINT PAUL	MN	55106
MARK E CULLEN		1125 MCLEAN AVE		SAINT PAUL	MN	55106
FRANK CHARLES SCHMIDT		1125 SUBURBAN AVE		SAINT PAUL	MN	55106
Mark Duncan	Aggregate Industries	11250 Grey Cloud Trail		Cottage Grove	MN	55016
RAYMOND RICCI		1126 PACIFIC ST		SAINT PAUL	MN	55106
STEVEN J ANDERSON		1127 MCKNIGHT RD S		SAINT PAUL	MN	55119
SALVADOR LOPEZ		1127 WINTHROP ST S		SAINT PAUL	MN	55119
MARCO CARRERA		1128 BURNS AVE		SAINT PAUL	MN	55106
VICKI LYNN MILLER		1129 EUCLID ST		SAINT PAUL	MN	55106
TRAVIS SCHWAB		1129 MCLEAN AVE		SAINT PAUL	MN	55106
CAROL H MROZIK		1129 THORN ST		SAINT PAUL	MN	55106
TIMOTHY J BERG & JEAN E GIEBENHAIN		113 STANLEY AVE		SOUTH ST PAUL	MN	55075
PARKWAY LITTLE LEAGUE INC		1130 3RD ST E		SAINT PAUL	MN	55106
DANIEL E & PATRICE HORST		1130 SUMMIT AVE		SOUTH ST PAUL	MN	55075
JEFFREY W HINTZ		1132 PACIFIC ST		SAINT PAUL	MN	55106
ROBERT H FITZGERALD TRUSTEE		1132 SUBURBAN AVE		SAINT PAUL	MN	55106
ELEANOR GOMEZ		1133 EUCLID ST		SAINT PAUL	MN	55106
CAROLYN ROESSLER		1133 MCLEAN AVE		SAINT PAUL	MN	55106
PHENG YANG		1133 SUBURBAN AVE		SAINT PAUL	MN	55106
JAN P GASTERLAND		1133 THORN ST		SAINT PAUL	MN	55106
MICHAEL J SCHWANTES		1134 MCLEAN AVE		SAINT PAUL	MN	55106
JOHN C CONWAY		1135 MCKNIGHT RD S		SAINT PAUL	MN	55119
BRITTANY M ACCIARI		1136 PACIFIC ST		SAINT PAUL	MN	55106
NICHOLAS R POWLEY		1137 BURNS AVE		SAINT PAUL	MN	55106
R KURT H LEIN		1137 WINTHROP ST S		SAINT PAUL	MN	55119
MICHAEL R BUTCHKO		1138 BURNS AVE		SAINT PAUL	MN	55106
CHARLES A TACHENY		1138 EUCLID ST		SAINT PAUL	MN	55106
JESSICA R BLADE		1138 MCLEAN AVE		SAINT PAUL	MN	55106
ROBIN L WILLIAMS		1138 SUBURBAN AVE		SAINT PAUL	MN	55106
ST PAUL PUBLIC HOUSING AGENCY		1139 EUCLID ST		SAINT PAUL	MN	55106
ELIZABETH A HANDLSON		1139 MCLEAN AVE		SAINT PAUL	MN	55106
STEVEN R LAWRENCE		1139 SUBURBAN AVE		SAINT PAUL	MN	55106
PIETER W GASTERLAND		1139 THORN ST		SAINT PAUL	MN	55106
CHAD BLAHA		114 BATES AVE		SAINT PAUL	MN	55106
ANDREW A MILLER		114 FLANDRAU PL		SAINT PAUL	MN	55106
DEROSIER HOMES LLC		1140 PACIFIC ST		SAINT PAUL	MN	55106
ISAAC RIVERA		1141 BURNS AVE		SAINT PAUL	MN	55106
ANTHONY T VANG		1142 EUCLID ST		SAINT PAUL	MN	55106
JOHN P OSBORNE		1142 MCLEAN AVE		SAINT PAUL	MN	55106
SILVERDOLL IRA LLC		1143 EUCLID ST		SAINT PAUL	MN	55106
SUSAN M KATT		1143 MCLEAN AVE		SAINT PAUL	MN	55106
DAVID R LEMKE		1143 THORN ST		SAINT PAUL	MN	55106
BARBARA J PLUMLEY		1144 PACIFIC ST		SAINT PAUL	MN	55106
HELEN T MATTICK		1145 BURNS AVE		SAINT PAUL	MN	55106
KATHLEEN VANGUILDER		1145 SUBURBAN AVE		SAINT PAUL	MN	55106
TAYLEE MOUA		1145 WILSON AVE		SAINT PAUL	MN	55106
JUHA LYNELLE THAO		1146 WILSON AVE		SAINT PAUL	MN	55106
WA SENG XIONG		1147 EUCLID ST		SAINT PAUL	MN	55106
DENISE S RODRIGUEZ		1147 MCLEAN AVE		SAINT PAUL	MN	55106
ANNA E MCRIGHT		1147 WINTHROP ST S		SAINT PAUL	MN	55119
DEL CO LIMITED PARTNERSHIP		1148 BURNS AVE		SAINT PAUL	MN	55106
CAROLYN SCHINDERLE		1148 EUCLID ST		SAINT PAUL	MN	55106
JOSEPH M FELT		1148 MCLEAN AVE		SAINT PAUL	MN	55106
KAWASKII R BACON		1148 PACIFIC ST		SAINT PAUL	MN	55106
DAO THAO		1148 SUBURBAN AVE		SAINT PAUL	MN	55106
DORIAN W DIAL		1149 MOUNDS BLVD		SAINT PAUL	MN	55106
CHA YANG		1149 WILSON AVE		SAINT PAUL	MN	55106
DANIEL BONNETT		115 BATES AVE		SAINT PAUL	MN	55106
HUGH L MCCONNELL		115 FLANDRAU PL		SAINT PAUL	MN	55106
CITY OF ST PAUL		115 MARIA AVE		SAINT PAUL	MN	55106
DOUGLAS F MAGNEY		115 MARIA AVE		SAINT PAUL	MN	55106
TONG PAO YANG		1150 PACIFIC ST		SAINT PAUL	MN	55106
DOROTHY E FREISEIS		1150 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
MICHAEL W HOLT		1151 MCLEAN AVE		SAINT PAUL	MN	55106
SEAN CUSICK		1152 MCLEAN AVE		SAINT PAUL	MN	55106
JEREMIAH J HURLEY		1152 WILSON AVE		SAINT PAUL	MN	55106
JAMES M REYES		1154 BURNS AVE		SAINT PAUL	MN	55106
TRANG N LU		1154 EUCLID ST		SAINT PAUL	MN	55106
JEFFREY A BRAZEAU		1154 WINTHROP ST S		SAINT PAUL	MN	55119
CHAI XIONG		1155 EUCLID ST		SAINT PAUL	MN	55106
BONNIE FEATHERSTONE		1155 MOUNDS BLVD		SAINT PAUL	MN	55106
MARK RAWLINGS		1155 WILSON AVE		SAINT PAUL	MN	55106
LISA H YANG		1156 MCLEAN AVE		SAINT PAUL	MN	55106
DORICE A WEEGMAN		1156 PACIFIC ST		SAINT PAUL	MN	55106
BARBARA M RIOPELLE		1156 WILSON AVE		SAINT PAUL	MN	55106
FORREST S PRICE		1157 BURNS AVE		SAINT PAUL	MN	55106
RANDY T RITT		1157 MCLEAN AVE		SAINT PAUL	MN	55106
JOSEPH BURNS BALDWIN		1158 BURNS AVE		SAINT PAUL	MN	55106
CONNIE XIONG		1158 EUCLID ST		SAINT PAUL	MN	55106
F RICHARD GALLO JR		1158 MCLEAN AVE		SAINT PAUL	MN	55106
JON E PHELPS		1158 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
PATRICIA M ZOOK		1158 SUBURBAN AVE		SAINT PAUL	MN	55106
CHOUA YANG		1159 WILSON AVE		SAINT PAUL	MN	55106
PATRICIA A PRANKE & JAMIE L PRANKE		116 HOMER ST		SOUTH ST PAUL	MN	55075
DONAVAN G SMITH		116 LYON ST		SAINT PAUL	MN	55106
HARRY M CHALLENGER		1160 SUBURBAN AVE		SAINT PAUL	MN	55106
LOWERY B SMITH		1162 BURNS AVE		SAINT PAUL	MN	55106
JASON M LENARZ		1162 PACIFIC ST		SAINT PAUL	MN	55106
FORREST S PRICE		1163 BURNS AVE		SAINT PAUL	MN	55106
THAO VANG		1163 EUCLID ST		SAINT PAUL	MN	55106
PATRICIA L CORNISH		1163 MCLEAN AVE		SAINT PAUL	MN	55106
CRAIG A MEYER		1163 WINTHROP ST S		SAINT PAUL	MN	55119
THOMAS A GOBELY		1164 WILSON AVE		SAINT PAUL	MN	55106
GRETCHEN BUSTIN		1165 BURNS AVE		SAINT PAUL	MN	55106
SHIRLEY R BENSON ROGERS		1165 WILSON AVE		SAINT PAUL	MN	55106
ALICE M STAHNKE		1166 BURNS AVE		SAINT PAUL	MN	55106

Full Name	Organization - Primary	Mailing Street	Mailing Street 2	Mailing City	Mailing State	Mailing Zip
ENRIQUE S ROMERO		1166 EUCLID ST		SAINT PAUL	MN	55106
SOVANNY LIM		1166 MCLEAN AVE		SAINT PAUL	MN	55106
MATTHEW A VOLZ		1166 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
IA VANG		1167 EUCLID ST		SAINT PAUL	MN	55106
DANG N YANG		1168 WILSON AVE		SAINT PAUL	MN	55106
LOUIS P SCHMITT		1169 MCLEAN AVE		SAINT PAUL	MN	55106
GARY C BROWN		117 BATES AVE		SAINT PAUL	MN	55106
YENG YANG		117 FLANDRAU PL		SAINT PAUL	MN	55106
CHONG HER		1170 CONWAY ST		SAINT PAUL	MN	55106
JEANNE R ROSS		1170 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
YANG CHENG VANG		1171 EUCLID ST		SAINT PAUL	MN	55106
NE NINH DAO		1171 WILSON AVE		SAINT PAUL	MN	55106
SARAH E JOHNSON		1172 MCLEAN AVE		SAINT PAUL	MN	55106
SANDRA LEE R MILLER		1172 PACIFIC ST		SAINT PAUL	MN	55106
JOHN G WINJUM		1172 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
RICHARD C SCHMITT		1172 WINTHROP ST S		SAINT PAUL	MN	55119
CHUE YANG		1173 MCLEAN AVE		SAINT PAUL	MN	55106
E MICHAEL JOSEPH		1174 BURNS AVE		SAINT PAUL	MN	55106
SHELLY XIONG		1174 EUCLID ST		SAINT PAUL	MN	55106
SUNYU VANG		1175 EUCLID ST		SAINT PAUL	MN	55106
THOMAS BELLAMY		1176 CONWAY ST		SAINT PAUL	MN	55106
ALBERT S XIONG		1176 PACIFIC ST		SAINT PAUL	MN	55106
MARITZA LOPEZ		1176 WILSON AVE		SAINT PAUL	MN	55106
MARY J ENGSTROM		1176 WINTHROP ST S		SAINT PAUL	MN	55119
ALEX PRIMOZICH		1177 BURNS AVE		SAINT PAUL	MN	55106
PORT AUTHORITY OF ST PAUL		1177 CHILDS RD		SAINT PAUL	MN	55106
STEVEN G SCHERZ		1177 MCLEAN AVE		SAINT PAUL	MN	55106
MICHELLE M YOUNESS		1177 WILSON AVE		SAINT PAUL	MN	55106
DANYELLE M OHARA		1178 BURNS AVE		SAINT PAUL	MN	55106
HOMEOWNERS THREE LLC		1178 CONWAY ST		SAINT PAUL	MN	55106
GEORGE HRYNEWYCH		1178 MCLEAN AVE		SAINT PAUL	MN	55106
KUNG CHIMKAEW		1178 SUBURBAN AVE		SAINT PAUL	MN	55106
JANICE L MEYER		1178 WILSON AVE		SAINT PAUL	MN	55106
MATTHEW D BORK		118 BATES AVE		SAINT PAUL	MN	55106
QUINTEN C KRUSZKA		118 FLANDRAU PL		SAINT PAUL	MN	55106
BRENDAN G CASSIDY		118 MARIA AVE		SAINT PAUL	MN	55106
FARMERS UNION COOP OIL ASSN		1180 CONCORD ST N		SOUTH ST PAUL	MN	55075
PHOUA THAO		1180 EUCLID ST		SAINT PAUL	MN	55106
HOUA Q LOR		1181 EUCLID ST		SAINT PAUL	MN	55106
KURT MICHAEL ERRICKSON		1183 MCLEAN AVE		SAINT PAUL	MN	55106
YOUA YIA YANG		1183 WILSON AVE		SAINT PAUL	MN	55106
SANDRA N BURCIAGA		1184 CONWAY ST		SAINT PAUL	MN	55106
PATRICIA M OSBERG		1185 BURNS AVE		SAINT PAUL	MN	55106
E & E ENTERPRISES INC		1185 CONCORD ST N		SOUTH ST PAUL	MN	55075
TONG VUE		1186 EUCLID ST		SAINT PAUL	MN	55106
LYLA YANG		1187 CONWAY ST		SAINT PAUL	MN	55106
WA N THAO		1187 EUCLID ST		SAINT PAUL	MN	55106
WADE M SONNIER		1187 MCKNIGHT RD S		SAINT PAUL	MN	55119
JOSEPH C GORGOS		1188 CONWAY ST		SAINT PAUL	MN	55106
JEFFREY M GORTON		1188 MCLEAN AVE		SAINT PAUL	MN	55106
BLAYN L REIMNITZ		1189 MCLEAN AVE		SAINT PAUL	MN	55106
MICHAEL ADAMSON		1189 WILSON AVE		SAINT PAUL	MN	55106
LORA VANG		119 FLANDRAU PL		SAINT PAUL	MN	55106
PEDRO J CRUZ		1190 PACIFIC ST		SAINT PAUL	MN	55106
JEANNE C HEITZMAN		1190 WILSON AVE		SAINT PAUL	MN	55106
CHARLES E BETHEL		1191 WINTHROP ST S		SAINT PAUL	MN	55119
O MOO		1193 MCLEAN AVE		SAINT PAUL	MN	55106
TODD R LARSEN		1194 PACIFIC ST		SAINT PAUL	MN	55106
DAVID D GLYNN		1194 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
JOE COLEMAN		1194 WILSON AVE		SAINT PAUL	MN	55106
CHRISTOPHER P LARSON TRUSTEE		1195 BURNS AVE		SAINT PAUL	MN	55106
JOANNE HINICH ANDERSON		1196 MCLEAN AVE		SAINT PAUL	MN	55106
BER CHANG		1197 CONWAY ST		SAINT PAUL	MN	55106
KIMBERLY A LARSON		1197 MCLEAN AVE		SAINT PAUL	MN	55106
SUSAN E DIMMICK		1197 WILSON AVE		SAINT PAUL	MN	55106
PAMELA D WEBER		1199 WINTHROP ST S		SAINT PAUL	MN	55119
JOHN OLIN		12 B ST		SAINT PAUL	MN	55106
RODRIGUEZ INVESTMENT PROP LLC		12 WHITE BEAR AVE N		SAINT PAUL	MN	55106
MARY ANN KOSEL		120 BUTLER AVE		SOUTH ST PAUL	MN	55075
DANNY L BALLARD		120 FLANDRAU PL		SAINT PAUL	MN	55106
JOSEPH GOODALL		120 MARIA AVE		SAINT PAUL	MN	55106
Jim Krieger	Canadian Pacific	120 South 6th Street	Suite 900	Minneapolis	MN	55402
NORTH CONCORD LTD PTNSHP		1200 CONCORD ST N		SOUTH ST PAUL	MN	55075
STATE OF MINNESOTA DNR		1200 WARNER RD		SAINT PAUL	MN	55106
STATE OF MN DNR REAL ESTATE		1200 WARNER RD		SAINT PAUL	MN	55106
HEANG NHIM		1200 WILSON AVE		SAINT PAUL	MN	55106
PHILIP J LAHR		1201 MCLEAN AVE		SAINT PAUL	MN	55106
LOUIS J VETTER		1201 WILSON AVE		SAINT PAUL	MN	55106
JULIE LOR		1203 CONWAY ST		SAINT PAUL	MN	55106
JINSIL HWANG		1204 PACIFIC ST		SAINT PAUL	MN	55106
VICTORIA MORALEZ		1204 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
DAVID N CASHMAN		1205 MCLEAN AVE		SAINT PAUL	MN	55106
MIYA SHARPE		1206 CONWAY ST		SAINT PAUL	MN	55106
DONNA E SEABLOOM		1206 PACIFIC ST		SAINT PAUL	MN	55106
PATRICIA GRANGER		1207 BIRCH ST		SAINT PAUL	MN	55119
DAVID A HOLMGREN		1207 BURNS AVE		SAINT PAUL	MN	55106
JOHN NER RI		1207 CONWAY ST		SAINT PAUL	MN	55106
SHARON M ZDRAZIL		1208 MCLEAN AVE		SAINT PAUL	MN	55106
ZACHARY A BOS		1209 MCKNIGHT RD S		SAINT PAUL	MN	55119
LINDA K HIRTE		121 MARIA AVE		SAINT PAUL	MN	55106
FRANKLIN R CARTAGENA QUIJADA		1210 CONWAY ST		SAINT PAUL	MN	55106
ST PAUL PUBLIC HOUSING AGENCY		1210 PACIFIC ST		SAINT PAUL	MN	55106
JOSEPH S REESE		1211 MCLEAN AVE		SAINT PAUL	MN	55106
GEORGIA POWELL		1212 MCLEAN AVE		SAINT PAUL	MN	55106
MARK P & BRENDA L FRID		1212 SUMMIT CT		SOUTH ST PAUL	MN	55075
MAI YANG		1213 CONWAY ST		SAINT PAUL	MN	55106
MAISUSAN LY		1214 CONWAY ST		SAINT PAUL	MN	55106
VERBURGT HOLDINGS LLC		1214 PACIFIC ST		SAINT PAUL	MN	55106
JEANNE M ADAMS		1215 BURNS AVE		SAINT PAUL	MN	55106
CURTIS J NEFF		1215 CONWAY ST		SAINT PAUL	MN	55106
ROBERT P ROTH		1215 MCLEAN AVE		SAINT PAUL	MN	55106
ROBERT P ROTH		1216 MCLEAN AVE		SAINT PAUL	MN	55106
PATRICK J FITCH		1217 BURNS AVE		SAINT PAUL	MN	55106
JORDAN BROWN		1219 CONWAY ST		SAINT PAUL	MN	55106
JEFFREY C NEUDAHL		1219 MCKNIGHT RD S		SAINT PAUL	MN	55119
LAWRENCE F JAROSIEWICZ		1219 MCLEAN AVE		SAINT PAUL	MN	55106
PATRICK D HERMES		1220 CONWAY ST		SAINT PAUL	MN	55106
MINN CONF ASSN 7TH DAY ADV		1220 MCKNIGHT RD S		MAPLEWOOD	MN	55119
ALEX C JOKELA		1220 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
ANDREW H BURFEIND		1221 EUCLID ST		SAINT PAUL	MN	55106
JONATHAN A PAINTER		1222 MCLEAN AVE		SAINT PAUL	MN	55106
EUGENE J FITGERALD		1223 MCLEAN AVE		SAINT PAUL	MN	55106
DAWN M BIAGINI		1225 BURNS AVE		SAINT PAUL	MN	55106
DARRYL R YARITZ		1225 CONWAY ST		SAINT PAUL	MN	55106
VANG CHUE HER		1227 EUCLID ST		SAINT PAUL	MN	55106
DAVID A BIXLER		1227 MCKNIGHT RD S		SAINT PAUL	MN	55119
KRISTINA PAVEK		1228 MCLEAN AVE		SAINT PAUL	MN	55106
NOR Y CHANG		1229 CONWAY ST		SAINT PAUL	MN	55106
ANNIKKI J MAY		1229 MCLEAN AVE		SAINT PAUL	MN	55106
KATHRYN MALCHOW CURRELL		123 BATES AVE		SAINT PAUL	MN	55106
STEVEN T PANUSHKA		123 DWANE ST		SOUTH ST PAUL	MN	55075
TMT EQUITIES LLC		1230 CONWAY ST		SAINT PAUL	MN	55106
MARCIA E REHR		1233 BURNS AVE		SAINT PAUL	MN	55106
GREEN JACKET LLC		1233 CONWAY ST		SAINT PAUL	MN	55106
WESLEY J WINKLER		1234 CONWAY ST		SAINT PAUL	MN	55106
RITA M JOHANSON		1234 MCKNIGHT RD S		MAPLEWOOD	MN	55119
MATTHEW A MALONEY		1234 MCLEAN AVE		SAINT PAUL	MN	55106
RICHARD C FUITH		1235 MCLEAN AVE		SAINT PAUL	MN	55106
GERALYN M ROGERS		1237 BURNS AVE		SAINT PAUL	MN	55106
BRANDON STECHER		1237 CONWAY ST		SAINT PAUL	MN	55106
FRANK E ASPEN		124 BATTLE CREEK RD		SAINT PAUL	MN	55119
LOIS BUSH		1240 19TH AVE N		SOUTH ST PAUL	MN	55075
BETH MAE MOSHIER		1240 CONWAY ST		SAINT PAUL	MN	55106
ELIZABETH A CARLSON		1240 MCLEAN AVE		SAINT PAUL	MN	55106
ELIMU KAJUNJU		1241 CONWAY ST		SAINT PAUL	MN	55106
DIANE M MAYO		1241 MCLEAN AVE		SAINT PAUL	MN	55106
SCOTT L FORRY		1244 MCKNIGHT RD S		MAPLEWOOD	MN	55119

Full Name	Organization - Primary	Mailing Street	Mailing Street 2	Mailing City	Mailing State	Mailing Zip
ROGER R RODE		1246 MCLEAN AVE		SAINT PAUL	MN	55106
JONATHAN T KELLEY		1247 BURNS AVE		SAINT PAUL	MN	55106
PADMINI MA YANG		1247 CONWAY ST		SAINT PAUL	MN	55106
CHARISSA OSBORN		1249 BURNS AVE		SAINT PAUL	MN	55106
Chris Hartzell	City of South St.Paul Minnesota	125 3rd Ave N		South St.Paul	MN	55075
TROY STARK		125 BATES AVE		SAINT PAUL	MN	55106
WATEROUS CO		125 HARDMAN AVE S		SOUTH ST PAUL	MN	55075
Pat Dunn	City of South Saint Paul	125 Third Avenue N		St. Paul	MN	55075
DEBRA K SCHEIBEL		1250 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
THOMAS P DOCHNIAK		1251 CONWAY ST		SAINT PAUL	MN	55106
MNSF MINNEAPOLIS LLC		1252 MCLEAN AVE		SAINT PAUL	MN	55106
WALTER J CHOJNOWSKI		1254 MCKNIGHT RD S		MAPLEWOOD	MN	55119
YESH F XIONG		1255 CONWAY ST		SAINT PAUL	MN	55106
TERENCE J MCDONOUGH		1257 WILSON AVE		SAINT PAUL	MN	55106
CHI NGUYEN PHUNG		1259 WILSON AVE		SAINT PAUL	MN	55106
PAIGE L STEVENS		1261 CONWAY ST		SAINT PAUL	MN	55106
STEPHEN J FULMEK		1264 MCKNIGHT RD S		MAPLEWOOD	MN	55119
DAISY PROPERTIES LLC		1264 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
BRENT W KATZENMAIER		1267 WILSON AVE		SAINT PAUL	MN	55106
NATHAN J JESPERSEN		1269 WILSON AVE		SAINT PAUL	MN	55106
THOMAS P SONG		1271 MCKNIGHT RD S		SAINT PAUL	MN	55119
ZACHARY B SCHUSTER		1271 WILSON AVE		SAINT PAUL	MN	55106
1272 HUDSON LLC		1272 HUDSON RD		SAINT PAUL	MN	55106
BENJAMIN BRASKET		1273 WILSON AVE		SAINT PAUL	MN	55106
FAWN VO		1275 WILSON AVE		SAINT PAUL	MN	55106
BRUCE MARVIN NELSON		1276 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
LAURIE A LEWIS		1277 WILSON AVE		SAINT PAUL	MN	55106
JANA L STARWALT		1278 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
HUIWEN ZOU		1279 WILSON AVE		SAINT PAUL	MN	55106
LOU A RYAN		128 MARIA AVE		SAINT PAUL	MN	55106
NHIA THAO		1280 EUCLID ST		SAINT PAUL	MN	55106
JEREMIAH KAPLAN		1280 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
XIAOQIAO WEI		1281 WILSON AVE		SAINT PAUL	MN	55106
CHAGER XIONG		1284 EUCLID ST		SAINT PAUL	MN	55106
MARK L PETTY		1285 EUCLID ST		SAINT PAUL	MN	55106
WALTER C SMYTHE		1285 MCKNIGHT RD S		SAINT PAUL	MN	55119
SCHREIBER MULLANEY PARTNERSHI		1286 HUDSON RD		SAINT PAUL	MN	55106
YOUA XIONG		1288 EUCLID ST		SAINT PAUL	MN	55106
NENG XIONG		1289 WILSON AVE		SAINT PAUL	MN	55106
MARGARET J KESSELL		129 BATES AVE		SAINT PAUL	MN	55106
KARI L WESTBY		129 MARIA AVE		SAINT PAUL	MN	55106
BLAKE HAYDEN		1290 EUCLID ST		SAINT PAUL	MN	55106
WIN WORLD		1296 CONWAY ST		SAINT PAUL	MN	55106
JONATHAN L FARACI		1296 HUDSON RD		SAINT PAUL	MN	55106
SIRIJUNDHO MEDITATION CENTER OF		1296 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
TIMOTHY A HALSTEAD		1297 BURNS AVE		SAINT PAUL	MN	55106
KELLY JO MARSH		1297 EUCLID ST		SAINT PAUL	MN	55106
DENNIS N LINDGREN		130 BATES AVE		SAINT PAUL	MN	55106
AMY A EBBESEN		130 MARIA AVE		SAINT PAUL	MN	55106
LEIGH C PREGENT		130 MOUNDS BLVD		SAINT PAUL	MN	55106
ROBERT F MCMILLEN		130 WHITE BEAR AVE N		SAINT PAUL	MN	55106
PAUL L WOHLERS		1300 MCKNIGHT RD S		MAPLEWOOD	MN	55119
JULIE WILSON SOLORZ		1300 STICKNEY AVE		SOUTH ST PAUL	MN	55075
MICHAEL D & BEVERLY CASHMAN		1301 KASSAN DR		SOUTH ST PAUL	MN	55075
XOU LEE		1302 PACIFIC ST		SAINT PAUL	MN	55106
RIGOBERTO T RAMOS		1303 BURNS AVE		SAINT PAUL	MN	55106
DENNIS L VANDEBERG		1303 MCLEAN AVE		SAINT PAUL	MN	55106
PHINA GAU		1303 PACIFIC ST		SAINT PAUL	MN	55106
THOMAS A CARBONE		1304 MCKNIGHT RD S		MAPLEWOOD	MN	55119
HOME INVESTMENT PROPERTY INC		1306 HUDSON RD		SAINT PAUL	MN	55106
K & C ASSCIATES INC		1306 PACIFIC ST		SAINT PAUL	MN	55106
MARCO V MARTINEZ BUITRAGO		1307 BURNS AVE		SAINT PAUL	MN	55106
RONALD F & JENETA L ROVER		1307 KASSAN DR		SOUTH ST PAUL	MN	55075
MAINONG HANG		1307 PACIFIC ST		SAINT PAUL	MN	55106
THERON E VON BEHREN & JESSICA M		1308 KASSAN DR		SOUTH ST PAUL	MN	55075
RONALD L HECK		1309 MCLEAN AVE		SAINT PAUL	MN	55106
ASAHI Y KOUMARN		1310 HUDSON RD		SAINT PAUL	MN	55106
CORNELIUS BROWN		1310 MCKNIGHT RD S		MAPLEWOOD	MN	55119
THOMAS WEIKERT		1311 PACIFIC ST		SAINT PAUL	MN	55106
ROBIN L PURDY		1312 KASSAN DR		SOUTH ST PAUL	MN	55075
ANNETTA D HANSEN		1314 PACIFIC ST		SAINT PAUL	MN	55106
STANLEY R & RUTH A KRUEGER		1315 KASSAN DR		SOUTH ST PAUL	MN	55075
RAYMOND H RUCKER		1315 MCLEAN AVE		SAINT PAUL	MN	55106
JAMES R JOHNSEN		1317 BURNS AVE		SAINT PAUL	MN	55106
OMAR B PINEDA		1319 MCLEAN AVE		SAINT PAUL	MN	55106
BRADLEY E COLVIN		1319 PACIFIC ST		SAINT PAUL	MN	55106
MARK D SCHAEFER		1320 KASSAN DR		SOUTH ST PAUL	MN	55075
MOHAMED DAHIR HADI		1320 WILSON AVE		SAINT PAUL	MN	55106
TERRY JAY & CHRISTY HAMMERSTROM		1321 BUTLER CT		SOUTH ST PAUL	MN	55075
JACOB T ENGELMEIER & EMILY N TRACY		1321 KASSAN DR		SOUTH ST PAUL	MN	55075
T E SMITH PROPERTIES LLC		1322 PACIFIC ST		SAINT PAUL	MN	55106
ANDREW N JOHNSON		1322 STICKNEY AVE		SOUTH ST PAUL	MN	55075
THAI YANG		1324 WILSON AVE		SAINT PAUL	MN	55106
OLE T HARVANG		1325 BURNS AVE		SAINT PAUL	MN	55106
EQUITRON HOLDINGS LLC		1325 BUTLER CT		SOUTH ST PAUL	MN	55075
CHRISTOPHER A WALKER		1325 MCLEAN AVE		SAINT PAUL	MN	55106
KIMBERLY K PLATE		1325 PACIFIC ST		SAINT PAUL	MN	55106
JOAN M WARD		1326 PACIFIC ST		SAINT PAUL	MN	55106
FRANCISCO V ROSAS		1328 HUDSON RD		SAINT PAUL	MN	55106
DAN L & TERESA M MIKLYA		1328 KASSAN DR		SOUTH ST PAUL	MN	55075
POBITS LLC		1328 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
AMY M SWEENEY & LYNN M		1328 STICKNEY AVE		SOUTH ST PAUL	MN	55075
PA CHAO VANG		1328 WILSON AVE		SAINT PAUL	MN	55106
RONALD P & JANET L SCHROEDER		1329 KASSAN DR		SOUTH ST PAUL	MN	55075
AHCENE DAHMANI		1329 PACIFIC ST		SAINT PAUL	MN	55106
ELECTRICIANS AND ASSOCIATES I		1330 CONWAY ST		SAINT PAUL	MN	55106
AUNG MIN NAING		1330 PACIFIC ST		SAINT PAUL	MN	55106
TUAN BUI & KIEU-GIANG THI PHAM-BUI		1331 BUTLER CT		SOUTH ST PAUL	MN	55075
MARILYN D POWERS CAMPBELL		1331 MCLEAN AVE		SAINT PAUL	MN	55106
AMBER AGUILAR		1332 HUDSON RD		SAINT PAUL	MN	55106
CHOUA M THAO		1332 WILSON AVE		SAINT PAUL	MN	55106
RHA 3 LLC		1333 PACIFIC ST		SAINT PAUL	MN	55106
GREGORY L & JEANNE FEHRMAN		1333 STICKNEY AVE		SOUTH ST PAUL	MN	55075
JIA YAN		1335 BUTLER CT		SOUTH ST PAUL	MN	55075
STEVEN F HANSON & NANCY S		1336 STICKNEY AVE		SOUTH ST PAUL	MN	55075
TAMI JO ROBERTS		1337 PACIFIC ST		SAINT PAUL	MN	55106
ADAM J STREETS TRUSTEE		134 MARIA AVE		SAINT PAUL	MN	55106
JAMES V OSTRUM		134 MOUNDS BLVD		SAINT PAUL	MN	55106
WANG K VANG		1340 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
LIONEL WILSON		1343 PACIFIC ST		SAINT PAUL	MN	55106
PAUL M SAWYER		1346 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
JAMES JOHNSEN HOLDINGS LLC		1347 BURNS AVE		SAINT PAUL	MN	55106
RACHAEL GOODMAN		1347 PACIFIC ST		SAINT PAUL	MN	55106
ROBERT M JORDAN M QUAYLE QUAYLE		135 MARIA AVE		SAINT PAUL	MN	55106
AUNG KYAW		1353 PACIFIC ST		SAINT PAUL	MN	55106
JULIANA I PIAZZA		1359 PACIFIC ST		SAINT PAUL	MN	55106
JIM PETERSON		136 BATES AVE		SAINT PAUL	MN	55106
OMALLEY PROPERTIES LLC		136 WHITE BEAR AVE N		SAINT PAUL	MN	55106
TIMOTHY L LUNDGREN		1360 PACIFIC ST		SAINT PAUL	MN	55106
KATHLEEN FINN		1360 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
PORT AUTHORITY OF ST PAUL		1363 RED ROCK RD		SAINT PAUL	MN	55119
JAMES R JOHNSEN		1365 BURNS AVE		SAINT PAUL	MN	55106
ROBERT J FITZGERALD		1367 BURNS AVE		SAINT PAUL	MN	55106
ROSEMARY LANGNESS TRUSTEE		1368 MCLEAN AVE		SAINT PAUL	MN	55106
SHERRI L NESSETH		1368 PACIFIC ST		SAINT PAUL	MN	55106
MELISSA A TISCHLER		137 BATES AVE		SAINT PAUL	MN	55106
EMILY B SHOULTZ		1372 PACIFIC ST		SAINT PAUL	MN	55106
DANIEL J SHOWALTER		1373 BURNS AVE		SAINT PAUL	MN	55106
TERRY D HEIM		1374 MCLEAN AVE		SAINT PAUL	MN	55106
BOOTHILL PARTNERS LLP		1375 CONWAY ST		SAINT PAUL	MN	55106
LARRY PHANTHAVONG		1375 MCLEAN AVE		SAINT PAUL	MN	55106
US BANK NATIONAL ASSOCIATION		1377 BURNS AVE		SAINT PAUL	MN	55106
JOHN RICHARDS		1379 BURNS AVE		SAINT PAUL	MN	55106
DEBRA L FERGUS		138 DWANE ST		SOUTH ST PAUL	MN	55075
JONATHAN J MELANDER		138 MOUNDS BLVD		SAINT PAUL	MN	55106
RUSSELL J UPDYKE		1380 PACIFIC ST		SAINT PAUL	MN	55106

Full Name	Organization - Primary	Mailing Street	Mailing Street 2	Mailing City	Mailing State	Mailing Zip
THOMAS G BROCK		1383 BURNS AVE		SAINT PAUL	MN	55106
KIMBERLY L LAWLER		1387 BURNS AVE		SAINT PAUL	MN	55106
OAKWOOD CHURCH		1388 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
DIANA L SAWYER		139 BATES AVE		SAINT PAUL	MN	55106
THOMAS FEIST		1391 BURNS AVE		SAINT PAUL	MN	55106
RICK J STRUNTZ		14 FLANDRAU PL		SAINT PAUL	MN	55106
DAVID W BUGG JR		1400 EVANS AVE		SOUTH ST PAUL	MN	55075
NICHOLAS RODRIGUEZ		1400 STICKNEY AVE		SOUTH ST PAUL	MN	55075
MEYRICK R VAZ TSTE & BETSY M		1400 WILSON CT		SOUTH ST PAUL	MN	55075
TIMOTHY J WILLIAMS & LISA A		1401 WILSON CT		SOUTH ST PAUL	MN	55075
TODD PATRICK VAILLANCOURT		1406 STICKNEY AVE		SOUTH ST PAUL	MN	55075
ARLEEN FRAZER-FEHR		1407 OUTLOOK AVE		SOUTH ST PAUL	MN	55075
TODD VAILLANCOURT		1408 STICKNEY AVE		SOUTH ST PAUL	MN	55075
ERIC W FURCHNER		141 MARIA AVE		SAINT PAUL	MN	55106
DAKOTA COUNTY CDA		1410 EVANS AVE		SOUTH ST PAUL	MN	55075
JEREMY & ANDREA KOENEN		1410 WILSON CT		SOUTH ST PAUL	MN	55075
HAO KIM NGO & LONG THANH PHAM		1411 WILSON CT		SOUTH ST PAUL	MN	55075
DANE PHILLIPS & ALISA A TUQUILAR		1413 EVANS AVE		SOUTH ST PAUL	MN	55075
DANIEL G & VICTORIA LABROSSE		1414 EVANS AVE		SOUTH ST PAUL	MN	55075
PINCE DANIEL J & CYNTHIA		1415 OUTLOOK AVE		SOUTH ST PAUL	MN	55075
DONALD PATRICK VAILLANCOURT &		1416 STICKNEY AVE		SOUTH ST PAUL	MN	55075
JOSHUA B & RAWAN S HILL		1417 EVANS AVE		SOUTH ST PAUL	MN	55075
JARED A KOVARIK		1417 STICKNEY AVE		SOUTH ST PAUL	MN	55075
JIM PETERSON		142 BATES AVE		SAINT PAUL	MN	55106
EDGAR C RINDAL		142 MARIA AVE		SAINT PAUL	MN	55106
PHILLIP V TATEOSIAN		142 WHITE BEAR AVE N		SAINT PAUL	MN	55106
DANNER FAMILY LTD PTNSHP		1420 EVANS AVE		SOUTH ST PAUL	MN	55075
BENJAMIN J SCHEERER III		1420 STICKNEY AVE		SOUTH ST PAUL	MN	55075
MARK & LAURA REED		1420 WILSON CT		SOUTH ST PAUL	MN	55075
SEAN MICHAEL CLIFFORD & THANH		1421 WILSON CT		SOUTH ST PAUL	MN	55075
BRADLEY J HOLZEM		1424 STICKNEY AVE		SOUTH ST PAUL	MN	55075
CHENG S VANG		1424 UPPER AFTON RD		SAINT PAUL	MN	55106
TERENCE & GERALDINE FULTON		1425 OUTLOOK AVE		SOUTH ST PAUL	MN	55075
JEFFREY M & JILL M TALLMAN		1425 STICKNEY AVE		SOUTH ST PAUL	MN	55075
REBECCA SIMONDET		143 BATES AVE		SAINT PAUL	MN	55106
KAY C RINDAL TRUSTEE		143 MARIA AVE		SAINT PAUL	MN	55106
GILMA JANNETTE SALAZAR & HERBERT		1430 STICKNEY AVE		SOUTH ST PAUL	MN	55075
ABIGAIL ANN PARTA		1430 WILSON CT		SOUTH ST PAUL	MN	55075
JAMESON M DOROFF		1431 PACIFIC ST		SAINT PAUL	MN	55106
ALLURE INVESTMENTS LLC		1433 CONCORD ST N		SOUTH ST PAUL	MN	55075
ALLISON A TOPP		1433 PACIFIC ST		SAINT PAUL	MN	55106
DARLENE DEE GOODWILL-HUBACK TSTE		1434 STICKNEY AVE		SOUTH ST PAUL	MN	55075
KOU YANG		1435 PACIFIC ST		SAINT PAUL	MN	55106
MAKHTAL A AHMAD & FATIMA HAJI		1435 STICKNEY AVE		SOUTH ST PAUL	MN	55075
KOU YANG		1437 PACIFIC ST		SAINT PAUL	MN	55106
ROSEMARY TRICOLA		1438 STICKNEY AVE		SOUTH ST PAUL	MN	55075
MOLLY E FLETCHER		1438 UPPER AFTON RD		SAINT PAUL	MN	55106
MALLARD M TEAL		144 MOUNDS BLVD		SAINT PAUL	MN	55106
GARY W BLACK TSTE		1440 STICKNEY AVE		SOUTH ST PAUL	MN	55075
STANLEY E DALLMANN		1441 CONCORD ST N		SOUTH ST PAUL	MN	55075
STEPHEN T WESTBY		1441 UPPER AFTON RD		SAINT PAUL	MN	55106
BENJAMIN P MIKE		1442 STICKNEY AVE		SOUTH ST PAUL	MN	55075
HARLAN R CHRISTENSEN		1443 EVANS AVE		SOUTH ST PAUL	MN	55075
TENG XIONG		1443 PACIFIC ST		SAINT PAUL	MN	55106
ANDREY A MITIN		1444 STICKNEY AVE		SOUTH ST PAUL	MN	55075
CASSIE JO DEILKE		1444 WILSON AVE		SAINT PAUL	MN	55106
JOHN M WENDT		1445 OLD HUDSON RD		SAINT PAUL	MN	55106
JOSEPH W MAURER		1445 STICKNEY AVE		SOUTH ST PAUL	MN	55075
CASEY CHENG		1445 WILSON AVE		SAINT PAUL	MN	55106
WILLIAM O HINTZE		1446 BURNS AVE		SAINT PAUL	MN	55106
DAVID AMYOTTE		1446 CONWAY ST		SAINT PAUL	MN	55106
MICHAEL D MAANUM		1448 UPPER AFTON RD		SAINT PAUL	MN	55106
JOSE DELATORRE		1449 OLD HUDSON RD		SAINT PAUL	MN	55106
David Unmacht	League of MN Cities	145 University Ave W		St. Paul	MN	55103
Patricia Nauman	Metro Cities	145 University Ave W.		St. Paul	MN	55103
DOLORES J GREZEK		1450 CONWAY ST		SAINT PAUL	MN	55106
RONALD G HUMPHREY		1450 WILSON AVE		SAINT PAUL	MN	55106
ROZS AUTO BODY INC		1451 CONCORD ST N		SOUTH ST PAUL	MN	55075
ANTIWONE GIBSON		1451 CONWAY ST		SAINT PAUL	MN	55106
MICHAEL J BIALLAS		1451 EVANS AVE		SOUTH ST PAUL	MN	55075
JOHNNY VANG		1451 WILSON AVE		SAINT PAUL	MN	55106
NAI MA HAR MON		1452 PACIFIC ST		SAINT PAUL	MN	55106
KAREN WEST		1452 UPPER AFTON RD		SAINT PAUL	MN	55106
CLYDE L DAISLEY		1454 STICKNEY AVE		SOUTH ST PAUL	MN	55075
TOUA VANG		1455 CONWAY ST		SAINT PAUL	MN	55106
CINDY XIONG		1455 OLD HUDSON RD		SAINT PAUL	MN	55106
SHAWN A KRUEGER & SHAWNEE L		1455 STICKNEY AVE		SOUTH ST PAUL	MN	55075
TONG XIONG		1456 CONWAY ST		SAINT PAUL	MN	55106
RALPH P BACHMEIER		1456 WILSON AVE		SAINT PAUL	MN	55106
MSR I ASSETS LLC		1457 PACIFIC ST		SAINT PAUL	MN	55106
JAMES H TROG		1457 WILSON AVE		SAINT PAUL	MN	55106
MACKENZIE FEDORINCHIK		1460 PACIFIC ST		SAINT PAUL	MN	55106
LANA F SCHAFFER		1460 UPPER AFTON RD		SAINT PAUL	MN	55106
JULIA HANDAL		1461 OLD HUDSON RD		SAINT PAUL	MN	55106
ANDREW C LEE		1461 PACIFIC ST		SAINT PAUL	MN	55106
MARTIN JAQUES III		1461 WILSON AVE		SAINT PAUL	MN	55106
MARY C ERICKSON		1462 CONWAY ST		SAINT PAUL	MN	55106
JENNA M BURGOYNE		1462 WILSON AVE		SAINT PAUL	MN	55106
DALE A BROOKE		1463 CONWAY ST		SAINT PAUL	MN	55106
RUTH C SWANSON		1463 UPPER AFTON RD		SAINT PAUL	MN	55106
MAY CHA		1464 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
YULIANA R BAEZ		1464 UPPER AFTON RD		SAINT PAUL	MN	55106
LAWRENCE C OSTERKAMP		1466 OLD HUDSON RD		SAINT PAUL	MN	55106
VANG XAI YANG		1467 PACIFIC ST		SAINT PAUL	MN	55106
ROSALIE MORA		1467 WILSON AVE		SAINT PAUL	MN	55106
PHOEBE L BONN		1468 CONWAY ST		SAINT PAUL	MN	55106
KHAI HONG LIM		1468 UPPER AFTON RD		SAINT PAUL	MN	55106
RAED SULIMAN		1468 WILSON AVE		SAINT PAUL	MN	55106
GARY W SALMINEN		1469 CONWAY ST		SAINT PAUL	MN	55106
MARK A & BONNIE M SOLOS		147 KASSAN CT		SOUTH ST PAUL	MN	55075
ALAN ENGLER		147 MARIA AVE		SAINT PAUL	MN	55106
NHIA GOUA YANG		147 WILSHIRE PL		SAINT PAUL	MN	55106
DELMAR NAPUE		1470 BURNS AVE		SAINT PAUL	MN	55106
RACHEL DEVRIES		1471 BURG ST		SAINT PAUL	MN	55119
WILLIAM DENNIS LEE		1471 EVANS AVE		SOUTH ST PAUL	MN	55075
RAYMOND M BEANE		1472 OLD HUDSON RD		SAINT PAUL	MN	55106
MARIO HERNANDEZ		1474 CONWAY ST		SAINT PAUL	MN	55106
SHERYL A JERIKOVSKY		1474 UPPER AFTON RD		SAINT PAUL	MN	55106
JOSEPH M ROLFER		1474 WILSON AVE		SAINT PAUL	MN	55106
DONALD W SUCHOMEL		1475 CONWAY ST		SAINT PAUL	MN	55106
MELISSA ZAHRADKA		1475 OLD HUDSON RD		SAINT PAUL	MN	55106
KORY IVERSON		1475 UPPER AFTON RD		SAINT PAUL	MN	55106
MICHAEL D GRIFITH		1475 WILSON AVE		SAINT PAUL	MN	55106
AARON ROOZEN		1476 BURNS AVE		SAINT PAUL	MN	55106
LOUIS F CONTINENZA		1478 OLD HUDSON RD		SAINT PAUL	MN	55106
DORRIS J BARNES		1479 OLD HUDSON RD		SAINT PAUL	MN	55106
ESSO PROPERTIES LLC		148 BATES AVE		SAINT PAUL	MN	55106
GRANT R WARD		148 MARIA AVE		SAINT PAUL	MN	55106
DOROTHY L MOHWINKEL		148 WHITE BEAR AVE N		SAINT PAUL	MN	55106
GREGORY J STACHOWIAK		1480 CONWAY ST		SAINT PAUL	MN	55106
TOBY F YANG		1480 UPPER AFTON RD		SAINT PAUL	MN	55106
YAO HUI ZHU		1481 CONWAY ST		SAINT PAUL	MN	55106
CHRISTINA DUONG		1481 WILSON AVE		SAINT PAUL	MN	55106
ROBERTO C ALFARO MENDOZA		1482 BURNS AVE		SAINT PAUL	MN	55106
PAUL ZAPPA		1483 OLD HUDSON RD		SAINT PAUL	MN	55106
LINDSEY M RAYMOND		1483 PACIFIC ST		SAINT PAUL	MN	55106
MARY B HAUPT		1484 UPPER AFTON RD		SAINT PAUL	MN	55106
RICKY VANG		1484 WILSON AVE		SAINT PAUL	MN	55106
ERIK D STANTON		1485 PACIFIC ST		SAINT PAUL	MN	55106
HUBERT J WEGELE		1485 UPPER AFTON RD		SAINT PAUL	MN	55106
GERALDINE MAI LING TAN		1486 OLD HUDSON RD		SAINT PAUL	MN	55106
MARCEL J LIPINSKI		1487 BURNS AVE		SAINT PAUL	MN	55106
LERNER JOE		1487 CONWAY ST		SAINT PAUL	MN	55106
DEODATH NARAINE		1487 OLD HUDSON RD		SAINT PAUL	MN	55106
MARK A DEMBOUSKI		1488 CONWAY ST		SAINT PAUL	MN	55106

Full Name	Organization - Primary	Mailing Street	Mailing Street 2	Mailing City	Mailing State	Mailing Zip
KONG MENG VANG		1488 OLD HUDSON RD		SAINT PAUL	MN	55106
DAVID VANG		1490 BURNS AVE		SAINT PAUL	MN	55106
ELMER A MINERO		1490 WILSON AVE		SAINT PAUL	MN	55106
PATRICK MCLAUGHLIN		1491 OLD HUDSON RD		SAINT PAUL	MN	55106
FRED T RABENS		1491 UPPER AFTON RD		SAINT PAUL	MN	55106
DAVID MOUA		1492 BURNS AVE		SAINT PAUL	MN	55106
JENNIFER A FLYNN		1492 DORA LN		SAINT PAUL	MN	55106
STEVEN LEE AXDAHL		1492 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
LANCE E REISETTER		1493 MCLEAN AVE		SAINT PAUL	MN	55106
JI LI		1493 PACIFIC ST		SAINT PAUL	MN	55106
CAROL E LINDBERG		1494 BURNS AVE		SAINT PAUL	MN	55106
BERNARD JOSEPH MORDORSKI		1494 PACIFIC ST		SAINT PAUL	MN	55106
DANIELLE N WETTSCHRECK		1495 CONWAY ST		SAINT PAUL	MN	55106
ROBERT L PIECHOWSKI		1495 OLD HUDSON RD		SAINT PAUL	MN	55106
VERA S LYONS		1496 DORA LN		SAINT PAUL	MN	55106
SUSAN K SMITH		1496 UPPER AFTON RD		SAINT PAUL	MN	55106
YENG VANG		1496 WILSON AVE		SAINT PAUL	MN	55106
YEA KLER		1499 MCLEAN AVE		SAINT PAUL	MN	55106
MARILYN A MOLEAN		1499 OLD HUDSON RD		SAINT PAUL	MN	55106
PATRICK J MADIGAN		1499 PACIFIC ST		SAINT PAUL	MN	55106
Rebacca Noecker	St. Paul City Council	15 Kelloff Blvd. West	310-B City Hall	Saint Paul	MN	55102
Jane Prince	St. Paul City Council	15 Kellog Blvd. West	3320-C City Hall	St. Paul	MN	55102
Jim McDonough	Ramsey County	15 W. Kellogg Blvd.	Room 220	St. Paul	MN	55102
Ken Iosso	Ramsey County	15 W. Kellogg Blvd.	Room 220	St. Paul	MN	55102
Rafael Ortega	Ramsey County	15 W. Kellogg Blvd.	Room 220	St. Paul	MN	55102
CHARLES W BOECK		150 BATES AVE		SAINT PAUL	MN	55106
MICHAEL M & VICTORIA BEBERG		150 KASSAN CT		SOUTH ST PAUL	MN	55075
JONATHAN K LEWIS TRUSTEE		150 MOUNDS BLVD		SAINT PAUL	MN	55106
LOC BA NGUYEN		1500 BURNS AVE		SAINT PAUL	MN	55106
PLACIDO HERNANDEZ		1500 CONWAY ST		SAINT PAUL	MN	55106
MONTY HOEFFLIN		1500 PACIFIC ST		SAINT PAUL	MN	55106
DEBORA M LILLI		1500 UPPER AFTON RD		SAINT PAUL	MN	55106
BNSF RAILWAY CO		1500 WARNER RD		SAINT PAUL	MN	55106
CHANG VANG		1501 CONWAY ST		SAINT PAUL	MN	55106
BARRY R & LAEL A CLIFTON		1501 MOTOR AVE		SOUTH ST PAUL	MN	55075
KYANA M MARBLE		1501 WILSON AVE		SAINT PAUL	MN	55106
LYLE M KRAFT		1502 DORA LN		SAINT PAUL	MN	55106
XIA XIONG		1502 WILSON AVE		SAINT PAUL	MN	55106
MARY JANE THOMPSON		1503 MCLEAN AVE		SAINT PAUL	MN	55106
WILFRIED M HEIN		1503 UPPER AFTON RD		SAINT PAUL	MN	55106
MICHAEL C DOX & EILEEN C EIBL-DOX		1503 WILLIS AVE		SOUTH ST PAUL	MN	55075
DAVID TESFALDET HADGU		1504 BURG AVE		SAINT PAUL	MN	55119
WILLIAM C JOHNSON TRUSTEE		1504 OLD HUDSON RD		SAINT PAUL	MN	55106
JOSEPH MOEN		1504 WILLIS AVE		SOUTH ST PAUL	MN	55075
PROGRESSIVE MISSIONARY BAPTIS		1505 BURNS AVE		SAINT PAUL	MN	55106
THOMAS E & LAVONNE K POWERS		1505 CONCORD ST N		SOUTH ST PAUL	MN	55075
DARLING YANG		1505 CONWAY ST		SAINT PAUL	MN	55106
BRP II LLC		1505 OLD HUDSON RD		SAINT PAUL	MN	55106
HILLARY ANN RUTH DOYLE		1505 PACIFIC ST		SAINT PAUL	MN	55106
TRIA LEE		1506 CONWAY ST		SAINT PAUL	MN	55106
MARIA T SOLIS		1506 PACIFIC ST		SAINT PAUL	MN	55106
DEBORAH JEAN BREITZMAN		1506 UPPER AFTON RD		SAINT PAUL	MN	55106
AYARIE A SONGYOUNG		1507 WILSON AVE		SAINT PAUL	MN	55106
LILLIAN W HOLLAND		1508 BURNS AVE		SAINT PAUL	MN	55106
XONG VUE		1508 WILSON AVE		SAINT PAUL	MN	55106
ROBERT E RENNING		1509 BURG AVE		SAINT PAUL	MN	55119
STEPHEN J BLISS		1509 CONWAY ST		SAINT PAUL	MN	55106
JESUS A BONILLA		1509 MCLEAN AVE		SAINT PAUL	MN	55106
JOSEPH C & KAREN L BROTZLER		1509 STICKNEY AVE		SOUTH ST PAUL	MN	55075
SHANE R TRONDSON		1509 UPPER AFTON RD		SAINT PAUL	MN	55106
KIM M THOMPSON		151 URBAN PL		SAINT PAUL	MN	55106
SUNLIGHT HOME IMPROVEMENT		1510 CONWAY ST		SAINT PAUL	MN	55106
SANDRA J GROVE		1510 DORA LN		SAINT PAUL	MN	55106
BRENT MICHAEL CIRILLO		1510 UPPER AFTON RD		SAINT PAUL	MN	55106
JOSHUA FOSSUM		1511 OLD HUDSON RD		SAINT PAUL	MN	55106
MA MANEE MOUA		1511 PACIFIC ST		SAINT PAUL	MN	55106
DAIL E & STEPHANIE M BRANDNER		1511 WILLIS AVE		SOUTH ST PAUL	MN	55075
MARIA MEJIA		1511 WILSON AVE		SAINT PAUL	MN	55106
MIGUEL A SANCHEZ GALLO		1512 BURNS AVE		SAINT PAUL	MN	55106
TIMOTHY R BEEDLE		1512 PACIFIC ST		SAINT PAUL	MN	55106
JAMES R PARENT		1512 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
RICHARD STEFFELS		1514 WILLIS AVE		SOUTH ST PAUL	MN	55075
XENG HER		1514 WILSON AVE		SAINT PAUL	MN	55106
CHOMNANSAKI MOM		1515 BURG AVE		SAINT PAUL	MN	55119
DAVID P KEMP		1515 MCLEAN AVE		SAINT PAUL	MN	55106
CHA VANG		1515 PACIFIC ST		SAINT PAUL	MN	55106
NANCI YANES		1515 UPPER AFTON RD		SAINT PAUL	MN	55106
RONALD DAVID SHELAFOE		1516 UPPER AFTON RD		SAINT PAUL	MN	55106
HUU TRI NGOC DANG		1517 OLD HUDSON RD		SAINT PAUL	MN	55106
GUSTAVO A GRIHALVA		1518 CONWAY ST		SAINT PAUL	MN	55106
JAMES W SHANNON		1518 DORA LN		SAINT PAUL	MN	55106
DANIEL B KLAWITTER		1518 PACIFIC ST		SAINT PAUL	MN	55106
CHEE VANG		1519 HUDSON RD		SAINT PAUL	MN	55106
DANIEL P AVOLES		1519 WILSON AVE		SAINT PAUL	MN	55106
CHARLES H BOECK		152 BATES AVE		SAINT PAUL	MN	55106
JOANN VANDOREN		152 MARIA AVE		SAINT PAUL	MN	55106
MICHAEL J CARDINAL		1520 BURNS AVE		SAINT PAUL	MN	55106
SEE LOR		1520 OLD HUDSON RD		SAINT PAUL	MN	55106
TIMOTHY M PAUL		1520 UPPER AFTON RD		SAINT PAUL	MN	55106
AMY VUE XIONG		1520 WILSON AVE		SAINT PAUL	MN	55106
JAMES S SANDERS		1521 BURNS AVE		SAINT PAUL	MN	55106
KATHLEEN A BRADSHAW		1521 MCLEAN AVE		SAINT PAUL	MN	55106
ST PAUL PUBLIC HOUSING AGENCY		1521 PACIFIC ST		SAINT PAUL	MN	55106
ARLIE M PIERSON		1522 DORA LN		SAINT PAUL	MN	55106
DANIEL C YANG		1522 PT DOUGLAS RD S		SAINT PAUL	MN	55119
ENRIQUE CORTEZ		1523 OLD HUDSON RD		SAINT PAUL	MN	55106
KENNETH SCHWARTZ		1523 UPPER AFTON RD		SAINT PAUL	MN	55106
KARI KUEMPEL		1524 DORA LN		SAINT PAUL	MN	55106
MICHAEL K OBRYAN		1524 PACIFIC ST		SAINT PAUL	MN	55106
PHENG XIONG		1524 WILSON AVE		SAINT PAUL	MN	55106
J & J CONCORD PROPERTY LLC		1525 CONCORD ST N		SOUTH ST PAUL	MN	55075
DAVID A TREPANIER		1525 PACIFIC ST		SAINT PAUL	MN	55106
DIANNE L SOGGIORNO		1525 WILSON AVE		SAINT PAUL	MN	55106
KANJANA THAO VANG		1526 CONWAY ST		SAINT PAUL	MN	55106
WALLY HUPALO		1526 UPPER AFTON RD		SAINT PAUL	MN	55106
JULIE YOUA VUE		1527 PACIFIC ST		SAINT PAUL	MN	55106
ALEXEJ VLADYMYR PAVLOV		1529 HUDSON RD		SAINT PAUL	MN	55106
KEE VANG		1529 MCLEAN AVE		SAINT PAUL	MN	55106
ST PAUL PUBLIC HOUSING AGENCY		1529 OLD HUDSON RD		SAINT PAUL	MN	55106
PETER J FOSTER		1529 UPPER AFTON RD		SAINT PAUL	MN	55106
THOMAS L KENNEDY		153 BATES AVE		SAINT PAUL	MN	55106
ELIZABETH A YARNS		1530 BURNS AVE		SAINT PAUL	MN	55106
ROSS O HULLEMAN		1530 MCLEAN AVE		SAINT PAUL	MN	55106
DUANE ECK		1530 OLD HUDSON RD		SAINT PAUL	MN	55106
ROBERT M ZIMMERMAN		1530 PACIFIC ST		SAINT PAUL	MN	55106
BLAINE A DORWEILER		1530 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
LEE ALLEN & JENNY AN PROCHNOW		1530 STICKNEY AVE		SOUTH ST PAUL	MN	55075
STEVEN R EMBERTSON		1530 UPPER AFTON RD		SAINT PAUL	MN	55106
JOSE C AGUIRRE		1530 WILSON AVE		SAINT PAUL	MN	55106
SANDRA K WILDENAUER		1531 UPPER AFTON RD		SAINT PAUL	MN	55106
SANDY YANG		1531 WILSON AVE		SAINT PAUL	MN	55106
COLLEEN T OCONNELL		1532 CONWAY ST		SAINT PAUL	MN	55106
ROGER B HOLDEN		1532 DORA LN		SAINT PAUL	MN	55106
MARGARET K HEISTERKAMP		1533 BURNS AVE		SAINT PAUL	MN	55106
CAROL A MCKENNA		1533 CONWAY ST		SAINT PAUL	MN	55106
BORIS V OZEROV		1533 OLD HUDSON RD		SAINT PAUL	MN	55106
ASHLEY NICOLE GARCIA		1533 STICKNEY AVE		SOUTH ST PAUL	MN	55075
LARRY A SANDBURG		1534 WILSON AVE		SAINT PAUL	MN	55106
STEPHEN D MCGREGOR		1535 HUDSON RD		SAINT PAUL	MN	55106
MARLENE L DRAMDAHL		1535 MCLEAN AVE		SAINT PAUL	MN	55106
TAMMY R UGRO		1535 PACIFIC ST		SAINT PAUL	MN	55106
DAVID HEITZMAN		1535 WILSON AVE		SAINT PAUL	MN	55106
SWS REAL ESTATE LLC		1536 BURNS AVE		SAINT PAUL	MN	55106
ST PAUL PUBLIC HOUSING AGENCY		1536 UPPER AFTON RD		SAINT PAUL	MN	55106
JEFFREY A KEITH		1537 BURNS AVE		SAINT PAUL	MN	55106
CONNIE J ANDERSON		1537 OLD HUDSON RD		SAINT PAUL	MN	55106
SAI VONG LEE		1538 CONWAY ST		SAINT PAUL	MN	55106

Full Name	Organization - Primary	Mailing Street	Mailing Street 2	Mailing City	Mailing State	Mailing Zip
TAMMY PHAN		1538 PACIFIC ST		SAINT PAUL	MN	55106
PHOENIX RESIDENCE INC		1538 PT DOUGLAS RD S		SAINT PAUL	MN	55119
KIESHIA BRYANT		1538 WILSON AVE		SAINT PAUL	MN	55106
PENG PHA		1539 CONWAY ST		SAINT PAUL	MN	55106
ARTURO CERVANTES		1539 WILSON AVE		SAINT PAUL	MN	55106
REBECKA MACINNES		154 MOUNDS BLVD		SAINT PAUL	MN	55106
LUPE SANCHEZ		154 WHITE BEAR AVE N		SAINT PAUL	MN	55106
ABDURAHMAN HUSSEIN MAMMA		1540 CONWAY ST		SAINT PAUL	MN	55106
CHENGXENG LEE		1540 UPPER AFTON RD		SAINT PAUL	MN	55106
KEITH & ALLISON MOMPER		1541 CONCORD ST N		SOUTH ST PAUL	MN	55075
XINKAI WANG		1541 PACIFIC ST		SAINT PAUL	MN	55106
MARTIN R LUMPERT & MILAGROS P		1542 MOTOR AVE		SOUTH ST PAUL	MN	55075
RICHARD W ELLIS		1542 WILSON AVE		SAINT PAUL	MN	55106
LISA HANSON		1543 BURG AVE		SAINT PAUL	MN	55119
CARLOS J URRUTIA CORDOVA		1543 EUCLID ST		SAINT PAUL	MN	55106
JEFFREY A GILMAN		1544 BURNS AVE		SAINT PAUL	MN	55106
CODY J JERZAK		1544 UPPER AFTON RD		SAINT PAUL	MN	55106
MATTHEW J DRISCOLL		1545 BURNS AVE		SAINT PAUL	MN	55106
MICHON BRUDENELL		1545 CONWAY ST		SAINT PAUL	MN	55106
OLSON PROPERTY INVESTMENTS LLC		1545 HUDSON RD		SAINT PAUL	MN	55106
THAI CHANG		1545 PACIFIC ST		SAINT PAUL	MN	55106
ELIZABETH AVWUNUMA		1545 WILSON AVE		SAINT PAUL	MN	55106
YEE KOON LAM GEE		1546 CONWAY ST		SAINT PAUL	MN	55106
SOUNA VANG		1546 EUCLID ST		SAINT PAUL	MN	55106
MARTIN R LUMPERT		1546 MOTOR AVE		SOUTH ST PAUL	MN	55075
ANSHU KHAKURAL		1546 WILSON AVE		SAINT PAUL	MN	55106
JESSICA F CAMPBELL		1547 EUCLID ST		SAINT PAUL	MN	55106
NEIL L GRASS		1547 LEONE AVE		SAINT PAUL	MN	55106
HARRY S DAVIS		1548 DORA LN		SAINT PAUL	MN	55106
RENATE ESQUIVEL		1548 UPPER AFTON RD		SAINT PAUL	MN	55106
KATHLEEN M MENACHER		1549 BURNS AVE		SAINT PAUL	MN	55106
FERNANDO ORTIZ		1549 HUDSON RD		SAINT PAUL	MN	55106
JOYCE M GUSTAFSON		1549 LEONE AVE		SAINT PAUL	MN	55106
MICHAEL P CONWAY		1549 UPPER AFTON RD		SAINT PAUL	MN	55106
NORTHERN METRO SERVICES LLC		155 HARDMAN AVE S		SOUTH ST PAUL	MN	55075
JOSEPH JOHN SCHACHTNER TRUSTEE		155 MARIA AVE		SAINT PAUL	MN	55106
SOPHIA SMITH		155 URBAN PL		SAINT PAUL	MN	55106
KATHERINE M CARLSON		155 WILSHIRE PL		SAINT PAUL	MN	55106
JOSIAH K OBWATHO		1550 BURNS AVE		SAINT PAUL	MN	55106
JANET L SORENSEN		1550 EUCLID ST		SAINT PAUL	MN	55106
WILLIAM THOMAS FERNOW		1550 STICKNEY AVE		SOUTH ST PAUL	MN	55075
TASHA D DAVIS		1551 CONCORD ST N		SOUTH ST PAUL	MN	55075
MARY N WADDINGTON		1551 EUCLID ST		SAINT PAUL	MN	55106
DANIEL R KOTKE		1551 LEONE AVE		SAINT PAUL	MN	55106
D & K VENTURES LLC		1551 WILLIS AVE		SOUTH ST PAUL	MN	55075
MAI KIA VANG		1552 CONWAY ST		SAINT PAUL	MN	55106
DUANE MARONEY		1552 WILLIS AVE		SOUTH ST PAUL	MN	55075
MAIZIA LISA LEE		1553 HUDSON RD		SAINT PAUL	MN	55106
LUIS ROBLES ROJAS & GRACIELA TORRES-		1553 MOTOR AVE		SOUTH ST PAUL	MN	55075
DANIEL EGGERS		1554 BURNS AVE		SAINT PAUL	MN	55106
IAN ALLIOTT CAPITAL LLC		1554 MOTOR AVE		SOUTH ST PAUL	MN	55075
JOHN D FARLEY		1554 WILSON AVE		SAINT PAUL	MN	55106
VIENGMOR PHIDAVANH		1555 BURG AVE		SAINT PAUL	MN	55119
JAG RENTALS LLC		1555 BURNS AVE		SAINT PAUL	MN	55106
KIMBERLY D LAM VANG		1555 CONWAY ST		SAINT PAUL	MN	55106
CRAIG LONG		1555 EUCLID ST		SAINT PAUL	MN	55106
GERALD & JOAN ARVIDSON		1555 EVANS AVE		SOUTH ST PAUL	MN	55075
GENARO GARCIA REYES		1555 LEONE AVE		SAINT PAUL	MN	55106
SHERYL V HAYNE		1555 UPPER AFTON RD		SAINT PAUL	MN	55106
MARCOS T SALGUERO		1555 WILSON AVE		SAINT PAUL	MN	55106
SILVER OAK DEVELOPMENT LLLP		1556 BURG ST		SAINT PAUL	MN	55119
ROY O SWENSON		1556 EUCLID ST		SAINT PAUL	MN	55106
LUCY A GARRITY		1556 EVANS AVE		SOUTH ST PAUL	MN	55075
MICHAEL A DISANTO		1558 BURNS AVE		SAINT PAUL	MN	55106
KATRINA M SMITH		1558 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
JEFFREY J OLIVER		1559 BURNS AVE		SAINT PAUL	MN	55106
CURTIS & JORDAN DEGIDIO		1559 CONCORD ST N		SOUTH ST PAUL	MN	55075
EH KOR		1559 EUCLID ST		SAINT PAUL	MN	55106
KAI LEUNG LAM		1559 HUDSON RD		SAINT PAUL	MN	55106
JOSHUA M SCHWEMMER		1559 MCLEAN AVE		SAINT PAUL	MN	55106
ROBERT D & SHARI JACKSON		156 KASSAN CT		SOUTH ST PAUL	MN	55075
CONG YI WU		1560 CONWAY ST		SAINT PAUL	MN	55106
ANNE E HANDFORD		1560 DORA LN		SAINT PAUL	MN	55106
GHOUSE M KHAN		1560 MCLEAN AVE		SAINT PAUL	MN	55106
MARY D JORGENSEN		1560 PACIFIC ST		SAINT PAUL	MN	55106
SHARON A FUEHRER		1560 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
ERIC & JENNIFER LIVESAY		1560 STICKNEY AVE		SOUTH ST PAUL	MN	55075
WILLIS APARTMENTS LLC		1560 WILLIS AVE		SOUTH ST PAUL	MN	55075
RODERICK N BOLEN & MARILYN PORTER		1561 CONCORD ST N		SOUTH ST PAUL	MN	55075
TERESA L STEINER		1561 CONWAY ST		SAINT PAUL	MN	55106
MARY ANN CORBETT		1561 EVANS AVE		SOUTH ST PAUL	MN	55075
STEVEN R BARIBEAU		1561 LEONE AVE		SAINT PAUL	MN	55106
WESLEY M BERGHERR		1561 MOTOR AVE		SOUTH ST PAUL	MN	55075
KLARRIS REAL ESTATE HOLDINGS LLC		1562 MOTOR AVE		SOUTH ST PAUL	MN	55075
BENJAMIN KOENIG		1562 UPPER AFTON RD		SAINT PAUL	MN	55106
EDWARD M LOPEZ		1563 EUCLID ST		SAINT PAUL	MN	55106
CONRAD J LEE		1563 UPPER AFTON RD		SAINT PAUL	MN	55106
ANTHONY J HOUSLEY		1563 WILLIS AVE		SOUTH ST PAUL	MN	55075
RICHARD S FELT		1564 BURNS AVE		SAINT PAUL	MN	55106
MARK LAWSON		1564 MCLEAN AVE		SAINT PAUL	MN	55106
ERIC S FROEMEL		1564 PACIFIC ST		SAINT PAUL	MN	55106
ANNETT LEE COSSETTA		1564 UPPER AFTON RD		SAINT PAUL	MN	55106
CHENG VUE		1565 BURG AVE		SAINT PAUL	MN	55119
MICHAEL HODSDON		1565 EVANS AVE		SOUTH ST PAUL	MN	55075
MARY ANN MAGGI		1565 HUDSON RD		SAINT PAUL	MN	55106
CARMEN M GARCIA PEREZ		1565 MCLEAN AVE		SAINT PAUL	MN	55106
MICHAEL BLAESER		1565 MOTOR AVE		SOUTH ST PAUL	MN	55075
HTOO SHEE		1566 CONWAY ST		SAINT PAUL	MN	55106
JAMES F HEHN		1566 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
GAYL H WALDVOGEL		1566 SUBURBAN AVE		SAINT PAUL	MN	55106
CHONG VANG		1566 WILSON AVE		SAINT PAUL	MN	55106
MY FUTURE LIVING LLC		1567 CONCORD ST N		SOUTH ST PAUL	MN	55075
MARINN KRANG		1567 CONWAY ST		SAINT PAUL	MN	55106
AMIEE FRIED		1567 EUCLID ST		SAINT PAUL	MN	55106
MICHAEL P ADRIAN		1567 WILLIS AVE		SOUTH ST PAUL	MN	55075
STEVE VANG		1568 LEONE AVE		SAINT PAUL	MN	55106
MARIE A JACOBSEN		1568 MCLEAN AVE		SAINT PAUL	MN	55106
GREGORY A WROBEL		1568 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
MICHAEL & ELIZABETH ERDMAN		1568 WILLIS AVE		SOUTH ST PAUL	MN	55075
MCLEAN AVENUE LLC		1569 MCLEAN AVE		SAINT PAUL	MN	55106
ANN POPADIUK LARSON		157 BATES AVE		SAINT PAUL	MN	55106
JOSEPH W TRCKA		157 MARIA AVE		SAINT PAUL	MN	55106
ARUN MONONGDOEN		1570 CONWAY ST		SAINT PAUL	MN	55106
CHOU C VANG		1570 PACIFIC ST		SAINT PAUL	MN	55106
TOUA LEE		1570 SUBURBAN AVE		SAINT PAUL	MN	55106
BOONKA MOUA		1571 EUCLID ST		SAINT PAUL	MN	55106
JULIANNE M BLOSSEY		1571 HUDSON RD		SAINT PAUL	MN	55106
TIMOTHY & BRITTA MALY		1571 MOTOR AVE		SOUTH ST PAUL	MN	55075
VIENGSAVANH PABORRIBOON		1571 STICKNEY AVE		SOUTH ST PAUL	MN	55075
LUCY YANG		1571 SUBURBAN AVE		SAINT PAUL	MN	55106
JONATHAN A & LISA J LEMKE		1571 WILLIS AVE		SOUTH ST PAUL	MN	55075
ADAM JENNA LOVINS NEUJAHR		1572 BURG AVE		SAINT PAUL	MN	55119
JODI M SWENSON		1572 BURNS AVE		SAINT PAUL	MN	55106
BAO VUE		1573 BURG AVE		SAINT PAUL	MN	55119
ST PAUL PUBLIC HOUSING AGENCY		1573 CONWAY ST		SAINT PAUL	MN	55106
GRACIANO GARRIDO		1574 LEONE AVE		SAINT PAUL	MN	55106
ALBERT E PETERSON		1574 PACIFIC ST		SAINT PAUL	MN	55106
JAMES C & GEORGIA L ARVIDSON		1574 STICKNEY AVE		SOUTH ST PAUL	MN	55075
THOMAS OSZMAN & DONNA M EVANS		1575 EVANS AVE		SOUTH ST PAUL	MN	55075
DANIELLE L ELIASEN		1575 HUDSON RD		SAINT PAUL	MN	55106
PAO CHOUA XIONG		1575 MCLEAN AVE		SAINT PAUL	MN	55106
TONYA M SMITH		1575 SUBURBAN AVE		SAINT PAUL	MN	55106
ASIF BASHAR		1576 CONWAY ST		SAINT PAUL	MN	55106
ST PAUL PUBLIC HOUSING AGENCY		1576 MCLEAN AVE		SAINT PAUL	MN	55106
SHESHI DESTA		1576 SUBURBAN AVE		SAINT PAUL	MN	55106
LOIS E LEIER TRUSTEE		1577 EUCLID ST		SAINT PAUL	MN	55106

Full Name	Organization - Primary	Mailing Street	Mailing Street 2	Mailing City	Mailing State	Mailing Zip
MISTY L COLEMAN		1577 PACIFIC ST		SAINT PAUL	MN	55106
JEAN M BONN		1578 EUCLID ST		SAINT PAUL	MN	55106
JENISE R ROBERTS		1578 WILLIS AVE		SOUTH ST PAUL	MN	55075
MAI XIONG		1578 WILSON AVE		SAINT PAUL	MN	55106
YIA XIONG		1579 CONWAY ST		SAINT PAUL	MN	55106
JOHN H PETTIS		1579 LEONE AVE		SAINT PAUL	MN	55106
RUSSELL M & KAYE M LINDBERG		1579 MOTOR AVE		SOUTH ST PAUL	MN	55075
VIENGSAVANH PABORRIBOON		1579 STICKNEY AVE		SOUTH ST PAUL	MN	55075
STEVEN E & BARBARA J WRIGHT		1579 WILLIS AVE		SOUTH ST PAUL	MN	55075
CRYSTAL STEVENSON		158 BATES AVE		SAINT PAUL	MN	55106
JAMES N RINDAL		158 MOUNDS BLVD		SAINT PAUL	MN	55106
BONNIE J JOHNSON		1580 BURNS AVE		SAINT PAUL	MN	55106
JOHN M KNIPRATH		1580 MCLEAN AVE		SAINT PAUL	MN	55106
JORDAN ALLE & JENNIFER SOLDOW		1580 WILLIS AVE		SOUTH ST PAUL	MN	55075
SALVADOR SAYBE		1581 BURG AVE		SAINT PAUL	MN	55119
DENNIS J & SUSAN L WALTER		1581 CONCORD ST N		SOUTH ST PAUL	MN	55075
GINA BLANCO		1581 HUDSON RD		SAINT PAUL	MN	55106
TENG YANG		1581 MCLEAN AVE		SAINT PAUL	MN	55106
FLORO R BASUIL		1581 SUBURBAN AVE		SAINT PAUL	MN	55106
NANCY L Y AKOFIO SOWAH		1581 WILSON AVE		SAINT PAUL	MN	55106
WALENG VANG		1582 CONWAY ST		SAINT PAUL	MN	55106
YILLAH ELI KARGBO		1582 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
BRODY RYAN		1582 WILSON AVE		SAINT PAUL	MN	55106
LEON J RODRIGUES		1583 BURNS AVE		SAINT PAUL	MN	55106
AGULA YANG		1583 EUCLID ST		SAINT PAUL	MN	55106
ROBERT KELLER		1583 LEONE AVE		SAINT PAUL	MN	55106
KAREN M HYRKAS		1583 PACIFIC ST		SAINT PAUL	MN	55106
JESSICA A ROSS		1584 BURG AVE		SAINT PAUL	MN	55119
LAO VANG		1584 EUCLID ST		SAINT PAUL	MN	55106
FUE XEE LEE YANG		1584 LEONE AVE		SAINT PAUL	MN	55106
DOUA XIONG		1584 MCLEAN AVE		SAINT PAUL	MN	55106
APRIL L JOHNSON		1584 SUBURBAN AVE		SAINT PAUL	MN	55106
ANIDA VUE		1585 CONWAY ST		SAINT PAUL	MN	55106
KAREN SORENSON		1586 BURNS AVE		SAINT PAUL	MN	55106
KYLE BARTON		1586 PACIFIC ST		SAINT PAUL	MN	55106
ALYSSA MAE BREU		1587 BURG AVE		SAINT PAUL	MN	55119
TAMMY L SCHLOMKA		1587 MCLEAN AVE		SAINT PAUL	MN	55106
THELMA STEWART		1587 SUBURBAN AVE		SAINT PAUL	MN	55106
MARK L WEBER		1588 WILSON AVE		SAINT PAUL	MN	55106
EMMA BRISKI		1589 EUCLID ST		SAINT PAUL	MN	55106
JOHNNY THAO		1589 LEONE AVE		SAINT PAUL	MN	55106
CATHERINE ANNE VANROSSUM		159 WHITE BEAR AVE N		SAINT PAUL	MN	55106
KATHLEEN MCKENNA		1590 EUCLID ST		SAINT PAUL	MN	55106
NANCY C HEILLE		1590 SUBURBAN AVE		SAINT PAUL	MN	55106
WILLIAM K MARBEN		1591 BURNS AVE		SAINT PAUL	MN	55106
ELAINE M RAYNE		1591 MCLEAN AVE		SAINT PAUL	MN	55106
ROCKY VUE		1591 WILSON AVE		SAINT PAUL	MN	55106
SHOP 2012 LLC		1592 PACIFIC ST		SAINT PAUL	MN	55106
GREGG M BAUMGART		1593 BURG AVE		SAINT PAUL	MN	55119
SAMANTHA LA THAO		1593 PACIFIC ST		SAINT PAUL	MN	55106
GLENN B BLOKZYL		1593 SUBURBAN AVE		SAINT PAUL	MN	55106
JOSEPH A AUGE		1594 CONWAY ST		SAINT PAUL	MN	55106
LAURA M GLEIXNER		1594 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
MICHAEL R RITLAND		1594 SUBURBAN AVE		SAINT PAUL	MN	55106
MICHAEL P KLEIN		1594 UPPER AFTON RD		SAINT PAUL	MN	55106
VANG L YANG		1595 EUCLID ST		SAINT PAUL	MN	55106
WILLIAM DORSEY SMITH		1595 HUDSON RD		SAINT PAUL	MN	55106
DAVID REWEY		1595 WILSON AVE		SAINT PAUL	MN	55106
JOHN OWEN DOUGLAS KING		1596 BURG AVE		SAINT PAUL	MN	55119
JUDITH A CULLEN		1596 CONWAY ST		SAINT PAUL	MN	55106
JANE L MILLER		1596 EUCLID ST		SAINT PAUL	MN	55106
JAMES D CAMPBELL		1596 MCLEAN AVE		SAINT PAUL	MN	55106
CELESTE R YANISCH PERRON		1596 UPPER AFTON RD		SAINT PAUL	MN	55106
SHEE LEE		1597 BURNS AVE		SAINT PAUL	MN	55106
PAUL YANG		1597 MCLEAN AVE		SAINT PAUL	MN	55106
JER LEE		1598 PACIFIC ST		SAINT PAUL	MN	55106
BRADLEY R KAISER		1599 CONWAY ST		SAINT PAUL	MN	55106
MEE YANG		1599 EUCLID ST		SAINT PAUL	MN	55106
YI THAN		1599 SUBURBAN AVE		SAINT PAUL	MN	55106
DENNIS S WAGNER		16 WHITE BEAR AVE S		SAINT PAUL	MN	55106
BRETT L RAMER		160 MARIA AVE		SAINT PAUL	MN	55106
LAWRENCE J FINK		160 WHITE BEAR AVE N		SAINT PAUL	MN	55106
LOREN BUSHYHEAD		160 WILSHIRE PL		SAINT PAUL	MN	55106
WILLIAM J KENNEY		1600 CONWAY ST		SAINT PAUL	MN	55106
LEE HUE		1600 MCLEAN AVE		SAINT PAUL	MN	55106
COLLEEN M BRIGGS		1600 OLD HUDSON RD		SAINT PAUL	MN	55106
BLACKSTONE 1 LLC		1600 STICKNEY AVE		SOUTH ST PAUL	MN	55075
YEE XIONG		1600 SUBURBAN AVE		SAINT PAUL	MN	55106
CELESTE R YANISCH PERRON TRUSTEE		1600 UPPER AFTON RD		SAINT PAUL	MN	55106
RENALDO C WALKER		1601 BURG AVE		SAINT PAUL	MN	55119
SCOTT F QUINN		1601 EUCLID ST		SAINT PAUL	MN	55106
SCOTT MOUA		1601 LEONE AVE		SAINT PAUL	MN	55106
ANTENEH W TEFERA		1603 CONWAY ST		SAINT PAUL	MN	55106
BRUCE ELROY OTTERNESS		1603 HUDSON RD		SAINT PAUL	MN	55106
KEVIN F MALANI		1603 WILLIS AVE		SOUTH ST PAUL	MN	55075
ANTHONY V MARTINEZ		1604 BURNS AVE		SAINT PAUL	MN	55106
STACIE J FRANK		1604 EUCLID ST		SAINT PAUL	MN	55106
LEE MANAGEMENT INC		1604 MCLEAN AVE		SAINT PAUL	MN	55106
JAMES P WHITE		1604 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
ARDYS L STADLER		1604 SUBURBAN AVE		SAINT PAUL	MN	55106
MICHAEL M MILLER		1605 EUCLID ST		SAINT PAUL	MN	55106
SCOTT C SINKS		1605 MCLEAN AVE		SAINT PAUL	MN	55106
KELLI NEWMAN		1605 WILSON AVE		SAINT PAUL	MN	55106
MOHAMUD ADEN		1606 CONWAY ST		SAINT PAUL	MN	55106
DAVE G NECHREBECKI		1606 OLD HUDSON RD		SAINT PAUL	MN	55106
JAMES R KACON		1606 PACIFIC ST		SAINT PAUL	MN	55106
RALPH J LUDDEN		1607 BURNS AVE		SAINT PAUL	MN	55106
DIANE M WIFALL		1607 CONWAY ST		SAINT PAUL	MN	55106
DUANE P BAUER		1607 SUBURBAN AVE		SAINT PAUL	MN	55106
OMALLEY PROPERTIES LLC		1607 WILLIS AVE		SOUTH ST PAUL	MN	55075
MIGUEL A SEVILLA MARTINEZ		1608 BURNS AVE		SAINT PAUL	MN	55106
VEDNITA I CARTER		1608 EUCLID ST		SAINT PAUL	MN	55106
JENNY VANG XIONG		1608 MCLEAN AVE		SAINT PAUL	MN	55106
KEITH F & ANGELA FURMAN		1608 MOTOR AVE		SOUTH ST PAUL	MN	55075
JARVIS VANG		1608 OLD HUDSON RD		SAINT PAUL	MN	55106
KAREN CORNELL		1608 SUBURBAN AVE		SAINT PAUL	MN	55106
KA ZOUA VANG		1609 UPPER AFTON RD		SAINT PAUL	MN	55106
HOLLIS A BLACK		1610 BURNS AVE		SAINT PAUL	MN	55106
WILLIAM G WILSON		1610 UPPER AFTON RD		SAINT PAUL	MN	55106
CHONG VUE THAO		1611 EUCLID ST		SAINT PAUL	MN	55106
LEANN J RENE MARTINEZ RUSSELL		1611 SUBURBAN AVE		SAINT PAUL	MN	55106
ADAM J HALL		1611 WILLIS AVE		SOUTH ST PAUL	MN	55075
DONNA M DUSTERHOFT		1611 WILSON AVE		SAINT PAUL	MN	55106
WILLIAM J KAISER		1612 EUCLID ST		SAINT PAUL	MN	55106
BRET JOHNSON		1613 CONWAY ST		SAINT PAUL	MN	55106
JUDITH I LUDWIG		1613 MCLEAN AVE		SAINT PAUL	MN	55106
MARK C THEN		1613 UPPER AFTON RD		SAINT PAUL	MN	55106
LORI A JERANSON		1614 BURNS AVE		SAINT PAUL	MN	55106
CHRISTOPHER R ESTY		1614 CONWAY ST		SAINT PAUL	MN	55106
CHUE YANG		1614 PACIFIC ST		SAINT PAUL	MN	55106
BARBARA REVOIR		1614 WILLIS AVE		SOUTH ST PAUL	MN	55075
RONALD C PETERSEN		1615 BURNS AVE		SAINT PAUL	MN	55106
CHONG VUE THAO		1615 EUCLID ST		SAINT PAUL	MN	55106
ELIZABETH GASPAR		1616 EUCLID ST		SAINT PAUL	MN	55106
JOSEPH D & ANGELA G NEUMANN		1616 EVANS AVE		SOUTH ST PAUL	MN	55075
THOMAS G SMOLIK		1616 OLD HUDSON RD		SAINT PAUL	MN	55106
JEROME F FERGUSON		1616 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
SHAWN A & RANDI D WOTHE		1616 STICKNEY AVE		SOUTH ST PAUL	MN	55075
ELWOOD D LARSON		1616 UPPER AFTON RD		SAINT PAUL	MN	55106
MATTHEW FORDYCE		1617 HUDSON RD		SAINT PAUL	MN	55106
VALERIE J FITCH		1617 SUBURBAN AVE		SAINT PAUL	MN	55106
VICTORIA FRANCISCO		1617 UPPER AFTON RD		SAINT PAUL	MN	55106
ARTHUR J DORNFIELD		1617 WILSON AVE		SAINT PAUL	MN	55106
DAVID E GASPER		1618 BURNS AVE		SAINT PAUL	MN	55106
OWEN R FLOREK		1618 MCLEAN AVE		SAINT PAUL	MN	55106

Full Name	Organization - Primary	Mailing Street	Mailing Street 2	Mailing City	Mailing State	Mailing Zip
PATRICIA K FJERSTAD		1618 MOTOR AVE		SOUTH ST PAUL	MN	55075
CAROL A SIDEEN		1618 SUBURBAN AVE		SAINT PAUL	MN	55106
TONY LYSONGTSENG		1619 CONWAY ST		SAINT PAUL	MN	55106
ERNEST B MONDRY		1619 EUCLID ST		SAINT PAUL	MN	55106
JOHN HER		1619 LEONE AVE		SAINT PAUL	MN	55106
LARRY A ADAM		1619 MCLEAN AVE		SAINT PAUL	MN	55106
ANTHONY CULLEN		1619 WILLIS AVE		SOUTH ST PAUL	MN	55075
VALDIS ROZENTALS		162 BATES AVE		SAINT PAUL	MN	55106
AMY K NASH		1620 EUCLID ST		SAINT PAUL	MN	55106
DOUA YANG		1620 OLD HUDSON RD		SAINT PAUL	MN	55106
SHENG XIONG		1620 PACIFIC ST		SAINT PAUL	MN	55106
MICHAEL L RAVERTY		1621 BURNS AVE		SAINT PAUL	MN	55106
STEPHEN V CHAPMAN		1621 CONCORD ST N		SOUTH ST PAUL	MN	55075
BREA MAHONEY		1621 EVANS AVE		SOUTH ST PAUL	MN	55075
WALTER PEREZ		1621 SUBURBAN AVE		SAINT PAUL	MN	55106
WENDY S LANE		1621 UPPER AFTON RD APT. A		SAINT PAUL	MN	55106
DALE G KOEHLER		1621 UPPER AFTON RD APT. B		SAINT PAUL	MN	55106
CAROL S FREERKS		1621 UPPER AFTON RD APT. C		SAINT PAUL	MN	55106
ALLAN B STEFFENSMEIER		1621 WILSON AVE		SAINT PAUL	MN	55106
PETER M EMEOTT		1622 BURNS AVE		SAINT PAUL	MN	55106
TAHAMARA J CHAVEZ		1622 CONWAY ST		SAINT PAUL	MN	55106
SOLEDAD ORTIZ FLORES & FILIPE		1622 WILLIS AVE		SOUTH ST PAUL	MN	55075
PAMELA A TOCKO		1623 UPPER AFTON RD APT. A		SAINT PAUL	MN	55106
JACK P CARVER		1623 UPPER AFTON RD APT. B		SAINT PAUL	MN	55106
JANET M OLSON		1623 UPPER AFTON RD APT. C		SAINT PAUL	MN	55106
MICHAEL WAWRA		1623 UPPER AFTON RD APT. D		SAINT PAUL	MN	55106
BERNADINE C TAFT		1623 UPPER AFTON RD APT. E		SAINT PAUL	MN	55106
LUCIEN BELL SOLEFACK		1623 WILLIS AVE		SOUTH ST PAUL	MN	55075
ST PAUL PUBLIC HOUSING AGENCY		1624 EUCLID ST		SAINT PAUL	MN	55106
FERNANDO A GARCIA		1624 MCLEAN AVE		SAINT PAUL	MN	55106
ADAM JASS		1624 OLD HUDSON RD		SAINT PAUL	MN	55106
JAMES D & LORI L MCNEESE		1624 STICKNEY AVE		SOUTH ST PAUL	MN	55075
DANIEL S BIERSCHANK		1624 SUBURBAN AVE		SAINT PAUL	MN	55106
SUNNY I OLISE		1625 CONWAY ST		SAINT PAUL	MN	55106
STEPHEN YANG		1625 EUCLID ST		SAINT PAUL	MN	55106
JOHN K SULLIVAN		1625 MCLEAN AVE		SAINT PAUL	MN	55106
LAWRENCE MCCABE		1625 UPPER AFTON RD APT. A		SAINT PAUL	MN	55106
DEREK H PLUMMER		1625 UPPER AFTON RD APT. B		SAINT PAUL	MN	55106
LOUANN J DEBBAUT		1625 UPPER AFTON RD APT. C		SAINT PAUL	MN	55106
BRYON LUKOWICZ		1625 UPPER AFTON RD APT. D		SAINT PAUL	MN	55106
TA ERR		1626 PACIFIC ST		SAINT PAUL	MN	55106
SUSAN K GRUENEWALD		1627 UPPER AFTON RD APT. A		SAINT PAUL	MN	55106
JOEL E SWENSON		1627 UPPER AFTON RD APT. B		SAINT PAUL	MN	55106
VANESSA L WILSON		1627 UPPER AFTON RD APT. C		SAINT PAUL	MN	55106
KYLE D HANSEN		1627 UPPER AFTON RD APT. D		SAINT PAUL	MN	55106
MATTHEW D LULIC		1627 WILLIS AVE		SOUTH ST PAUL	MN	55075
GERALD J BLEES		1627 WILSON AVE		SAINT PAUL	MN	55106
FRANK J BAUER		1628 CONWAY ST		SAINT PAUL	MN	55106
NANCY M HOOD		1628 OLD HUDSON RD		SAINT PAUL	MN	55106
CHURCH OF GOD 7TH DAY		1628 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
MATTHEW W DAWSON		1628 UPPER AFTON RD		SAINT PAUL	MN	55106
VANG K YANG		1629 SUBURBAN AVE		SAINT PAUL	MN	55106
CALEY J SCHWALM		163 MARIA AVE		SAINT PAUL	MN	55106
DUE MEN CHAN		1630 BURNS AVE		SAINT PAUL	MN	55106
BARBARA LINDEMAN		1630 EUCLID ST		SAINT PAUL	MN	55106
DONNA G BETZ		1630 MCLEAN AVE		SAINT PAUL	MN	55106
GILBERT B & DOLORES RIEHM		1631 CONCORD ST N		SOUTH ST PAUL	MN	55075
JOSHUA KNAPP		1631 CONWAY ST		SAINT PAUL	MN	55106
WILLIS G PIESKE		1631 EUCLID ST		SAINT PAUL	MN	55106
ASCHALEW DEYESSA		1631 LEONE AVE		SAINT PAUL	MN	55106
SHADOW S LEE		1631 MCLEAN AVE		SAINT PAUL	MN	55106
JAY G GULLICKSON		1631 SUBURBAN AVE		SAINT PAUL	MN	55106
STEVEN J HEISLER		1631 UPPER AFTON RD		SAINT PAUL	MN	55106
MAI TONG XIONG		1631 WILSON AVE		SAINT PAUL	MN	55106
WENDY M HAGEN		1632 PACIFIC ST		SAINT PAUL	MN	55106
LINDA M RUIZ		1632 SUBURBAN AVE		SAINT PAUL	MN	55106
BERTA A SORTO		1634 CONWAY ST		SAINT PAUL	MN	55106
DOUGLAS & GLORIA STOCKWELL		1634 EVANS AVE		SOUTH ST PAUL	MN	55075
RAINTRY J SALK		1635 BURNS AVE		SAINT PAUL	MN	55106
CHA VANG		1635 MCLEAN AVE		SAINT PAUL	MN	55106
BRIAN CONOVER		1635 SUBURBAN AVE		SAINT PAUL	MN	55106
SOPHAL KIM		1635 WILSON AVE		SAINT PAUL	MN	55106
JOSHUA DAVID MEAUX		1636 EUCLID ST		SAINT PAUL	MN	55106
PHENG KONG		1636 MCLEAN AVE		SAINT PAUL	MN	55106
MARY E HORKY		1636 OLD HUDSON RD		SAINT PAUL	MN	55106
DOUA YANG		1636 PACIFIC ST		SAINT PAUL	MN	55106
MARY E MARRIN		1637 CONWAY ST		SAINT PAUL	MN	55106
WILLIAM T NELSON		1637 EUCLID ST		SAINT PAUL	MN	55106
ROBERT K MARION		1637 SUBURBAN AVE		SAINT PAUL	MN	55106
VALERIE GEISDORF		1637 UPPER AFTON RD		SAINT PAUL	MN	55106
DARLENE FRY		1637 WILSON AVE		SAINT PAUL	MN	55106
AMY SCHROEDER		1638 CONWAY ST		SAINT PAUL	MN	55106
SHERI J ZIGAN TSTE		1638 EVANS AVE		SOUTH ST PAUL	MN	55075
ROBERT R FRANCE		1638 LEONE AVE		SAINT PAUL	MN	55106
SHAWN M DUNFORD		1639 BURNS AVE		SAINT PAUL	MN	55106
BRAD D & CHANDRA L ROHRER		164 KASSAN CT		SOUTH ST PAUL	MN	55075
SHEVEK J MCKEE		1640 LEONE AVE		SAINT PAUL	MN	55106
MICHAEL XIAOJING WANG		1640 MCLEAN AVE		SAINT PAUL	MN	55106
DOROTHYANN THOMPSON		1640 SUBURBAN AVE		SAINT PAUL	MN	55106
EDWIN MUNDSTOCK		1640 UPPER AFTON RD		SAINT PAUL	MN	55106
ALEWYA IBRAHIM		1641 CONWAY ST		SAINT PAUL	MN	55106
JOHN SHULL		1641 LEONE AVE		SAINT PAUL	MN	55106
ALBERT WAN		1641 MCLEAN AVE		SAINT PAUL	MN	55106
SMASHWILL LLC		1641 SUBURBAN AVE		SAINT PAUL	MN	55106
KEVIN C CALLINAN		1641 UPPER AFTON RD		SAINT PAUL	MN	55106
JAY A SLIWINSKI		1642 BURNS AVE		SAINT PAUL	MN	55106
BARBARA J MILLER		1642 CONWAY ST		SAINT PAUL	MN	55106
KONG VANG		1642 EUCLID ST		SAINT PAUL	MN	55106
TIMOTHY P RYAN		1642 OLD HUDSON RD		SAINT PAUL	MN	55106
ROBERT E EBERT		1643 EUCLID ST		SAINT PAUL	MN	55106
JOHN D JANKE		1643 WILSON AVE		SAINT PAUL	MN	55106
MIGUEL J & PAT A GONZALEZ		1644 EVANS AVE		SOUTH ST PAUL	MN	55075
LATONIA BURGIN		1644 MCLEAN AVE		SAINT PAUL	MN	55106
VICTOR D GIRLING		1644 PACIFIC ST		SAINT PAUL	MN	55106
SAMUEL BASURTO		1645 BURNS AVE		SAINT PAUL	MN	55106
AMY A OLSON		1645 MCLEAN AVE		SAINT PAUL	MN	55106
SIMCOTE INC		1645 RED ROCK RD		SAINT PAUL	MN	55119
ELINOR J CLARK AUGE		1645 UPPER AFTON RD		SAINT PAUL	MN	55106
KENNETH B LABRASSEUR		1646 BURNS AVE		SAINT PAUL	MN	55106
OAK KNOLL PROPERTY MANAGEMENT		1646 OLD HUDSON RD		SAINT PAUL	MN	55106
REM RAMSEY INC		1646 SUBURBAN AVE		SAINT PAUL	MN	55106
SOUA XIONG		1647 LEONE AVE		SAINT PAUL	MN	55106
MAIZOUA MOUA		1648 EUCLID ST		SAINT PAUL	MN	55106
PIUS UGWU		1648 MCLEAN AVE		SAINT PAUL	MN	55106
JODI L ANDERS		1648 PACIFIC ST		SAINT PAUL	MN	55106
SHAWN BOESER & JOSEPHINE HUTTON		1649 CONCORD ST N		SOUTH ST PAUL	MN	55075
SCOTT THURY		1649 CONWAY ST		SAINT PAUL	MN	55106
JAMES J REISDORF		1649 EUCLID ST		SAINT PAUL	MN	55106
PAO VANG		1649 MCLEAN AVE		SAINT PAUL	MN	55106
BARBARA RIDDLE		1649 UPPER AFTON RD		SAINT PAUL	MN	55106
FLORENCE LAMB		1649 WILLIS AVE		SOUTH ST PAUL	MN	55075
JULIE A ZABEL		1649 WILSON AVE		SAINT PAUL	MN	55106
STEPHEN O IRABOR		1650 CONWAY ST		SAINT PAUL	MN	55106
KEVIN A KOLSTAD		1650 OLD HUDSON RD		SAINT PAUL	MN	55106
WILLIAM A & HOPE L WERNET		1650 STICKNEY AVE		SOUTH ST PAUL	MN	55075
WILLIAM C TROW		1650 SUBURBAN AVE		SAINT PAUL	MN	55106
RUBEN YOMTOUBIAN TRUSTEE		1650 UPPER AFTON RD		SAINT PAUL	MN	55106
ANDREW J UNTZ		1651 BURNS AVE		SAINT PAUL	MN	55106
RONALD E TROSDAHL		1651 SUBURBAN AVE		SAINT PAUL	MN	55106
BRADLEY LUNZER		1652 MCLEAN AVE		SAINT PAUL	MN	55106
DENNIS DRESLER		1652 PACIFIC ST		SAINT PAUL	MN	55106
DANIEL G SHAW		1653 LEONE AVE		SAINT PAUL	MN	55106
EFRAIN RODRIGUEZ		1653 MCLEAN AVE		SAINT PAUL	MN	55106
MICHAEL E CONLIN		1653 UPPER AFTON RD		SAINT PAUL	MN	55106

Full Name	Organization - Primary	Mailing Street	Mailing Street 2	Mailing City	Mailing State	Mailing Zip
BENJAMIN LEE & SARAH RENO		1654 WILLIS AVE		SOUTH ST PAUL	MN	55075
GERALDINE MARIE GAGLIARDI		1655 BURNS AVE		SAINT PAUL	MN	55106
LOUIS DISANTO		1655 CONWAY ST		SAINT PAUL	MN	55106
MACARIO M SAULOG		1655 EUCLID ST		SAINT PAUL	MN	55106
ST PAUL PUBLIC HOUSING AGENCY		1655 MCLEAN AVE		SAINT PAUL	MN	55106
THOMAS G HAUWILLER		1655 SUBURBAN AVE		SAINT PAUL	MN	55106
DOLORES A GUION		1655 WILSON AVE		SAINT PAUL	MN	55106
ANGELA J STEHR		1656 BURNS AVE		SAINT PAUL	MN	55106
MAI HER		1656 CONWAY ST		SAINT PAUL	MN	55106
SANJUANITA GALARZA GARCIA		1656 EUCLID ST		SAINT PAUL	MN	55106
MICHAEL J KETOLA		1656 MCLEAN AVE		SAINT PAUL	MN	55106
ELIAS JUAREZ DIAZ		1656 PACIFIC ST		SAINT PAUL	MN	55106
IVAN RAY & SHAWN M VANDERVEER		1656 STICKNEY AVE		SOUTH ST PAUL	MN	55075
YEE ZONG VANG		1656 SUBURBAN AVE		SAINT PAUL	MN	55106
KOUA YANG		1657 UPPER AFTON RD		SAINT PAUL	MN	55106
EVA TIETZ		1658 LOUISE AVE		SAINT PAUL	MN	55106
RICHARD W BRADY		1658 UPPER AFTON RD		SAINT PAUL	MN	55106
STEVE JOHNSON		1658 WILLIS AVE		SOUTH ST PAUL	MN	55075
SHARON UTGAARD		1659 LEONE AVE		SAINT PAUL	MN	55106
RALPH CURTIS & SUE M EPPEN		1659 WILLIS AVE		SOUTH ST PAUL	MN	55075
STEPHEN M IVANCIC		166 BATES AVE		SAINT PAUL	MN	55106
JACOB THAO		166 WHITE BEAR AVE N		SAINT PAUL	MN	55106
YANG XIONG		1660 BURNS AVE		SAINT PAUL	MN	55106
RICHARD J HOFFMAN		1660 CONWAY ST		SAINT PAUL	MN	55106
PAUL A MUNGER		1660 LOUISE AVE		SAINT PAUL	MN	55106
SENG YANG		1660 OLD HUDSON RD		SAINT PAUL	MN	55106
JOLYNN MARIE PECK		1660 STICKNEY AVE		SOUTH ST PAUL	MN	55075
MARCIA R AUBUCHON		1660 UPPER AFTON RD		SAINT PAUL	MN	55106
XOUA XIONG		1661 BURNS AVE		SAINT PAUL	MN	55106
MARLENA VANG		1661 CONWAY ST		SAINT PAUL	MN	55106
KONGMENG VANG		1661 EUCLID ST		SAINT PAUL	MN	55106
DALE KAPPENMAN		1661 UPPER AFTON RD		SAINT PAUL	MN	55106
MERTON W MILLER		1661 WILSON AVE		SAINT PAUL	MN	55106
DANTON W MYHRE		1662 EUCLID ST		SAINT PAUL	MN	55106
JEROME W BRIDGER		1663 UPPER AFTON RD		SAINT PAUL	MN	55106
JEFFREY W & SHARON P TEEPLE		1663 WILLIS AVE		SOUTH ST PAUL	MN	55075
FRANK KOUA VANG		1664 LOUISE AVE		SAINT PAUL	MN	55106
SUBURBAN SQUARE PARTNERS LLP		1664 SUBURBAN AVE		SAINT PAUL	MN	55106
SUE LEE		1664 UPPER AFTON RD		SAINT PAUL	MN	55106
SHARON UTGAARD		1665 LEONE AVE		SAINT PAUL	MN	55106
RICHARD CHRISTOPHERSON		1665 UPPER AFTON RD		SAINT PAUL	MN	55106
ERICA MEDINA		1666 CONWAY ST		SAINT PAUL	MN	55106
TONY YANG		1667 BURNS AVE		SAINT PAUL	MN	55106
KA YANG		1667 CONWAY ST		SAINT PAUL	MN	55106
SHARON L WOZNIAK		1667 EUCLID ST		SAINT PAUL	MN	55106
JEANETTE M BACHMEIER		1667 UPPER AFTON RD		SAINT PAUL	MN	55106
KUE YANG		1667 WILSON AVE		SAINT PAUL	MN	55106
PAJKUB C VAJ		1668 EUCLID ST		SAINT PAUL	MN	55106
LAURA M LEDO		1668 LOUISE AVE		SAINT PAUL	MN	55106
Daniel Rodriguez	Merrick Community Services	1669 Arcade St.	Suite 4	St. Paul	MN	55106
ILIE DINCA		1669 UPPER AFTON RD		SAINT PAUL	MN	55106
RONALD D JUELFS TRUSTEE		167 WHITE BEAR AVE N		SAINT PAUL	MN	55106
ANTHONY P DZIK		1670 BURNS AVE		SAINT PAUL	MN	55106
KIMLOAN THI HUYNH		1671 BURNS AVE		SAINT PAUL	MN	55106
HSAR HIN WAH		1671 EUCLID ST		SAINT PAUL	MN	55106
SHARON UTGAARD		1671 LEONE AVE		SAINT PAUL	MN	55106
GERALD R GROH		1671 UPPER AFTON RD		SAINT PAUL	MN	55106
THOMAS & PATRICIA CORBETT		1671 WILLIS AVE		SOUTH ST PAUL	MN	55075
BRIAN JOHNSON		1672 BURNS AVE		SAINT PAUL	MN	55106
MAIXIA VANG		1672 CONWAY ST		SAINT PAUL	MN	55106
XIA VUE		1672 EUCLID ST		SAINT PAUL	MN	55106
ANDREAS JUREWITSCH		1672 LOUISE AVE		SAINT PAUL	MN	55106
PAUL D & DEBORAH L STOVEN		1673 MOTOR AVE		SOUTH ST PAUL	MN	55075
DONNA M ROBINSON		1673 UPPER AFTON RD		SAINT PAUL	MN	55106
CHUE LOR		1674 LEONE AVE		SAINT PAUL	MN	55106
JOHN R & JANE M BOBZIN		1674 STICKNEY AVE		SOUTH ST PAUL	MN	55075
JON K JORDAN		1674 UPPER AFTON RD		SAINT PAUL	MN	55106
CHAD CHAN		1675 EUCLID ST		SAINT PAUL	MN	55106
TOU VANG		1675 LOUISE AVE		SAINT PAUL	MN	55106
JNJ HOMES LLC		1675 UPPER AFTON RD		SAINT PAUL	MN	55106
MEGAN J RYAN		1676 EUCLID ST		SAINT PAUL	MN	55106
ROSANNE M DAGOSTINO		1677 BURNS AVE		SAINT PAUL	MN	55106
OTTO H FOLGER		1677 CONWAY ST		SAINT PAUL	MN	55106
ROBBIN L SCHAFER		1678 CONWAY ST		SAINT PAUL	MN	55106
PHILLIP W SAUSER		1678 LOUISE AVE		SAINT PAUL	MN	55106
ROBERT L C WALSH		1678 OLD HUDSON RD		SAINT PAUL	MN	55106
SHARON UTGAARD		1679 LEONE AVE		SAINT PAUL	MN	55106
DAVID J LANGFORD		1679 UPPER AFTON RD		SAINT PAUL	MN	55106
DAVID E JOHNSON		1680 BURNS AVE		SAINT PAUL	MN	55106
ANN R REETZ		1680 LEONE AVE		SAINT PAUL	MN	55106
LENNY THAO		1680 UPPER AFTON RD		SAINT PAUL	MN	55106
ELIZABETH L WELTER		1681 EUCLID ST		SAINT PAUL	MN	55106
MICHELLE K FELT		1681 UPPER AFTON RD		SAINT PAUL	MN	55106
GENESIS B JAIME SALAZAR		1682 CONWAY ST		SAINT PAUL	MN	55106
CHOWLY PAJGER LEE		1682 EUCLID ST		SAINT PAUL	MN	55106
KAREN D DAVIS		1682 STICKNEY AVE		SOUTH ST PAUL	MN	55075
ST PAUL PUBLIC HOUSING AGENCY		1683 BURNS AVE		SAINT PAUL	MN	55106
SOR THAO		1683 CONWAY ST		SAINT PAUL	MN	55106
KATHLEEN VOJE		1684 BURNS AVE		SAINT PAUL	MN	55106
DAVID R BERRY		1684 LOUISE AVE		SAINT PAUL	MN	55106
PETER M BECK		1684 UPPER AFTON RD		SAINT PAUL	MN	55106
ISMAEL L MARTINEZ		1685 LEONE AVE		SAINT PAUL	MN	55106
CEDRIC R STRIPLING		1685 LOUISE AVE		SAINT PAUL	MN	55106
MARK JANSSEN		1685 UPPER AFTON RD		SAINT PAUL	MN	55106
ANNA XIONG YANG		1686 LEONE AVE		SAINT PAUL	MN	55106
RICHARD K MATHISEN		1687 EUCLID ST		SAINT PAUL	MN	55106
CHAN MAY VANG		1687 HUDSON RD		SAINT PAUL	MN	55106
PAH DEE		1688 EUCLID ST		SAINT PAUL	MN	55106
CHOU C XIONG		1688 OLD HUDSON RD		SAINT PAUL	MN	55106
KELLY J OCHIS		1688 STICKNEY AVE		SOUTH ST PAUL	MN	55075
NETSANET M DEMISSIE		1689 LOUISE AVE		SAINT PAUL	MN	55106
PINCE WILLIAM E		1689 MOTOR AVE		SOUTH ST PAUL	MN	55075
TANYA J KULA		1689 UPPER AFTON RD		SAINT PAUL	MN	55106
VIRGINIE BEAUVALOT		1690 CONWAY ST		SAINT PAUL	MN	55106
TREVOR N ST GERMAIN		1690 EUCLID ST		SAINT PAUL	MN	55106
JEFFREY C HELGESON		1691 BURNS AVE		SAINT PAUL	MN	55106
KOU THAO		1691 CONWAY ST		SAINT PAUL	MN	55106
ZOUA VANG		1691 LEONE AVE		SAINT PAUL	MN	55106
JOHN P KRAMSCHUSTER		1692 BURNS AVE		SAINT PAUL	MN	55106
NIRMAL N ARYAL		1692 LEONE AVE		SAINT PAUL	MN	55106
ERIK W NESS		1693 EUCLID ST		SAINT PAUL	MN	55106
MA XIONG		1693 HUDSON RD		SAINT PAUL	MN	55106
KENNETH D GOEBEL		1694 UPPER AFTON RD		SAINT PAUL	MN	55106
THUY HOANG PHAN		1695 BURNS AVE		SAINT PAUL	MN	55106
KEVIN C DOLL		1695 LOUISE AVE		SAINT PAUL	MN	55106
ZACH HICKEY		1696 CONWAY ST		SAINT PAUL	MN	55106
TOU YANG		1697 CONWAY ST		SAINT PAUL	MN	55106
CHERYL M MALM		1697 LEONE AVE		SAINT PAUL	MN	55106
HOSIE L GULLETTE		1698 LEONE AVE		SAINT PAUL	MN	55106
THUY H PHAN		1699 BURNS AVE		SAINT PAUL	MN	55106
ST PAUL PUBLIC HOUSING AGENCY		1699 EUCLID ST		SAINT PAUL	MN	55106
MARK E ROBERTSON		17 BATTLE CREEK RD		SAINT PAUL	MN	55119
JUDY V DELGADO		17 WHITE BEAR AVE S		SAINT PAUL	MN	55106
NORTHWESTERN ALANO SOC INC		170 MARIA AVE		SAINT PAUL	MN	55106
JAMES E RICHARDS		1700 EUCLID ST		SAINT PAUL	MN	55106
DONNA L CLEVENGER		1700 UPPER AFTON RD		SAINT PAUL	MN	55106
EDWIN NEFTALY BAIRES VASQUEZ		1701 LOUISE AVE		SAINT PAUL	MN	55106
PAUL L JOHNSON		1702 BURNS AVE		SAINT PAUL	MN	55106
KAI THAO		1702 CONWAY ST		SAINT PAUL	MN	55106
CHONG TOUA YANG		1703 CONWAY ST		SAINT PAUL	MN	55106
ARNOLD M CARLSON		1703 LEONE AVE		SAINT PAUL	MN	55106
NAO CHA THAO		1704 LEONE AVE		SAINT PAUL	MN	55106
FRANK J AGUIRRE		1704 LOUISE AVE		SAINT PAUL	MN	55106
NICOLAS V GONZALEZ		1705 EUCLID ST		SAINT PAUL	MN	55106
CRISTIAN FLORES		1706 EUCLID ST		SAINT PAUL	MN	55106

Full Name	Organization - Primary	Mailing Street	Mailing Street 2	Mailing City	Mailing State	Mailing Zip
SI WEN HUANG		1708 CONWAY ST		SAINT PAUL	MN	55106
BRENT PHILIPICH		1708 LOUISE AVE		SAINT PAUL	MN	55106
ELLIOT J GROSSKLAUS		1709 BURNS AVE		SAINT PAUL	MN	55106
EAH NAY WAH		1709 LEONE AVE		SAINT PAUL	MN	55106
NICHOLAS S SCHIPP		1710 LEONE AVE		SAINT PAUL	MN	55106
KENNETH G MAXWELL		1711 CONWAY ST		SAINT PAUL	MN	55106
TRACY A NELSON		1711 EUCLID ST		SAINT PAUL	MN	55106
LAURENCE S NADEAU		1711 LOUISE AVE		SAINT PAUL	MN	55106
NANCY CHENG		1712 BURNS AVE		SAINT PAUL	MN	55106
KATHLEEN A BLEES		1712 CONWAY ST		SAINT PAUL	MN	55106
KARMEN G WILLIAMS		1712 EUCLID ST		SAINT PAUL	MN	55106
JAMES L LETOURNEAU		1712 LOUISE AVE		SAINT PAUL	MN	55106
SOWATH KEO		1712 UPPER AFTON RD		SAINT PAUL	MN	55106
LA VANG		1715 CONWAY ST		SAINT PAUL	MN	55106
ERIC J HOIDAHL		1715 EUCLID ST		SAINT PAUL	MN	55106
PETER J NILES		1715 LEONE AVE		SAINT PAUL	MN	55106
JAMES A OLMSTEAD		1715 LOUISE AVE		SAINT PAUL	MN	55106
SHARON J BACHMEIER		1715 UPPER AFTON RD		SAINT PAUL	MN	55106
ROBERT RODRIGUEZ		1716 CONWAY ST		SAINT PAUL	MN	55106
LYMOUA MOUACHEUPAO		1716 EUCLID ST		SAINT PAUL	MN	55106
TOU YANG		1716 LEONE AVE		SAINT PAUL	MN	55106
JEFFREY P WEINZETL		1717 BURNS AVE		SAINT PAUL	MN	55106
ANDRY LEE		1719 LEONE AVE		SAINT PAUL	MN	55106
LYDIA MAE NOLL CHAPMAN		1719 LOUISE AVE		SAINT PAUL	MN	55106
LOWELL D DUNCAN		172 MOUNDS BLVD		SAINT PAUL	MN	55106
ERVIN G DEYO		1720 BURNS AVE		SAINT PAUL	MN	55106
FRANCIS M GARHOFER		1720 CONWAY ST		SAINT PAUL	MN	55106
LEE M GOVEDNIK		1720 EUCLID ST		SAINT PAUL	MN	55106
RUDOLPH AGUILAR		1721 EUCLID ST		SAINT PAUL	MN	55106
RANDALL S JUNKER		1721 UPPER AFTON RD		SAINT PAUL	MN	55106
YING THAO		1722 LEONE AVE		SAINT PAUL	MN	55106
AFC ENTERPRISES INC		1722 SUBURBAN AVE		SAINT PAUL	MN	55106
ROBERT THAO		1723 BURNS AVE		SAINT PAUL	MN	55106
DAVID A DUNBAR		1724 CONWAY ST		SAINT PAUL	MN	55106
THOMAS B ROSE		1725 LEONE AVE		SAINT PAUL	MN	55106
MAIKA THAO		1725 LOUISE AVE		SAINT PAUL	MN	55106
ERIN KASTL		1726 BURNS AVE		SAINT PAUL	MN	55106
JONATHAN HOWARD		1726 EUCLID ST		SAINT PAUL	MN	55106
MACARIA GARCIA		1727 EUCLID ST		SAINT PAUL	MN	55106
BLONG HER		1727 UPPER AFTON RD		SAINT PAUL	MN	55106
ST PAUL PUBLIC HOUSING AGENCY		1728 CONWAY ST		SAINT PAUL	MN	55106
STEPHEN W MERTH		1728 LEONE AVE		SAINT PAUL	MN	55106
THOMAS BIEDRZYCKI		1728 ROWE PL		SAINT PAUL	MN	55106
STEPHEN L MORRIS		1729 A ST		SAINT PAUL	MN	55106
DENISE ANN LEONARD		1729 BURNS AVE		SAINT PAUL	MN	55106
CHENG XENG LOR		1729 EUCLID ST		SAINT PAUL	MN	55106
BEVERLY L TURNER		173 MARIA AVE		SAINT PAUL	MN	55106
YOUR XIONG		1730 BURNS AVE		SAINT PAUL	MN	55106
ARTHUR J BROWN		1730 CONWAY ST		SAINT PAUL	MN	55106
RICHARD D CISNEROS		1731 BURNS AVE		SAINT PAUL	MN	55106
MICHAEL SPENCE		1731 LEONE AVE		SAINT PAUL	MN	55106
PAUL J SIMONE		1731 LOUISE AVE		SAINT PAUL	MN	55106
EDWARD D MUNSON		1732 LEONE AVE		SAINT PAUL	MN	55106
KELLY KENNEDY		1733 EUCLID ST		SAINT PAUL	MN	55106
MATTHEW M KLINKHAMER		1733 UPPER AFTON RD		SAINT PAUL	MN	55106
A NAING		1734 BURNS AVE		SAINT PAUL	MN	55106
CHUE CHANG LEE		1735 LEONE AVE		SAINT PAUL	MN	55106
JOHN LEE		1735 LOUISE AVE		SAINT PAUL	MN	55106
PHILIP L LAY		1736 CONWAY ST		SAINT PAUL	MN	55106
ABUBAKRI A AMUDA		1736 LEONE AVE		SAINT PAUL	MN	55106
FONG VANG		1736 ROWE PL		SAINT PAUL	MN	55106
JUSTIN J DVORAK		1738 UPPER AFTON RD		SAINT PAUL	MN	55106
MICHAEL A WALKER		1739 EUCLID ST		SAINT PAUL	MN	55106
JOHN M ARLAND		1739 LOUISE AVE		SAINT PAUL	MN	55106
GARY L OIE TRUSTEE		1739 ROWE PL		SAINT PAUL	MN	55106
LOREN K JONKER		1739 UPPER AFTON RD		SAINT PAUL	MN	55106
PATRICIA H LEMKE		1740 BURNS AVE		SAINT PAUL	MN	55106
MARCIA CALIGUIRE		1742 CONWAY ST		SAINT PAUL	MN	55106
MARK J CASEY		1742 LEONE AVE		SAINT PAUL	MN	55106
S & R CONSULTING LLC		1743 LOUISE AVE		SAINT PAUL	MN	55106
MAPLEWOOD CORNER PLAZA LLC		1744 OLD HUDSON RD		SAINT PAUL	MN	55106
RACHELLE J SITTLER		1744 ROWE PL		SAINT PAUL	MN	55106
DAYTON HUDSON CORP T68		1744 SUBURBAN AVE		SAINT PAUL	MN	55106
ROCHELLE L CHAVEZ		1745 EUCLID ST		SAINT PAUL	MN	55106
JOANNA SUE MICHALSKA		1745 GRACE LN		SAINT PAUL	MN	55106
CHRISTOPHER JAMES KETCHEL		1745 LEONE AVE		SAINT PAUL	MN	55106
JAMES LATTERGRASS SMITH		1745 UPPER AFTON RD		SAINT PAUL	MN	55106
JAIRO I YANES MUNOZ		1746 BURNS AVE		SAINT PAUL	MN	55106
NICHOLAS J ORTEGA		1747 LOUISE AVE		SAINT PAUL	MN	55106
SENG THAO		1748 CONWAY ST		SAINT PAUL	MN	55106
ANDREA F VAUBEL		1748 LEONE AVE		SAINT PAUL	MN	55106
MALLORY H BELILLE		1748 UPPER AFTON RD		SAINT PAUL	MN	55106
DER THAO		1749 A ST		SAINT PAUL	MN	55106
ST PAUL PUBLIC HOUSING AGENCY		1749 GRACE LN		SAINT PAUL	MN	55106
XIOMARA Y MELGAR		1749 LOUISE AVE		SAINT PAUL	MN	55106
CHA KOU MOUA		1749 ROWE PL		SAINT PAUL	MN	55106
ST PAUL PUBLIC HOUSING AGENCY		175 CONGRESS ST E		SAINT PAUL	MN	55107
MAYTEE WANG		1750 LOUISE AVE		SAINT PAUL	MN	55106
JANE B MENNE		1750 ROWE PL		SAINT PAUL	MN	55106
THOMAS R STUSYNSKI		1751 BURNS AVE		SAINT PAUL	MN	55106
BRIAN C VANG		1751 EUCLID ST		SAINT PAUL	MN	55106
DAWN M WALTER		1751 LEONE AVE		SAINT PAUL	MN	55106
YUEPHENG YANG		1751 UPPER AFTON RD		SAINT PAUL	MN	55106
WILLIAM T GOLDBERG		1752 BURNS AVE		SAINT PAUL	MN	55106
STEVEN R NEUMANN		1752 GRACE LN		SAINT PAUL	MN	55106
DANIEL T MAGNUSON		1753 GRACE LN		SAINT PAUL	MN	55106
WILLIE J POUNCY TRUST		1753 LOUISE AVE		SAINT PAUL	MN	55106
LARNSCIE STEVENSON		1754 CONWAY ST		SAINT PAUL	MN	55106
HPA KEN		1754 LEONE AVE		SAINT PAUL	MN	55106
TERRY M ZEIMET		1755 A ST		SAINT PAUL	MN	55106
STEVEN D JAROMBEK		1755 GRACE LN		SAINT PAUL	MN	55106
ROBERT J HAURI		1755 LEONE AVE		SAINT PAUL	MN	55106
VANG YANG		1757 BURNS AVE		SAINT PAUL	MN	55106
ST PASCAL BAYLON CHURCH		1757 CONWAY ST		SAINT PAUL	MN	55106
JENNIE L LONDON		1757 EUCLID ST		SAINT PAUL	MN	55106
DENNIS EMERSON		1757 GRACE LN		SAINT PAUL	MN	55106
MATTHEW YOUNG		1757 UPPER AFTON RD		SAINT PAUL	MN	55106
WILLIAM J WHALEY		1758 GRACE LN		SAINT PAUL	MN	55106
ADAM R MATHISON		1758 UPPER AFTON RD		SAINT PAUL	MN	55106
THEODORE J ERICKSON		1759 LOUISE AVE		SAINT PAUL	MN	55106
LAO VANG		1759 ROWE PL		SAINT PAUL	MN	55106
LORENZO CHAVEZ		176 WHITE BEAR AVE N		SAINT PAUL	MN	55106
DAVID A ST MARTIN		1760 GRACE LN		SAINT PAUL	MN	55106
SANDRA L CAMPBELL		1760 ROWE PL		SAINT PAUL	MN	55106
LOE KIN		1761 GRACE LN		SAINT PAUL	MN	55106
TRYSOBORITH KING		1761 LEONE AVE		SAINT PAUL	MN	55106
TONY XIONG		1762 LEONE AVE		SAINT PAUL	MN	55106
BYRON W BLOOM		1763 A ST		SAINT PAUL	MN	55106
JOHN A SCHMIDT		1763 BURNS AVE		SAINT PAUL	MN	55106
NAOTOU YANG		1763 GRACE LN		SAINT PAUL	MN	55106
TINA D PATTON		1764 GRACE LN		SAINT PAUL	MN	55106
LAO L MOUA		1764 LEONE AVE		SAINT PAUL	MN	55106
CHAO XIONG		1765 UPPER AFTON RD		SAINT PAUL	MN	55106
DAVID C ROWLEY		1767 BURNS AVE		SAINT PAUL	MN	55106
POLLY SONSALLA		1768 LEONE AVE		SAINT PAUL	MN	55106
KEENE R MCCAMMON		1768 UPPER AFTON RD		SAINT PAUL	MN	55106
JOSHUA KRAMER		1769 A ST		SAINT PAUL	MN	55106
CHAD HOWARD		1770 BURNS AVE		SAINT PAUL	MN	55106
PAUL H GIESE		1770 GRACE LN		SAINT PAUL	MN	55106
ZEPHYR GROUP LLP		1770 OLD HUDSON RD		SAINT PAUL	MN	55106
MIGUEL A SANCHEZ		1770 ROWE PL		SAINT PAUL	MN	55106
KARI KLOCKE SALMINEN		1771 C ST		SAINT PAUL	MN	55106
NGOC YEN THI TRAN		1771 GRACE LN		SAINT PAUL	MN	55106
JOYCE C REIMERS		1771 LEONE AVE		SAINT PAUL	MN	55106

Full Name	Organization - Primary	Mailing Street	Mailing Street 2	Mailing City	Mailing State	Mailing Zip
JESSICA L BRACKEY		1773 UPPER AFTON RD		SAINT PAUL	MN	55106
RICHARD BIGA		1774 UPPER AFTON RD		SAINT PAUL	MN	55106
DOROTHY A PLASTER		1775 A ST		SAINT PAUL	MN	55106
MARK D KASZYNSKI		1776 GRACE LN		SAINT PAUL	MN	55106
THOMAS TAM NGUYEN		1777 LEONE AVE		SAINT PAUL	MN	55106
ROBERT J FISHER		1779 UPPER AFTON RD		SAINT PAUL	MN	55119
LANCE G SCOTT		178 MAPLE ST		SAINT PAUL	MN	55106
DAVID W HASS		178 MARIA AVE		SAINT PAUL	MN	55106
JAMES T PETERSON		178 MOUNDS BLVD		SAINT PAUL	MN	55106
WA MENG THAO		1784 UPPER AFTON RD		SAINT PAUL	MN	55119
ZEPHYR GROUP LLP		1785 SUBURBAN AVE		SAINT PAUL	MN	55119
SUSAN M BARKER		1785 UPPER AFTON RD		SAINT PAUL	MN	55119
WEINFRA LLC		1788 OLD HUDSON RD		SAINT PAUL	MN	55119
LISA L RECORD		179 MARIA AVE		SAINT PAUL	MN	55106
CAROL M SOMMERS		179 URBAN PL		SAINT PAUL	MN	55106
IRIS M SCHELL		1790 UPPER AFTON RD		SAINT PAUL	MN	55119
CAROLE A GRAW		1791 UPPER AFTON RD		SAINT PAUL	MN	55119
GARY R MINDER		1797 UPPER AFTON RD		SAINT PAUL	MN	55119
JESSE BENNIG		18 FLANDRAU PL		SAINT PAUL	MN	55106
RAMSEY COUNTY PARKS AND REC		18 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
ST PAUL PUBLIC HOUSING AGENCY		18 WHITE BEAR AVE N		SAINT PAUL	MN	55106
Colonel Samuel L. Calkins	Army Corps of Engineers	180 5th St. E	Suite 700	St. Paul	MN	55101
Barbara Griffin	US Army Corp of Engineers	180 5th St. E.		St. Paul	MN	55101
Jon Fure	CapitolRiver Council	180 East 5th Street	Suite 260	St. Paul	MN	55101
JOHN F FAHEY		180 MARIA AVE		SAINT PAUL	MN	55106
BRUCE SCOTT JOHNSON		180 MOUNDS BLVD		SAINT PAUL	MN	55106
Luke Taylor	Wenck Associates	1802 Wooddale Drive		St. Paul	MN	55112
Stephanie Kuphal	Wenck Associates	1802 Wooddale Drive		St. Paul	MN	55112
CHAD SCHUELER		1805 UPPER AFTON RD		SAINT PAUL	MN	55119
MANUEL HERNANDEZ OSORIO		181 MAPLE ST		SAINT PAUL	MN	55106
ANDREW DINKINS		181 WHITE BEAR AVE N		SAINT PAUL	MN	55106
SAVANAH CLARIN		182 MAPLE ST		SAINT PAUL	MN	55106
MARJORIE E PITZ		182 MOUNDS BLVD		SAINT PAUL	MN	55106
J AND M BOSTON PROPERTIES LLC		182 WHITE BEAR AVE N		SAINT PAUL	MN	55106
JOSE P RUBIO		1820 BUTLER AVE		SOUTH ST PAUL	MN	55075
JAMES A MORIN		1823 UPPER AFTON RD		SAINT PAUL	MN	55119
HAROLD H GALL		184 MARIA AVE		SAINT PAUL	MN	55106
WARREN W & CAROL J SCHULDT		1840 BUTLER AVE		SOUTH ST PAUL	MN	55075
ROBERT E KOETZ		185 MARIA AVE		SAINT PAUL	MN	55106
CHARLES NOSIE		186 MAPLE ST		SAINT PAUL	MN	55106
JEAN E LUBKE		1860 BUTLER AVE		SOUTH ST PAUL	MN	55075
MARIO B MATIAS		187 WHITE BEAR AVE N		SAINT PAUL	MN	55106
RICK REINHART		1875 PARK RIDGE CT		SAINT PAUL	MN	55119
KYLE J BROOKS BABCOCK		1876 PARK RIDGE CT		SAINT PAUL	MN	55119
CURTIS B ANDERSON		188 MOUNDS BLVD		SAINT PAUL	MN	55106
RICHARD LANZ		188 WHITE BEAR AVE N		SAINT PAUL	MN	55106
NICOLE M BUCHER		1881 PARK RIDGE CT		SAINT PAUL	MN	55119
GERALD T ZGODA		1882 PARK RIDGE CT		SAINT PAUL	MN	55119
WILLIAM R SMITH		1887 PARK RIDGE CT		SAINT PAUL	MN	55119
DAWN M EWALD		1888 PARK RIDGE CT		SAINT PAUL	MN	55119
GEMINI OWNERSHIP TEAM LLC		189 MAPLE ST		SAINT PAUL	MN	55106
MARCIA A TIPPERY		1895 PARK RIDGE CT		SAINT PAUL	MN	55119
JAMES L HARTMANN		1895 UPPER AFTON RD		SAINT PAUL	MN	55119
MARCEL J M VERONNEAU TRUSTEE		1896 PARK RIDGE CT		SAINT PAUL	MN	55119
ANITA J MILLER		1898 UPPER AFTON RD		SAINT PAUL	MN	55119
GLORIA E IVERSON		19 MILLER CREST LN		SAINT PAUL	MN	55106
OTIS CLARK		1901 PARK RIDGE CT		SAINT PAUL	MN	55119
LILIANE THAO		1902 PARK RIDGE CT		SAINT PAUL	MN	55119
LINDA HUGGINS		1904 UPPER AFTON RD		SAINT PAUL	MN	55119
FRANCIS A CAMPBELL		1905 UPPER AFTON RD		SAINT PAUL	MN	55119
BETHANY G JOHNSON SANXTER		1908 UPPER AFTON RD		SAINT PAUL	MN	55119
JULIA CASTILLO		191 MAPLE ST		SAINT PAUL	MN	55106
SCOTT A HAIRE		191 MARIA AVE		SAINT PAUL	MN	55106
SHOUA LOR		1911 EBERTZ CT		SAINT PAUL	MN	55119
MOLLY E MAROSE		1912 BUTLER AVE		SOUTH ST PAUL	MN	55075
JOSEPH E WARD		1912 UPPER AFTON RD		SAINT PAUL	MN	55119
MARK F HAIDER		1914 EBERTZ CT		SAINT PAUL	MN	55119
JOSEPH E WARD		1914 UPPER AFTON RD		SAINT PAUL	MN	55119
DAVID J & LORI SWANLUND		1915 BUTLER AVE		SOUTH ST PAUL	MN	55075
MARK A & JUDY PETERSON		1916 BUTLER AVE		SOUTH ST PAUL	MN	55075
MICHAEL R DISTAD		1918 UPPER AFTON RD		SAINT PAUL	MN	55119
Darrell Gerber	Minnesota Center for Environmental Advocacy	1919 University Ave W	Suite 515	Saint Paul	MN	55104
Kathryn Hoffman	Minnesota Center for Environmental Advocacy	1919 University Ave W	Suite 515	Saint Paul	MN	55104
Kevin Lee	Minnesota Center for Environmental Advocacy	1919 University Ave W	Suite 515	Saint Paul	MN	55104
Mark Ten Eyck	MCEA	1919 University Ave W	Suite 515	St. Paul	MN	55104
MARY A MADERA		192 MARIA AVE		SAINT PAUL	MN	55106
DEBRA K OLSON		192 MOUNDS BLVD		SAINT PAUL	MN	55106
WILLIAM & JESSICA KAUL		1920 CONVER AVE		SOUTH ST PAUL	MN	55075
JEANETTE BOWLES		1921 BUTLER AVE		SOUTH ST PAUL	MN	55075
VASILE JURA		1922 CONVER AVE		SOUTH ST PAUL	MN	55075
GREGORY L & DENISE L MUNOS		1924 BUTLER AVE		SOUTH ST PAUL	MN	55075
MARY ELLIOT		1924 EBERTZ CT		SAINT PAUL	MN	55119
PAULA K FOREMAN		1925 UPPER AFTON RD		SAINT PAUL	MN	55119
STEVEN T & MARY LEE PRICE		1926 CONVER AVE		SOUTH ST PAUL	MN	55075
ALEXANDER NUNEZ		1926 UPPER AFTON RD		SAINT PAUL	MN	55119
LESLIE H MICHELS		1929 EBERTZ CT		SAINT PAUL	MN	55119
TIMOTHY M HIMANGO		193 MARIA AVE		SAINT PAUL	MN	55106
HUDSON FINANCIAL LLC		1930 CONVER AVE		SOUTH ST PAUL	MN	55075
PAUL E MOYER		1930 EBERTZ CT		SAINT PAUL	MN	55119
LATICHIA DIANE HARPER		1930 UPPER AFTON RD		SAINT PAUL	MN	55119
ALEXANDER R KLEVEN		1931 BUTLER AVE		SOUTH ST PAUL	MN	55075
PAUL E KUCHENMEISTER		1934 BUTLER AVE		SOUTH ST PAUL	MN	55075
PETER NYAKEOGA OSEBE & PENINAH		1934 CONVER AVE		SOUTH ST PAUL	MN	55075
ROBERT DEHN		1936 EBERTZ CT		SAINT PAUL	MN	55119
BRIAN D MARCHE		1937 BUTLER AVE		SOUTH ST PAUL	MN	55075
SHARON ANNE KOEHNEN		1938 CONVER AVE		SOUTH ST PAUL	MN	55075
DANIEL MCGARRY		1941 BUTLER AVE		SOUTH ST PAUL	MN	55075
YER MOUA		1942 EBERTZ CT		SAINT PAUL	MN	55119
JILL L SUTER		1945 BUTLER AVE		SOUTH ST PAUL	MN	55075
LEAH S BURLINGAME		1946 CONVER AVE		SOUTH ST PAUL	MN	55075
THOMAS L BERTINI		1948 EBERTZ CT		SAINT PAUL	MN	55119
EZEKIEL J JACKSON		1949 EBERTZ CT		SAINT PAUL	MN	55119
TONG VUE		195 WHITE BEAR AVE N		SAINT PAUL	MN	55106
HOWARD T ORR JR & MARGARET P ORR		1950 BUTLER AVE		SOUTH ST PAUL	MN	55075
MICHAEL ROBERT MENARD & TARA J		1950 CONVER AVE		SOUTH ST PAUL	MN	55075
PETER ANGELO OGRODNIK & KIM ARPS		1955 BUTLER AVE		SOUTH ST PAUL	MN	55075
RONALD M SWENSON		1955 EBERTZ CT		SAINT PAUL	MN	55119
DIANE LOUISE KRECH		1958 CONVER AVE		SOUTH ST PAUL	MN	55075
TARA M & DUSTIN HOEGER		1959 BUTLER AVE		SOUTH ST PAUL	MN	55075
DOUGLAS A BOYSEN		196 MAPLE ST		SAINT PAUL	MN	55106
DONALD J TRCKA TRUSTEE		196 MOUNDS BLVD		SAINT PAUL	MN	55106
RICHARD E DRUGGE TRUSTEE		197 MARIA AVE		SAINT PAUL	MN	55106
DOUGLAS A BOYSEN		198 MAPLE ST		SAINT PAUL	MN	55106
BRIAN T LINK		200 DORA CT E		SAINT PAUL	MN	55106
CERENITY MARIAN OF ST PAUL LLC		200 EARL ST		SAINT PAUL	MN	55106
TONYE E BOBMANUEL		2001 BUTLER AVE		SOUTH ST PAUL	MN	55075
KENNETH K FRENCH & MARY M FRENCH		2002 BUTLER AVE		SOUTH ST PAUL	MN	55075
KARIN M TOMERVIK		2004 OAKRIDGE ST		SAINT PAUL	MN	55119
ROBERT P & MARIE MIKE		2005 BUTLER AVE		SOUTH ST PAUL	MN	55075
RONALD W KEDROWSKI		2006 BUTLER AVE		SOUTH ST PAUL	MN	55075
HOMES FOR LEARNING LTD PRTNSH		201 BATES AVE		SAINT PAUL	MN	55106
DIANE K BRAND		201 DORA CT W		SAINT PAUL	MN	55106
JAMES D HUNTER		201 STANLEY AVE		SOUTH ST PAUL	MN	55075
SCOTT R HINSHAW		2012 BUTLER AVE		SOUTH ST PAUL	MN	55075
PEDRO LOERA VALLEZ & MARIA		2015 BUTLER AVE		SOUTH ST PAUL	MN	55075
RAMSEY COUNTY PARKS AND REC		2015 VAN DYKE ST N		SAINT PAUL	MN	55109
ALFONSO & LUCILLE DELEON		2017 BUTLER AVE		SOUTH ST PAUL	MN	55075
KIM & MONICA HUEBSCHER		2018 BUTLER AVE		SOUTH ST PAUL	MN	55075
HEMANT & SHEILA BHAKTA		2020 WILSON AVE		SOUTH ST PAUL	MN	55075
DAN PEINOVICH & DIANE KEEHR		2021 WILSON AVE		SOUTH ST PAUL	MN	55075
DIANA M HOLZMER		2024 CONVER AVE		SOUTH ST PAUL	MN	55075
JAMES D CAMPBELL		2024 OAKRIDGE ST		SAINT PAUL	MN	55119
Thor Becken	Cemstone Products	2025 Centre Pointe Blvd	Suite 300	Mendota Heights	MN	55120
MICHAEL J NIHART		2026 SPRINGSIDE DR		SAINT PAUL	MN	55119
JAN M G GUSTAFSSON		203 EARL ST		SAINT PAUL	MN	55106
JAMES D & KATIE J SITAR		2030 WILSON AVE		SOUTH ST PAUL	MN	55075
SHELDON P JOHNSON		2031 HOWARD ST S		SAINT PAUL	MN	55119

Full Name	Organization - Primary	Mailing Street	Mailing Street 2	Mailing City	Mailing State	Mailing Zip
MICHAEL & KRISTIE AHERN		2031 WILSON AVE		SOUTH ST PAUL	MN	55075
CAROL VOLLBRECHT		2032 BUTLER AVE		SOUTH ST PAUL	MN	55075
JAMES P OHR		2032 OAKRIDGE ST		SAINT PAUL	MN	55119
ANTHONY HEYMANS		2034 BUTLER AVE		SOUTH ST PAUL	MN	55075
BRIAN W VOSSEN		2034 HIGHWOOD AVE		SAINT PAUL	MN	55119
KURT J MERRELL		2035 BUTLER AVE		SOUTH ST PAUL	MN	55075
ROBERT CHRISTIAN RASMUSSEN &		2036 BUTLER AVE		SOUTH ST PAUL	MN	55075
EDWARD HEMMELMAN & KELLY A		2037 BUTLER AVE		SOUTH ST PAUL	MN	55075
BRIAN SEIDL		2039 BUTLER AVE		SOUTH ST PAUL	MN	55075
STEVEN R KUEHL		204 BATES AVE		SAINT PAUL	MN	55106
MARY M WEST		2040 HIGHWOOD AVE		SAINT PAUL	MN	55119
DAVID ANTHONY MCLAUGHLIN		2040 WILSON AVE		SOUTH ST PAUL	MN	55075
DANIEL R JIROVEC		2041 OAKRIDGE ST		SAINT PAUL	MN	55119
DONALD R & BRENDA L WILLENBRING		2041 WILSON AVE		SOUTH ST PAUL	MN	55075
ROBERT WALDEN		2049 OAKRIDGE ST		SAINT PAUL	MN	55119
BRIGHTON ALLSTON PROPERTIES LLC		205 HARDMAN AVE S		SOUTH ST PAUL	MN	55075
DEAN W JOHNSON		2050 OAKRIDGE AVE		SAINT PAUL	MN	55119
ADAM J BROTZLER & LINDSEY M		2050 WILSON AVE		SOUTH ST PAUL	MN	55075
KEVIN L COLESTOCK		2051 HOWARD ST S		SAINT PAUL	MN	55119
BILL JARRETT RUDE KORF		2052 HIGHWOOD AVE		SAINT PAUL	MN	55119
STATE OF MN MILITARY AFFAIRS		206 AIRPORT RD W		SAINT PAUL	MN	55107
STEPHAN G BURGESON		2064 HIGHWOOD AVE		SAINT PAUL	MN	55119
JACK A ANDERSON		2065 ELMWOOD ST		SAINT PAUL	MN	55119
CHAD M BOGDAN		2065 WILDVIEW AVE		SAINT PAUL	MN	55119
DADDERS ESTATES LLC		207 MAPLE ST		SAINT PAUL	MN	55106
CHAD CARLSON		2070 OAKRIDGE ST		SAINT PAUL	MN	55119
MICHAEL D WILLIAMS TRUSTEE		2071 SKYWAY DR		SAINT PAUL	MN	55119
GAIL M GEISENHOFF		2072 HIGHWOOD AVE		SAINT PAUL	MN	55119
RALPH A TUTTILA		2074 HIGHWOOD AVE		SAINT PAUL	MN	55119
JOHN A SCHNEIDER		2075 OAKRIDGE ST		SAINT PAUL	MN	55119
WILLIAM M FISCHER		2076 HIGHWOOD AVE		SAINT PAUL	MN	55119
JOHN RANDOLPH HUBBLING		2077 HIGHWOOD AVE		SAINT PAUL	MN	55119
RHONDA PFIFFNER		2077 WILDVIEW AVE		SAINT PAUL	MN	55119
SOUTH METRO HUMAN SERVICES		2080 HIGHWOOD AVE		SAINT PAUL	MN	55119
2015 3 IH2 BORROWER LP		2081 HIGHWOOD AVE		SAINT PAUL	MN	55119
KENT W JEFFERSON CONST INC		2081 LONDIN LN		SAINT PAUL	MN	55119
RAYMOND A LUX		2082 OAKRIDGE ST		SAINT PAUL	MN	55119
DONN G ANDERSON		2082 SKYWAY DR		SAINT PAUL	MN	55119
STEPHEN F BERENATO		2087 SKYWAY DR		SAINT PAUL	MN	55119
CITY OF ST PAUL		2088 BATAVIA ST		SAINT PAUL	MN	55119
DONALD W JABLONSKI		2089 HIGHWOOD AVE		SAINT PAUL	MN	55119
Monica Bravo	West Side Community Organization	209 Page Street West		St. Paul	MN	55107
LISA A CAMPBELL		2090 HIGHWOOD AVE		SAINT PAUL	MN	55119
NELS S EVERTZ		2091 OAKRIDGE ST		SAINT PAUL	MN	55119
JON C KAMKA		2091 SKYWAY DR		SAINT PAUL	MN	55119
MICHAEL J MCGARRY		2092 HIGHWOOD AVE		SAINT PAUL	MN	55119
GRETCHEN L CAMPBELL JOHNSON		2095 SKYWAY DR		SAINT PAUL	MN	55119
BENJAMIN J WISNIEWSKI		2096 HIGHWOOD AVE		SAINT PAUL	MN	55119
JORDAN A ANDERSON		2097 HIGHWOOD AVE		SAINT PAUL	MN	55119
JOHN A BOLIN		2099 SKYWAY DR		SAINT PAUL	MN	55119
ERIK CHRISTIANSON		21 BATTLE CREEK PL		SAINT PAUL	MN	55119
KAREN M SCHNEIDER TRUSTEE		21 FLANDRAU PL		SAINT PAUL	MN	55106
THOMAS O & DIANE BARTELT		2100 CONVER AVE		SOUTH ST PAUL	MN	55075
MAURICIO M MARIN		2100 HIGHWOOD AVE		SAINT PAUL	MN	55119
TIMOTHY A GELKING		2100 SKYWAY DR		SAINT PAUL	MN	55119
DEAN J FARINELLA		2101 OAKRIDGE ST		SAINT PAUL	MN	55119
ROBERT A LODER		2102 ELMWOOD ST		SAINT PAUL	MN	55119
MATTHEW J RINDAL		2104 HIGHWOOD AVE		SAINT PAUL	MN	55119
Betsy Mowry Voss	District 1 Community Council	2105 1/2 Old Hudson Road		St. Paul	MN	55119
BARBARA E LACKNER		2106 DOUGLYNN LN		SAINT PAUL	MN	55119
DAVID J BEHRENDS		2106 LOWER AFTON RD		SAINT PAUL	MN	55119
CHARLES DONALD DAILEY		2107 SKYWAY DR		SAINT PAUL	MN	55119
WILLIAM R MELLEN		2107 WILDVIEW AVE		SAINT PAUL	MN	55119
HELEN J LAFAVOR		2108 CONVER AVE		SOUTH ST PAUL	MN	55075
BEN AELING		2108 DOUGLYNN LN		SAINT PAUL	MN	55119
JOANN COCHRAN		2108 HIGHWOOD AVE		SAINT PAUL	MN	55119
JIMMIE D MORTON		2108 SKYWAY DR		SAINT PAUL	MN	55119
JIMMY D MORTON		2108 SKYWAY DR		SAINT PAUL	MN	55119
JENNIFER GOTTBERG		2109 OAKRIDGE ST		SAINT PAUL	MN	55119
CHRISTOPHER STEVEN HAAS		211 EARL ST		SAINT PAUL	MN	55106
RALPH W INLOW		2111 SKYWAY DR		SAINT PAUL	MN	55119
DAVID W WARNER		2112 LOWER AFTON RD		SAINT PAUL	MN	55119
SOUA YANG		2114 HIGHWOOD AVE		SAINT PAUL	MN	55119
STEVEN P ROGERS		2115 SKYWAY DR		SAINT PAUL	MN	55119
RONALD D & JUDITH M LARSON		2116 CONVER AVE		SOUTH ST PAUL	MN	55075
GLENN WILLIAMS		2116 HIGHWOOD AVE		SAINT PAUL	MN	55119
GRANT J CONKLIN		2117 OAKRIDGE ST		SAINT PAUL	MN	55119
ABEBE A DEMME		2118 LOWER AFTON RD		SAINT PAUL	MN	55119
THOMAS R DIMOND		2119 SKYWAY DR		SAINT PAUL	MN	55119
HOMES FOR LEARNING LTD PRTNSH		212 BATES AVE		SAINT PAUL	MN	55106
CHRISTINA BANKU ACHU		2120 CONVER AVE		SOUTH ST PAUL	MN	55075
JOHN J ROGERS		2120 DOUGLYNN LN		SAINT PAUL	MN	55119
MAURICIO M MARIN		2120 HIGHWOOD AVE		SAINT PAUL	MN	55119
CITY OF ST PAUL		2120 SKYWAY DR		SAINT PAUL	MN	55119
REBECCA MCQUISTON		2120 WILDVIEW AVE		SAINT PAUL	MN	55119
CHRISTOPHER R KENOWSKI		2121 DOUGLYNN LN		SAINT PAUL	MN	55119
JOEL R FERNLUND		2121 OAKRIDGE ST		SAINT PAUL	MN	55119
JOEL W MILLER		2121 SKYWAY DR		SAINT PAUL	MN	55119
DOUGLAS J MONSON		2124 LOWER AFTON RD		SAINT PAUL	MN	55119
JOE R BANKS		2125 SKYWAY DR		SAINT PAUL	MN	55119
MICAELA DOUGLAS		2126 HIGHWOOD AVE		SAINT PAUL	MN	55119
KAREN K HITZMAN		2128 SKYWAY DR		SAINT PAUL	MN	55119
DOUGLAS K LAMB		213 WHITE BEAR AVE N		SAINT PAUL	MN	55106
EDWARD C CARBERT		2130 CONVER AVE		SOUTH ST PAUL	MN	55075
LAWRENCE M BAILEY		2130 HOWARD ST S		SAINT PAUL	MN	55119
WILLIAM D KAMB		2130 LOWER AFTON RD		SAINT PAUL	MN	55119
STEVE WOLF		2130 SKYWAY DR		SAINT PAUL	MN	55119
JESSICA L GRODIN		2133 HIGHWOOD AVE		SAINT PAUL	MN	55119
ROBERT B SALISBURY		2134 HIGHWOOD AVE E		SAINT PAUL	MN	55119
PAMELA S JOHNSON		2134 HOWARD ST S		SAINT PAUL	MN	55119
CHARLES F THELL		2134 LOWER AFTON RD		SAINT PAUL	MN	55119
STEPHEN C SULLIVAN		2135 OAKRIDGE ST		SAINT PAUL	MN	55119
ADRIAN L SAFFOLD		2135 SKYWAY DR		SAINT PAUL	MN	55119
ANA A ARIAS FLORES & RANSON J REYES		2136 CONVER AVE		SOUTH ST PAUL	MN	55075
BLUFF PARK HOMES		214 CESAR CHAVEZ ST		SAINT PAUL	MN	55107
NOELLE C HANNAY		214 FRANK ST		SAINT PAUL	MN	55106
AMY JACKY		214 KENNARD ST		SAINT PAUL	MN	55106
AREE PROPERTIES LLC		214 MAPLE ST		SAINT PAUL	MN	55106
DANIEL D HAAKINSON		2140 HOWARD ST S		SAINT PAUL	MN	55119
THOMAS & KARI SCHLOSSER		2142 CONVER AVE		SOUTH ST PAUL	MN	55075
KEITH M KOTCHICK		2143 VALLEY VIEW PL		SAINT PAUL	MN	55119
STEVEN C JOHNSON		2144 VALLEY VIEW PL		SAINT PAUL	MN	55119
PORT AUTHORITY OF ST PAUL		2145 CHILDS RD		SAINT PAUL	MN	55106
TINA K LENLING		2145 VALLEY VIEW PL		SAINT PAUL	MN	55119
ERIC JS CHEUER		2146 CONVER AVE		SOUTH ST PAUL	MN	55075
JAMES R BERRES		2146 HOWARD ST S		SAINT PAUL	MN	55119
JOAN ADEL NESSET		2147 VALLEY VIEW PL		SAINT PAUL	MN	55119
NEAL G THOMAS		2148 SPRINGSIDE DR		SAINT PAUL	MN	55119
MICHAEL H WALLMAN		2149 SNOWSHOE LN		SAINT PAUL	MN	55119
MARTHA SCHWERR		215 BIRCHER AVE		SOUTH ST PAUL	MN	55075
SPENCER W PERRON		215 DORA CT W		SAINT PAUL	MN	55106
BARBARA WLODARCZYK		215 KENNARD ST		SAINT PAUL	MN	55106
PAO VANG		215 MAPLE ST		SAINT PAUL	MN	55106
SCOTT D HICKEY		2150 HIGHWOOD AVE		SAINT PAUL	MN	55119
CARL B ANDERSON		2150 MAILAND RD		SAINT PAUL	MN	55119
KATHLEEN M DONNELLY COHEN		2150 VALLEY VIEW PL		SAINT PAUL	MN	55119
HARRY APPOLON		2151 LONDIN LN		SAINT PAUL	MN	55119
KEITH G TOLAR		2152 HOWARD ST S		SAINT PAUL	MN	55119
TERRENCE J PETRA		2155 BOXWOOD AVE		SAINT PAUL	MN	55119
NICHOLAS J SARINSKE		2155 LONDIN LN		SAINT PAUL	MN	55119
ABRAHAM L MCCARTY		2155 VALLEY VIEW PL		SAINT PAUL	MN	55119
ANGELA LANGASON		2155 WINTHROP CT		SAINT PAUL	MN	55119
JERRY L MEUSBURGER		2156 HOWARD ST S		SAINT PAUL	MN	55119
ROBYN BARTZ WOOLLEY		2156 WINTHROP CT		SAINT PAUL	MN	55119
MAY SEE LO		2157 SPRINGSIDE DR		SAINT PAUL	MN	55119
TROY A MARCOTTE		2159 DOUGLYNN LN		SAINT PAUL	MN	55119
ANDREW P JOHNSON		2159 SPRINGSIDE DR		SAINT PAUL	MN	55119
MARIA T CURTIS		2160 DOUGLYNN LN		SAINT PAUL	MN	55119
NANCY C MCGUINESS		2160 OGDEN AVE		SAINT PAUL	MN	55119

Full Name	Organization - Primary	Mailing Street	Mailing Street 2	Mailing City	Mailing State	Mailing Zip
KEVIN A PETERSON		2161 HADLEY ST		SAINT PAUL	MN	55119
DAVID R MCGOWAN		2161 SPRINGSIDE DR		SAINT PAUL	MN	55119
STEPHEN W MOHN		2162 VALLEY VIEW PL		SAINT PAUL	MN	55119
JOSEPH J BIANCONI TRUSTEE		2163 VALLEY VIEW PL		SAINT PAUL	MN	55119
MARGARET A D HALDEMAN		2164 HADLEY ST		SAINT PAUL	MN	55119
NICHOLAS A THOMPSON		2165 HOWARD ST S		SAINT PAUL	MN	55119
FU LEE		2165 MAILAND RD		SAINT PAUL	MN	55119
Mike Marsollek	Pigs Eye Wood Recycling	2165 Pigs Eye Lake Rd		St. Paul	MN	55106
LEMMIE L DILLON		2165 SPRINGSIDE DR		SAINT PAUL	MN	55119
MARK J BERTHIAUME		2166 CARVER AVE		SAINT PAUL	MN	55119
LOWELL L COULTER		2169 LONDIN LN		SAINT PAUL	MN	55119
JAMES O ASP		217 EARL ST		SAINT PAUL	MN	55106
BRIDGET ANNE ESSLING		2170 SNOWSHOE LN		SAINT PAUL	MN	55119
BRENT JAMES MAROTZKE		2170 SPRINGSIDE DR		SAINT PAUL	MN	55119
DAVID L MORRISON		2170 VALLEY VIEW PL		SAINT PAUL	MN	55119
ALISON A DIDIER		2171 SPRINGSIDE DR		SAINT PAUL	MN	55119
HOSSAENA ADADA		2171 VALLEY VIEW PL		SAINT PAUL	MN	55119
REIER R GRUDEM		2172 HADLEY ST		SAINT PAUL	MN	55119
KRISTIN HAROLD H ELLIOTT III ELLIOTT		2173 SNOWSHOE LN		SAINT PAUL	MN	55119
KEVIN W MERKLING		2173 VIVIAN LN		SAINT PAUL	MN	55119
ANGELA A JAIRETT		2174 VIVIAN LN		SAINT PAUL	MN	55119
PORT AUTHORITY OF ST PAUL		2175 CHILDS RD		SAINT PAUL	MN	55106
BRUCE M PILTINGSRUD		2176 DOUGLYNN LN		SAINT PAUL	MN	55119
RAYMOND HE		2176 STINCHFIELD ST		SAINT PAUL	MN	55119
MAIYA HEATHER YANG		2177 STINCHFIELD ST		SAINT PAUL	MN	55119
SHAWN M TOL		2178 VALLEY VIEW PL		SAINT PAUL	MN	55119
HAROLD J SELLIE		2179 VALLEY VIEW PL		SAINT PAUL	MN	55119
THOMAS ROBERT MARTELL		218 FRANK ST		SAINT PAUL	MN	55106
MCLEAN WONG		2180 SPRINGSIDE DR		SAINT PAUL	MN	55119
WILLIAM P JONES		2181 SPRINGSIDE DR		SAINT PAUL	MN	55119
BRADLEY A BAKER		2183 DAHL AVE		SAINT PAUL	MN	55119
LISA SIPE		2183 VIVIAN LN		SAINT PAUL	MN	55119
CHRISTOPHER L COTE		2184 BONNIE LN		SAINT PAUL	MN	55119
RANDY A SENKBEIL		2184 DAHL AVE		SAINT PAUL	MN	55119
ELIZABETH MOWRY		2184 SPRINGSIDE DR		SAINT PAUL	MN	55119
MELVIN L KNOPS		2185 LONDIN LN		SAINT PAUL	MN	55119
MADRONE KUBOVCIK		2185 MAILAND RD		SAINT PAUL	MN	55119
JONATHAN E GREENLEE		2186 MAILAND RD		SAINT PAUL	MN	55119
BRIDGET ANNE ESSLING		2187 BONNIE LN		SAINT PAUL	MN	55119
JAC REAL ESTATE LLC		2187 SPRINGSIDE DR		SAINT PAUL	MN	55119
JAMES D MCKINNON		2188 BONNIE LN		SAINT PAUL	MN	55119
INDEPENDENT SCHOOL DIST 625		2188 LONDIN LN		SAINT PAUL	MN	55119
DAN EMERY		2188 SPRINGSIDE DR		SAINT PAUL	MN	55119
MICHAEL G SANDERS		2189 BOXWOOD AVE		SAINT PAUL	MN	55119
MELVIN E CROATT		2189 DAHL AVE		SAINT PAUL	MN	55119
LEON A RODRIGUES		2189 LONDIN LN		SAINT PAUL	MN	55119
NANCY JO KADOUN		2189 VALLEY VIEW PL		SAINT PAUL	MN	55119
SCOTT A GUNDERSON		219 BATES AVE		SAINT PAUL	MN	55106
PATRICK J MADIGAN		219 WHITE BEAR AVE N		SAINT PAUL	MN	55106
ROBERT W KESSLER		2190 DAHL AVE		SAINT PAUL	MN	55119
ROBERT J OLSEN		2190 MAILAND RD		SAINT PAUL	MN	55119
DENNIS E CAHILL		2191 DOUGLYNN LN		SAINT PAUL	MN	55119
RICHARD C MOUA		2191 LONDIN LN		SAINT PAUL	MN	55119
CARL B ANDERSON		2191 MAILAND RD		SAINT PAUL	MN	55119
JERRY BONINE		2192 BONNIE LN		SAINT PAUL	MN	55119
PAUL W KOLL		2192 VALLEY VIEW PL		SAINT PAUL	MN	55119
AMY C CONLEY		2193 BONNIE LN		SAINT PAUL	MN	55119
MEGAS L GRIGGS LEROUX		2193 LONDIN LN		SAINT PAUL	MN	55119
JACOB W WILLIAMSON		2194 SNOWSHOE LN		SAINT PAUL	MN	55119
PAYING XIONG		2195 LONDIN LN		SAINT PAUL	MN	55119
NICHOLAS R PRINCE		2195 MARILLAC LN		SAINT PAUL	MN	55119
THERESA M WATSCHKE		2195 SNOWSHOE LN		SAINT PAUL	MN	55119
NDIFONGWA D NGWA		2195 VALLEY VIEW PL		SAINT PAUL	MN	55119
PAUL R MEYER		2196 BONNIE LN		SAINT PAUL	MN	55119
SHAMROCK COURT INVESTORS LP		2196 LOWER AFTON RD		SAINT PAUL	MN	55119
LAWRENCE J THOMAS		2196 MAILAND RD		SAINT PAUL	MN	55119
RAY YANG		2196 MARILLAC LN		SAINT PAUL	MN	55119
LEONARD J HARTMON		2196 SPRINGSIDE DR		SAINT PAUL	MN	55119
BRIDGET ANNE ESSLING		2197 BONNIE LN		SAINT PAUL	MN	55119
ROBERT G STOLPE		2197 LONDIN LN		SAINT PAUL	MN	55119
JOSEPH C PEISERT TRUSTEE		2197 OGDEN CT		SAINT PAUL	MN	55119
KAYAK PROPERTIES INC		2197 VIVIAN LN		SAINT PAUL	MN	55119
TIEN V TRAN		2198 DAHL AVE		SAINT PAUL	MN	55119
PAUL GABORIAULT		2199 DAHL AVE		SAINT PAUL	MN	55119
MARK R TSCHIDA		2199 DOUGLYNN LN		SAINT PAUL	MN	55119
JOHN F SNIKER		22 B ST		SAINT PAUL	MN	55106
KAREN J MCCRAE		22 FLANDRAU PL		SAINT PAUL	MN	55106
TERRENCE L BAILEY		22 MILLER CREST LN		SAINT PAUL	MN	55106
STEPHEN S REYNOLDS		22 WHITE BEAR AVE N		SAINT PAUL	MN	55106
CAROL GREENHAW		220 BIRCHER AVE		SOUTH ST PAUL	MN	55075
JEFFREY A LOGAN		220 KENNARD ST		SAINT PAUL	MN	55106
JAMES J MESSINA		2200 BONNIE LN		SAINT PAUL	MN	55119
DAVID P KUCKLER		2200 BUTLER AVE		SOUTH ST PAUL	MN	55075
JOSEPH P FEIDT		2200 HADLEY ST		SAINT PAUL	MN	55119
SHARON M MIDDENDORF		2200 MARILLAC LN		SAINT PAUL	MN	55119
MITCHELL J NELSON		2200 OGDEN CT		SAINT PAUL	MN	55119
ROBERT J KOSTICHKA		2200 VALLEY VIEW PL		SAINT PAUL	MN	55119
JAYNE M SPADO		2201 BONNIE LN		SAINT PAUL	MN	55119
ALLEN J KIEL		2201 LONDIN LN		SAINT PAUL	MN	55119
RORY V MATTER		2201 SPRINGSIDE DR		SAINT PAUL	MN	55119
DANIEL A LOPEZ		2202 DOUGLYNN LN		SAINT PAUL	MN	55119
TENG VANG		2203 CARVER AVE		SAINT PAUL	MN	55119
DAVID J PLUFF		2203 HIGHWOOD AVE		SAINT PAUL	MN	55119
SAM SAI SHOUA LAO		2203 LONDIN LN		SAINT PAUL	MN	55119
CRAIG A ZLIMEN		2203 OGDEN CT		SAINT PAUL	MN	55119
MICHAEL WINTER		2203 VALLEY VIEW PL		SAINT PAUL	MN	55119
STEVEN PIERSON		2204 CARVER AVE		SAINT PAUL	MN	55119
LOWER AFTON NH PARTNERSHIP LLP		2204 LOWER AFTON RD		SAINT PAUL	MN	55119
ST PAUL APOSTOLIC TABERNACLE		2205 MATTERHORN LN		SAINT PAUL	MN	55119
MICHELLE M HARTWICK		2205 WILLIAM TELL RD		SAINT PAUL	MN	55119
STEVEN J FRAZER		2206 DAHL AVE		SAINT PAUL	MN	55119
DAVID J SUNDMARK		2206 MARILLAC LN		SAINT PAUL	MN	55119
JONATHAN P ERICKSON		2206 MATTERHORN LN		SAINT PAUL	MN	55119
HORACE KELLY COMBS HENRY		2206 WILLIAM TELL RD		SAINT PAUL	MN	55119
SCOTT HIMMER		2207 EMERALD LN		SAINT PAUL	MN	55119
NAONHIA MOUA		2207 LONDIN LN		SAINT PAUL	MN	55119
TADEUSZ NAPIORKOWSKI TRUSTEE		2207 VIVIAN LN		SAINT PAUL	MN	55119
STEVEN KING		2208 EMERALD LN		SAINT PAUL	MN	55119
PORT AUTHORITY OF ST PAUL		2209 CHILDS RD		SAINT PAUL	MN	55106
PATRICK L ULMER		221 EARL ST		SAINT PAUL	MN	55106
KYLE K NYSTROM		221 KENNARD ST		SAINT PAUL	MN	55106
SARAH E KLINE STENSVOLD		2210 BONNIE LN		SAINT PAUL	MN	55119
RYAN A LINDGREN		2210 DOUGLYNN LN		SAINT PAUL	MN	55119
GERRY L BRUCKNER		2210 MATTERHORN LN		SAINT PAUL	MN	55119
BARRY J SIEBERT		2210 VIVIAN LN		SAINT PAUL	MN	55119
JEFFREY MCCANN		2211 DOUGLYNN LN		SAINT PAUL	MN	55119
CHERRY WU		2211 MATTERHORN LN		SAINT PAUL	MN	55119
TONYA M YARWOOD		2211 SPRINGSIDE DR		SAINT PAUL	MN	55119
MARK L LEE		2211 VALLEY VIEW PL		SAINT PAUL	MN	55119
STEVEN C DRESS		2211 WILLIAM TELL RD		SAINT PAUL	MN	55119
JESSICA A HENSEL		2212 CARVER AVE		SAINT PAUL	MN	55119
PHILIP H KACHELMYER TRUSTEE		2212 MARILLAC LN		SAINT PAUL	MN	55119
CHRYSTINA XIONG		2212 MATTERHORN LN		SAINT PAUL	MN	55119
KENNETH D KLINE		2212 OGDEN CT		SAINT PAUL	MN	55119
KEITH D HEISICK		2212 WILLIAM TELL RD		SAINT PAUL	MN	55119
MATTHEW G SETLEY		2213 EMERALD LN		SAINT PAUL	MN	55119
DAVID N HARWOOD		2214 BONNIE LN		SAINT PAUL	MN	55119
DONALD R DANNER		2214 DAHL AVE		SAINT PAUL	MN	55119
ZHONGHU LI		2214 EMERALD LN		SAINT PAUL	MN	55119
ROBERT PETERSON		2214 LOWER AFTON RD		SAINT PAUL	MN	55119
TOM K PARKER		2215 BONNIE LN		SAINT PAUL	MN	55119
DOUGLAS M MCKEE		2215 CARVER AVE		SAINT PAUL	MN	55119
SUSAN M MITCHELL		2215 HIGHWOOD AVE		SAINT PAUL	MN	55119
RICHARD J OKESON		2215 MARILLAC LN		SAINT PAUL	MN	55119
JOHN P SCHOLLMEIER		2215 MATTERHORN LN		SAINT PAUL	MN	55119
XAO LOR		2215 WILLIAM TELL RD		SAINT PAUL	MN	55119
BEVERLEY OLIVER HAWKINS		2216 LOWER AFTON RD		SAINT PAUL	MN	55119
JOSEPH J GORMAN		2217 BONNIE LN		SAINT PAUL	MN	55119
ERIC C ANDERSON		2217 DAHL AVE		SAINT PAUL	MN	55119
ROBERT V COURTRIGHT		2217 HIGHWOOD AVE		SAINT PAUL	MN	55119
MARK R JOHNSON		2217 LONDIN LN		SAINT PAUL	MN	55119
ERIC ANDERSON		2218 BONNIE LN		SAINT PAUL	MN	55119
YOUNG WHITE		2218 LOWER AFTON RD		SAINT PAUL	MN	55119

Full Name	Organization - Primary	Mailing Street	Mailing Street 2	Mailing City	Mailing State	Mailing Zip
JORDAN JOHNSON		2218 MATTERHORN LN		SAINT PAUL	MN	55119
EDWARD M HAGBERG		2218 SNOWSHOE LN		SAINT PAUL	MN	55119
KENNETH A FOURNELLE		2218 WILLIAM TELL RD		SAINT PAUL	MN	55119
JAMES P BURKE		2219 EMERALD LN		SAINT PAUL	MN	55119
AHVO TAIPALE		2219 SPRINGSIDE DR		SAINT PAUL	MN	55119
MICHAEL D SAIN		2219 VIVIAN LN		SAINT PAUL	MN	55119
MORROW PARTNERS INC		222 FRANK ST		SAINT PAUL	MN	55106
PIETIG BROS INC		222 MAPLE ST		SAINT PAUL	MN	55106
J AND M BOSTON PROPERTIES LLC		2220 DOUGLYNN LN		SAINT PAUL	MN	55119
JILL M CHRISTOPHERSON		2220 EMERALD LN		SAINT PAUL	MN	55119
NANCY G ROSE		2220 LOWER AFTON RD		SAINT PAUL	MN	55119
JOHN F HALTER		2220 MARILLAC LN		SAINT PAUL	MN	55119
RYAN J BIERWERTH		2220 SNOWSHOE LN		SAINT PAUL	MN	55119
ROGER A PFIFFNER		2221 BOXWOOD AVE		SAINT PAUL	MN	55119
MARLENE A BERG		2221 CARVER AVE		SAINT PAUL	MN	55119
DOUG XIONG		2221 MAILAND RD		SAINT PAUL	MN	55119
EUGENE R WOITAS		2221 MARILLAC LN		SAINT PAUL	MN	55119
JOSE YGNACIO DIAZ MALPICA		2221 OGDEN CT		SAINT PAUL	MN	55119
JAMES W RANDAZZO		2221 VALLEY VIEW PL		SAINT PAUL	MN	55119
MICHAEL K JANKE		2222 BONNIE LN		SAINT PAUL	MN	55119
DONALD K ENGSTROM		2222 BOXWOOD AVE		SAINT PAUL	MN	55119
LOUIS MARIUCCI		2222 DAHL AVE		SAINT PAUL	MN	55119
JOHN KEMP		2222 LOWER AFTON RD		SAINT PAUL	MN	55119
THOMAS G REISCHEL		2222 WILLIAM TELL RD		SAINT PAUL	MN	55119
NAOTHAI VANG		2223 MATTERHORN LN		SAINT PAUL	MN	55119
JENNIFER L OLSEN		2223 WILLIAM TELL RD		SAINT PAUL	MN	55119
MARLENE E HANSEN		2224 LOWER AFTON RD		SAINT PAUL	MN	55119
JOHN K LEE		2224 MAILAND RD		SAINT PAUL	MN	55119
GRALIN CARTER		2224 MATTERHORN LN		SAINT PAUL	MN	55119
CHRISTOPHER R HENDRIX		2224 SPRINGSIDE DR		SAINT PAUL	MN	55119
PERCY T FENN		2225 DAHL AVE		SAINT PAUL	MN	55119
JEREMY J STRALEY		2225 DOUGLYNN LN		SAINT PAUL	MN	55119
LAURA L WAKEFIELD		2225 SNOWSHOE LN		SAINT PAUL	MN	55119
NICHOLAS T MAXIM CARLSON		2226 BOXWOOD AVE		SAINT PAUL	MN	55119
STEVEN C JONES		2226 DOUGLYNN LN		SAINT PAUL	MN	55119
RUTH I BLOOM		2226 LOWER AFTON RD		SAINT PAUL	MN	55119
KARLA J LADWIG		2226 MARILLAC LN		SAINT PAUL	MN	55119
DOUGLAS W OLSSEN		2227 EMERALD LN		SAINT PAUL	MN	55119
RICHELLE LYONS		2227 LONDIN LN		SAINT PAUL	MN	55119
ZHANGQING WU		2227 VIVIAN LN		SAINT PAUL	MN	55119
MARGARET MARY KELLER		2228 DOUGLYNN LN		SAINT PAUL	MN	55119
BRIAN T JONES		2228 EMERALD LN		SAINT PAUL	MN	55119
CAROL J DREIER		2228 LOWER AFTON RD		SAINT PAUL	MN	55119
CARRIE M KOLLES		2228 SNOWSHOE LN		SAINT PAUL	MN	55119
PORT AUTHORITY OF ST PAUL		2229 CHILDS RD		SAINT PAUL	MN	55106
LISA M JACOBSON FLOOD		2229 DOUGLYNN LN		SAINT PAUL	MN	55119
ADAM J MACKIE		223 BATES AVE		SAINT PAUL	MN	55106
TRYAN & EUDOCHIA WINSTON		223 STANLEY AVE		SOUTH ST PAUL	MN	55075
JEFFREY P CROONQUIST		2230 DAHL AVE		SAINT PAUL	MN	55119
JANET L BERGMARK		2230 LOWER AFTON RD		SAINT PAUL	MN	55119
MATTHEW J FOLLMER		2230 MARILLAC LN		SAINT PAUL	MN	55119
YAN YI WU		2230 MATTERHORN LN		SAINT PAUL	MN	55119
NEDA CHANG		2230 VIVIAN LN		SAINT PAUL	MN	55119
KING W FUNG		2230 WILLIAM TELL RD		SAINT PAUL	MN	55119
JAMES L SPEIDEL		2231 MATTERHORN LN		SAINT PAUL	MN	55119
RAOPING MARIANI		2231 SPRINGSIDE DR		SAINT PAUL	MN	55119
TRIA CHANG		2231 WILLIAM TELL RD		SAINT PAUL	MN	55119
MICHAEL R WILSON		2232 BOXWOOD AVE		SAINT PAUL	MN	55119
TIMOTHY F COLESTOCK		2232 CARVER AVE		SAINT PAUL	MN	55119
CARISSA N SKAFF		2232 LOWER AFTON RD		SAINT PAUL	MN	55119
OWEN L NELSON		2232 OGDEN CT		SAINT PAUL	MN	55119
MAYKER X YOUNG		2233 BOXWOOD AVE		SAINT PAUL	MN	55119
MINH HA		2233 DAHL AVE		SAINT PAUL	MN	55119
COLIN B CLARK		2233 HIGHWOOD AVE		SAINT PAUL	MN	55119
ROBERTA J HOVE		2233 MARILLAC LN		SAINT PAUL	MN	55119
MICHAEL AUSTIN		2233 SNOWSHOE LN		SAINT PAUL	MN	55119
FREDERICK K GRITTNER		2233 VALLEY VIEW PL		SAINT PAUL	MN	55119
ALONZO G BLIVEN		2234 DOUGLYNN LN		SAINT PAUL	MN	55119
SUZANNE L JENSEN		2234 LOWER AFTON RD		SAINT PAUL	MN	55119
ANGELINE L APPELHOLM		2234 VALLEY VIEW PL		SAINT PAUL	MN	55119
ASHLEY DICKENS		2235 EMERALD LN		SAINT PAUL	MN	55119
DAVID A MARSH		2236 EMERALD LN		SAINT PAUL	MN	55119
BARRET J WITZEL		2236 MATTERHORN LN		SAINT PAUL	MN	55119
Luke Spalj	Rice Lake Construction Group	22360 County Road 12	PO Box 517	Deerwood	MN	56444
STEPHEN B ROTH		2237 VIVIAN LN		SAINT PAUL	MN	55119
MATTHEW SWEENEY		2238 DAHL AVE		SAINT PAUL	MN	55119
DONALD A BATEMAN		2239 MATTERHORN LN		SAINT PAUL	MN	55119
WILLIAM J SCHAAF		2239 WILLIAM TELL RD		SAINT PAUL	MN	55119
THE BLADE GROUP LLC		224 BATES AVE		SAINT PAUL	MN	55106
ARTHUR E THOM INC		224 CLERMONT ST		SAINT PAUL	MN	55106
ROBIN RENO		2240 BOXWOOD AVE		SAINT PAUL	MN	55119
DAVID M NORD		2240 CARVER AVE		SAINT PAUL	MN	55119
JOSHUA JONES		2240 LEONARD CT		SAINT PAUL	MN	55119
RANDOLPH N MOBERG		2240 SNOWSHOE LN		SAINT PAUL	MN	55119
JOHN P BUCHMEIER		2240 VIVIAN LN		SAINT PAUL	MN	55119
MARIE F ZOBEL		2241 SNOWSHOE LN		SAINT PAUL	MN	55119
MAI Y THAO		2242 MATTERHORN LN		SAINT PAUL	MN	55119
RAYMOND L ANDERSON		2242 SPRINGSIDE DR		SAINT PAUL	MN	55119
RONALD C ROACH		2242 WILLIAM TELL RD		SAINT PAUL	MN	55119
NIKKI FOSSEY		2243 EMERALD LN		SAINT PAUL	MN	55119
CHAD M KING		2243 LEONARD CT		SAINT PAUL	MN	55119
JAMAL WALID ISAID		2243 LONDIN LN		SAINT PAUL	MN	55119
RICK D ALBRECHT		2244 EMERALD LN		SAINT PAUL	MN	55119
SCOTT BRAHY		2244 OGDEN CT		SAINT PAUL	MN	55119
KIRK E JUFFER		2245 BOXWOOD AVE		SAINT PAUL	MN	55119
KRISTLE EZIRIKE		2245 CARVER AVE		SAINT PAUL	MN	55119
TOU T XIONG		2245 MATTERHORN LN		SAINT PAUL	MN	55119
ASHLEIGH D WALL		2245 VIVIAN LN		SAINT PAUL	MN	55119
JOSHUA D WINGER		2245 WILLIAM TELL RD		SAINT PAUL	MN	55119
STEPHEN J SCHELLENBERG		2246 LEONARD CT		SAINT PAUL	MN	55119
GERARDO MERINO		2246 VIVIAN LN		SAINT PAUL	MN	55119
KATHERINE R HELGESON		2247 OGDEN CT		SAINT PAUL	MN	55119
RYAN E ANDERSON		2248 DAHL AVE		SAINT PAUL	MN	55119
JOSHUA J EVANS		2248 MATTERHORN LN		SAINT PAUL	MN	55119
JOSEPH J RAUSCH		2248 WILLIAM TELL RD		SAINT PAUL	MN	55119
ROBERT SCHLECHT		2249 CARVER AVE		SAINT PAUL	MN	55119
LINDA K ANDERSON		2249 LEONARD CT		SAINT PAUL	MN	55119
JENNIFER ROHDE		225 EARL ST		SAINT PAUL	MN	55106
CERENITY MARIAN OF ST PAUL LLC		225 FRANK ST		SAINT PAUL	MN	55106
WAYNE T RIES		225 WHITE BEAR AVE N		SAINT PAUL	MN	55106
JOHN G HAWTHORNE		2250 SNOWSHOE LN		SAINT PAUL	MN	55119
NETSAYI U WEAH		2251 CARVER AVE		SAINT PAUL	MN	55119
DANIEL O JOHANSEN		2251 EMERALD LN		SAINT PAUL	MN	55119
GAONOU THAO		2251 MATTERHORN LN		SAINT PAUL	MN	55119
PANG XIONG		2251 VALLEY VIEW PL		SAINT PAUL	MN	55119
FRANCIS J MEYER		2252 CARVER AVE		SAINT PAUL	MN	55119
TAMARA BAYNE		2252 EMERALD LN		SAINT PAUL	MN	55119
ROBERT R JUAIRE		2252 LEONARD CT		SAINT PAUL	MN	55119
CHRISTOPHER HEILMAN		2252 VALLEY VIEW PL		SAINT PAUL	MN	55119
DAVID L MIKEL		2253 BOXWOOD AVE		SAINT PAUL	MN	55119
DALEY PROPERTIES MINNESOTA LLC		2253 SNOWSHOE LN		SAINT PAUL	MN	55119
JOAN K ERNSTER		2253 VIVIAN LN		SAINT PAUL	MN	55119
SHENGHAI LY		2254 MATTERHORN LN		SAINT PAUL	MN	55119
CHRISTOPHER J RUEB		2254 VIVIAN LN		SAINT PAUL	MN	55119
MEGAN M SAIN		2254 WILLIAM TELL RD		SAINT PAUL	MN	55119
ARTHUR L SAWYER		2255 LEONARD CT		SAINT PAUL	MN	55119
MERCED RAMIREZ ROJAS		2255 MARILLAC LN		SAINT PAUL	MN	55119
SHEILA F FALLS		2255 WILLIAM TELL RD		SAINT PAUL	MN	55119
STEPHEN ROBIDEAU		226 BATES AVE		SAINT PAUL	MN	55106
MARK CEMENSKY		226 FRANK ST		SAINT PAUL	MN	55106
PANGHOUA MOUA		226 MAPLE ST		SAINT PAUL	MN	55106
BYRON M MEYER TRUSTEE		2260 MORELAND CT E		MAPLEWOOD	MN	55119
CHRISTOPHER D WILLIAMS		2260 TIMBER TRL E		MAPLEWOOD	MN	55119
JUSTIN R JEPPESON		2261 BOXWOOD AVE E		MAPLEWOOD	MN	55119
KEE MOUA		2261 MORELAND CT E		MAPLEWOOD	MN	55119
DAO YANG		2261 TIMBER TRL E		MAPLEWOOD	MN	55119

Full Name	Organization - Primary	Mailing Street	Mailing Street 2	Mailing City	Mailing State	Mailing Zip
ANTHONY R VANDERHEYDEN		2261 VALLEY VIEW AVE E		MAPLEWOOD	MN	55119
JOSEPH P VOLK		2262 DAHL AVE E		MAPLEWOOD	MN	55119
MAUREEN M WEISMAN		2262 LINWOOD AVE E		MAPLEWOOD	MN	55119
POLLY M SMITH		2262 SNOWSHOE LN E		MAPLEWOOD	MN	55119
DON A BENNER		2262 VALLEY VIEW AVE E		MAPLEWOOD	MN	55119
ARTURO H LEYVA		2263 DAHL AVE E		MAPLEWOOD	MN	55119
SCHUYLER GILLESPIE		2263 SNOWSHOE LN E		MAPLEWOOD	MN	55119
TSUE YANG		2264 PHYLIS CT E		MAPLEWOOD	MN	55119
DARLENE FULLERTON		2265 PHYLIS CT E		MAPLEWOOD	MN	55119
EDWARD D NELSON		2267 BOXWOOD AVE E		MAPLEWOOD	MN	55119
MARK P JUAIRE		2268 CARVER AVE E		MAPLEWOOD	MN	55119
HUNG N NGUYEN		2268 MORELAND CT E		MAPLEWOOD	MN	55119
CHARLES A WILLIAMS		2268 TEAKWOOD CT E		MAPLEWOOD	MN	55119
JAMES J VARRO TRUSTEE		2268 TIMBER TRL E		MAPLEWOOD	MN	55119
STEVEN M WEBER		2269 MORELAND CT E		MAPLEWOOD	MN	55119
MICHAEL K STRINGER		2269 TEAKWOOD CT E		MAPLEWOOD	MN	55119
THOMAS J GANZER		2269 TIMBER TRL E		MAPLEWOOD	MN	55119
MICHAEL E GRIFFIN		2270 DAHL AVE E		MAPLEWOOD	MN	55119
ROBERTO VALDOVINOS		2270 HIGHWOOD AVE E		MAPLEWOOD	MN	55119
TODD & HARMENING		2270 SNOWSHOE LN E		MAPLEWOOD	MN	55119
ARTHUR L FRY TRUSTEE		2270 VALLEY VIEW AVE E		MAPLEWOOD	MN	55119
JAMES H LEACH		2271 DAHL AVE E		MAPLEWOOD	MN	55119
MICHAEL A PETERSON		2271 HILLWOOD DR E		MAPLEWOOD	MN	55119
BRIAN P KIESER		2271 LONDIN LN E		MAPLEWOOD	MN	55119
TRAVALE HAYNES		2271 SNOWSHOE LN E		MAPLEWOOD	MN	55119
LISA S SMITH		2271 VALLEY VIEW AVE E		MAPLEWOOD	MN	55119
MICHAEL W MAURINA		2272 CARVER AVE E		MAPLEWOOD	MN	55119
ROGER ALBERT RICKER		2272 PHYLIS CT E		MAPLEWOOD	MN	55119
NANCY GODBOUT ANDERSON		2273 PHYLIS CT E		MAPLEWOOD	MN	55119
TROY A KOFORD		2275 HIGHWOOD AVE E		MAPLEWOOD	MN	55119
GERHARD E GERTH		2276 LONDIN LN E		MAPLEWOOD	MN	55119
LEIF C MADSON		2278 LINWOOD AVE E		MAPLEWOOD	MN	55119
FRANCIS D FRATTO		2278 TEAKWOOD CT E		MAPLEWOOD	MN	55119
PAHOUA LEE		2279 DAHL AVE E		MAPLEWOOD	MN	55119
IWONA B STYNWAK POJASEK		2279 TEAKWOOD CT E		MAPLEWOOD	MN	55119
JENNIFER TRONGARD		228 MARIA AVE		SAINT PAUL	MN	55106
ST PAUL PUBLIC HOUSING AGENCY		228 SIGURD ST		SAINT PAUL	MN	55106
DAVID H NELMARK		2280 HILLWOOD DR E		MAPLEWOOD	MN	55119
LINNEA SOLEM		2281 HILLWOOD DR E		MAPLEWOOD	MN	55119
DONALD M FOLLMER		2287 DAHL AVE E		MAPLEWOOD	MN	55119
KAZONG XIONG		229 BATES AVE		SAINT PAUL	MN	55106
DAVID G STUART TRUSTEE		229 EARL ST		SAINT PAUL	MN	55106
MARK MCGINN		229 KENNARD ST		SAINT PAUL	MN	55106
TERRI A OLSON		2290 HILLWOOD DR E		MAPLEWOOD	MN	55119
DANIEL GROHS CONTRACTING INC		230 BATES AVE		SAINT PAUL	MN	55106
SUSAN B HUGHES		230 MAPLE ST		SAINT PAUL	MN	55106
DAVID BLACKMAN		230 MARIA AVE		SAINT PAUL	MN	55106
BRANIGAN R WEBER		230 STANLEY AVE		SOUTH ST PAUL	MN	55075
V GEORGE OXFORD TRUSTEE		2305 LINWOOD AVE E		MAPLEWOOD	MN	55119
SADANAND V PATHRE TRUSTEE		2307 TIMBER TRL E		MAPLEWOOD	MN	55119
BRUCE JOHNSON		231 BATES AVE		SAINT PAUL	MN	55106
CAROL L JASIN		231 CLERMONT ST		SAINT PAUL	MN	55106
MARCUS M MUGGLI		231 EARL ST		SAINT PAUL	MN	55106
TANYA CASAVANT		231 SIGURD ST		SAINT PAUL	MN	55106
TOU KUEKIE VANG		231 WHITE BEAR AVE N		SAINT PAUL	MN	55106
ROBERT D WAID		2315 TIMBER TRL E		MAPLEWOOD	MN	55119
JOLENE S WANDERSEE		232 MARIA AVE		SAINT PAUL	MN	55106
KENNETH F PARISEAU		2321 TIMBER TRL E		MAPLEWOOD	MN	55119
Margaret Levin	Sierra Club	2327 East Franklin Avenue	Suite 1	Minneapolis	MN	55406
AEL PROPERTIES LLC		233 BATES AVE		SAINT PAUL	MN	55106
JEFFREY C LEMKE		234 CLERMONT ST		SAINT PAUL	MN	55106
NICOLE M SAATHOFF		234 KENNARD ST		SAINT PAUL	MN	55106
DONALD E PAULLEY TRUST		234 SIGURD ST		SAINT PAUL	MN	55106
DEBORAH A RUBERTO		235 BATES AVE		SAINT PAUL	MN	55106
SALLY A ANDERSON		235 KENNARD ST		SAINT PAUL	MN	55106
KYRA L LAMMERS		235 MARIA AVE		SAINT PAUL	MN	55106
Alexis Walstad	Karen Organization of Minnesota	2353 Rice Street	#240	Roseville	MN	55113
SHON PARKER		236 KENNARD ST		SAINT PAUL	MN	55106
CHASENG XIONG		236 MARIA AVE		SAINT PAUL	MN	55106
EMMETT J OWENS		237 BATES AVE		SAINT PAUL	MN	55106
CAROLE A HARRIS		237 MARIA AVE		SAINT PAUL	MN	55106
KARA ERICKSON		237 SIGURD ST		SAINT PAUL	MN	55106
SKIPPER LLC		237 WHITE BEAR AVE N		SAINT PAUL	MN	55106
RONALD WENTZ		238 MARIA AVE		SAINT PAUL	MN	55106
Rick Remackel	Hawkins Inc.	2381 Rosegate		Roseville	MN	55113
EMMETT OWENS		239 BATES AVE		SAINT PAUL	MN	55106
INLAND AMER ST PAUL ATLAS LLC		240 CHESTER ST		SAINT PAUL	MN	55107
DAVID A ROWLAND		240 KENNARD ST		SAINT PAUL	MN	55106
TAMARA L BAUER		240 SIGURD ST		SAINT PAUL	MN	55106
METROPOLITAN WASTE CONTROL		2400 CHILDS RD		SAINT PAUL	MN	55106
AHMAD H KHATIB		241 EARL ST		SAINT PAUL	MN	55106
THOMAS S KRAUS		241 ENGLISH ST		SAINT PAUL	MN	55106
HANS M MEIZINGER		241 WHITE BEAR AVE N		SAINT PAUL	MN	55106
BB HOUSING ASSOCIATES LLC		242 MARIA AVE		SAINT PAUL	MN	55106
DAVID MICHAEL MAY		243 MARIA AVE		SAINT PAUL	MN	55106
LIEU THI TRAN		244 JOHNSON PKWY		SAINT PAUL	MN	55106
TIMOTHY R CLAUDE		244 PT DOUGLAS RD N		SAINT PAUL	MN	55106
RAE RODRIGUEZ		245 EARL ST		SAINT PAUL	MN	55106
ERIC P ZIDLICKY		245 MARIA AVE		SAINT PAUL	MN	55106
JASON XIONG		246 KENNARD ST		SAINT PAUL	MN	55106
JASON A LAMPPA		247 ENGLISH ST		SAINT PAUL	MN	55106
STEPHEN F MARINCEL		247 KENNARD ST		SAINT PAUL	MN	55106
CHENG VANG		247 MARIA AVE		SAINT PAUL	MN	55106
ANDREW L HECKER		247 POINT DOUGLAS RD N		SAINT PAUL	MN	55106
XEE YANG		247 WHITE BEAR AVE N		SAINT PAUL	MN	55106
SUSAN M RICHTER		248 JOHNSON PKWY		SAINT PAUL	MN	55106
CHONG XUE XIONG		248 MARIA AVE		SAINT PAUL	MN	55106
DESTA FOGHE		249 BATES AVE		SAINT PAUL	MN	55106
GERALD J MALEAN		249 EARL ST		SAINT PAUL	MN	55106
NAWVAUGN THAO		249 WHITE BEAR AVE N		SAINT PAUL	MN	55106
DUNCAN J RYAN		25 B ST		SAINT PAUL	MN	55106
LAIRD R ANDERSON		25 BATTLE CREEK RD		SAINT PAUL	MN	55119
JEFFREY P HOVE		25 FLANDRAU PL		SAINT PAUL	MN	55106
Kathy Lantry	City of Saint Paul	25 West 4th Street	1500 City Hall Annex	St. Paul	MN	55102
Paul Kurtz	City of Saint Paul – Public Works	25 West 4th Street	1500 City Hall Annex	St. Paul	MN	55102
JWT PILLSBURY LLC		250 BIRMINGHAM ST		SAINT PAUL	MN	55106
Katrina Kessler	City of Minneapolis	250 S. 4th St.	Room 300	Minneapolis	MN	55415
Robin Hutcheson	City of Minneapolis – Public Works	250 S. 4th St.	Room 300	Minneapolis	MN	55415
JAMES L RASMUSSEN		251 BATES AVE		SAINT PAUL	MN	55106
CULLEN HOMES INC		251 MARIA AVE		SAINT PAUL	MN	55106
KOU YANG		251 POINT DOUGLAS RD N		SAINT PAUL	MN	55106
SINA A BLACK		252 JOHNSON PKWY		SAINT PAUL	MN	55106
LAURA L SCHULZ		252 MARIA AVE		SAINT PAUL	MN	55106
BETH A PRIESTLEY		253 ENGLISH ST		SAINT PAUL	MN	55106
RONALD F DAVIDSON		253 POINT DOUGLAS RD N		SAINT PAUL	MN	55106
THOMAS GEORGE GILBERTSON		254 MARIA AVE		SAINT PAUL	MN	55106
NAI LYI WANG NAI		254 POINT DOUGLAS RD N		SAINT PAUL	MN	55106
XIA THAO		255 BATES AVE		SAINT PAUL	MN	55106
KRISTINA C HERNANDEZ		255 EARL ST		SAINT PAUL	MN	55106
NOSIE PROPERTIES LLC		255 MARIA AVE		SAINT PAUL	MN	55106
DARWIN A TORRES		255 POINT DOUGLAS RD N		SAINT PAUL	MN	55106
PATRICK C SIMPSON		255 WENTWORTH AVE		SOUTH ST PAUL	MN	55075
RICHARD ADERINKOMI		255 WHITE BEAR AVE N		SAINT PAUL	MN	55106
ALEISHA J NORDIN		256 JOHNSON PKWY		SAINT PAUL	MN	55106
REBECCA S LINKERT YURKOVICH		256 POINT DOUGLAS RD N		SAINT PAUL	MN	55106
GREG T WURTH		257 BATES AVE		SAINT PAUL	MN	55106
KATHERINE E PEARCE		257 JOHNSON PKWY		SAINT PAUL	MN	55106
KAW DOE SO		257 POINT DOUGLAS RD N		SAINT PAUL	MN	55106
ANDREW E LANGE		258 MARIA AVE		SAINT PAUL	MN	55106
STEVEN C ZUTZ		258 POINT DOUGLAS RD N		SAINT PAUL	MN	55106
MITZI M WHITE		259 ENGLISH ST		SAINT PAUL	MN	55106
LYNNEA RICE		259 MARIA AVE		SAINT PAUL	MN	55106
JENNA IVERSON		259 POINT DOUGLAS RD N		SAINT PAUL	MN	55106
Sheldon Johnson	Minnesota House of Representatives	259 State Office Building	100 Rev. Dr. Martin Luther Ling Jr. Blvd.	Saint Paul	MN	55155
THYRONE E HOPPE		26 BATTLE CREEK PL		SAINT PAUL	MN	55119

Full Name	Organization - Primary	Mailing Street	Mailing Street 2	Mailing City	Mailing State	Mailing Zip
GEORGINA M RICCI		26 FLANDRAU PL		SAINT PAUL	MN	55106
INLAND AMER ST PAUL ATLAS LLC		260 CHESTER ST		SAINT PAUL	MN	55107
JAMES R JOHNSEN		260 CLARENCE ST		SAINT PAUL	MN	55106
JOHN W SIPF		260 ENGLISH ST		SAINT PAUL	MN	55106
KENDRICK PHAN		260 KENNARD ST		SAINT PAUL	MN	55106
ST PAUL PUBLIC HOUSING AGENCY		260 POINT DOUGLAS RD N		SAINT PAUL	MN	55106
INDEPENDENT SCHOOL DIST 625		261 CHESTER ST		SAINT PAUL	MN	55107
DEAN J ANDERSON		262 POINT DOUGLAS RD N		SAINT PAUL	MN	55106
DOUGLAS O ENGEBRETSON		263 ETNA ST		SAINT PAUL	MN	55106
ANDREW D PAWLITSCHEK		263 JOHNSON PKWY		SAINT PAUL	MN	55106
FAIR HOUSING LLC		263 MARIA AVE		SAINT PAUL	MN	55106
MARY KAY BROWN		263 POINT DOUGLAS RD N		SAINT PAUL	MN	55106
JIM JOHNSEN		264 CLARENCE ST		SAINT PAUL	MN	55106
DEL CO LIMITED PARTNERSHIP		264 EARL ST		SAINT PAUL	MN	55106
RBP REALTY LLC		264 LAFAYETTE FRONTAGE RD E		SAINT PAUL	MN	55107
WIN MOE		264 POINT DOUGLAS RD N		SAINT PAUL	MN	55106
GREGG A VOGLER		265 BURLINGTON RD		SAINT PAUL	MN	55119
LAI LLC		265 EARL ST		SAINT PAUL	MN	55106
DEXTER L WINGFIELD		265 ENGLISH ST		SAINT PAUL	MN	55106
OLE T HARVANG		266 CLARENCE ST		SAINT PAUL	MN	55106
OMMAN HILLESON		266 ENGLISH ST		SAINT PAUL	MN	55106
266 MARIA AVE LLC		266 MARIA AVE		SAINT PAUL	MN	55106
MAI CHUE LEE		267 BATES AVE		SAINT PAUL	MN	55106
DONALD E MEYERS		267 HAZELWOOD ST		SAINT PAUL	MN	55106
JOANNE MOYER RUST		267 MARIA AVE		SAINT PAUL	MN	55106
RUSSELL J MILLER		267 WHITE BEAR AVE N		SAINT PAUL	MN	55106
KIMQUYEN T PHAM		268 KENNARD ST		SAINT PAUL	MN	55106
YE MYINT		27 FLANDRAU PL		SAINT PAUL	MN	55106
KATHERINE ANN RISTOW VERHASSELT		27 WHITE BEAR AVE S		SAINT PAUL	MN	55106
CRAIG B JOHNSON		270 EARL ST		SAINT PAUL	MN	55106
DELLA J NOLL		270 FRANK ST		SAINT PAUL	MN	55106
EVELYN M LECHER		270 HAZELWOOD ST		SAINT PAUL	MN	55106
GLORIA GOMEZ		270 MARIA AVE		SAINT PAUL	MN	55106
Jonathan Palmer	Hallie Q. Brown	270 N Kent St.		St. Paul	MN	55102
GRANT C ERICKSON		271 CLARENCE ST		SAINT PAUL	MN	55106
GLENN J BLOOMQUIST		271 ENGLISH ST		SAINT PAUL	MN	55106
TIMMY VAN NGUYEN		271 ETNA ST		SAINT PAUL	MN	55106
MSR I ASSETS COMPANY LLC		271 HAZELWOOD ST		SAINT PAUL	MN	55106
JOSHUA VEIT		271 MARIA AVE		SAINT PAUL	MN	55106
MICHAEL E JENSEN		272 CLARENCE ST		SAINT PAUL	MN	55106
JANET A KESSLER		272 JOHNSON PKWY		SAINT PAUL	MN	55106
PLEASANTVILLE LLC		273 BIRMINGHAM ST		SAINT PAUL	MN	55106
CITY OF ST PAUL		273 WHITE BEAR AVE N		SAINT PAUL	MN	55106
ANTHONY G LEWIS		274 KENNARD ST		SAINT PAUL	MN	55106
EDEN BUILDERS INC		275 BATES AVE		SAINT PAUL	MN	55106
FLORENCE ONDUKO		275 BURLINGTON RD		SAINT PAUL	MN	55119
BROOKE CLEVENGER		275 CLARENCE ST		SAINT PAUL	MN	55106
CHARLES CROTTY AND SONS INC		275 COMMERCIAL ST		SAINT PAUL	MN	55106
RANDY LIBERSKY		275 MARIA AVE		SAINT PAUL	MN	55106
NARAYAN INVESTMENTS		275 MCKNIGHT RD S		SAINT PAUL	MN	55119
MARK WILLIAMS		275 MORNINGSIDE CIR		SAINT PAUL	MN	55119
PATRICK C SIMPSON		275 WENTWORTH AVE		SOUTH ST PAUL	MN	55075
LASKY HOLDINGS WHITE BEAR LLC		275 WHITE BEAR AVE N		SAINT PAUL	MN	55106
NAGESH P SHINDE		275 WINTHROP ST S		SAINT PAUL	MN	55119
RBP REALTY LLC		276 CHESTER ST		SAINT PAUL	MN	55107
VA REAL ESTATE LLC		276 MARIA AVE		SAINT PAUL	MN	55106
KATHLEEN A WALICKE		276 MORNINGSIDE CIR		SAINT PAUL	MN	55119
RICHARD O EKOBENA		276 WINTHROP ST S		SAINT PAUL	MN	55119
JENNIE M KIEBLER		277 ENGLISH ST		SAINT PAUL	MN	55106
DANIEL D SORENSEN		277 JOHNSON PKWY		SAINT PAUL	MN	55106
ALICE M BURDICK		277 MARIA AVE		SAINT PAUL	MN	55106
RUSSELL MALON TRUSTEE		277 MORNINGSIDE CIR		SAINT PAUL	MN	55119
EMILY WHARTON		278 CLARENCE ST		SAINT PAUL	MN	55106
ROBERT P RUBIANES		278 JOHNSON PKWY		SAINT PAUL	MN	55106
SUSAN MARIE SUTHERLAND		278 MORNINGSIDE CIR		SAINT PAUL	MN	55119
FAUSTINO ECHEVERRIA		278 POINT DOUGLAS RD N		SAINT PAUL	MN	55106
DIANE M LABORE		279 BURLINGTON RD		SAINT PAUL	MN	55119
LAWRENCE T MIKESH		279 CLARENCE ST		SAINT PAUL	MN	55106
MARGARET YATSEVITCH		279 ETNA ST		SAINT PAUL	MN	55106
ROGER D RASMUSSEN		280 KENNARD ST		SAINT PAUL	MN	55106
LYNDALE TERMINAL CO		280 MCKNIGHT RD S		MAPLEWOOD	MN	55119
Brendan Jordan	Great Plains Institute	2801 21st Ave S	Suite 220	Minneapolis	MN	55407
KATHRYN A THOMPSON		281 BURLINGTON RD		SAINT PAUL	MN	55119
YERFINA CORTES		281 HAZELWOOD ST		SAINT PAUL	MN	55106
JESSICA E JOHNSON		282 CLARENCE ST		SAINT PAUL	MN	55106
MATTHEW G LANGOWSKI		282 HAZELWOOD ST		SAINT PAUL	MN	55106
JACOB D BEAUREGARD		283 CLARENCE ST		SAINT PAUL	MN	55106
MAO THAO		283 ETNA ST		SAINT PAUL	MN	55106
LORENA L OLIVARES		284 JOHNSON PKWY		SAINT PAUL	MN	55106
SANDRA J ANDERSON		284 MORNINGSIDE CIR		SAINT PAUL	MN	55119
DEMI MANCINI		285 HAZELWOOD ST		SAINT PAUL	MN	55106
HNOM XIONG		285 MORNINGSIDE CIR		SAINT PAUL	MN	55119
AGUSTIN M OCHOA RODRIGUEZ		285 POINT DOUGLAS RD N		SAINT PAUL	MN	55106
JAMES D NYGREN		285 WINTHROP ST S		SAINT PAUL	MN	55119
AMANDA MACKIEWICZ		286 CLARENCE ST		SAINT PAUL	MN	55106
REM RAMSEY INC		286 CONGRESS ST E		SAINT PAUL	MN	55107
GEORGINA L JACOBO		286 KENNARD ST		SAINT PAUL	MN	55106
MARY C DURAND		286 MORNINGSIDE CIR		SAINT PAUL	MN	55119
OMOBOLAJI N SHADRACK		286 WINTHROP ST S		SAINT PAUL	MN	55119
TYLER T KATZMAN		287 CLARENCE ST		SAINT PAUL	MN	55106
WIN PROCESSING LLC		289 ETNA ST		SAINT PAUL	MN	55106
AMERICAN INVESTMENTS LLC		289 HAZELWOOD ST		SAINT PAUL	MN	55106
TOU YER LEE		29 BATTLE CREEK PL		SAINT PAUL	MN	55119
CAROL D SYKES		29 DARLENE ST		SAINT PAUL	MN	55119
DORIS M SCHRENKLER		290 BURLINGTON RD		SAINT PAUL	MN	55119
JACOB M DORER		290 EARL ST		SAINT PAUL	MN	55106
DALA CHANG		290 HAZELWOOD ST		SAINT PAUL	MN	55106
MISTY LYNN BURNETTE		290 JOHNSON PKWY		SAINT PAUL	MN	55106
GER KONG		291 EARL ST		SAINT PAUL	MN	55106
GREGORY JOHN PINSKI		291 MORNINGSIDE CIR		SAINT PAUL	MN	55119
MNSF ACQUISITIONS LLC		292 CLARENCE ST		SAINT PAUL	MN	55106
IRMA GARCIA		292 MORNINGSIDE CIR		SAINT PAUL	MN	55119
THOMAS G CRAN		293 BURLINGTON RD		SAINT PAUL	MN	55119
BRET J BRETAG		293 CLARENCE ST		SAINT PAUL	MN	55106
KBD INVESTMENTS LLC		293 ETNA ST		SAINT PAUL	MN	55106
ROBERT I RYTI		293 HAZELWOOD ST		SAINT PAUL	MN	55106
JOHN P RODRIGUEZ		293 WINIFRED ST E		SAINT PAUL	MN	55107
JANIE D PETERSON		294 CLARENCE ST		SAINT PAUL	MN	55106
DIONNE SIMMONS		294 HAZELWOOD ST		SAINT PAUL	MN	55106
BARBARA A MILLER		294 MORNINGSIDE CIR		SAINT PAUL	MN	55119
DANIEL R GESCHKE		295 EARL ST		SAINT PAUL	MN	55106
RRE VENTURES LLC		295 WINIFRED ST E		SAINT PAUL	MN	55107
VIRGIL N HEROUX		295 WINTHROP ST S		SAINT PAUL	MN	55119
RBP REALTY LLC		296 CHESTER ST		SAINT PAUL	MN	55107
TYLER JOSEPH GLASCO		296 WINTHROP ST S		SAINT PAUL	MN	55119
PA MOUA		297 CLARENCE ST		SAINT PAUL	MN	55106
JENNIFER OGAARD		297 HAZELWOOD ST		SAINT PAUL	MN	55106
CAROLE ANN MCDANIEL		298 HAZELWOOD ST		SAINT PAUL	MN	55106
FLORENTINO VASQUEZ		298 WINIFRED ST E		SAINT PAUL	MN	55107
MATTHEW J BARRETT		299 BURLINGTON RD		SAINT PAUL	MN	55119
MAI XIA XIONG		299 MORNINGSIDE CIR		SAINT PAUL	MN	55119
BRIDGET MOE		3 BATTLE CREEK RD		SAINT PAUL	MN	55119
JUDITH M TILSEN		3 KENNARD CT		SAINT PAUL	MN	55106
JOHN SLADE		3 LINDER CT		SAINT PAUL	MN	55106
KEVIN S SCHLOSSER		30 B ST		SAINT PAUL	MN	55106
HUGH E HAWKINS		30 BATTLE CREEK PL		SAINT PAUL	MN	55119
RICHARD G JOHNSON		30 DARLENE ST		SAINT PAUL	MN	55119
JOHN CHARLES COOLIDGE		30 WHITE BEAR AVE N		SAINT PAUL	MN	55106
HEATHER MATSON		30 WHITE BEAR AVE S		SAINT PAUL	MN	55106
SIGRID A JOHNSON		300 BURLINGTON RD		SAINT PAUL	MN	55119
ZACHARY STEVENS		300 CLARENCE ST		SAINT PAUL	MN	55106
LESTER L MOE		302 MORNINGSIDE CIR		SAINT PAUL	MN	55119
SILAS J DOTEN		303 CLARENCE ST		SAINT PAUL	MN	55106
WAMIE R POJASEK		303 HAZELWOOD ST		SAINT PAUL	MN	55106

Full Name	Organization - Primary	Mailing Street	Mailing Street 2	Mailing City	Mailing State	Mailing Zip
MICHAEL R OLSEN		303 JOHNSON PKWY		SAINT PAUL	MN	55106
DENISE BAILEY		304 CLARENCE ST		SAINT PAUL	MN	55106
DANIEL J MADIGAN		304 HAZELWOOD ST		SAINT PAUL	MN	55106
MHIRET G KETEM		304 MORNINGSIDE CIR		SAINT PAUL	MN	55119
WASIA LEE		305 BARCLAY ST		SAINT PAUL	MN	55106
REYES ARMANDO TABORA		305 ETNA ST		SAINT PAUL	MN	55106
PRIYANGANI GOONATHILAKA & SYDESH		305 STANLEY AVE		SOUTH ST PAUL	MN	55075
CHRISTOPHER E ROCCO		305 WINIFRED ST E		SAINT PAUL	MN	55107
MARCUS KELLY		305 WINTHROP ST S		SAINT PAUL	MN	55119
RICHARD M & LINDA LORENZ		306 BIRCHER AVE		SOUTH ST PAUL	MN	55075
JAMES B WALLACE		306 FOREST ST		SAINT PAUL	MN	55106
JASON VASQUEZ		306 WINIFRED ST E		SAINT PAUL	MN	55107
KWOK YU NG		306 WINTHROP ST S		SAINT PAUL	MN	55119
PAMELA J LACHOWITZER		307 HAZELWOOD ST		SAINT PAUL	MN	55106
KENNETH Y GOYA		307 MORNINGSIDE CIR		SAINT PAUL	MN	55119
ROSALVA LUCIO		307 ROBIE ST E		SAINT PAUL	MN	55107
ELIZABETH WATKINS		307 WINIFRED ST E		SAINT PAUL	MN	55107
ARLENE GORZ		308 FOREST ST		SAINT PAUL	MN	55106
TAMMY BUTLER		308 HAZELWOOD ST		SAINT PAUL	MN	55106
LING JIANG		308 MORNINGSIDE CIR		SAINT PAUL	MN	55119
BRENT T LEOPOLD		309 ETNA ST		SAINT PAUL	MN	55106
JENNIFER DEERING		309 WINIFRED ST E		SAINT PAUL	MN	55107
DEL ARTHUR KAUSS		31 BATTLE CREEK RD		SAINT PAUL	MN	55119
DEBRA A WESLEY		310 MORNINGSIDE CIR		SAINT PAUL	MN	55119
CHAD PARTNERS LLP		310 WHITE BEAR AVE N		SAINT PAUL	MN	55106
HOPE M VARELA		310 WINIFRED ST E		SAINT PAUL	MN	55107
FATUMA B HASSAN		311 BARCLAY ST		SAINT PAUL	MN	55106
PATRICK E BONES		311 BURLINGTON RD		SAINT PAUL	MN	55119
STEPHEN MOY		311 CLARENCE ST		SAINT PAUL	MN	55106
SCOTT A DIEKMANN		311 HAZELWOOD ST		SAINT PAUL	MN	55106
TERESA CARRASCO SONTOYA		311 ROBIE ST E		SAINT PAUL	MN	55107
ROLLEN NGUYEN		311 WINIFRED ST E		SAINT PAUL	MN	55107
WALTRAUT W SHERSETH		312 CLARENCE ST		SAINT PAUL	MN	55106
LOWERY B SMITH		312 EARL ST		SAINT PAUL	MN	55106
GARY A NELSON		312 HAZELWOOD ST		SAINT PAUL	MN	55106
SILVER LINING SOLUTIONS LLP		313 WINIFRED ST E		SAINT PAUL	MN	55107
SHIRLEY & JOYCE STOERZINGER		314 BIRCHER AVE		SOUTH ST PAUL	MN	55075
RBP REALTY LLC		314 CHESTER ST		SAINT PAUL	MN	55107
ERMINIA Z CASTILLO		315 CESAR CHAVEZ ST		SAINT PAUL	MN	55107
NAOMI YANG		315 FOREST ST		SAINT PAUL	MN	55106
KEEVA N HARTLEY STOUFFER		315 HAZELWOOD ST		SAINT PAUL	MN	55106
TRUNG LE		315 MORNINGSIDE CIR		SAINT PAUL	MN	55119
RIWA OBEL NSANGALUFU		315 WINIFRED ST E		SAINT PAUL	MN	55107
ERICK E REYES		316 HAZELWOOD ST		SAINT PAUL	MN	55106
ANGEL RAMOS		317 BURLINGTON RD		SAINT PAUL	MN	55119
MARCOS RAMIREZ		317 ROBIE ST E		SAINT PAUL	MN	55107
GLORIA L GREGOR		317 WINIFRED ST E		SAINT PAUL	MN	55107
WILLIAM K GREENE		318 MORNINGSIDE CIR		SAINT PAUL	MN	55119
JOSE G ALVARADO		318 ROBIE ST E		SAINT PAUL	MN	55107
ROBERT D SNYDER		319 CESAR CHAVEZ ST		SAINT PAUL	MN	55107
ELIZABETH A MYERS		319 CLARENCE ST		SAINT PAUL	MN	55106
LEFT BANK PROPERTY LLC		319 EARL ST		SAINT PAUL	MN	55106
SAROEUM PATH		319 ETNA ST		SAINT PAUL	MN	55106
LIA VUE YANG		319 FOREST ST		SAINT PAUL	MN	55106
ALAINA E ANDERSON		319 HAZELWOOD ST		SAINT PAUL	MN	55106
KENNETH T & JILL M WICKER		319 STANLEY AVE		SOUTH ST PAUL	MN	55075
TAMARA NICOSIA		319 WINIFRED ST E		SAINT PAUL	MN	55107
MAI VANG THAO		32 FLANDRAU PL		SAINT PAUL	MN	55106
JAMES H BARNARD		32 MOUNDS BLVD		SAINT PAUL	MN	55106
LARRY J BRESINA		320 BURLINGTON RD		SAINT PAUL	MN	55119
JORGE A GARCIA		320 HAZELWOOD ST		SAINT PAUL	MN	55106
JARVIS V GUNTER		320 MORNINGSIDE CIR		SAINT PAUL	MN	55119
MARK R & CAROL A CEMENSKY		321 BIRCHER AVE		SOUTH ST PAUL	MN	55075
GERALDINE M CHINO		321 WINIFRED ST E		SAINT PAUL	MN	55107
LANCE E REISETTER		323 BARCLAY ST		SAINT PAUL	MN	55106
SANDRA L ALCOCER		323 CESAR CHAVEZ ST		SAINT PAUL	MN	55107
MARK W MULLEN		323 CLARENCE ST		SAINT PAUL	MN	55106
JASON L HOLM		323 FOREST ST		SAINT PAUL	MN	55106
ANN STRICKLER		323 HAZELWOOD ST		SAINT PAUL	MN	55106
DAVID P GOCKOWSKI		323 MORNINGSIDE CIR		SAINT PAUL	MN	55119
RANDY HOCKERT		323 WINIFRED ST E		SAINT PAUL	MN	55107
DALE SWENO		324 CLARENCE ST		SAINT PAUL	MN	55106
DIANA L SALINAS		324 HAZELWOOD ST		SAINT PAUL	MN	55106
OSMAN D JIBRELL		324 MORNINGSIDE CIR		SAINT PAUL	MN	55119
NORTH END APARTMENTS LLC		325 BIRMINGHAM ST		SAINT PAUL	MN	55106
JANICE M SULLIVAN		325 POINT DOUGLAS RD N		SAINT PAUL	MN	55106
KATELYN JOHNSON & CASEY JOHNSON		325 STANLEY AVE		SOUTH ST PAUL	MN	55075
SAING EAN CHHEM		325 WINIFRED ST E		SAINT PAUL	MN	55107
SAMUEL TEKLE AB KIDANE		326 MORNINGSIDE CIR		SAINT PAUL	MN	55119
NANCY L & DONALD J LARSON		326 OUTLOOK AVE		SOUTH ST PAUL	MN	55075
JESSE J NEUMANN		327 CLARENCE ST		SAINT PAUL	MN	55106
KEVIN R LOFTUS		327 HAZELWOOD ST		SAINT PAUL	MN	55106
KHALA KIM		327 WINIFRED ST E		SAINT PAUL	MN	55107
ARMANDO P OROZCO		328 BIRMINGHAM ST		SAINT PAUL	MN	55106
SCOTT E WESTPHAL		328 HAZELWOOD ST		SAINT PAUL	MN	55106
MATTHEW YA VANG		328 MCKNIGHT RD S		MAPLEWOOD	MN	55119
SHIMELIS DADI		329 CESAR CHAVEZ ST		SAINT PAUL	MN	55107
JOSEPH A YANG		329 POINT DOUGLAS RD N		SAINT PAUL	MN	55106
MICHAEL GREGER		329 STANLEY AVE		SOUTH ST PAUL	MN	55075
GENEVIEVE RANGEL		329 WINIFRED ST E		SAINT PAUL	MN	55107
ANNE M THAO		33 BATTLE CREEK PL		SAINT PAUL	MN	55119
RAYMOND N VOSS		33 MILLER CREST LN		SAINT PAUL	MN	55106
Deanna White	Clean Water Action	330 2nd Avenue South	#420	Minneapolis	MN	55401
ROBERT H GRIFFITHS		330 BURLINGTON RD		SAINT PAUL	MN	55119
LAURENCE G LEE		330 CLARENCE ST		SAINT PAUL	MN	55106
MANDALAY LEE		330 MORNINGSIDE CIR		SAINT PAUL	MN	55119
GILBERTO CASTOR		330 ROBIE ST E		SAINT PAUL	MN	55107
MARILYN J ROUNDY		331 BURLINGTON RD		SAINT PAUL	MN	55119
MARK L STEINGRABER		331 HAZELWOOD ST		SAINT PAUL	MN	55106
SEAN B STINE		331 MCKNIGHT RD S		SAINT PAUL	MN	55119
JOY L DECKER		331 MORNINGSIDE CIR		SAINT PAUL	MN	55119
MARIA DEL C ARELLANO GARCIA		331 WINIFRED ST E		SAINT PAUL	MN	55107
CHERYL A ROWE		332 MORNINGSIDE CIR		SAINT PAUL	MN	55119
VERNY AVILES		333 CESAR CHAVEZ ST		SAINT PAUL	MN	55107
YONG VANG		333 WINIFRED ST E		SAINT PAUL	MN	55107
RBP REALTY LLC		334 CHESTER ST		SAINT PAUL	MN	55107
MARIA D MARTINEZ		335 HAZELWOOD ST		SAINT PAUL	MN	55106
MELVIN CHRISTIANSON		335 STANLEY AVE		SOUTH ST PAUL	MN	55075
LARRY E CAIN		335 WINIFRED ST E		SAINT PAUL	MN	55107
DAVID S MELOY		336 HAZELWOOD ST		SAINT PAUL	MN	55106
SANDRA L SHANLEY		336 MORNINGSIDE CIR		SAINT PAUL	MN	55119
JOHN E VARCHMINN		337 MCKNIGHT RD S		SAINT PAUL	MN	55119
DUSTIN PAUL HAUGEN		337 WINIFRED ST E		SAINT PAUL	MN	55107
NURIA B TAURES DIAZ		338 MCKNIGHT RD S		MAPLEWOOD	MN	55119
JUDITH F DEMULLING		338 MORNINGSIDE CIR		SAINT PAUL	MN	55119
KARISHNA B LOR		338 ROBIE ST E		SAINT PAUL	MN	55107
MELINDA SMITH		339 HAZELWOOD ST		SAINT PAUL	MN	55106
FELIX LOZANO		339 WINIFRED ST E		SAINT PAUL	MN	55107
STEPHEN F CONROY		34 MOUNDS BLVD		SAINT PAUL	MN	55106
RYAN W DUFFY		340 HAZELWOOD ST		SAINT PAUL	MN	55106
CATHOLIC CHARITIES ARCHDIOCESE ST		341 CHESTER ST		SAINT PAUL	MN	55107
CHAY CHANG KIM		341 WINIFRED ST E		SAINT PAUL	MN	55107
DONALD M BRUTLAG		342 BURLINGTON RD		SAINT PAUL	MN	55119
ENDALE T BEYENE		343 BURLINGTON RD		SAINT PAUL	MN	55119
JANICE M DUNBAR		343 WINIFRED ST E		SAINT PAUL	MN	55107
528 LIMITED PARTNERSHIP		345 PLATO BLVD E		SAINT PAUL	MN	55107
JESSICA M MICHALEK		345 WINIFRED ST E		SAINT PAUL	MN	55107
ANN M KUITUNEN		346 MCKNIGHT RD S		MAPLEWOOD	MN	55119
JAMES L ANDERSON		347 CLARENCE ST		SAINT PAUL	MN	55106
MARGARET K ACKERMAN		348 BURLINGTON RD		SAINT PAUL	MN	55119
SIERRA V SCHMIDT		35 B ST		SAINT PAUL	MN	55106
MARGAYLA J SABIN		35 FLANDRAU PL		SAINT PAUL	MN	55106
TOUA YANG		35 WHITE BEAR AVE S		SAINT PAUL	MN	55106
LORI H JAMES		351 BURLINGTON RD		SAINT PAUL	MN	55119
DREW P DILLER		351 MCKNIGHT RD S		SAINT PAUL	MN	55119
OLADUNNI AFOLABI		351 WINIFRED ST E		SAINT PAUL	MN	55107
DOUGLAS A TACHENY		352 BURLINGTON RD		SAINT PAUL	MN	55119

Full Name	Organization - Primary	Mailing Street	Mailing Street 2	Mailing City	Mailing State	Mailing Zip
VCI-CRANE LLC		353 FILLMORE AVE E		SAINT PAUL	MN	55107
AMBROCIO A SANCHEZ CORTES		357 WINIFRED ST E		SAINT PAUL	MN	55107
APEX HOLDINGS LLC		358 FILLMORE AVE E		SAINT PAUL	MN	55107
CECILIA I MARTINEZ UMANZOR		358 MCKNIGHT RD S		MAPLEWOOD	MN	55119
C & E APARTMENTS LLC		358 WINIFRED ST E		SAINT PAUL	MN	55107
CHARLES M THIELE TRUSTEE		36 BATTLE CREEK PL		SAINT PAUL	MN	55119
ALLEN RICHARD OLSON		36 DARLENE ST		SAINT PAUL	MN	55119
LYNNE GOUGHLER		36 WHITE BEAR AVE S		SAINT PAUL	MN	55106
RICHARD E MULKERN		360 KENNARD ST		SAINT PAUL	MN	55106
H HENRY HACK		361 BURLINGTON RD		SAINT PAUL	MN	55119
C & E APARTMENTS LLC		362 WINIFRED ST E		SAINT PAUL	MN	55107
PETER A VERDEJA		363 WINIFRED ST E		SAINT PAUL	MN	55107
AFTON VIEW INVESTORS LP		363 WINTHROP ST S		SAINT PAUL	MN	55119
EMMISA LLC		365 EARL ST		SAINT PAUL	MN	55106
CHOU XUE THAO		365 KENNARD ST		SAINT PAUL	MN	55106
ROBERT D JONES		365 TOTEM RD		SAINT PAUL	MN	55119
TIMOTHY W OLSEN		366 JOHNSON PKWY		SAINT PAUL	MN	55106
DANIEL M YASIS		366 MCKNIGHT RD S		MAPLEWOOD	MN	55119
SASS INC		366 WINIFRED ST E		SAINT PAUL	MN	55107
DAVID A PRIESTLEY		367 LONDIN CIR		SAINT PAUL	MN	55119
BAO VANG		367 LONDIN PL		SAINT PAUL	MN	55119
R M SCHNEIDER		367 PAGE ST E		SAINT PAUL	MN	55107
DAVID P HODGSON		368 BURLINGTON RD		SAINT PAUL	MN	55119
BRANDON T BEEMAN		368 LONDIN CIR		SAINT PAUL	MN	55119
THOMAS TERRANCE LINGENFELTER		368 LONDIN PL		SAINT PAUL	MN	55119
DRM PROPERTIES LLC		369 WINIFRED ST E		SAINT PAUL	MN	55107
JACQUELINE M FLEMING		372 WINIFRED ST E		SAINT PAUL	MN	55107
KEITH J CLEARY		373 LONDIN CIR		SAINT PAUL	MN	55119
DAVID SHEPPARD		373 LONDIN PL		SAINT PAUL	MN	55119
TALLIE A FITZGERALD		374 LONDIN CIR		SAINT PAUL	MN	55119
MARK J MIELZAREK		374 LONDIN PL		SAINT PAUL	MN	55119
TED RIES		375 WINIFRED ST E		SAINT PAUL	MN	55107
BRENDA I SANCHEZ		379 WINIFRED ST E		SAINT PAUL	MN	55107
FRANK G PINCE		38 MOUNDS BLVD		SAINT PAUL	MN	55106
COTTAGE GROVE REAL ESTATE AND		38 WHITE BEAR AVE N		SAINT PAUL	MN	55106
JAMES J GALLAGHER		380 BURLINGTON RD		SAINT PAUL	MN	55119
RIVERVIEW TRIANGLE LLC		380 CHESTER ST		SAINT PAUL	MN	55107
GABRIEL D GARBOW		380 EARL ST		SAINT PAUL	MN	55106
WILLIAM KELLY		380 LONDIN CIR		SAINT PAUL	MN	55119
WILLIAM T MAYER		380 LONDIN PL		SAINT PAUL	MN	55119
TAYLOR S JAMES		380 PAGE ST E		SAINT PAUL	MN	55107
GREGORY E BYH		381 BURLINGTON RD		SAINT PAUL	MN	55119
JOSE R TAPIA DELATORRE		381 LONDIN CIR		SAINT PAUL	MN	55119
JANE E MADSEN		381 LONDIN PL		SAINT PAUL	MN	55119
GUADALUPE AREA PROJECT INC		381 ROBIE ST E		SAINT PAUL	MN	55107
PEOPLE INC		384 LONDIN PL		SAINT PAUL	MN	55119
DEL CO LIMITED PARTNERSHIP		385 EARL ST		SAINT PAUL	MN	55106
REBECCA S SWANSON		385 LONDIN CIR		SAINT PAUL	MN	55119
DANIEL D WITTHOFT		385 LONDIN PL		SAINT PAUL	MN	55119
CHARLES W BURKITT		385 PAGE ST E		SAINT PAUL	MN	55107
PAUL A MOSZER		385 TOTEM RD		SAINT PAUL	MN	55119
JOHN W LARSON		386 LONDIN CIR		SAINT PAUL	MN	55119
REDA S YACOUB		386 PAGE ST E		SAINT PAUL	MN	55107
ADAM T VANG		386 WINIFRED ST E		SAINT PAUL	MN	55107
OKBAGABIR F GILACHEAL		387 LONDIN CIR		SAINT PAUL	MN	55119
LYLE T TESCH		388 BURLINGTON RD		SAINT PAUL	MN	55119
HLEE X MOUA		388 EARL ST		SAINT PAUL	MN	55106
MARK LAWRENCE GREEN TRUSTEE		388 JOHNSON PKWY		SAINT PAUL	MN	55106
BRIAN J PETERS		388 LONDIN CIR		SAINT PAUL	MN	55119
DONALD A MCCOLLOUGH		388 LONDIN PL		SAINT PAUL	MN	55119
PAMELA J CHRISTNER		389 LONDIN PL		SAINT PAUL	MN	55119
THOMAS R THORPE		389 SIDNEY ST E		SAINT PAUL	MN	55107
JOLEEN M KUCHINSKI		39 DARLENE ST		SAINT PAUL	MN	55119
JEREMY KROMER		390 PAGE ST E		SAINT PAUL	MN	55107
Alene Tchourumoff	Metropolitan Council	390 Robert Street North		St. Paul	MN	55101
Cara Letofsky	Metropolitan Council	390 Robert Street North		St. Paul	MN	55101
Dan White		390 Robert Street North		St. Paul	MN	55101
Edward Reynoso	Metropolitan Council	390 Robert Street North		St. Paul	MN	55101
Harry Melander	Metropolitan Council	390 Robert Street North		St. Paul	MN	55101
Jeannine Clancy	Metropolitan Council Environmental Services	390 Robert Street North		St. Paul	MN	55101
Karen Neis		390 Robert Street North		St. Paul	MN	55101
Larry Rogacki	Metropolitan Council Environmental Services	390 Robert Street North		St. Paul	MN	55101
Leisa Thompson	Metropolitan Council Environmental Services	390 Robert Street North		St. Paul	MN	55101
Lona Schreiber	Metropolitan Council	390 Robert Street North		St. Paul	MN	55101
Marie McCarthy	Metropolitan Council	390 Robert Street North		St. Paul	MN	55101
Mary Gail Scott	Metropolitan Council Environmental Services	390 Robert Street North		St. Paul	MN	55101
Mike Merenes	Metropolitan Council Environmental Services	390 Robert Street North		St. Paul	MN	55101
Ned Smith	Metropolitan Council Environmental Services	390 Robert Street North		St. Paul	MN	55101
Ned Smith	Metropolitan Council Environmental Services	390 Robert Street North		St. Paul	MN	55101
Rene Heflin	Met Council	390 Robert Street North		St. Paul	MN	55101
Richard Kramer	Metropolitan Council	390 Robert Street North		St. Paul	MN	55101
Sam Paske	Metropolitan Council Environmental Services	390 Robert Street North		St. Paul	MN	55101
Sandy Rummel	Metropolitan Council	390 Robert Street North		St. Paul	MN	55101
Stephen Norton	Met Council	390 Robert Street North		St. Paul	MN	55101
Terry Gilchrist	Metropolitan Council Environmental Services	390 Robert Street North		St. Paul	MN	55101
Wendy Wuff	Metropolitan Council	390 Robert Street North		St. Paul	MN	55101
LUCAS J BRUN		393 SIDNEY ST E		SAINT PAUL	MN	55107
JOHN M KUBIAK		394 JOHNSON PKWY		SAINT PAUL	MN	55106
TAMMY J PIELE		394 SIDNEY ST E		SAINT PAUL	MN	55107
PRESTON D WRIGHT		395 MCKNIGHT RD S		SAINT PAUL	MN	55119
DERALD D SCHROEDER		396 EARL ST		SAINT PAUL	MN	55106
HAI THANH HUYNH		397 JOHNSON PKWY		SAINT PAUL	MN	55106
CHURCH OF OUR LADY GUADALUPE		397 ROBIE ST E		SAINT PAUL	MN	55107
JOEL L HANSEN		398 SIDNEY ST E		SAINT PAUL	MN	55107
COUNTY OF RAMSEY COMM CORR		398 TOTEM RD		SAINT PAUL	MN	55119
JOHN W WEBSTER		399 BURLINGTON RD		SAINT PAUL	MN	55119
KIMBERLY K MILBRATH		399 CURTICE ST E		SAINT PAUL	MN	55107
MOHAMED ELNABARAWY		4 BATTLE CREEK RD		SAINT PAUL	MN	55119
TODD DADDARIO		4 WHITE BEAR AVE N		SAINT PAUL	MN	55106
WILLIAM F KOSFELD		400 BURLINGTON RD		SAINT PAUL	MN	55119
JENNIFER MARTNER		400 JOHNSON PKWY		SAINT PAUL	MN	55106
DAWN M POOLE		400 OUTLOOK AVE		SOUTH ST PAUL	MN	55075
DANMARK PROPERTIES LLC		400 SIDNEY ST E		SAINT PAUL	MN	55107
CHURCH OF OUR LADY GUADALUPE		401 CONCORD ST		SAINT PAUL	MN	55107
GERALD M KACKMAN		401 JOHNSON PKWY		SAINT PAUL	MN	55106
MARVIN F YOUNESS		401 MARION PL		SOUTH ST PAUL	MN	55075
DUSTIN DERETHIK		402 EARL ST		SAINT PAUL	MN	55106
JESSICA M LYONS		402 SIDNEY ST E		SAINT PAUL	MN	55107
GARY L GRAF TSTE		403 BIRCHER AVE		SOUTH ST PAUL	MN	55075
MAI YIA HER		403 CURTICE ST E		SAINT PAUL	MN	55107
AMERICRAFT CARTON INC		403 FILLMORE AVE E		SAINT PAUL	MN	55107
BRETT S HESLEY		403 TOTEM RD		SAINT PAUL	MN	55119
EUGENE J BROWN		404 JOHNSON PKWY		SAINT PAUL	MN	55106
MARY K MULLER		405 BURLINGTON RD		SAINT PAUL	MN	55119
ESTER M RICHARDS		405 ROBIE ST E		SAINT PAUL	MN	55107
KRISTY L KASPER		405 STANLEY AVE		SOUTH ST PAUL	MN	55075
KEVIN STUHLMANN		405 TOTEM RD		SAINT PAUL	MN	55119
KENT RADDATZ		406 SIDNEY ST E		SAINT PAUL	MN	55107
LOUELL ENTERPRISES LLC		407 CURTICE ST E		SAINT PAUL	MN	55107
JOSEPH S & DEBRA A WISNESKI		407 MARION PL		SOUTH ST PAUL	MN	55075
JUSTIN D ULRICH		407 MCKNIGHT RD S		SAINT PAUL	MN	55119
CARL WILSON		407 TOTEM RD		SAINT PAUL	MN	55119
HERMAN R FUECHTMANN & VALERIE J		408 BIRCHER AVE		SOUTH ST PAUL	MN	55075
EDWARD W BEDDOW		408 BURLINGTON RD		SAINT PAUL	MN	55119
EDWARD SMOLIAK		408 HAZELWOOD ST		SAINT PAUL	MN	55106
AARON P TROOST		408 JOHNSON PKWY		SAINT PAUL	MN	55106
Michael Noble	Fresh Energy	408 Saint Peter Street	Suite 220	St. Paul	MN	55102
SHARI L BRYANT		408 STANLEY AVE		SOUTH ST PAUL	MN	55075
EDWARD A SONKSEN TRUSTEE		408 TOTEM RD		SAINT PAUL	MN	55119
409 BIRCHER AVENUE LLC		409 BIRCHER AVE		SOUTH ST PAUL	MN	55075
EDMUND H WEBSTER		409 BURLINGTON RD		SAINT PAUL	MN	55119
PATRICIA A HARMON		41 B ST		SAINT PAUL	MN	55106
DOLORES I WROBEL		41 FLANDRAU PL		SAINT PAUL	MN	55106
LOWELL L COULTER		41 MILLER CREST LN		SAINT PAUL	MN	55106
RAPHAEL P AUGE		410 CURTICE ST E		SAINT PAUL	MN	55107
SCOTT M FERGUSON		410 EARL ST		SAINT PAUL	MN	55106

Full Name	Organization - Primary	Mailing Street	Mailing Street 2	Mailing City	Mailing State	Mailing Zip
3M COMPANY		410 FILLMORE AVE E		SAINT PAUL	MN	55107
MAPLEWOOD GARDENS PARTNERSHIP		410 MCKNIGHT RD S		MAPLEWOOD	MN	55119
JAMES & NICOLE BOUDREAU		410 OUTLOOK AVE		SOUTH ST PAUL	MN	55075
SHARON Y JACK		410 TOTEM RD		SAINT PAUL	MN	55119
STEVEN D THOMPSON		411 CURTICE ST E		SAINT PAUL	MN	55107
AMY LYNN ROUILLARD		411 FOREST ST		SAINT PAUL	MN	55106
KENNETH W ROSS		411 JOHNSON PKWY		SAINT PAUL	MN	55106
KINCLARA MIRIAM A		411 STANLEY AVE		SOUTH ST PAUL	MN	55075
VERENA A NELSON		411 TOTEM RD		SAINT PAUL	MN	55119
JACQUELYN HASE		412 BIRCHER AVE		SOUTH ST PAUL	MN	55075
ROCCO MUSSEHL		412 JOHNSON PKWY		SAINT PAUL	MN	55106
GLENN D JACKOLA		413 BURLINGTON RD		SAINT PAUL	MN	55119
PAUL E WULTERKENS		413 TOTEM RD		SAINT PAUL	MN	55119
E & K REAL ESTATE INVESTMENTS LLC		414 EARL ST		SAINT PAUL	MN	55106
ALAN T CLEGG		414 JOHNSON PKWY		SAINT PAUL	MN	55106
MARK CEMENSKY		415 CLARENCE ST		SAINT PAUL	MN	55106
JEREMY HARVEY		415 JOHNSON PKWY		SAINT PAUL	MN	55106
JAVIER GUTIERREZ		415 ROBIE ST E		SAINT PAUL	MN	55107
JOSHUA DRIESEN		415 TOTEM RD		SAINT PAUL	MN	55119
ELIZABETH KERR		416 OUTLOOK AVE		SOUTH ST PAUL	MN	55075
MARGARET ANN FAIRHURST		417 5TH AVE N		SOUTH ST PAUL	MN	55075
ROLF E JOHNSON		417 BELVIDERE ST E		SAINT PAUL	MN	55107
PETROLEUM SERVICES USA LLC		417 CONCORD ST N		SOUTH ST PAUL	MN	55075
K & C ASSOCIATES INC		417 FOREST ST		SAINT PAUL	MN	55106
PAUL R HOWLETT		417 JOHNSON PKWY		SAINT PAUL	MN	55106
KATIE M VANYO		417 TOTEM RD		SAINT PAUL	MN	55119
ROBERT E JOHNSON		418 BURLINGTON RD		SAINT PAUL	MN	55119
TWIN CITIES HABITAT FOR		418 CURTICE ST E		SAINT PAUL	MN	55107
THE BANK OF NEW YORK MELLON		418 EARL ST		SAINT PAUL	MN	55106
CHEEMANG HER		418 JOHNSON PKWY		SAINT PAUL	MN	55106
LAWRENCE C MAY TRUSTEE		418 TOTEM RD		SAINT PAUL	MN	55119
MICHAEL D MCDONALD		42 DARLENE ST		SAINT PAUL	MN	55119
HG ENTERPRISE LLC		42 WHITE BEAR AVE N		SAINT PAUL	MN	55106
CHRISTOPHER LEHMANN & MICHELLE K		420 5TH AVE N		SOUTH ST PAUL	MN	55075
THOMAS XIONG		420 GRIFFITH ST		SAINT PAUL	MN	55106
ARMANDO ALVARADO		420 JOHNSON PKWY		SAINT PAUL	MN	55106
JANET L HOSTETTER		421 BELVIDERE ST E		SAINT PAUL	MN	55107
DANIEL J & LINDA C NIEDERKORN		421 OUTLOOK AVE		SOUTH ST PAUL	MN	55075
VERONICA L HOHNEKE		421 TOTEM RD		SAINT PAUL	MN	55119
TWV LIMITED PARTNERSHIP C/O		422 CONCORD ST		SAINT PAUL	MN	55107
EUGENE R MORYN		422 CURTICE ST E		SAINT PAUL	MN	55107
CHER G HER		425 BIRMINGHAM ST		SAINT PAUL	MN	55106
METRO 94 BUSINESS CENTER LLC		425 ETNA ST		SAINT PAUL	MN	55106
CHAI THAO		425 JOHNSON PKWY		SAINT PAUL	MN	55106
CARL B ANDERSEN		425 MCKNIGHT RD S		SAINT PAUL	MN	55119
PATRICK A STILLER		425 TOTEM RD		SAINT PAUL	MN	55119
MARCEL CHEVRETTE		426 BURLINGTON RD		SAINT PAUL	MN	55119
SHANIKIA WHITE		426 CURTICE ST E		SAINT PAUL	MN	55107
HOMEOWNERS THREE LLC		426 GRIFFITH ST		SAINT PAUL	MN	55106
JOAN MARIE PERRAULT		427 BELVIDERE ST E		SAINT PAUL	MN	55107
MAUREEN C BIBRO		427 GERMAIN ST		SAINT PAUL	MN	55106
METRO 7 PROPERTIES LLC		427 ROBIE ST E		SAINT PAUL	MN	55107
JUKO HARUNA MAWANDA		429 JOHNSON PKWY		SAINT PAUL	MN	55106
COLIN D BENDER		429 TOTEM RD		SAINT PAUL	MN	55119
STEVEN L HOBBS		43 BATTLE CREEK PL		SAINT PAUL	MN	55119
JOSEPH BAARSCH		430 CURTICE ST E		SAINT PAUL	MN	55107
JON D ARONSON		430 JOHNSON PKWY		SAINT PAUL	MN	55106
ROGER MCCLURE		431 BIRMINGHAM ST		SAINT PAUL	MN	55106
STEPHANIE T LYONS		431 PAGE ST E		SAINT PAUL	MN	55107
LENNEA A LOPEZ		431 ROBIE ST E		SAINT PAUL	MN	55107
SANDRA H MICHAELSEN		432 BELVIDERE ST E		SAINT PAUL	MN	55107
STEVEN KELSEY BIELMEIER BIELMEIER		432 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
ERIC J LOHMAN		433 JOHNSON PKWY		SAINT PAUL	MN	55106
UNI ASSOCIATES LLC		433 MENDOTA ST		SAINT PAUL	MN	55106
JEROLD J DANIELS		434 BELVIDERE ST E		SAINT PAUL	MN	55107
MARY L MARTIN CARRIGAN		434 BURLINGTON RD		SAINT PAUL	MN	55119
WILLIAM S COLLINS		435 BURLINGTON RD		SAINT PAUL	MN	55119
CHAO N XIONG		435 GRIFFITH ST		SAINT PAUL	MN	55106
JERRY P MACNEIL		435 MCKNIGHT RD S		SAINT PAUL	MN	55119
WILLIAM R WILEBSKI		435 TOTEM RD		SAINT PAUL	MN	55119
LAURA L SCHWANTES		436 GRIFFITH ST		SAINT PAUL	MN	55106
JOSE ALEJANDRO CRUZ		437 BIRMINGHAM ST		SAINT PAUL	MN	55106
DUNCAN M WAWERU		438 BURLINGTON RD		SAINT PAUL	MN	55119
JAMES H KINNEY		438 JOHNSON PKWY		SAINT PAUL	MN	55106
RAFAEL FUENTES		438 PAGE ST E		SAINT PAUL	MN	55107
JOSHUA G GATHJE		438 TOTEM RD		SAINT PAUL	MN	55119
JEWELLY LEE		439 FOREST ST		SAINT PAUL	MN	55106
ASHLEE FREDERICK		439 JOHNSON PKWY		SAINT PAUL	MN	55106
ROBERT J LAWRENCE		439 TOTEM RD		SAINT PAUL	MN	55119
R F DEBACE		44 B ST		SAINT PAUL	MN	55106
GREGORY P KRAMER		44 BATES AVE		SAINT PAUL	MN	55106
ALAN D EMORY		44 BATTLE CREEK PL		SAINT PAUL	MN	55119
DARLENE KVIST		44 MILLER CREST LN		SAINT PAUL	MN	55106
KATHERINE MAX		440 BELVIDERE ST E		SAINT PAUL	MN	55107
KEVIN J BRUMMER		441 PAGE ST E		SAINT PAUL	MN	55107
JUAN CABAN		441 SIDNEY ST E		SAINT PAUL	MN	55107
LEIGH Y JORENTO		442 BURLINGTON RD		SAINT PAUL	MN	55119
TOU CHA		443 BIRMINGHAM ST		SAINT PAUL	MN	55106
ASTLEFORD FAMILY LMTD PRTNRSH		443 FILLMORE AVE E		SAINT PAUL	MN	55107
CLINTON L CONRAD		443 GRIFFITH ST		SAINT PAUL	MN	55106
BENJAMIN SMIDT		443 JOHNSON PKWY		SAINT PAUL	MN	55106
KEVIN B LAGOS		443 MCKNIGHT RD S		SAINT PAUL	MN	55119
JUDITH M NERISON		444 GERMAIN ST		SAINT PAUL	MN	55106
SALLY L REVAK		444 JOHNSON PKWY		SAINT PAUL	MN	55106
SILVESTRE YBARRA		444 PAGE ST E		SAINT PAUL	MN	55107
JENNI HERMANN		444 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
JAMES L STROBACH		444 SIDNEY ST E		SAINT PAUL	MN	55107
JOAQUINA MARTINEZ CASTILLO		445 PAGE ST E		SAINT PAUL	MN	55107
ZACHARY J RYDEL		445 SIDNEY ST E		SAINT PAUL	MN	55107
THOMAS LEECH		445 TOTEM RD		SAINT PAUL	MN	55119
RICHARD SAGERT		447 HAZELWOOD ST		SAINT PAUL	MN	55106
ROBERTA LYNN KEHNE		447 JOHNSON PKWY		SAINT PAUL	MN	55106
AMY L SMITH		447 TOTEM RD		SAINT PAUL	MN	55119
BROOKS BUTLER		448 BURLINGTON RD		SAINT PAUL	MN	55119
LEO H RECK		448 GRIFFITH ST		SAINT PAUL	MN	55106
SYLVIA A SWANSON		448 SIDNEY ST E		SAINT PAUL	MN	55107
JAMES J FRASCONE		449 BIRMINGHAM ST		SAINT PAUL	MN	55106
EARL V SCHOENHEIDER TRUSTEE		449 BURLINGTON RD		SAINT PAUL	MN	55119
DONALD A OBRIEN		449 TOTEM RD		SAINT PAUL	MN	55119
JAMES OKULLO		45 B ST		SAINT PAUL	MN	55106
MICHAEL NEHOTTE		45 BATTLE CREEK RD		SAINT PAUL	MN	55119
GERALDINE M NASSEFF LIVING TRUST		45 MILLER CREST LN		SAINT PAUL	MN	55106
EARL V SCHOENHEIDER TRUSTEE		450 BURLINGTON RD		SAINT PAUL	MN	55119
PEARL L MUEFFELMAN		450 FOREST ST		SAINT PAUL	MN	55106
MATTHEW BECHEL		450 JOHNSON PKWY		SAINT PAUL	MN	55106
PETER J CONLIN		451 BURLINGTON RD		SAINT PAUL	MN	55119
DEL CO LIMITED PARTNERSHIP		451 FOREST ST		SAINT PAUL	MN	55106
J AND M BOSTON PROPERTIES LLC		451 HAZELWOOD ST		SAINT PAUL	MN	55106
HA THANH THI LE		451 MCKNIGHT RD S		SAINT PAUL	MN	55119
JENNIFER BIRKHOLZ		451 TOTEM RD		SAINT PAUL	MN	55119
ERIC J LEVIN		451 WYOMING ST E		SAINT PAUL	MN	55107
BENITO M BENITEZ		452 CONCORD ST		SAINT PAUL	MN	55107
DELORIA FERN SHAVINSKY CLAY		453 BIRMINGHAM ST		SAINT PAUL	MN	55106
THU THI NGUYEN		453 BURLINGTON RD		SAINT PAUL	MN	55119
FONG VANG		453 JOHNSON PKWY		SAINT PAUL	MN	55106
JOLEA GRESS		453 MYSTIC ST		SAINT PAUL	MN	55119
JOHN A STEWART		453 PAGE ST E		SAINT PAUL	MN	55107
MICHAELENE ROSE COLESTOCK		453 WHITE BEAR AVE N		SAINT PAUL	MN	55106
AMERICAN MEDICAL RESEARCH INC		454 BARCLAY ST		SAINT PAUL	MN	55106
BROOKS A BUTLER		454 BURLINGTON RD		SAINT PAUL	MN	55119
ANTONIO MENDOZA		454 EARL ST		SAINT PAUL	MN	55106
GROW K TOULH		454 GRIFFITH ST		SAINT PAUL	MN	55106
INVESTAPROP LLC		454 SIDNEY ST E		SAINT PAUL	MN	55107
KEVIN BRANVILLE		455 BARCLAY ST		SAINT PAUL	MN	55106
LARRY E CAIN		455 BURLINGTON RD		SAINT PAUL	MN	55119
MAI CHUE LEE		455 GRIFFITH ST		SAINT PAUL	MN	55106
MICHEAL P FUENTES		456 CONCORD ST		SAINT PAUL	MN	55107

Full Name	Organization - Primary	Mailing Street	Mailing Street 2	Mailing City	Mailing State	Mailing Zip
TROY A RADEMACHER		456 JOHNSON PKWY		SAINT PAUL	MN	55106
CHRISTOPHER J GERBER		457 BURLINGTON RD		SAINT PAUL	MN	55119
JANICE D CANO		457 CURTICE ST E		SAINT PAUL	MN	55107
LOR BROTHERS CONSULTING LLC		457 FOREST ST		SAINT PAUL	MN	55106
PATRICK J MADIGAN		457 HAZELWOOD ST		SAINT PAUL	MN	55106
SERGIO ORTEGA GUZMAN		457 MYSTIC ST		SAINT PAUL	MN	55119
CHARLOTTE H THOMPSON		458 BURLINGTON RD		SAINT PAUL	MN	55119
MAI MANDY VANG		458 GRIFFITH ST		SAINT PAUL	MN	55106
STEVEN R MEIS		459 BIRMINGHAM ST		SAINT PAUL	MN	55106
CECILIO A BARAIBAR		459 GRIFFITH ST		SAINT PAUL	MN	55106
DAVID SCHELL		46 MOUNDS BLVD		SAINT PAUL	MN	55106
MARK A & ANITA L GROETHE TST		460 BUTLER AVE E		WEST ST PAUL	MN	55118
MICHAEL T MIOSEK		460 EARL ST		SAINT PAUL	MN	55106
BRYAN BEHRENDT		461 BURLINGTON RD		SAINT PAUL	MN	55119
CARL B ANDERSON		461 MCKNIGHT RD S		SAINT PAUL	MN	55119
ANDREW R LEDMAN		461 MYSTIC ST		SAINT PAUL	MN	55119
MICHAEL J MALONEY		461 SIDNEY ST E		SAINT PAUL	MN	55107
THOMAS J WONDRA		461 WHITE BEAR AVE N		SAINT PAUL	MN	55106
IREP RISK AND CASUALTY		462 CURTICE ST E		SAINT PAUL	MN	55107
STEPHEN TYSOWSKY		462 SIDNEY ST E		SAINT PAUL	MN	55107
RHA 3 LLC		463 FOREST ST		SAINT PAUL	MN	55106
TAMMY MORALES		464 CONCORD ST		SAINT PAUL	MN	55107
CANA YANG		464 EARL ST		SAINT PAUL	MN	55106
DAN LEWANDOWSKI		464 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
MARY L CASTOR		464 WYOMING ST E		SAINT PAUL	MN	55107
CAROL M LUEDTKE		465 BIRMINGHAM ST		SAINT PAUL	MN	55106
ROBERT B WAHLBERG		465 BURLINGTON RD		SAINT PAUL	MN	55119
DANGER XIONG		465 GRIFFITH ST		SAINT PAUL	MN	55106
MARIE J FUNK		465 MYSTIC ST		SAINT PAUL	MN	55119
ERIC J COLLINS		465 WHITE BEAR AVE N		SAINT PAUL	MN	55106
HAROLD M CHESSHIR		466 BURLINGTON RD		SAINT PAUL	MN	55119
NATHANIEL A ALLEN		466 JOHNSON PKWY		SAINT PAUL	MN	55106
STEVEN L WARD		466 WHITE BEAR AVE N		SAINT PAUL	MN	55106
BLANCA EGUIA		466 WYOMING ST E		SAINT PAUL	MN	55107
ANITA VANDENBOSCH		467 SIDNEY ST E		SAINT PAUL	MN	55107
CHRISTOPHER MARK MCDONALD		468 MYSTIC ST		SAINT PAUL	MN	55119
JAMES SHANLEY		468 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
JANET GRACIA		468 WYOMING ST E		SAINT PAUL	MN	55107
JEAN A BIRKHOLZ		469 BIRMINGHAM ST		SAINT PAUL	MN	55106
LE THU T NGO		469 BURLINGTON RD		SAINT PAUL	MN	55119
MARIO SANCHEZ GRANADOS		469 CYPRESS ST		SAINT PAUL	MN	55106
TONG CZ THAO		470 EARL ST		SAINT PAUL	MN	55106
JAMES S KNOWLTON		470 PAGE ST E		SAINT PAUL	MN	55107
ARTURO SANCHEZ		470 WYOMING ST E		SAINT PAUL	MN	55107
WAYNE VITKOSKY		471 BURLINGTON RD		SAINT PAUL	MN	55119
MARY A WEIR		471 CURTICE ST E		SAINT PAUL	MN	55107
MICHAEL DARWITZ		471 GRIFFITH ST		SAINT PAUL	MN	55106
BONNIE WATKINS		471 MYSTIC ST		SAINT PAUL	MN	55119
ALAN L MARKEN		471 SIDNEY ST E		SAINT PAUL	MN	55107
MIGUEL A MESZAROS		472 CONCORD ST		SAINT PAUL	MN	55107
FRANK RIVERA PRESCOTT		472 WYOMING ST E		SAINT PAUL	MN	55107
MOMO LLC		473 CYPRESS ST		SAINT PAUL	MN	55106
JANE POSTEN		474 EARL ST		SAINT PAUL	MN	55106
BENJAMIN N HILLS		474 WYOMING ST E		SAINT PAUL	MN	55107
PETER J WEBER		475 BIRMINGHAM ST		SAINT PAUL	MN	55106
METRO 94 BUSINESS CENTER LLC		475 ETNA ST		SAINT PAUL	MN	55106
Mitch Lee	Hmong Tv Network	475 Etna St.		St. Paul	MN	55106
PAUL R SCHILLER		475 MCKNIGHT RD S		SAINT PAUL	MN	55119
THOMAS A TONDA		475 SIDNEY ST E		SAINT PAUL	MN	55107
FRANCES J WIESE		476 JOHNSON PKWY		SAINT PAUL	MN	55106
WILLIAM LEROY ALLEN		476 SIDNEY ST E		SAINT PAUL	MN	55107
JUAN F ELIAS		477 CURTICE ST E		SAINT PAUL	MN	55107
BAO TRAN		477 WHITE BEAR AVE N		SAINT PAUL	MN	55106
JESSICA KLIER		478 EARL ST		SAINT PAUL	MN	55106
MARK S LERMAN		478 PAGE ST E		SAINT PAUL	MN	55107
ST PAUL PUBLIC HOUSING AGENCY		479 BIRMINGHAM ST		SAINT PAUL	MN	55106
JAMES D CAMPBELL		479 BURLINGTON RD		SAINT PAUL	MN	55119
SOUA N YANG		48 DARLENE ST		SAINT PAUL	MN	55119
BEE VANG		48 WHITE BEAR AVE N		SAINT PAUL	MN	55106
KAOJIA N VANG		480 FOREST ST		SAINT PAUL	MN	55106
JORGE MORENO		480 SIDNEY ST E		SAINT PAUL	MN	55107
TOMAS DOMINQUEZ		481 CURTICE ST E		SAINT PAUL	MN	55107
BRUCE J MOENCK		481 SIDNEY ST E		SAINT PAUL	MN	55107
STACI VANG		482 EARL ST		SAINT PAUL	MN	55106
HENRIETTA B ZENISEK		482 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
BENNIE E GOODLEY		483 BIRMINGHAM ST		SAINT PAUL	MN	55106
WILLIAM WHITEIS		484 BARCLAY ST		SAINT PAUL	MN	55106
WILLIAM J LUEDKE		484 BELVIDERE ST E		SAINT PAUL	MN	55107
WUILMER A SARAVIA		484 JOHNSON PKWY		SAINT PAUL	MN	55106
WADE D ANDERSON		484 MYSTIC ST		SAINT PAUL	MN	55119
DRACO PROPERTIES LLC		484 PAGE ST E		SAINT PAUL	MN	55107
ABIGAIL AMPARAN NAVARRO		484 SIDNEY ST E		SAINT PAUL	MN	55107
WILLIAM TURNER		485 BELVIDERE ST E		SAINT PAUL	MN	55107
ALEX WOLNER		485 BURLINGTON RD		SAINT PAUL	MN	55119
YENG THAO		485 WINONA ST E		SAINT PAUL	MN	55107
TIMMIE E HOLDEN		486 BIRMINGHAM ST		SAINT PAUL	MN	55106
DOROTHY DETOMASO TRUSTEE		486 WINONA ST E		SAINT PAUL	MN	55107
PATRICK R COOK		487 BURLINGTON RD		SAINT PAUL	MN	55119
RAMIRO DOMINGUEZ SANCHEZ		487 CURTICE ST E		SAINT PAUL	MN	55107
SONG THAO		487 GERMAIN ST		SAINT PAUL	MN	55106
WHITNEY D GRAF		487 MENDOTA ST		SAINT PAUL	MN	55106
JESSICA MARTIN		488 CURTICE ST E		SAINT PAUL	MN	55107
LISA COLLINS		488 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
ELIZABETH HOLLENHORST		489 BELVIDERE ST E		SAINT PAUL	MN	55107
CHARLES VERNON WALLER		489 BIRMINGHAM ST		SAINT PAUL	MN	55106
JUDY LEE		489 JOHNSON PKWY		SAINT PAUL	MN	55106
MARY L BUTLER		489 MYSTIC ST		SAINT PAUL	MN	55119
RYAN KARPE		49 BATTLE CREEK PL		SAINT PAUL	MN	55119
JESSE D WATSON		49 DARLENE ST		SAINT PAUL	MN	55119
OWEN J HALLIGAN		49 FLANDRAU PL		SAINT PAUL	MN	55106
DRACO PROPERTIES LLC		490 PAGE ST E		SAINT PAUL	MN	55107
DAVID A BERG		491 BELVIDERE ST E		SAINT PAUL	MN	55107
SARA SHELDON ROSSON		491 BURLINGTON RD		SAINT PAUL	MN	55119
JONATHAN MURRAY		491 SIDNEY ST E		SAINT PAUL	MN	55107
WELLS FARGO BANK N A		491 WYOMING ST E		SAINT PAUL	MN	55107
JENNIFER M REICHLEIN		492 ANDREW ST		SAINT PAUL	MN	55107
JONATHAN THOMAS HEINN		492 BELVIDERE ST E		SAINT PAUL	MN	55107
SHS PROPERTY ONE LLC		492 CONCORD ST		SAINT PAUL	MN	55107
MITCHELL A WITTIG		492 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
RONALD P DETOMASO JR		492 WINONA ST E		SAINT PAUL	MN	55107
DARRYL W HALL		494 BARCLAY ST		SAINT PAUL	MN	55106
FRANCISCA SALDIVAR SEVILLA		495 ANDREW ST		SAINT PAUL	MN	55107
DORIAN J KOLLANDER		495 BELVIDERE ST E		SAINT PAUL	MN	55107
DAVID K LEVANG		495 BIRMINGHAM ST		SAINT PAUL	MN	55106
XOCHITL HUERTA		495 BURLINGTON RD		SAINT PAUL	MN	55119
JOHN M AHERN		495 CURTICE ST E		SAINT PAUL	MN	55107
JOSEPH KELLERMAN		495 SIDNEY ST E		SAINT PAUL	MN	55107
2015 3 IH2 BORROWER LP		495 WINONA ST E		SAINT PAUL	MN	55107
ANA LUISA VAZQUEZ ROJAS		496 ANDREW ST		SAINT PAUL	MN	55107
KEVIN L WELLMANN		496 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
TERRILL L KATZ		497 BURLINGTON RD		SAINT PAUL	MN	55119
RONALD A JISKRA		497 FOREST ST		SAINT PAUL	MN	55106
CLODETTA IRENE CARLONE		497 WYOMING ST E		SAINT PAUL	MN	55107
DAVID H & JOYCE A ROSS		498 STEWART AVE		SOUTH ST PAUL	MN	55075
DANMARK PROPERTIES LLC		499 BELVIDERE ST E		SAINT PAUL	MN	55107
PATRICIA S KATZ		499 BURLINGTON RD		SAINT PAUL	MN	55119
CYNTHIA S GILLETT		5 BATTLE CREEK RD		SAINT PAUL	MN	55119
CRAIG B WILSON		5 KENNARD CT		SAINT PAUL	MN	55106
SOUA LOR		5 MILLER CREST LN		SAINT PAUL	MN	55106
SCOTT E THAYER		5 WHITE BEAR AVE S		SAINT PAUL	MN	55106
BARBARA L OSTHUS		50 BATES AVE		SAINT PAUL	MN	55106

Full Name	Organization - Primary	Mailing Street	Mailing Street 2	Mailing City	Mailing State	Mailing Zip
DARLENE J HOTUJEC		50 BATTLE CREEK PL		SAINT PAUL	MN	55119
CHS INC		50 CHESTER ST		SAINT PAUL	MN	55107
BARBARA E CROUCHER		50 FLANDRAU PL		SAINT PAUL	MN	55106
PAUL K BORZO		50 MOUNDS BLVD		SAINT PAUL	MN	55106
TIMOTHY M BORGAN		500 CURTICE ST E		SAINT PAUL	MN	55107
Luke Skinner	Department of Natural Resources – Ecological and	500 Lafayette Road - Box 25		St. Paul	MN	55155
REBECCA A WOODIWISS		500 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
CYNTHIA L ADAMS		500 STEWART AVE		SOUTH ST PAUL	MN	55075
KEVIN C MCMONIGAL		500 WYOMING ST E		SAINT PAUL	MN	55107
DAVID M ABRAMOWICZ		501 CONCORD ST N		SOUTH ST PAUL	MN	55075
SOLEDAD FLORES DE SANTANA		501 SIDNEY ST E		SAINT PAUL	MN	55107
SHEILA M JOHNSON		501 WYOMING ST E		SAINT PAUL	MN	55107
NENG YANG		502 ANDREW ST		SAINT PAUL	MN	55107
JOHN D VALIUKAS		502 MYSTIC ST		SAINT PAUL	MN	55119
MONICA ELIAS ESPINOZA		503 BELVIDERE ST E		SAINT PAUL	MN	55107
LORNA K GIRARD		503 BURLINGTON RD		SAINT PAUL	MN	55119
GARY T BOLLMANN		503 MCKNIGHT RD S		SAINT PAUL	MN	55119
ROBERT J BERGLUND		504 BELVIDERE ST E		SAINT PAUL	MN	55107
RHA 3 LLC		504 CURTICE ST E		SAINT PAUL	MN	55107
PHILIP B KRINKIE		504 MCKNIGHT RD S		MAPLEWOOD	MN	55119
JOHN HEINZ		504 STEWART AVE		SOUTH ST PAUL	MN	55075
RONALD DETOMASO		504 WINONA ST E		SAINT PAUL	MN	55107
JULIE BORGERDING		505 BURLINGTON RD		SAINT PAUL	MN	55119
PAMELA L HALBAKKEN		505 SIDNEY ST E		SAINT PAUL	MN	55107
LONETTE MARIE ANDERSON		505 STEWART AVE		SOUTH ST PAUL	MN	55075
JAMES J BITTERMAN		506 CONCORD ST		SAINT PAUL	MN	55107
LORETTA L LEWIS		506 WYOMING ST E		SAINT PAUL	MN	55107
KYLE CRAWFORD		507 BELVIDERE ST E		SAINT PAUL	MN	55107
SCOTT & MICHELE L DECKER		508 7TH AVE N		SOUTH ST PAUL	MN	55075
ADELAIDO SANCHEZ		508 BELVIDERE ST E		SAINT PAUL	MN	55107
RICHARD & BERNADETTE CATES		508 NAPOLEON CIR		SOUTH ST PAUL	MN	55075
SHELLEY R KORTUEM		508 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
STATE OF MINNESOTA		508 TRANSPORTATION BLDG		SAINT PAUL	MN	55155
KEITH L LOCKHART		509 SIDNEY ST E		SAINT PAUL	MN	55107
LINDA M CARLSON		51 B ST		SAINT PAUL	MN	55106
ADAM BONINE		51 WHITE BEAR AVE S		SAINT PAUL	MN	55106
ADAM E BRODT		510 BELVIDERE ST E		SAINT PAUL	MN	55107
FRED GARCIA		510 WINONA ST E		SAINT PAUL	MN	55107
RODRIGO GALVAN YANEZ		510 WYOMING ST E		SAINT PAUL	MN	55107
JOSHUA HAREIN		511 BELVIDERE ST E		SAINT PAUL	MN	55107
STACEY STRAW		511 MCKNIGHT RD S		SAINT PAUL	MN	55119
CYNTHIA L WICKBERG		511 STEWART AVE		SOUTH ST PAUL	MN	55075
PETER WHITE		511 WYOMING ST E		SAINT PAUL	MN	55107
AARON & JESSICA BUTCHER		512 7TH AVE N		SOUTH ST PAUL	MN	55075
TIRSIT ABERA		512 CURTICE ST E		SAINT PAUL	MN	55107
DAVID G MCKAY		513 WINONA ST E		SAINT PAUL	MN	55107
DAVID P VANDERBEEK		515 BELVIDERE ST E		SAINT PAUL	MN	55107
BETH KAY PARIS		515 BURLINGTON RD		SAINT PAUL	MN	55119
MACKENZIE GAINEY		515 MCKNIGHT RD S		SAINT PAUL	MN	55119
THOMAS VON BERGE		515 WYOMING ST E		SAINT PAUL	MN	55107
EUNICE AMPARAN		516 CURTICE ST E		SAINT PAUL	MN	55107
FRESH START PROPERTIES LLC		516 STEWART AVE		SOUTH ST PAUL	MN	55075
ANDREW STEHR		517 ANNAPOLIS ST E		SAINT PAUL	MN	55118
ROSEMARY E JOHNSTON		517 BURLINGTON RD		SAINT PAUL	MN	55119
L E MARTINEZ		517 SIDNEY ST E		SAINT PAUL	MN	55107
MARK ALLEN DUFFY & LISA MA		517 STEWART AVE		SOUTH ST PAUL	MN	55075
BLANCA D RIVAS		517 WINONA ST E		SAINT PAUL	MN	55107
ELIZABETH C PITCHFORD		518 WINONA ST E		SAINT PAUL	MN	55107
KEVIN D SIME		518 WYOMING ST E		SAINT PAUL	MN	55107
MIDWEST HOUSE BUYERS LLC		519 BELVIDERE ST E		SAINT PAUL	MN	55107
JEFFREY A OEHRLEIN		52 B ST		SAINT PAUL	MN	55106
MARTHA M BERGMAN		52 MOUNDS BLVD		SAINT PAUL	MN	55106
RUBY LEE GARDINER		520 CURTICE ST E		SAINT PAUL	MN	55107
CITY OF ST PAUL		520 EATON ST		SAINT PAUL	MN	55107
Amanda Smith	Minnesota Pollution Control Agency	520 Lafayette Road N		St. Paul	MN	55155-4194
Bruce Braaten	Minnesota Pollution Control Agency	520 Lafayette Road N		St. Paul	MN	55155-4194
Christine Steinwand	Minnesota Pollution Control Agency	520 Lafayette Road N		St. Paul	MN	55155-4194
Chuck Peterson	Minnesota Pollution Control Agency	520 Lafayette Road N		St. Paul	MN	55155-4194
Dan Card	Minnesota Pollution Control Agency	520 Lafayette Road N		St. Paul	MN	55155-4194
Hassan Bouchareb	Minnesota Pollution Control Agency	520 Lafayette Road N		St. Paul	MN	55155-4194
Helen Waquiu	Minnesota Pollution Control Agency	520 Lafayette Road N		St. Paul	MN	55155-4194
Nancy Drach	Minnesota Pollution Control Agency	520 Lafayette Road N		St. Paul	MN	55155-4194
Shannon Lotthammer	Minnesota Pollution Control Agency	520 Lafayette Road N		St. Paul	MN	55155
Steve Pak	Minnesota Pollution Control Agency	520 Lafayette Road N		St. Paul	MN	55155-4194
MICHAEL J & CAROL DASOVIC		520 STEWART AVE		SOUTH ST PAUL	MN	55075
Tony White	Northern Metal Recycling	521 Barge Channel Rd.		St. Paul	MN	55107
BRENDA K DUERR		521 STEWART AVE		SOUTH ST PAUL	MN	55075
BRANDON P FRITZ		522 7TH AVE N		SOUTH ST PAUL	MN	55075
MICHAEL J & BONNIE L FRANCIS		522 CONCORD ST N		SOUTH ST PAUL	MN	55075
SARA A KRUEGER & ELLIOT L MCNEW		523 STEWART AVE		SOUTH ST PAUL	MN	55075
ARIANA R AVENSON		524 WYOMING ST E		SAINT PAUL	MN	55107
JOHN ROUEN		525 BURLINGTON RD		SAINT PAUL	MN	55119
MURRAY R PRUST		525 MCKNIGHT RD S		SAINT PAUL	MN	55119
HUMBERTO FLORES		525 WYOMING ST E		SAINT PAUL	MN	55107
NICE HOMES LLC		526 CURTICE ST E		SAINT PAUL	MN	55107
LAWRENCE R RYLE		527 BATTLE CREEK RD		SAINT PAUL	MN	55119
JOANNE SANDERSON		528 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
JEAN M GARSKE		528 WYOMING ST E		SAINT PAUL	MN	55107
BRIAN FEIST		529 BURLINGTON RD		SAINT PAUL	MN	55119
HIEUDUC D NGUYEN		529 CONCORD ST N		SOUTH ST PAUL	MN	55075
YER CHANG		53 BATTLE CREEK PL		SAINT PAUL	MN	55119
DEBRA MARIE FELTMAN		53 MARIA AVE		SAINT PAUL	MN	55106
THOMAS C & MARY K RUDQUIST		530 ANNAPOLIS ST E		SOUTH ST PAUL	MN	55075
CAROLYN A MARSH		530 BELVIDERE ST E		SAINT PAUL	MN	55107
GREGORY L DAHL		532 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
GUY BALDWIN		533 BURLINGTON RD		SAINT PAUL	MN	55119
RICHARD L JR & JUANITA B VOIGT		534 ANNAPOLIS ST E		SOUTH ST PAUL	MN	55075
JAMES OSBORNE		534 WINONA ST E		SAINT PAUL	MN	55107
DEBORAH M TRAYNOR		535 ANNAPOLIS ST E		SAINT PAUL	MN	55118
LISA M KRETER		535 MCKNIGHT RD S		SAINT PAUL	MN	55119
DONALD E PAULLEY TRUSTEE		536 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
MARIO NARDI		539 ANNAPOLIS ST E		SAINT PAUL	MN	55118
STEPHEN M HJEMBOE		54 BATES AVE		SAINT PAUL	MN	55106
VANESSA M AUSTIN		54 WHITE BEAR AVE N		SAINT PAUL	MN	55106
JOHN P SALAS		541 WYOMING ST E		SAINT PAUL	MN	55107
DARREN K JULIN		542 WINONA ST E		SAINT PAUL	MN	55107
BARBARA A STURM		544 WINONA ST E		SAINT PAUL	MN	55107
LAWRENCE W ERICKSON		545 BURLINGTON RD		SAINT PAUL	MN	55119
JOHN E LUCKFIELD		545 MCKNIGHT RD S		SAINT PAUL	MN	55119
Christine Goepfert	National Parks Conservation Association	546 Rice Street	Suite 100	St. Paul	MN	55103
Steve Morse	Minnesota Enviromental Partnership	546 Rice Street	Suite 100	St. Paul	MN	55103
BEVERLY J LONG		546 WINONA ST E		SAINT PAUL	MN	55107
DANIEL A MURPHY		549 ANNAPOLIS ST E		SAINT PAUL	MN	55118
VIGDIS ANDERSON		55 B ST		SAINT PAUL	MN	55106
GEORGETTE GENOVESE		55 BATTLE CREEK RD		SAINT PAUL	MN	55119
KRISTIAN P STEIFENHOFER		55 FLANDRAU PL		SAINT PAUL	MN	55106
ISMAEL CARABALLO		55 WHITE BEAR AVE N		SAINT PAUL	MN	55106
BRIAN J CONWAY		55 WHITE BEAR AVE S		SAINT PAUL	MN	55106
JESSICA C MARLOW		550 ANNAPOLIS ST E		SOUTH ST PAUL	MN	55075
QUETICO PROPERTY MGMT LLC		550 CONCORD ST		SAINT PAUL	MN	55107
SHS PROPERTY FOUR LLC		552 CONCORD ST		SAINT PAUL	MN	55107
JOSHUA SCHMIDT		552 MCKNIGHT RD S		MAPLEWOOD	MN	55119
DANIEL M POITRAS		554 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
555 BARGE CHANNEL RD LLC		555 BARGE CHANNEL RD		SAINT PAUL	MN	55107
DAVID R JOHNSON		555 BURLINGTON RD		SAINT PAUL	MN	55119
CURTIS THOMPSON		555 MCKNIGHT RD S		SAINT PAUL	MN	55119
KELLY R MAHON		555 WYOMING ST E		SAINT PAUL	MN	55107
MARDELL J KOLAK TSTE		556 TURIN AVE		SOUTH ST PAUL	MN	55075
RICHARD L & LOIS E VOIGT		558 ANNAPOLIS ST E		SOUTH ST PAUL	MN	55075
PRO OPERAM SUB II LLC		558 CONCORD ST		SAINT PAUL	MN	55107
WILL J BACKE		558 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
JOSEPH J JUVLAND		559 BURLINGTON RD		SAINT PAUL	MN	55119
LEONARD N ANDERSON		559 MCKNIGHT RD S		SAINT PAUL	MN	55119
ALISON S PICKFORD		56 B ST		SAINT PAUL	MN	55106
KAI LOR		56 BATTLE CREEK PL		SAINT PAUL	MN	55119
JEFFREY A BONNEVILLE		56 MOUNDS BLVD		SAINT PAUL	MN	55106

Full Name	Organization - Primary	Mailing Street	Mailing Street 2	Mailing City	Mailing State	Mailing Zip
Charles Wooley	Fish and Wildlife Service	5600 American Blvd	Suite 990	Bloomington	MN	55437
WYNETTE BARNETT		562 CONCORD ST		SAINT PAUL	MN	55107
JASON D MACDONALD LLC		565 ANNAPOLIS ST E		SAINT PAUL	MN	55118
LORRAINE M DUCKLINSKY & CORINNE C DUCKLINSKY		568 ANNAPOLIS ST E		SOUTH ST PAUL	MN	55075
STEPHEN D BAUER		569 MCKNIGHT RD S		SAINT PAUL	MN	55119
LINDA M STAHLEY		57 MARIA AVE		SAINT PAUL	MN	55106
HOMERO RODRIGUEZ		570 ANNAPOLIS ST E		SOUTH ST PAUL	MN	55075
DENISE KRIESEL		570 CONCORD ST		SAINT PAUL	MN	55107
GAOSHENG MOUA		572 BURLINGTON RD		SAINT PAUL	MN	55119
VIKTAR LESNIKOU		572 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
GLENN D & VALERIE K BOCHE		572 STEWART AVE		SOUTH ST PAUL	MN	55075
STEVEN A DARMER		575 MCKNIGHT RD S		SAINT PAUL	MN	55119
ANDREW L WIRTZ		577 ANNAPOLIS ST E		SAINT PAUL	MN	55118
MIGUEL S CORTES		578 CONCORD ST		SAINT PAUL	MN	55107
BRIAN E ELSHAUG		578 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
JUSTIN E GROVES		579 MCKNIGHT RD S		SAINT PAUL	MN	55119
SERENA L MOLLENHAUER		58 WHITE BEAR AVE S		SAINT PAUL	MN	55106
FRED & SHIRLEY APFELBACHER		580 STEWART AVE		SOUTH ST PAUL	MN	55075
JAMES M WATERS		582 CONCORD ST		SAINT PAUL	MN	55107
NICHOLAS W JOHNSON		583 BURLINGTON RD		SAINT PAUL	MN	55119
SARAH BEEMAN		584 BURLINGTON RD		SAINT PAUL	MN	55119
MINNESOTA REALTY AND		585 ANNAPOLIS ST E		SAINT PAUL	MN	55118
MARY L KRANZ		585 MCKNIGHT RD S		SAINT PAUL	MN	55119
RYAN P GUENVEUR		589 MCKNIGHT RD S		SAINT PAUL	MN	55119
SIRAK ABEBE		59 BATTLE CREEK PL		SAINT PAUL	MN	55119
LANG N NGUYEN		59 DARLENE ST		SAINT PAUL	MN	55119
WM G & AUDREY T WOJTOWICZ		590 ANNAPOLIS ST E		SOUTH ST PAUL	MN	55075
EDWARD J DUKES		590 CONCORD ST		SAINT PAUL	MN	55107
NUCHI YANG		590 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
CONRAD W WARNER		591 BURLINGTON RD		SAINT PAUL	MN	55119
KRISTI L BRUBER		592 CONCORD ST		SAINT PAUL	MN	55107
JOSEPH SWAYNE		594 BURLINGTON RD		SAINT PAUL	MN	55119
MARK J PAULSON TRUSTEE		595 MCKNIGHT RD S		SAINT PAUL	MN	55119
NICHOLAS A WEBB		596 ANNAPOLIS ST E		SOUTH ST PAUL	MN	55075
KATHRYN D ANDREWS		597 WIGGINS RD		SAINT PAUL	MN	55119
STEVEN A BURNS		598 WIGGINS RD		SAINT PAUL	MN	55119
ANTHONY LINBO		599 BURLINGTON RD		SAINT PAUL	MN	55119
JAMIE AHRENS		6 WHITE BEAR AVE S		SAINT PAUL	MN	55106
RYAN NORDAUNE		60 B ST		SAINT PAUL	MN	55106
ROBERT REID		60 BATES AVE		SAINT PAUL	MN	55106
WANDA S CONE		60 MARIA AVE		SAINT PAUL	MN	55106
MARK OBERMOLLER		60 MOUNDS BLVD		SAINT PAUL	MN	55106
RACHEL A RUTHERFORD		60 WHITE BEAR AVE N		SAINT PAUL	MN	55106
DARYLL JAMES & STEPH HELSETH		600 ANNAPOLIS ST E		SOUTH ST PAUL	MN	55075
PHILLIP GUSTAFSON		600 BURLINGTON RD		SAINT PAUL	MN	55119
MERCED R ROJAS		600 CONCORD ST N		SOUTH ST PAUL	MN	55075
LANCE EUGENE LAMPHEAR		601 ANNAPOLIS ST E		SAINT PAUL	MN	55107
TERRANCE J SCHMIT		601 BURLINGTON RD		SAINT PAUL	MN	55119
PAUL L HENDRICKSON		601 MCKNIGHT RD S		SAINT PAUL	MN	55119
EDWIN J BERNIARD		601 WIGGINS RD		SAINT PAUL	MN	55119
HELEN L PODGORSKI		602 DWANE ST		SOUTH ST PAUL	MN	55075
CRAIG RANDALL KUBERSKI		602 WINTHROP LN		SAINT PAUL	MN	55119
Andy Peek	Federal Aviation Administraion	6020 28th Avenue	Room 102	Minneapolis	MN	55450
STEPHEN J HAWKINS		603 BURLINGTON RD		SAINT PAUL	MN	55119
JHS LLC		603 CONGRESS ST		SOUTH ST PAUL	MN	55075
JESSICA DAVIS		605 BURLINGTON RD		SAINT PAUL	MN	55119
ROBERT & SARAH MWANIKI		605 CONCORD ST N		SOUTH ST PAUL	MN	55075
PALMER A YNGSDAL		605 WIGGINS RD		SAINT PAUL	MN	55119
RAYMOND P VINZANT		605 WINTHROP LN		SAINT PAUL	MN	55119
JUAN MACEDO		606 HILLWOOD CT		SAINT PAUL	MN	55119
JORDAN L HANSON		606 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
JOHN D MUDEK		607 BARGE CHANNEL RD		SAINT PAUL	MN	55107
JANIS C LAUNDERVILLE		608 CONGRESS ST		SOUTH ST PAUL	MN	55075
MICHAEL C SNYDER & CLARENCE W		609 CONCORD ST N		SOUTH ST PAUL	MN	55075
BRITTANY R ROSS		609 MCKNIGHT RD S		SAINT PAUL	MN	55119
PHYLLIS LEE VARGAS		609 STEWART AVE		SOUTH ST PAUL	MN	55075
PETER J WILLIAMS		609 WIGGINS RD		SAINT PAUL	MN	55119
JOHN C DITMORE		61 FLANDRAU PL		SAINT PAUL	MN	55106
ALEXANDRU I BUZILA		61 MARIA AVE		SAINT PAUL	MN	55106
JAMES A DORNFELD		61 WHITE BEAR AVE N		SAINT PAUL	MN	55106
KABAYNESH G GEBREMICHAEL		610 ANNAPOLIS ST E		SOUTH ST PAUL	MN	55075
CHOUA VANG		610 MCKNIGHT RD S		MAPLEWOOD	MN	55119
JAMES P HAYES		611 CONCORD PL		SOUTH ST PAUL	MN	55075
SORIN TROFIN		612 ANNAPOLIS ST E		SOUTH ST PAUL	MN	55075
JAMES A AURA		612 HILLWOOD CT		SAINT PAUL	MN	55119
612 S MCKNIGHT LLC		612 MCKNIGHT RD S		MAPLEWOOD	MN	55119
GERALD G & SUSAN A LERFALD		612 STEWART AVE #2		SOUTH ST PAUL	MN	55075
DAVID PAULU		613 BURLINGTON RD		SAINT PAUL	MN	55119
TOU L YANG		614 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
JOHN ASKELSON		615 CONCORD ST N		SOUTH ST PAUL	MN	55075
STEPHEN J & JEAN M MCSORLEY		615 STEWART AVE		SOUTH ST PAUL	MN	55075
ALLISON E & DESMOND JENSON		616 8TH AVE N		SOUTH ST PAUL	MN	55075
DAVID W BIEDERMANN		616 BURLINGTON RD		SAINT PAUL	MN	55119
YENG XIONG		616 HILLWOOD CT		SAINT PAUL	MN	55119
GERALD G & MARY L DEZELAR		616 STEWART AVE		SOUTH ST PAUL	MN	55075
DOUA CHANG		616 WIGGINS RD		SAINT PAUL	MN	55119
THAO ZE HER		617 BURLINGTON RD		SAINT PAUL	MN	55119
SCOTT A & AMBER M STANKO		617 CONCORD ST N		SOUTH ST PAUL	MN	55075
YEVGENIY A YEVTIKHOV		617 HILLWOOD CT		SAINT PAUL	MN	55119
DONALD F LINDSTEDT TRUSTEE		617 WIGGINS RD		SAINT PAUL	MN	55119
PAUL A BRANDON		617 WINTHROP LN		SAINT PAUL	MN	55119
KENNETH RENTFROW		619 BURLINGTON RD		SAINT PAUL	MN	55119
ERIK J & CYNITHIA A BORGSTROM		619 CONCORD ST N		SOUTH ST PAUL	MN	55075
DARRYL B SMITH		619 MCKNIGHT RD S		SAINT PAUL	MN	55119
JOEL S GERMAIN		62 FLANDRAU PL		SAINT PAUL	MN	55106
NICOLE M RUSK		620 8TH AVE N		SOUTH ST PAUL	MN	55075
BARBARA J NEMER		620 BURLINGTON RD		SAINT PAUL	MN	55119
JAMES C ANDERSON		620 HILLWOOD CT		SAINT PAUL	MN	55119
DAVINA THAO		620 MCKNIGHT RD S		MAPLEWOOD	MN	55119
GARY DAILY		621 CONCORD ST N		SOUTH ST PAUL	MN	55075
SHONG YANG		622 MCKNIGHT RD S		MAPLEWOOD	MN	55119
STEVEN M MASSON		623 BURLINGTON RD		SAINT PAUL	MN	55119
MARK HAAKINSON		623 CONCORD ST N		SOUTH ST PAUL	MN	55075
LUCILLE F LICK		623 MCKNIGHT RD S		SAINT PAUL	MN	55119
SCOTT FLANDERS		624 WIGGINS RD		SAINT PAUL	MN	55119
MATEJ BAJZER		624 WINTHROP LN		SAINT PAUL	MN	55119
DWAYNE P & REGINA M CARLIN		625 CONCORD PL		SOUTH ST PAUL	MN	55075
LAURIE LYNN KABES		625 CONCORD ST N		SOUTH ST PAUL	MN	55075
THOMAS E PETERSON		625 HILLWOOD CT		SAINT PAUL	MN	55119
David Bell	Minnesota Department of Health	625 Robert St. N.		St. Paul	MN	55164
Paul Allwood	Minnesota Department of Health	625 Robert St. N.		St. Paul	MN	55164
ELIZABETH ANN BEILKE		625 STEWART AVE		SOUTH ST PAUL	MN	55075
MARY ELIZABETH BOFFERDING		625 WIGGINS RD		SAINT PAUL	MN	55119
KELLY DUNNIGAN MOE		625 WINTHROP LN		SAINT PAUL	MN	55119
LAUREL A SCHMITZ TRUSTEE		626 HILLWOOD CT		SAINT PAUL	MN	55119
BARBARA Q HOLTAN		627 BURLINGTON RD		SAINT PAUL	MN	55119
BRADLEY T WILDMAN		628 BURLINGTON RD		SAINT PAUL	MN	55119
LINDA K BRODKORB		628 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
ALEX J MESSICCI		629 HILLWOOD CT		SAINT PAUL	MN	55119
KORY CLAUSEN		629 MCKNIGHT RD S		SAINT PAUL	MN	55119
SHAUN R DARST		629 STEWART AVE		SOUTH ST PAUL	MN	55075
ANNA M OHARA		629 WIGGINS RD		SAINT PAUL	MN	55119
63 MARIA LLC		63 MARIA AVE		SAINT PAUL	MN	55106
STEVEN J STAPLES		630 BURLINGTON RD		SAINT PAUL	MN	55119
DART S MOY		630 HILLWOOD CT		SAINT PAUL	MN	55119
CASSIE A ROOD		630 WIGGINS RD		SAINT PAUL	MN	55119
DANIEL J METZLER		631 BURLINGTON RD		SAINT PAUL	MN	55119
CHARLES W HUMPHREY		633 BURLINGTON RD		SAINT PAUL	MN	55119
HOME SFR BORROWER LLC		633 CONCORD ST N		SOUTH ST PAUL	MN	55075
ERICA SCHOPPER		633 WIGGINS RD		SAINT PAUL	MN	55119
ANDREW J HOFFMAN & ALISA L DRAGT-		634 8TH AVE N		SOUTH ST PAUL	MN	55075
JOY YANG		635 BURLINGTON RD		SAINT PAUL	MN	55119
SCOTT CILISKE		635 HILLWOOD CT		SAINT PAUL	MN	55119
MICHELE A BETTS		635 STEWART AVE		SOUTH ST PAUL	MN	55075
BRENT & SADIE BENSON		636 STEWART AVE		SOUTH ST PAUL	MN	55075

Full Name	Organization - Primary	Mailing Street	Mailing Street 2	Mailing City	Mailing State	Mailing Zip
CHAD BOGDAN		636 WIGGINS RD		SAINT PAUL	MN	55119
CITY OF ST PAUL		637 BARGE CHANNEL RD		SAINT PAUL	MN	55107
THEODORE H NOWICKI		637 MCKNIGHT RD S		SAINT PAUL	MN	55119
SETH DAVID WAIT		638 HILLWOOD CT		SAINT PAUL	MN	55119
TIMOTHY A JOHNSON		639 8TH AVE N		SOUTH ST PAUL	MN	55075
SALVATION ARMY		639 BURLINGTON RD		SAINT PAUL	MN	55119
PETER J STAACK		64 BATES AVE		SAINT PAUL	MN	55106
ANDREW QUADE		640 BURLINGTON RD		SAINT PAUL	MN	55119
CHRISTIAN R KLUENDER & KIMBERLY J		640 STEWART AVE		SOUTH ST PAUL	MN	55075
IRENE C KUSTRITZ LIVING TRUST		641 8TH AVE N		SOUTH ST PAUL	MN	55075
DANIEL T GOLDEN		641 HILLWOOD CT		SAINT PAUL	MN	55119
JAMES LEONARD ERICKSON		642 HILLWOOD CT		SAINT PAUL	MN	55119
MPLS ST PAUL MET AIRPORTS COM		644 BAYFIELD ST		SAINT PAUL	MN	55107
DAVID JOHN VAN BOGART		644 BURLINGTON RD		SAINT PAUL	MN	55119
JEFFREY KUSTRITZ		645 8TH AVE N		SOUTH ST PAUL	MN	55075
JAMES JUDIN GREER		645 BURLINGTON RD		SAINT PAUL	MN	55119
ELEUTERIA J BOLES		645 CONCORD ST N		SOUTH ST PAUL	MN	55075
JEFFREY T MICKO		645 HILLWOOD CT		SAINT PAUL	MN	55119
JOHN L AMACHER		645 MCKNIGHT RD S		SAINT PAUL	MN	55119
TREVOR G LUNN & ELISE M DOUCETTE		645 STEWART AVE		SOUTH ST PAUL	MN	55075
646 HILLWOOD LLC		646 HILLWOOD CT		SAINT PAUL	MN	55119
MICHAEL A DEMOTTS		647 MCLEAN AVE		SAINT PAUL	MN	55106
ELIZABETH A WIGGINS		648 BURLINGTON RD		SAINT PAUL	MN	55119
WILLIAM N LO		648 PLUM ST		SAINT PAUL	MN	55106
STACY E JAMESON		648 WIGGINS RD		SAINT PAUL	MN	55119
CARRIE C RINDAL		649 CHERRY ST		SAINT PAUL	MN	55106
GREG A LEHMAN		649 CONCORD ST N		SOUTH ST PAUL	MN	55075
ARRON M RUPERT		649 HILLWOOD CT		SAINT PAUL	MN	55119
TIMOTHY J OCONNOR		649 SHORT ST		SAINT PAUL	MN	55106
DANIEL K MCINTYRE		65 B ST		SAINT PAUL	MN	55106
DANIEL T LARKIN		65 BATTLE CREEK RD		SAINT PAUL	MN	55119
BRIAN CONWAY		65 FLANDRAU PL		SAINT PAUL	MN	55106
JULIAN D BEARD		650 HILLWOOD CT		SAINT PAUL	MN	55119
DAVID A HULBERT		650 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
BRENT BENSON		650 STEWART AVE		SOUTH ST PAUL	MN	55075
ANDREW DOUGLAS HEIN & DIANA		651 8TH AVE N		SOUTH ST PAUL	MN	55075
CINDY L FERNLUND		651 BURLINGTON RD		SAINT PAUL	MN	55119
VUGRANAM C VARADACHARI		651 MCKNIGHT RD S		SAINT PAUL	MN	55119
MATTHEW T & MEGAN M SCHMIDT		651 STEWART AVE		SOUTH ST PAUL	MN	55075
BARBARA A RASMUSSEN		652 BURLINGTON RD		SAINT PAUL	MN	55119
BONITA LYNN CHAMBERLIN REYES		652 CHERRY ST		SAINT PAUL	MN	55106
WILLIAM E GOLDBERG		652 CONCORD ST		SAINT PAUL	MN	55107
DAYTONS BLUFF NGHBRHD HOUSING		652 CONWAY ST		SAINT PAUL	MN	55106
MELANIE A BUETOW		652 MCLEAN AVE		SAINT PAUL	MN	55106
JOHN C TIBBETTS		652 PLUM ST		SAINT PAUL	MN	55106
SPENCER T HARTZ		653 CONCORD ST N		SOUTH ST PAUL	MN	55075
RICHARD G TISCHLER		653 MCLEAN AVE		SAINT PAUL	MN	55106
MARGRETTE SHANNON		654 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
JAMES E RICCI		654 SHORT ST		SAINT PAUL	MN	55106
JOSEPH C ANDERSON		655 8TH AVE N		SOUTH ST PAUL	MN	55075
SHERYL KNOTEK		655 CHERRY ST		SAINT PAUL	MN	55106
JAY L WITTENBERG		655 PLUM ST		SAINT PAUL	MN	55106
FRANCISCO J CARDONA		655 SHORT ST		SAINT PAUL	MN	55106
JEAN E THOMPSON		656 CHERRY ST		SAINT PAUL	MN	55106
JAMES MICHAEL SEYER		656 CONCORD ST		SAINT PAUL	MN	55107
PAUL S SCHUSTER		656 PLUM ST		SAINT PAUL	MN	55106
TARA FOHRENKAMM		656 SHORT ST		SAINT PAUL	MN	55106
MICHAEL E ONEILL & ROBIN L JONES		656 STEWART AVE		SOUTH ST PAUL	MN	55075
ROBERT W OTT		656 WIGGINS RD		SAINT PAUL	MN	55119
REBECCA S PAVLENKO		657 CHERRY ST		SAINT PAUL	MN	55106
ANGELO G WILLIAMS		657 MCLEAN AVE		SAINT PAUL	MN	55106
MACKENROTH ENTERPRISES LLC		657 PLUM ST		SAINT PAUL	MN	55106
ANNE L PINK		657 SHORT ST		SAINT PAUL	MN	55106
ADRIENNE DOROFF & THEODORE J &		658 9TH AVE N		SOUTH ST PAUL	MN	55075
STEPHEN WENSMAN		658 BURLINGTON RD		SAINT PAUL	MN	55119
PEDERSON HOLDINGS LLC		658 CONWAY ST		SAINT PAUL	MN	55106
TERRY L FRANSEN		658 PLUM ST		SAINT PAUL	MN	55106
LLOYD M NELSON		659 MCKNIGHT RD S		SAINT PAUL	MN	55119
JONATHAN S MASON		659 SHORT ST		SAINT PAUL	MN	55106
YANGTZE HOME LLC		659 SURREY AVE		SAINT PAUL	MN	55106
GERARD P MCINERNEY		66 FLANDRAU PL		SAINT PAUL	MN	55106
ROSAURA A DELATORRE		66 WHITE BEAR AVE N		SAINT PAUL	MN	55106
2015-2 IH2 BORROWER LP		660 BURLINGTON RD		SAINT PAUL	MN	55119
MARCIA LANINGHAM		660 CHERRY ST		SAINT PAUL	MN	55106
John Crampton	Izaak Walton League of America	6601 Auto Club Raod		Bloomington	MN	55438
ALVIN P FISCHER TSTE & MARILYN M		661 8TH AVE N		SOUTH ST PAUL	MN	55075
TIMOTHY A BORAAS		661 CHERRY ST		SAINT PAUL	MN	55106
JEROME W KELLER		661 MCLEAN AVE		SAINT PAUL	MN	55106
JOHN W WHEELER		661 PLUM ST		SAINT PAUL	MN	55106
LEO F VICKERMAN		661 SHORT ST		SAINT PAUL	MN	55106
MENG YANG		661 SURREY AVE		SAINT PAUL	MN	55106
ERIK BERGER		662 CONWAY ST		SAINT PAUL	MN	55106
RANDALL M MONSON		662 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
BRUCE G & ELIZ IVASCU		663 STEWART AVE		SOUTH ST PAUL	MN	55075
KAI THAO		663 SURREY AVE		SAINT PAUL	MN	55106
BENJAMIN R LACINA		664 BURLINGTON RD		SAINT PAUL	MN	55119
RYAN JEFFREY LOFTSGAARDEN		664 CHERRY ST		SAINT PAUL	MN	55106
EMILY HOGG		664 CONWAY ST		SAINT PAUL	MN	55106
GRANT M STEVENSEN		664 SHORT ST		SAINT PAUL	MN	55106
DONALD A & SHELLY A REGEP		664 STEWART AVE		SOUTH ST PAUL	MN	55075
PETER R WINDINGSTAD		665 CHERRY ST		SAINT PAUL	MN	55106
COLLEEN M MCKEE		665 MCLEAN AVE		SAINT PAUL	MN	55106
DANIEL TRI		665 STEWART AVE		SOUTH ST PAUL	MN	55075
STEPHEN W HEININGER		666 CHERRY ST		SAINT PAUL	MN	55106
CHRISTOPHER S ENGSTROM		666 PLUM ST		SAINT PAUL	MN	55106
MICHAEL B MARSHALL		666 SHORT ST		SAINT PAUL	MN	55106
GREG J OPPEGARD		667 SURREY AVE		SAINT PAUL	MN	55106
RICHARD LEE ROACH		668 BURLINGTON RD		SAINT PAUL	MN	55119
HOMES FOR LEARNING LTD PRTNSH		668 SURREY AVE		SAINT PAUL	MN	55106
DARREN A ABBEY		669 BURLINGTON RD		SAINT PAUL	MN	55119
PAUL A PURMAN		669 SHORT ST		SAINT PAUL	MN	55106
SHARON L HAU		67 BATTLE CREEK PL		SAINT PAUL	MN	55119
JUAN A CERVANTES		67 MARIA AVE		SAINT PAUL	MN	55106
CHARLES T DRAKE		670 CHERRY ST		SAINT PAUL	MN	55106
WARFA REAL ESTATE LLC		670 CONWAY ST		SAINT PAUL	MN	55106
JULIE M DUCKSTAD		670 SHORT ST		SAINT PAUL	MN	55106
NATALIE J GRAY		672 BURLINGTON RD		SAINT PAUL	MN	55119
ZACHARY S NINMANN		672 SURREY AVE		SAINT PAUL	MN	55106
PHILLIP J HOLMER		674 CONCORD ST		SAINT PAUL	MN	55107
WILLIAM H B WRIGHT		674 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
MARK W NIELSEN		675 BURLINGTON RD		SAINT PAUL	MN	55119
DERRELL T STOCKTON		676 BURLINGTON RD		SAINT PAUL	MN	55119
LAUREN H SMREKAR		677 MCKNIGHT RD S		SAINT PAUL	MN	55119
DINH BA LE		68 BATTLE CREEK PL		SAINT PAUL	MN	55119
BRAD D DIERINGER		68 MARIA AVE		SAINT PAUL	MN	55106
EVERARDO H AGUILERA		680 BURLINGTON RD		SAINT PAUL	MN	55119
WILLIAM E GOLDBERG		682 CONCORD ST		SAINT PAUL	MN	55107
ROGER A SCHULSTAD		683 FIR ST		SAINT PAUL	MN	55119
JESSICA A SAPP		685 BURLINGTON RD		SAINT PAUL	MN	55119
MOUA P VANG		685 MCKNIGHT RD S		SAINT PAUL	MN	55119
STEPHEN J WIPLINGER		685 WILSON AVE		SAINT PAUL	MN	55106
DAVID A PIECHOWSKI		686 BURLINGTON RD		SAINT PAUL	MN	55119
THOMAS E SAWYER		686 MCLEAN AVE		SAINT PAUL	MN	55106
MAITA LEE		686 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
MATTHEW WAITE		687 EUCLID ST		SAINT PAUL	MN	55106
XAI D VANG		687 WILSON AVE		SAINT PAUL	MN	55106
ROSTIN LLC		688 BURLINGTON RD		SAINT PAUL	MN	55119
EVA J LOPEZ		688 EUCLID ST		SAINT PAUL	MN	55106
HEXIAN HU		689 FIR ST		SAINT PAUL	MN	55119
YANGTZE HOME LLC		689 SURREY AVE		SAINT PAUL	MN	55106
JOHN VANG		689 WILSON AVE		SAINT PAUL	MN	55106
LONITA J FORTIER TRUSTEE		69 DARLENE ST		SAINT PAUL	MN	55119
XENG XIONG		690 CONWAY ST		SAINT PAUL	MN	55106
MAI VANG		690 SURREY AVE		SAINT PAUL	MN	55106
ARTURO CABALLERO DURAN		691 EUCLID ST		SAINT PAUL	MN	55106
LORI J BAILEY		691 SURREY AVE		SAINT PAUL	MN	55106
MICHAEL BUTCHKO		692 CONWAY ST		SAINT PAUL	MN	55106

Full Name	Organization - Primary	Mailing Street	Mailing Street 2	Mailing City	Mailing State	Mailing Zip
RONALD WENTZ		692 EUCLID ST		SAINT PAUL	MN	55106
GEORGE C LEWIS		692 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
LESLEY F ANIZOR		692 WILSON AVE		SAINT PAUL	MN	55106
CATHERINE A HANSEN		693 CHERRY ST		SAINT PAUL	MN	55106
DAVID H WANG		693 FIR ST		SAINT PAUL	MN	55119
ALEXANDER B DEPUTIE		693 SURREY AVE		SAINT PAUL	MN	55106
693 WILSON LLC		693 WILSON AVE		SAINT PAUL	MN	55106
WILLIAM BRADLEY SHARBONO		694 SURREY AVE		SAINT PAUL	MN	55106
AEL PROPERTIES LLC		694 WILSON AVE		SAINT PAUL	MN	55106
GLORIA A FRYE		695 EUCLID ST		SAINT PAUL	MN	55106
DAWN PAIGE CHRISTENSEN		696 CONCORD ST		SAINT PAUL	MN	55107
JAMES A RICHARDS		696 CONWAY ST		SAINT PAUL	MN	55106
JENNIFER M SINNA		696 SURREY AVE		SAINT PAUL	MN	55106
ALLYSON BECKERS		697 BURLINGTON RD		SAINT PAUL	MN	55119
JINGHAN QU		697 EUCLID ST		SAINT PAUL	MN	55106
ST PAUL PUBLIC HOUSING AGENCY		697 SHORT ST		SAINT PAUL	MN	55106
SHARON LEE ANDERSON		697 SURREY AVE		SAINT PAUL	MN	55106
FAIR HOUSING LLC		698 CONWAY ST		SAINT PAUL	MN	55106
LONG LEE		698 EUCLID ST		SAINT PAUL	MN	55106
NICHOLAS BAZAN		698 KANSAS AVE		SAINT PAUL	MN	55107
MARTIN LEAMON		698 WILSON AVE		SAINT PAUL	MN	55106
MICHAEL J SEEFELD		699 MCKNIGHT RD S		SAINT PAUL	MN	55119
ABBIE FINGER		699 SURREY AVE		SAINT PAUL	MN	55106
BAOSHAN SHAN		699 WILSON AVE		SAINT PAUL	MN	55106
TIMOTHY B DEUITCH		7 BATTLE CREEK RD		SAINT PAUL	MN	55119
KEITH A RICHTER		70 BATES AVE		SAINT PAUL	MN	55106
MARY K ENGELHARD		70 MOUNDS BLVD		SAINT PAUL	MN	55106
JO YLITALO SULLIVAN		70 UPPER AFTON TER		SAINT PAUL	MN	55106
GERALD D RAMEY		70 WHITE BEAR AVE N		SAINT PAUL	MN	55106
Bruce Elder	City of Saint Paul	700 City Hall Annex	25 W. 4th St.	St. Paul	MN	55102
Josh Williams	City of Saint Paul	700 City Hall Annex	25 W. 4th St.	St. Paul	MN	55102
Russ Stark	City of Saint Paul	700 City Hall Annex	25 W. 4th St.	St. Paul	MN	55102
Wes Saunders-Pearce	City of Saint Paul	700 City Hall Annex	25 W. 4th St.	St. Paul	MN	55102
JOSE GONZALEZ TORRES		700 CONWAY ST		SAINT PAUL	MN	55106
OSCAR G ESTRADA MATAMOROS		700 KANSAS AVE		SAINT PAUL	MN	55107
JERRY R FREDINE		700 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
JAMES A RICHARDS		700 SURREY AVE		SAINT PAUL	MN	55106
KATHERINE NGUYEN		700 WILSON AVE		SAINT PAUL	MN	55106
PORT AUTHORITY OF ST PAUL		701 BARGE CHANNEL RD		SAINT PAUL	MN	55107
ENRIQUE V DOMINQUEZ		701 KANSAS AVE		SAINT PAUL	MN	55107
UNITED HMONG INVESTMENT LLC		701 WILSON AVE		SAINT PAUL	MN	55106
TIMOTHY MURPHY		702 CONWAY ST		SAINT PAUL	MN	55106
ROBERT G WICKER		702 WILSON AVE		SAINT PAUL	MN	55106
ROYCE & M W MORRISSETTE		704 STEWART LN		SOUTH ST PAUL	MN	55075
NEIDA L GUERRA		704 WILSON AVE		SAINT PAUL	MN	55106
CELESTINE ANN WESLEY		706 CONGRESS ST		SOUTH ST PAUL	MN	55075
ROBERT C WOODFORD		707 FIR ST		SAINT PAUL	MN	55119
PAUL ANTHONY SIEKMEIER &		707 STEWART LN		SOUTH ST PAUL	MN	55075
REBECCA NICOLE LESSARD SANCHEZ		71 B ST		SAINT PAUL	MN	55106
MARY R SEVERANCE		71 MARIA AVE		SAINT PAUL	MN	55106
W & W RENTAL PROPERTIES LLC		710 CONCORD ST		SAINT PAUL	MN	55107
GREGORY J MORTENSEN		710 CONGRESS ST		SOUTH ST PAUL	MN	55075
HAROLD H BRAUN		710 MCKNIGHT RD S		MAPLEWOOD	MN	55119
CHRISTOPHER J SOVDE		710 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
DEAN R & BEVERLY L BRAND		711 STEWART LN		SOUTH ST PAUL	MN	55075
ST PAUL PUBLIC HOUSING AGENCY		712 ANDREW ST		SAINT PAUL	MN	55107
COLLEEN CHARPENTIER		712 CONCORD ST		SAINT PAUL	MN	55107
JEREN HAMLIN & HEIDI A THIEL		712 STEWART LN		SOUTH ST PAUL	MN	55075
THERESA M MARX		714 CONCORD ST		SAINT PAUL	MN	55107
TREMAYNE K JONES		715 MCKNIGHT RD S		SAINT PAUL	MN	55119
NELSON J RAMOS HERNANDEZ		715 PLUM ST		SAINT PAUL	MN	55106
KBD INVESTMENTS LLC		719 WILSON AVE		SAINT PAUL	MN	55106
BENJAMIN J OLSEN		72 MARIA AVE		SAINT PAUL	MN	55106
JOHN P BRAASCH		72 UPPER AFTON TER		SAINT PAUL	MN	55106
ROBERT J VANGUILDER		720 EUCLID ST		SAINT PAUL	MN	55106
JUSTIN J TERRONES		720 MCKNIGHT RD S		MAPLEWOOD	MN	55119
DEVON BANGERTER JR & JOAN		720 STEWART LN		SOUTH ST PAUL	MN	55075
ASIA C VILLARREAL SANSOM		720 WILSON AVE		SAINT PAUL	MN	55106
GW BADGER INVESTORS LLC		721 PLUM ST		SAINT PAUL	MN	55106
BRIAN B LAKE		721 STEWART LN		SOUTH ST PAUL	MN	55075
RAYMOND W BABCOCK		722 CONCORD ST N		SOUTH ST PAUL	MN	55075
THOMAS E STACHOWIAK		722 WILSON AVE		SAINT PAUL	MN	55106
GARY C SOUTHWARD		723 PLUM ST		SAINT PAUL	MN	55106
TOUA YANG		724 EUCLID ST		SAINT PAUL	MN	55106
JOSEPH M BRENNAN		724 WILSON AVE		SAINT PAUL	MN	55106
THERESA E DAVIDSEN		726 EUCLID ST		SAINT PAUL	MN	55106
ALINA CRUZ		726 WILSON AVE		SAINT PAUL	MN	55106
GERALD & IRENE ROY TSTES		727 STEWART LN		SOUTH ST PAUL	MN	55075
JAMES L BROOKS		727 WILSON AVE		SAINT PAUL	MN	55106
JOHN YANG		728 EUCLID ST		SAINT PAUL	MN	55106
LAWRENCE W BENNETT		728 PLUM ST		SAINT PAUL	MN	55106
LYNNE M HOULE CHERVENY		728 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
BETH LINDQUIST		729 PLUM ST		SAINT PAUL	MN	55106
KELLY ANN MARLOW		730 STEWART LN		SOUTH ST PAUL	MN	55075
HARRY W & RUTH A CHERRIER		732 10TH AVE N		SOUTH ST PAUL	MN	55075
ELIZABETH L NUNEZ		732 EUCLID ST		SAINT PAUL	MN	55106
DAVID JOHNSTONE		733 PLUM ST		SAINT PAUL	MN	55106
ELIZABETH M MATAKIS		733 WILSON AVE		SAINT PAUL	MN	55106
RANDALL D ASHER		734 WINTHROP ST S		SAINT PAUL	MN	55119
TWIN CITIES PROPERTY MANAGEMENT		735 WILSON AVE		SAINT PAUL	MN	55106
DAVID A FINSETH		736 CONCORD ST		SAINT PAUL	MN	55107
LAURENCE A PYE		736 EUCLID ST		SAINT PAUL	MN	55106
ROBERT KREIENSIECK		736 PLUM ST		SAINT PAUL	MN	55106
PATRICIA LUCAS		736 WILSON AVE		SAINT PAUL	MN	55106
ERIN E CASPER		737 PLUM ST		SAINT PAUL	MN	55106
THOMAS J WHYCHELL		737 WILSON AVE		SAINT PAUL	MN	55106
TYLER M POWERS		738 PLUM ST		SAINT PAUL	MN	55106
ANTHONY MARRONE		738 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
AKENZUA D AGBATOR		738 WILSON AVE		SAINT PAUL	MN	55106
ST PAUL PUBLIC HOUSING AGENCY		74 MARIA AVE		SAINT PAUL	MN	55106
LEONARD INVESTMENTS LLC		740 CONCORD ST N		SOUTH ST PAUL	MN	55075
TRINIDAD AYON		740 EUCLID ST		SAINT PAUL	MN	55106
JAMES F & RITA M JAWORSKI		740 STEWART LN		SOUTH ST PAUL	MN	55075
DAO YANG		740 WILSON AVE		SAINT PAUL	MN	55106
MILDRED MARY SANFTNER		741 WILSON AVE		SAINT PAUL	MN	55106
ARON B THOMAS		742 PLUM ST		SAINT PAUL	MN	55106
THERESA J HITZ		743 WILSON AVE		SAINT PAUL	MN	55106
ALISSA J FEHRMAN FRANKOT		744 STEWART LN		SOUTH ST PAUL	MN	55075
GLEN R TURNQUIST		749 MCKNIGHT RD S		SAINT PAUL	MN	55119
JOSEPH A OLIVER		75 BATTLE CREEK RD		SAINT PAUL	MN	55119
ALAN G JOHNSTON		75 MARIA AVE		SAINT PAUL	MN	55106
JOHN J III SCANLON		75 UPPER AFTON TER		SAINT PAUL	MN	55106
HOMERO T HERNANDEZ		750 CONCORD ST		SAINT PAUL	MN	55107
ANTONY M NOBELLO		750 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
PETER A FELIPE		754 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
STEVEN G DUERRE		76 BATES AVE		SAINT PAUL	MN	55106
JAI VANG		76 BATTLE CREEK PL		SAINT PAUL	MN	55119
RONALD D BOLLINGER		76 DARLENE ST		SAINT PAUL	MN	55119
KENDALL L CLEVENGER		76 MOUNDS BLVD		SAINT PAUL	MN	55106
ROBERT LINDAHL REALTY INC		76 UPPER AFTON TER		SAINT PAUL	MN	55106
MICHAEL J MADIGAN		760 BROOKLINE ST		SAINT PAUL	MN	55119
MARK E NORTHWICK		761 MCKNIGHT RD S		SAINT PAUL	MN	55119
WILLIAM A & DAWN E MEYER		763 10TH AVE N		SOUTH ST PAUL	MN	55075
MATTHEW M DOMSKI		763 MCKNIGHT RD S		SAINT PAUL	MN	55119
KARL E LIEDER		764 BROOKLINE ST		SAINT PAUL	MN	55119
STEPHEN DICK		764 CONCORD ST		SAINT PAUL	MN	55107
AMANDA KAY WAGNER HYATT		766 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
DAVID L & JERILYN A HEINICKE		767 10TH AVE N		SOUTH ST PAUL	MN	55075
KEITH KAMISH		769 BROOKLINE ST		SAINT PAUL	MN	55119
DAVID G ECKER		769 WATERLOO ST		SAINT PAUL	MN	55107
WAYNE E ERICKSON		77 B ST		SAINT PAUL	MN	55106
STEVEN C TRIMBLE		77 MARIA AVE		SAINT PAUL	MN	55106
DANIEL D GINKEL		77 UPPER AFTON TER		SAINT PAUL	MN	55106
RAYMOND V MATTER		770 BROOKLINE ST		SAINT PAUL	MN	55119
BARBARA A MANSON		770 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
SHERRI MARBERRY & NICHOLAS M		771 10TH AVE N		SOUTH ST PAUL	MN	55075
KAO HER		772 CONCORD ST N		SOUTH ST PAUL	MN	55075

Full Name	Organization - Primary	Mailing Street	Mailing Street 2	Mailing City	Mailing State	Mailing Zip
KATHLEEN E & GREGORY RAMIREZ		775 10TH AVE N		SOUTH ST PAUL	MN	55075
RACHEL L VENNES		775 WATERLOO ST		SAINT PAUL	MN	55107
JOHN PETER RIES TSTE & JOAN MARIE		777 CONCORD ST N		SOUTH ST PAUL	MN	55075
ANGELA C HEIBERGER		7771/2 CONCORD ST N		SOUTH ST PAUL	MN	55075
DESTINY STENNIS		778 10TH AVE N		SOUTH ST PAUL	MN	55075
BRIAN J MILLER		78 MARIA AVE		SAINT PAUL	MN	55106
AMY R ALLEN		780 10TH AVE N		SOUTH ST PAUL	MN	55075
PORT AUTHORITY OF ST PAUL		780 BARGE CHANNEL RD		SAINT PAUL	MN	55107
PORT AUTHORITY OF ST PAUL		781 BARGE CHANNEL RD		SAINT PAUL	MN	55107
DANIEL V NORTON		782 GABRIEL RD		SAINT PAUL	MN	55119
JAMES D GLAZER		79 UPPER AFTON TER		SAINT PAUL	MN	55106
INDEPENDENT SCHOOL DIST 625		790 CONWAY ST		SAINT PAUL	MN	55106
KAYLEIGH R NYQUIST		790 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
REBECCA A JOHNSON		799 GABRIEL RD		SAINT PAUL	MN	55119
CLAIRE A THOEN		799 WINTHROP ST S		SAINT PAUL	MN	55119
LAWRENCE E MEUWISSEN TRUSTEE		8 BATES AVE		SAINT PAUL	MN	55106
MICHAEL E WALL		8 BATTLE CREEK RD		SAINT PAUL	MN	55119
PIERRE BALIAN		80 BATES AVE		SAINT PAUL	MN	55106
JOHN M BRANDNER		80 BATTLE CREEK PL		SAINT PAUL	MN	55119
CHRISTOPHER L ROHDE		80 UPPER AFTON TER		SAINT PAUL	MN	55106
BLONG BILLY LOR		80 WHITE BEAR AVE N		SAINT PAUL	MN	55106
CITY OF ST PAUL		800 CONWAY ST		SAINT PAUL	MN	55106
PORT AUTHORITY OF ST PAUL		801 BARGE CHANNEL RD		SAINT PAUL	MN	55107
MARVIN JAMES SIGMUNDIK & JOAN		801 CONCORD ST N		SOUTH ST PAUL	MN	55075
JOSE FLORES		802 MOUND ST		SAINT PAUL	MN	55106
Jeanelle Foster	Dayton's Bluff Community Council	804 Margaret St.		St. Paul	MN	55106
TERESA J WALDVOGEL		805 BROOKLINE ST		SAINT PAUL	MN	55119
EILEEN RAUCHWARTER TSTE & RANDAL		806 CONCORD ST N		SOUTH ST PAUL	MN	55075
CLINTON M DEFORREST		807 GABRIEL RD		SAINT PAUL	MN	55119
TRAVIS T FERGUSON		808 MOUND ST		SAINT PAUL	MN	55106
ANN MARIE ACKERMAN		808 WINTHROP ST S		SAINT PAUL	MN	55119
THOMAS A RUCKMAR		809 STICKNEY ST		SAINT PAUL	MN	55107
WILLIAM R LAW		810 MCKNIGHT RD S		MAPLEWOOD	MN	55119
ELIZABETH C WRIGHT		811 GABRIEL RD		SAINT PAUL	MN	55119
MICHAEL P VOGT		811 WINTHROP ST S		SAINT PAUL	MN	55119
ASHLEY E LASKA		812 MOUND ST		SAINT PAUL	MN	55106
SHARON L FIELDS		812 STICKNEY ST		SAINT PAUL	MN	55107
NANCY L MORAVETZ		812 WINTHROP ST S		SAINT PAUL	MN	55119
WILLIAM J COCKRIEL		815 GABRIEL RD		SAINT PAUL	MN	55119
MICHAEL P WARRE		816 MOUND ST		SAINT PAUL	MN	55106
JOSEPH HARTE		818 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
GUADALUPE Q RODRIGUEZ		818 STICKNEY ST		SAINT PAUL	MN	55107
MICHAEL C ROBERTO		82 MARIA AVE		SAINT PAUL	MN	55106
GARY C SOUTHWARD		82 MOUNDS BLVD		SAINT PAUL	MN	55106
RJR ENTERPRISES LLC		820 CONCORD ST N		SOUTH ST PAUL	MN	55075
LISA MICHELE DAWES		820 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
STEVEN T BASCO		821 CONWAY ST		SAINT PAUL	MN	55106
GERALD A SANDERS		824 GABRIEL RD		SAINT PAUL	MN	55119
ANN PRIM		824 MOUND ST		SAINT PAUL	MN	55106
JACOB R SHEPPARD		824 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
EDGE INVESTMENTS LLC		825 CONCORD ST N		SOUTH ST PAUL	MN	55075
BRAD T JOHNSON		825 STICKNEY ST		SAINT PAUL	MN	55107
GREGORY J WARD		827 MOUND ST		SAINT PAUL	MN	55106
RUSSELL N OLSEN		827 WINTHROP ST S		SAINT PAUL	MN	55119
BEVERLY A SINGEWALD TRUSTEE		828 MOUND ST		SAINT PAUL	MN	55106
MARY J MINGO		828 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
PAUL P YANG		829 CONWAY ST		SAINT PAUL	MN	55106
ROBERT E LIND		83 B ST		SAINT PAUL	MN	55106
KATHLEEN SUSAN MADVIG		83 MARIA AVE		SAINT PAUL	MN	55106
PORT AUTHORITY OF ST PAUL		830 BARGE CHANNEL RD		SAINT PAUL	MN	55107
ANN M MYRAN		830 KANSAS AVE		SAINT PAUL	MN	55107
ARTHUR A WILKINSON		830 WINTHROP ST S		SAINT PAUL	MN	55119
KIESHIA BRYANT		831 CONWAY ST		SAINT PAUL	MN	55106
JEROME E SWANSON		832 GABRIEL RD		SAINT PAUL	MN	55119
PATRICIA BOYD		832 MOUND ST		SAINT PAUL	MN	55106
MICHAEL SCIARRA		833 STICKNEY ST		SAINT PAUL	MN	55107
GARY G ROACH		836 MOUND ST		SAINT PAUL	MN	55106
MARY LYNN YARBOROUGH		837 CONWAY ST		SAINT PAUL	MN	55106
DAVID J LANIK		837 GABRIEL RD		SAINT PAUL	MN	55119
SHIRLEY E JOHNSON		839 STICKNEY ST		SAINT PAUL	MN	55107
DAVID R POSSIN		84 BATES AVE		SAINT PAUL	MN	55106
JODIE ANDRUS		840 GABRIEL RD		SAINT PAUL	MN	55119
MARK L AMUNDSON		840 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
JEREMY G CRAMER		841 GABRIEL RD		SAINT PAUL	MN	55119
GREGORY PORYCKY		843 GABRIEL RD		SAINT PAUL	MN	55119
INTERCONTINENTAL PROPERTY		844 3RD ST E		SAINT PAUL	MN	55106
WADE A MONN		844 MOUND ST		SAINT PAUL	MN	55106
PATRICE MYERS		845 CONWAY ST		SAINT PAUL	MN	55106
CHRISTOPHER D PRIOR		848 3RD ST E		SAINT PAUL	MN	55106
ROBERT N LAY		848 GABRIEL RD		SAINT PAUL	MN	55119
JOHN C MAURER		848 MOUND ST		SAINT PAUL	MN	55106
WILLIAM R HILL		849 CONWAY ST		SAINT PAUL	MN	55106
DARREN E TUERK		849 WINTHROP ST S		SAINT PAUL	MN	55119
KYLE TRENBERTH		85 UPPER AFTON TER		SAINT PAUL	MN	55106
THOMAS V CRISP		850 WINTHROP ST S		SAINT PAUL	MN	55119
MORROW PARTNERS INC		851 CONWAY ST		SAINT PAUL	MN	55106
MARK D PRIOR		852 3RD ST E		SAINT PAUL	MN	55106
JOHN THOMPSON		852 MOUND ST		SAINT PAUL	MN	55106
FLAT IRON HOLDING LLC		853 CONWAY ST		SAINT PAUL	MN	55106
KIM HAGEMAN		853 MOUND ST		SAINT PAUL	MN	55106
CHRISTINA K RAMIREZ		854 EUCLID ST		SAINT PAUL	MN	55106
TRAVIS SCHAEFERS		854 GABRIEL RD		SAINT PAUL	MN	55119
MARILYN MORRISON		854 STICKNEY ST		SAINT PAUL	MN	55107
BRIAN D PETERSON		854 WINTHROP ST S		SAINT PAUL	MN	55119
SOUA LOR		856 3RD ST E		SAINT PAUL	MN	55106
ROBERT B KNOX		856 EUCLID ST		SAINT PAUL	MN	55106
MICHAEL J LEROUX		856 WINTHROP ST S		SAINT PAUL	MN	55119
SAMUEL SOLSRUD BECKMAN		857 HUDSON RD		SAINT PAUL	MN	55106
TODD W STENSON		857 MOUND ST		SAINT PAUL	MN	55106
BRADLEY CRNOBRNA		858 3RD ST E		SAINT PAUL	MN	55106
ROGER N OEHRLEIN		858 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
EMAN YOUSSEF KHALIL		858 STICKNEY ST		SAINT PAUL	MN	55107
MANIPHONE SOURIYAVONG		859 CONWAY ST		SAINT PAUL	MN	55106
RAMONA SWYGART		859 GABRIEL RD		SAINT PAUL	MN	55119
MICHIKO E SKOG		859 LENOX AVE		SAINT PAUL	MN	55119
LEIF CHRISTENSEN TRUSTEE		859 WINTHROP ST S		SAINT PAUL	MN	55119
JASON PAULY		86 UPPER AFTON TER		SAINT PAUL	MN	55106
ABERA MULUGETA		860 EUCLID ST		SAINT PAUL	MN	55106
VICTOR L SINDERMAN		860 GABRIEL RD		SAINT PAUL	MN	55119
GREGORY W BUSE TRUSTEE		860 LENOX AVE		SAINT PAUL	MN	55119
BARRY WHITE		860 MOUND ST		SAINT PAUL	MN	55106
VICTOR J QUAST		860 WINTHROP ST S		SAINT PAUL	MN	55119
MAI VANG		861 HUDSON RD		SAINT PAUL	MN	55106
LIPP INVESTMENTS LLC		862 3RD ST E		SAINT PAUL	MN	55106
PHOUA THAO		863 CONWAY ST		SAINT PAUL	MN	55106
PATRICK JAMES BLANDA		863 HUDSON RD		SAINT PAUL	MN	55106
PETER H HERMANN		864 GABRIEL RD		SAINT PAUL	MN	55119
LAVAY M CAIRL		864 WINTHROP ST S		SAINT PAUL	MN	55119
JAMES A ROE		865 LENOX AVE		SAINT PAUL	MN	55119
JAMES M LANO		865 MOUND ST		SAINT PAUL	MN	55106
HARRIETT L HAYNES		866 LENOX AVE		SAINT PAUL	MN	55119
DEBORAH L BEDNARZ		866 MOUND ST		SAINT PAUL	MN	55106
YENG THAO		867 CONWAY ST		SAINT PAUL	MN	55106
R AND S NO 1 PARTNERSHIP		867 STICKNEY ST		SAINT PAUL	MN	55107
ST PAUL PUBLIC HOUSING AGENCY		868 3RD ST E		SAINT PAUL	MN	55106
KABAO YANG		868 EUCLID ST		SAINT PAUL	MN	55106
JENNIFER J CLELLAND		868 MOUND ST		SAINT PAUL	MN	55106
DENISE B TURGEON		868 STICKNEY ST		SAINT PAUL	MN	55107
PINRASMITH KEO		868 WINTHROP ST S		SAINT PAUL	MN	55119
DAVID G NORBY		869 MCKNIGHT RD S		SAINT PAUL	MN	55119
LAWRENCE D LAND TRUSTEE		87 BATTLE CREEK RD		SAINT PAUL	MN	55119
THOMAS W GRZYWINSKI		87 LYON ST		SAINT PAUL	MN	55106
THOMAS E SAWYER		87 MARIA AVE		SAINT PAUL	MN	55106
DONG YANG		870 3RD ST E		SAINT PAUL	MN	55106
ANDREW J WEILAND		871 LENOX AVE		SAINT PAUL	MN	55119
PINNACLE PROPERTIES LLC		871 STICKNEY ST		SAINT PAUL	MN	55107

Full Name	Organization - Primary	Mailing Street	Mailing Street 2	Mailing City	Mailing State	Mailing Zip
JOSEPH P HAWK		872 EUCLID ST		SAINT PAUL	MN	55106
JOHN R GOODEN		873 WILSON AVE		SAINT PAUL	MN	55106
BRIAN E SCHNIZLEIN		875 WINTHROP ST S		SAINT PAUL	MN	55119
PATRICIA L VILLARREAL		876 3RD ST E		SAINT PAUL	MN	55106
JOHN EDWARD RAUCHBAUER		876 WINTHROP ST S		SAINT PAUL	MN	55119
ARIEL WORREL		877 HUDSON RD		SAINT PAUL	MN	55106
KEVIN A RUDOLPH		877 MCKNIGHT RD S		SAINT PAUL	MN	55119
GB ANDERSON DEVELOPMENT LLC		879 CONWAY ST		SAINT PAUL	MN	55106
LEFTERIS MORTOGLOU		88 BATES AVE		SAINT PAUL	MN	55106
KAO YANG		880 3RD ST E		SAINT PAUL	MN	55106
FRANZISKA B DRECHSLER		880 CONWAY ST		SAINT PAUL	MN	55106
CONSTANCE REGINA ANDERSON		880 EUCLID ST		SAINT PAUL	MN	55106
HARVEY L DUNDAS		880 MOUND ST		SAINT PAUL	MN	55106
Rosie Bungen		880 Mound St.		St. Paul		55106
DADDERS ESTATES LLC		880 WILSON AVE		SAINT PAUL	MN	55106
MAI XIONG LOR		881 EUCLID ST		SAINT PAUL	MN	55106
RUSSELL BLOMKER		881 HUDSON RD		SAINT PAUL	MN	55106
DOUGLAS P DOKKEN		881 MOUND ST		SAINT PAUL	MN	55106
JERROLD GRAY JR		881 WILSON AVE		SAINT PAUL	MN	55106
KIM N HARRINGTON		882 POINT DOUGLAS RD S		SAINT PAUL	MN	55119
DAVID W BAKER		883 MOUND ST		SAINT PAUL	MN	55106
JUAN C DIAZ		884 CONWAY ST		SAINT PAUL	MN	55106
EMIKO HALL		884 MOUND ST		SAINT PAUL	MN	55106
MICHAEL GUDEJKO		885 CONWAY ST		SAINT PAUL	MN	55106
XA TOU LOR		885 EUCLID ST		SAINT PAUL	MN	55106
DENNIS J MULLER		885 WILSON AVE		SAINT PAUL	MN	55106
RICHARD A CARLSON		885 WINTHROP ST S		SAINT PAUL	MN	55119
QUALITY RESIDENCES LLC		886 3RD ST E		SAINT PAUL	MN	55106
UNITED HMONG INVESTMENT LLC		886 EUCLID ST		SAINT PAUL	MN	55106
MAVIS T FRY		887 CONWAY ST		SAINT PAUL	MN	55106
MALCOLM B MACFARLANE		888 3RD ST E		SAINT PAUL	MN	55106
BRETT A SEEHUSEN		888 CONWAY ST		SAINT PAUL	MN	55106
KENNETH P HAMBLIN		889 EUCLID ST		SAINT PAUL	MN	55106
ELSIPETH A HUBERTY		889 MOUND ST		SAINT PAUL	MN	55106
BENJAMIN J AMTHOR		89 BATES AVE		SAINT PAUL	MN	55106
JAMES J WAKEM		89 FLANDRAU PL		SAINT PAUL	MN	55106
MIKE R JACOBSON		89 UPPER AFTON TER		SAINT PAUL	MN	55106
KENNETH MARTIN		890 WAKEFIELD AVE		SAINT PAUL	MN	55106
CEM PROPERTY MANAGEMENT LLC		890 WILSON AVE		SAINT PAUL	MN	55106
STEPPING STONES SUPPORTIVE		891 HUDSON RD		SAINT PAUL	MN	55106
Beverly Farraher	City of St. Paul Public Works	891 North Dale Street		Saint Paul	MN	55103
QUY CAO NGUYEN		891 WAKEFIELD AVE		SAINT PAUL	MN	55106
REAL ESTATE CONCEPTS INC		892 CONWAY ST		SAINT PAUL	MN	55106
JUDITH T HALL		893 WILSON AVE		SAINT PAUL	MN	55106
MELODIE MORSTAD		894 3RD ST E		SAINT PAUL	MN	55106
KATHRYN S KAMRUD		894 EUCLID ST		SAINT PAUL	MN	55106
DAVID CHARLES KREMER		894 MOUND ST		SAINT PAUL	MN	55106
DENNIS L HARMON		894 WILSON AVE		SAINT PAUL	MN	55106
JESUS ERNESTO ORTIZ DIAZ		895 MOUND ST		SAINT PAUL	MN	55106
MARY MOORE		895 WAKEFIELD AVE		SAINT PAUL	MN	55106
TROY RITTER		897 CONWAY ST		SAINT PAUL	MN	55106
UNITED HMONG INVESTMENT LLC		897 EUCLID ST		SAINT PAUL	MN	55106
SHARON A MCCREA		897 WILSON AVE		SAINT PAUL	MN	55106
SOUA LY		898 CONWAY ST		SAINT PAUL	MN	55106
CHIA XIONG		898 EUCLID ST		SAINT PAUL	MN	55106
AUNG NAE TU		898 WILSON AVE		SAINT PAUL	MN	55106
BNSF RAILWAY CO		90 FISH HATCHERY RD		SAINT PAUL	MN	55106
THOMAS Q CHASTEK		90 LYON ST		SAINT PAUL	MN	55106
MICHAEL BAUCH		90 MARIA AVE		SAINT PAUL	MN	55106
JENNIFER L FOLSTAD		90 MOUNDS BLVD		SAINT PAUL	MN	55106
KEITH CHAPMAN		900 3RD ST E		SAINT PAUL	MN	55106
JBL INVESTMENTS LLC		900 CONCORD ST N		SOUTH ST PAUL	MN	55075
KEVIN ERNST		900 WAKEFIELD AVE		SAINT PAUL	MN	55106
TIMOTHY FORDE		900 WINTHROP ST S		SAINT PAUL	MN	55119
DAVID T SCHAAL		901 CONCORD ST N		SOUTH ST PAUL	MN	55075
JOEL IBARRA		901 CONWAY ST		SAINT PAUL	MN	55106
JULIE A GARRETT		901 EUCLID ST		SAINT PAUL	MN	55106
MERRILL L HARRIS		901 WILSON AVE		SAINT PAUL	MN	55106
MADLAND PROPERTIES II LLC		902 CONCORD ST N		SOUTH ST PAUL	MN	55075
MICHAEL A IHRKE		902 CONWAY ST		SAINT PAUL	MN	55106
HONORE A BREMER		903 MOUND ST		SAINT PAUL	MN	55106
CHRISTOPHER S SPLINTER		904 EUCLID ST		SAINT PAUL	MN	55106
NICHOLAS G BRILL		904 WINTHROP ST S		SAINT PAUL	MN	55119
IRENE ANN SKRAMSTAD		905 CONWAY ST		SAINT PAUL	MN	55106
JAMES C BICKNELL		905 EUCLID ST		SAINT PAUL	MN	55106
TONG MOUA		905 WAKEFIELD AVE		SAINT PAUL	MN	55106
JOSHUA KIRSCHER		905 WILSON AVE		SAINT PAUL	MN	55106
ROBERT J LUNIESKI		906 3RD ST E		SAINT PAUL	MN	55106
JOHN E OLSON		906 CONCORD ST N		SOUTH ST PAUL	MN	55075
THOMAS L JOHNSTON		906 CONWAY ST		SAINT PAUL	MN	55106
GHOLAMREZA ASHRAFZADEHKIAN		906 WILSON AVE		SAINT PAUL	MN	55106
DELL PROPERTIES MANAGEMENT LLC		907 CONWAY ST		SAINT PAUL	MN	55106
ERIK A LANDSVERK		907 EUCLID ST		SAINT PAUL	MN	55106
YANG LEE		908 WAKEFIELD AVE		SAINT PAUL	MN	55106
CHARLES D WILLEY		908 WINTHROP ST S		SAINT PAUL	MN	55119
UPWARD PROPERTIES LLC		909 CONCORD ST N		SOUTH ST PAUL	MN	55075
DOMINIQUE WILLARD		909 WILSON AVE		SAINT PAUL	MN	55106
RICHARD W KRECH		91 LYON ST		SAINT PAUL	MN	55106
SEMPLE ENTERPRISES		91 RIDDER CIR		SAINT PAUL	MN	55107
MIGUEL ANGEL GARCIA MARTINEZ		910 3RD ST E		SAINT PAUL	MN	55106
PO KYAW		910 CONWAY ST		SAINT PAUL	MN	55106
CNRE 2 LLC		910 WILSON AVE		SAINT PAUL	MN	55106
THOMAS G PARMETER		911 CONWAY ST		SAINT PAUL	MN	55106
SHORE ACRES PROPERTIES LLC		911 EUCLID ST		SAINT PAUL	MN	55106
CHEE XIONG		911 WILSON AVE		SAINT PAUL	MN	55106
YENG LEE		912 3RD ST E		SAINT PAUL	MN	55106
MATTHEW T WEGLEITNER		912 WINTHROP ST S		SAINT PAUL	MN	55119
NAOCHA MANAGEMENT GROUP LLC		913 HUDSON RD		SAINT PAUL	MN	55106
JOSEPH HOOVER		913 MOUND ST		SAINT PAUL	MN	55106
ANDREW LUND		914 CONWAY ST		SAINT PAUL	MN	55106
LARRY YANG		914 EUCLID ST		SAINT PAUL	MN	55106
LADON W PETERSON		914 WAKEFIELD AVE		SAINT PAUL	MN	55106
MARISA HUERTA		915 CONWAY ST		SAINT PAUL	MN	55106
ZAAJ THAO		915 WAKEFIELD AVE		SAINT PAUL	MN	55106
LAWRENCE H GRUFMAN		916 MOUND ST		SAINT PAUL	MN	55106
917 EUCLID LLC		917 EUCLID ST		SAINT PAUL	MN	55106
JULIE VANG		917 HUDSON RD		SAINT PAUL	MN	55106
CHARLES R ROGALSKY		917 MCKNIGHT RD S		SAINT PAUL	MN	55119
ABIGAIL N NORBIN		917 WILSON AVE		SAINT PAUL	MN	55106
DANIEL GASSER		918 3RD ST E		SAINT PAUL	MN	55106
PARAMOUNT ASSETS LLC		918 CONWAY ST		SAINT PAUL	MN	55106
CHA LEE		918 EUCLID ST		SAINT PAUL	MN	55106
JENNIFER HAGEMAN		918 MCLEAN AVE		SAINT PAUL	MN	55106
WELLS FARGO BANK		918 WAKEFIELD AVE		SAINT PAUL	MN	55106
VALLEN K HER		919 CONWAY ST		SAINT PAUL	MN	55106
JUSTIN J KESSLER		919 WILSON AVE		SAINT PAUL	MN	55106
KATHERINE A COOK		92 BATES AVE		SAINT PAUL	MN	55106
LUANN K ERICKSON		92 UPPER AFTON TER		SAINT PAUL	MN	55106
A & P PROPERTIES		920 SUMMIT AVE		SOUTH ST PAUL	MN	55075
ALEXANDER YANG		921 EUCLID ST		SAINT PAUL	MN	55106
ERIC GONG		921 HUDSON RD		SAINT PAUL	MN	55106
BRANDON Z HARRIS		921 WAKEFIELD AVE		SAINT PAUL	MN	55106
MM PROPERTIES LLC		922 3RD ST E		SAINT PAUL	MN	55106
ST PAUL PUBLIC HOUSING AGENCY		922 CONWAY ST		SAINT PAUL	MN	55106
THIA CHA		922 EUCLID ST		SAINT PAUL	MN	55106
DAVID P MATTER		922 MOUND ST		SAINT PAUL	MN	55106
TED VANG		922 WILSON AVE		SAINT PAUL	MN	55106
PAULA TRINIDAD CRUZ		924 WAKEFIELD AVE		SAINT PAUL	MN	55106
SARA M ERICKSON		925 CONCORD ST N		SOUTH ST PAUL	MN	55075
MERSADIEZ DE LA ROSA		925 EUCLID ST		SAINT PAUL	MN	55106
BOON XIONG		925 MCKNIGHT RD S		SAINT PAUL	MN	55119
BRIAN KELLY		925 MCLEAN AVE		SAINT PAUL	MN	55106
JEFFREY C SUTPHEN		926 3RD ST E		SAINT PAUL	MN	55106
KOU THAO		926 EUCLID ST		SAINT PAUL	MN	55106
PIPER RENTALS LLC & C/O BRUGGEMAN		926 WILSON AVE		SAINT PAUL	MN	55106
HOUA VANG		927 HUDSON RD		SAINT PAUL	MN	55106
MARJORIE L TOENSING		927 MOUND ST		SAINT PAUL	MN	55106

Full Name	Organization - Primary	Mailing Street	Mailing Street 2	Mailing City	Mailing State	Mailing Zip
LIA XIONG		927 WAKEFIELD AVE		SAINT PAUL	MN	55106
JOHN C LUTZ		929 CONWAY ST		SAINT PAUL	MN	55106
KAOLEE LYSONGTSENG		929 EUCLID ST		SAINT PAUL	MN	55106
LEE YANG		929 WILSON AVE		SAINT PAUL	MN	55106
FREDY SALGUERO		93 LYON ST		SAINT PAUL	MN	55106
DENNIS R SCHILLING		93 MARIA AVE		SAINT PAUL	MN	55106
STEVEN J HAYNE		930 CONWAY ST		SAINT PAUL	MN	55106
KHANTI PROPERTIES		930 EUCLID ST		SAINT PAUL	MN	55106
MITCHELL S FILLBACH		930 MCLEAN AVE		SAINT PAUL	MN	55106
LISA M LEMKE		930 MOUND ST		SAINT PAUL	MN	55106
SSP STOCKYARD APARTMENTS LLC		930 SUMMIT AVE		SOUTH ST PAUL	MN	55075
DIANE R FAULDS		930 WAKEFIELD AVE		SAINT PAUL	MN	55106
NELLIE M KIMBROUGH		930 WILSON AVE		SAINT PAUL	MN	55106
SCOTT ALLEN GUSTAFSON		931 WAKEFIELD AVE		SAINT PAUL	MN	55106
STACY BLOMKER		931 WILSON AVE		SAINT PAUL	MN	55106
VORANDESOTO LLC		932 MCKNIGHT RD S		MAPLEWOOD	MN	55119
MIZAEL BRIONES OMANA		933 CONWAY ST		SAINT PAUL	MN	55106
ROBERT W ADNEY		933 MOUND ST		SAINT PAUL	MN	55106
MAI LAO YANG		934 CONWAY ST		SAINT PAUL	MN	55106
XENG XIONG MOUA		934 EUCLID ST		SAINT PAUL	MN	55106
MICHAEL J KASZUBA		934 MCLEAN AVE		SAINT PAUL	MN	55106
RICHARD BELL		934 WAKEFIELD AVE		SAINT PAUL	MN	55106
HEATHER M WATLAND		935 CONWAY ST		SAINT PAUL	MN	55106
BRISA EDNA CHASE		935 CURRIE CT S		MAPLEWOOD	MN	55119
ROBERT Q PARKER		935 HUDSON RD		SAINT PAUL	MN	55106
DEREK ENGELKING		935 MCLEAN AVE		SAINT PAUL	MN	55106
BRENT E WINCH		935 WAKEFIELD AVE		SAINT PAUL	MN	55106
PANGHOUA MOUA		935 WILSON AVE		SAINT PAUL	MN	55106
BEE KHANG		938 CONWAY ST		SAINT PAUL	MN	55106
JAMES A HIRTE		938 MCLEAN AVE		SAINT PAUL	MN	55106
JOHN P HYVARINEN		938 MOUND ST		SAINT PAUL	MN	55106
MAGGIE BLACK		938 WAKEFIELD AVE		SAINT PAUL	MN	55106
MARIAH T PODANY		939 CONWAY ST		SAINT PAUL	MN	55106
DAVID KING		939 WAKEFIELD AVE		SAINT PAUL	MN	55106
ARNULFO CALDERON		939 WILSON AVE		SAINT PAUL	MN	55106
JULIA M DADY		94 LYON ST		SAINT PAUL	MN	55106
PETER MELLOM		94 MARIA AVE		SAINT PAUL	MN	55106
KARA YOUNKIN VISWANATHAN		94 MOUNDS BLVD		SAINT PAUL	MN	55106
JEFFREY C LEMKE		940 PACIFIC ST		SAINT PAUL	MN	55106
K AND J ASSOCIATES INC		941 HUDSON RD		SAINT PAUL	MN	55106
ANDREW LUND		942 EUCLID ST		SAINT PAUL	MN	55106
CHRISTOPHER P CAULEY		942 MCKNIGHT RD S		MAPLEWOOD	MN	55119
DONALD M THOMPSON		942 MCLEAN AVE		SAINT PAUL	MN	55106
CHERYL M PRICE		942 WAKEFIELD AVE		SAINT PAUL	MN	55106
THOMAS C HUBER SR		942 WILSON AVE		SAINT PAUL	MN	55106
JACQUELYN K BRUSTUEN		943 CONWAY ST		SAINT PAUL	MN	55106
BRYON JO WHEATON		943 EUCLID ST		SAINT PAUL	MN	55106
IH3 PROPERTY MINNESOTA LP		943 PINE VIEW CT		SAINT PAUL	MN	55119
DAN P WHITESELL		943 WAKEFIELD AVE		SAINT PAUL	MN	55106
MATTHEW C STONE		943 WILSON AVE		SAINT PAUL	MN	55106
MIKE R SIGRIST		944 CONWAY ST		SAINT PAUL	MN	55106
TERI R FOCHT		944 EUCLID ST		SAINT PAUL	MN	55106
NATHANIEL HARDEN		944 PINE VIEW CT		SAINT PAUL	MN	55119
DEBRA M JOHNSON		944 WILSON AVE		SAINT PAUL	MN	55106
HOSFORD PROPERTIES LLC		945 CONWAY ST		SAINT PAUL	MN	55106
DANIEL A LESHER		945 CURRIE CT S		MAPLEWOOD	MN	55119
XIA VANG		945 HUDSON RD		SAINT PAUL	MN	55106
ERICH SCHUHMACHER		945 MCKNIGHT RD S		SAINT PAUL	MN	55119
DHANU PROPERTIES LLC		946 CONWAY ST		SAINT PAUL	MN	55106
THOMAS ROBERT BURSINGER TRUST		946 MCLEAN AVE		SAINT PAUL	MN	55106
WILLIAM M WOLTERS		946 WAKEFIELD AVE		SAINT PAUL	MN	55106
ARTHUR J BUECHNER		947 CONWAY ST		SAINT PAUL	MN	55106
SIGRID FELDBRUGGE		947 HUDSON RD		SAINT PAUL	MN	55106
NICOLE KENDRICKS		947 WAKEFIELD AVE		SAINT PAUL	MN	55106
QUALITY RESIDENCE LLC		948 EUCLID ST		SAINT PAUL	MN	55106
ELIZABETH HOLLY MUNOZ		948 WILSON AVE		SAINT PAUL	MN	55106
MEGAN M SMITH		949 BIRCH VIEW CT		SAINT PAUL	MN	55119
JOSEPH D SIMMONDS		949 CONWAY ST		SAINT PAUL	MN	55106
EDEN BUILDERS INC		949 EUCLID ST		SAINT PAUL	MN	55106
REBECCA GILGEN		949 MCLEAN AVE		SAINT PAUL	MN	55106
WILLIAM K FINNEY		949 PINE VIEW CT		SAINT PAUL	MN	55119
HUA VANG		949 WILSON AVE		SAINT PAUL	MN	55106
DAVID H ST MARTIN TRUSTEE		95 FLANDRAU PL		SAINT PAUL	MN	55106
Foung Hawj	Minnesota State Senate	95 University Ave W	Minnesota Senate Bldg., Room 3413	St. Paul	MN	55155
JARED J FALLOS		950 BIRCH VIEW CT		SAINT PAUL	MN	55119
MARY E SONNEN		950 OAK VIEW CT		SAINT PAUL	MN	55119
JEFFREY R ARRIGONI		950 PINE VIEW CT		SAINT PAUL	MN	55119
STACY L DROST		950 WAKEFIELD AVE		SAINT PAUL	MN	55106
JEREMY MOORE		951 BURNS AVE		SAINT PAUL	MN	55106
SIMONE K GAEDE		951 EUCLID ST		SAINT PAUL	MN	55106
DELORES E KLINGELHOETS		951 HUDSON RD		SAINT PAUL	MN	55106
MARY C VOIGHT		951 MCKNIGHT RD S		SAINT PAUL	MN	55119
STEVEN M SIREK		951 WAKEFIELD AVE		SAINT PAUL	MN	55106
DANIEL J FEESS		952 EUCLID ST		SAINT PAUL	MN	55106
MAI SONG YANG		952 PACIFIC ST		SAINT PAUL	MN	55106
DEANNA L & EMERY T LETOURNEAU		952 SUMMIT AVE		SOUTH ST PAUL	MN	55075
PATRICIA E SEMBORSKI		952 WAKEFIELD AVE		SAINT PAUL	MN	55106
RAMONA J SHAFER		952 WILSON AVE		SAINT PAUL	MN	55106
PAUL A SEPPI		953 MCLEAN AVE		SAINT PAUL	MN	55106
MICHAEL HAIRE		953 MOUND ST		SAINT PAUL	MN	55106
GREGORY M BOLAND		953 OAK VIEW CT		SAINT PAUL	MN	55119
ALY BLIATIA		953 WILSON AVE		SAINT PAUL	MN	55106
LAWRENCE W SMITH		954 CONWAY ST		SAINT PAUL	MN	55106
TERRANCE L SCHNEIDER		954 MCLEAN AVE		SAINT PAUL	MN	55106
APRIL J MITCHELL		954 WAKEFIELD AVE		SAINT PAUL	MN	55106
TIMOTHY ARTHUR		955 CURRIE CT S		MAPLEWOOD	MN	55119
JENNIFER A KING		955 HUDSON RD		SAINT PAUL	MN	55106
NICOLE A TOKACH		955 MCKNIGHT RD S		SAINT PAUL	MN	55119
WARREN PETERSON		955 WAKEFIELD AVE		SAINT PAUL	MN	55106
OSTERBAUER LLC		955 WILSON AVE		SAINT PAUL	MN	55106
ALBERTO O MIERA		956 BIRCH VIEW CT		SAINT PAUL	MN	55119
ELIZABETH CRAWLEY		956 OAK VIEW CT		SAINT PAUL	MN	55119
NICHOLAS J PAPPAS		956 PACIFIC ST		SAINT PAUL	MN	55106
DAVID R METZEN		956 PINE VIEW CT		SAINT PAUL	MN	55119
J THOMAS MOTT		957 BIRCH VIEW CT		SAINT PAUL	MN	55119
LAURA L GREENWOOD		957 EUCLID ST		SAINT PAUL	MN	55106
RAYMOND F GULDEN		957 OAK VIEW CT		SAINT PAUL	MN	55119
PATRICIA L OBRIEN		957 PINE VIEW CT		SAINT PAUL	MN	55119
PAO VANG		958 CONWAY ST		SAINT PAUL	MN	55106
EDWARD LYNN JOHNSON		958 EUCLID ST		SAINT PAUL	MN	55106
CHARLOTTE L COAN		958 MCLEAN AVE		SAINT PAUL	MN	55106
JENNIFER A POWER		958 WILSON AVE		SAINT PAUL	MN	55106
JEAN M RIVARD		959 BURNS AVE		SAINT PAUL	MN	55106
SALVADOR O MARAVILLA		959 CONWAY ST		SAINT PAUL	MN	55106
KALLY US LLC		959 EUCLID ST		SAINT PAUL	MN	55106
LJJ PROPERTIES LLC		96 BATES AVE		SAINT PAUL	MN	55106
LAURA J BROCHMAN		96 MOUNDS BLVD		SAINT PAUL	MN	55106
CUONG DUONG		96 UPPER AFTON TER		SAINT PAUL	MN	55106
STEPHEN R CORMIER		960 CONWAY ST		SAINT PAUL	MN	55106
DAVID THAO		960 EUCLID ST		SAINT PAUL	MN	55106
KONG MENG MOUA		960 PACIFIC ST		SAINT PAUL	MN	55106
KA YING VANG		960 WAKEFIELD AVE		SAINT PAUL	MN	55106
CHAD CRUTCHLEY		961 MCLEAN AVE		SAINT PAUL	MN	55106
XAI LOR		961 WILSON AVE		SAINT PAUL	MN	55106
EVERETT V WHITE		962 WILSON AVE		SAINT PAUL	MN	55106
ACEY DODD		963 CONWAY ST		SAINT PAUL	MN	55106
LUCIANNA BAREGI		963 WAKEFIELD AVE		SAINT PAUL	MN	55106
NATHAN D ANDERSON		964 EUCLID ST		SAINT PAUL	MN	55106
CHANGJIANG ZHENG		964 MCKNIGHT RD S		MAPLEWOOD	MN	55119
MICHAEL G STERN		964 MCLEAN AVE		SAINT PAUL	MN	55106
THERESA MOLINA		964 PACIFIC ST		SAINT PAUL	MN	55106
WAMOUA LEE		965 EUCLID ST		SAINT PAUL	MN	55106
WESLEY GENE STOCKTON		965 HUDSON RD		SAINT PAUL	MN	55106
MARK WILLIAM EMERSON		965 MCLEAN AVE		SAINT PAUL	MN	55106
John Vaughn	Eastside Neighborhood Development Company	965 Payne Ave	Suite 200	St. Paul	MN	55130
CHUE THAO		966 CONWAY ST		SAINT PAUL	MN	55106
JOHN F FAHEY		967 BURNS AVE		SAINT PAUL	MN	55106

Full Name	Organization - Primary	Mailing Street	Mailing Street 2	Mailing City	Mailing State	Mailing Zip
GEORGE R CRAGLE		967 CONWAY ST		SAINT PAUL	MN	55106
VIATICUS PROPERTIES INC		967 EUCLID ST		SAINT PAUL	MN	55106
PETER ROGNESS TRUSTEE		967 MOUND ST		SAINT PAUL	MN	55106
D/R/S BARRONS LLC		967 WAKEFIELD AVE		SAINT PAUL	MN	55106
THERESA L KOHN		967 WILSON AVE		SAINT PAUL	MN	55106
MICHAEL DAWN RACKY RACKY		968 EUCLID ST		SAINT PAUL	MN	55106
KENNETH L KAUFHOLD		968 WAKEFIELD AVE		SAINT PAUL	MN	55106
LINDA MOLINA		969 BURNS AVE		SAINT PAUL	MN	55106
KUM COMEAU		969 HUDSON RD		SAINT PAUL	MN	55106
BRUCE D MONTGOMERY		970 BURNS AVE		SAINT PAUL	MN	55106
CHARLES NOSIE		970 CONWAY ST		SAINT PAUL	MN	55106
TWO CITY HOLDINGS LLC		970 EUCLID ST		SAINT PAUL	MN	55106
MATTHEW P DORWEILER		970 WILSON AVE		SAINT PAUL	MN	55106
GERALD R HUTCHINSON		971 HUDSON RD		SAINT PAUL	MN	55106
CLINTON OHMANN		971 MCLEAN AVE		SAINT PAUL	MN	55106
LINDA J OLEARY		971 WAKEFIELD AVE		SAINT PAUL	MN	55106
CRAIG L FOHRENKAMM		972 EUCLID ST		SAINT PAUL	MN	55106
JADOONATH HOLDINGS LLC		972 MCLEAN AVE		SAINT PAUL	MN	55106
BREANNE LARSEN RICHINS		972 PACIFIC ST		SAINT PAUL	MN	55106
ANDREW SCHUSTER		972 WAKEFIELD AVE		SAINT PAUL	MN	55106
ADAM RILEY		972 WILSON AVE		SAINT PAUL	MN	55106
BARRY E HAWLEY TRUSTEE		973 CONWAY ST		SAINT PAUL	MN	55106
KONG YANG		973 EUCLID ST		SAINT PAUL	MN	55106
BNR		973 WILSON AVE		SAINT PAUL	MN	55106
SOPHIA SUNDSMO		974 BURNS AVE		SAINT PAUL	MN	55106
NANCY E TATE		974 CONWAY ST		SAINT PAUL	MN	55106
JANAE MARTINEZ		975 EUCLID ST		SAINT PAUL	MN	55106
JEFFREY W STREET		975 MCLEAN AVE		SAINT PAUL	MN	55106
MATTHEW SPENCE		975 WAKEFIELD AVE		SAINT PAUL	MN	55106
JONATHAN GARZA		975 WILSON AVE		SAINT PAUL	MN	55106
MARYANN K MARTIN		976 MCLEAN AVE		SAINT PAUL	MN	55106
EMILY A DANMEIER		976 PACIFIC ST		SAINT PAUL	MN	55106
KAYLA N BRINKMAN		976 WILSON AVE		SAINT PAUL	MN	55106
JOSEPH J BECKER		977 CONWAY ST		SAINT PAUL	MN	55106
FAIR HOUSING LLC		978 CONWAY ST		SAINT PAUL	MN	55106
JULLY VANG		978 EUCLID ST		SAINT PAUL	MN	55106
JADE C HARPER		978 WAKEFIELD AVE		SAINT PAUL	MN	55106
STANLEY WANDERSEE		979 BURNS AVE		SAINT PAUL	MN	55106
CRYSTAL RAUEN		979 HUDSON RD		SAINT PAUL	MN	55106
HEIDI SODERBERG		979 WAKEFIELD AVE		SAINT PAUL	MN	55106
KATHLEEN M TRAN		979 WILSON AVE		SAINT PAUL	MN	55106
OSTERBAUER LLC		98 BATES AVE		SAINT PAUL	MN	55106
BPH 1 LLC		980 CONWAY ST		SAINT PAUL	MN	55106
CHRISTINE M ANDERSON		980 EUCLID ST		SAINT PAUL	MN	55106
SHARON LILLMARS LAMB		980 MCKNIGHT RD S		MAPLEWOOD	MN	55119
THOMAS W & SUSAN B PUGH		980 TERRACE LN		SOUTH ST PAUL	MN	55075
CHAI YANG		980 WILSON AVE		SAINT PAUL	MN	55106
DENISE M AUGE TRUSTEE		981 CONWAY ST		SAINT PAUL	MN	55106
MICHAEL L SPRAGUE		981 WILSON AVE		SAINT PAUL	MN	55106
TIMOTHY JON TIREMAN		982 CONWAY ST		SAINT PAUL	MN	55106
DONALD THOMPSON		982 MCLEAN AVE		SAINT PAUL	MN	55106
BEN R YEATTS		982 WAKEFIELD AVE		SAINT PAUL	MN	55106
SARAH A RYAN		983 EUCLID ST		SAINT PAUL	MN	55106
BERT W AGUIRRE		983 HUDSON RD		SAINT PAUL	MN	55106
AIMING CHEN		984 WAKEFIELD AVE		SAINT PAUL	MN	55106
ROY E WALLACE		984 WILSON AVE		SAINT PAUL	MN	55106
IAN B ELROD		985 BURNS AVE		SAINT PAUL	MN	55106
986 EUCLID LLC		986 EUCLID ST		SAINT PAUL	MN	55106
DAVID E SCHELL		987 EUCLID ST		SAINT PAUL	MN	55106
CHARLES B ELITE		987 WAKEFIELD AVE		SAINT PAUL	MN	55106
COREY N THOMAS		987 WILSON AVE		SAINT PAUL	MN	55106
MICHAEL F ROCKENBACK		988 CONWAY ST		SAINT PAUL	MN	55106
JACOB M DORER		988 MCLEAN AVE		SAINT PAUL	MN	55106
ALICE L LECHER TRUSTEE		988 WAKEFIELD AVE		SAINT PAUL	MN	55106
KYLE D TESCH		988 WILSON AVE		SAINT PAUL	MN	55106
KOU LOR		989 CONWAY ST		SAINT PAUL	MN	55106
DON JACKSON		989 HUDSON RD		SAINT PAUL	MN	55106
SHANA K YANG		989 OAK BLUFF CIR		SAINT PAUL	MN	55119
JANET A HARBOUR		99 MARIA AVE		SAINT PAUL	MN	55106
JAMES E KELL		991 BURNS AVE		SAINT PAUL	MN	55106
GREGORY J POPOWICH		991 CONWAY ST		SAINT PAUL	MN	55106
GREGORY J COSIMINI		991 EUCLID ST		SAINT PAUL	MN	55106
BB HOUSING ASSOCIATES LLC		991 WAKEFIELD AVE		SAINT PAUL	MN	55106
RICHARD A CASTILLO		991 WILSON AVE		SAINT PAUL	MN	55106
JOSEPH P COSIMINI		992 EUCLID ST		SAINT PAUL	MN	55106
PATRICK D CARPENTER		992 MCLEAN AVE		SAINT PAUL	MN	55106
JEFFREY LEWIS		992 WAKEFIELD AVE		SAINT PAUL	MN	55106
MAYTY LEE		992 WILSON AVE		SAINT PAUL	MN	55106
BB HOUSING ASSOCIATES LLC		993 HUDSON RD		SAINT PAUL	MN	55106
LISA M BAHM		995 CONWAY ST		SAINT PAUL	MN	55106
THE TERRACES LLC		995 MCLEAN AVE		SAINT PAUL	MN	55106
NORA VUE		995 WAKEFIELD AVE		SAINT PAUL	MN	55106
JUDY M GUSTAFSON		995 WILSON AVE		SAINT PAUL	MN	55106
ROBERT P MARINO		996 BURNS AVE		SAINT PAUL	MN	55106
CHANEL A ROCKYMORE		996 WILSON AVE		SAINT PAUL	MN	55106
LONG VANG		997 EUCLID ST		SAINT PAUL	MN	55106
WILFORD C CREEL		998 EUCLID ST		SAINT PAUL	MN	55106
PAUL C JOHNSON		998 MCLEAN AVE		SAINT PAUL	MN	55106
AUGUST VENTURES LLC		999 HUDSON RD		SAINT PAUL	MN	55106
Tom Hogan	Department of Health – Environmental Health	P.O. Box 64975		St. Paul	MN	55164

Committee Report

Business Item No. 2018-256

Environment Committee

For the Metropolitan Council meeting of October 10, 2018

Subject: Metro Plant Solids Management Improvements Facility Plan

Proposed Action

That the Metropolitan Council adopt the Metro Plant Solids Management Improvements Facility Plan, MCES Project 806210, by formal attached Council resolution 2018-19.

Summary of Committee Discussion/Questions

Staff clarified that the $180 million includes $30 million for renewal of the existing incinerators.

METROPOLITAN COUNCIL

Environment Committee

Meeting date: September 25, 2018

For the Metropolitan Council meeting of October 10, 2018

Subject: Metro Plant Solids Management Improvements Facility Plan

District(s), Member(s): All

Policy/Legal Reference: PFA Load Rules

Staff Prepared/Presented: Rene Heflin, 651-602-1077

Division/Department: MCES c/o Leisa Thompson 651-602-8101

Proposed Action

That the Metropolitan Council adopt the Metro Plant Solids Management Improvements Facility Plan, MCES Project 806210, by formal attached Council resolution 2018-19.

Background

The Facility Plan recommends adding a fourth incinerator at the Metro Plant, followed by renewal of the existing three incinerators to preserve existing wastewater treatment plant infrastructure and to serve regional population growth through the year 2050. The estimated capital cost is $180,000,000.

Public outreach for this project was conducted by MCES staff and included local governments, elected officials, regulatory agencies, neighborhood and community organizations, Childs Road businesses and environmental advocacy groups. Public outreach was generally well-received, and no reservations were expressed about the proposed project.

A public hearing was held August 30, 2018. Legal notices were published for the Draft Facility Plan public hearing in the Star Tribune newspaper and the St. Paul Pioneer Press on July 29, 2018. Paper copies of the Draft Facility Plan were available for the public to review from July 27, 2018 at four libraries in Saint Paul: the George Latimer Central Library, the Sun Ray Library, the Riverview Library, and the Dayton's Bluff Library. The Draft Facility Plan also was available at the Metropolitan Council building in downtown Saint Paul, and on the Metropolitan Council website. The public comment period, which began July 29, 2018, ended September 10, 2018.

Five people provided written, or verbal, comments during the public comment period, and MCES staff have responded to all comments. Two individual residents expressed opposition to the project, citing cost (primary concern) and preference for land application, and one individual resident expressed support. The remaining two people asked questions and provided suggestions. No changes are proposed for the Draft Facility Plan based on the comments received.

The alternatives analysis completed for this facility plan found that adding a fourth incinerator is the most cost-effective and sustainable alternative to meet the region's wastewater needs. It has the lowest community impact and will improve the reliability of the wastewater treatment system.

Rationale

Public Facilities Authority (PFA) loan funding eligibility requires formal adoption of the Facility Plan by resolution, following a public hearing on the Facility Plan.

Thrive Lens Analysis

This project supports the Thrive Outcomes of stewardship and sustainability:

METROPOLITAN COUNCIL

- Stewardship: the work supports efforts to maintain the region's wastewater treatment system.
- Sustainability: the work supports efforts to invest in the region's wastewater treatment system so that in can be operated in an effective and efficient way.

Funding

Funds for this project is included in the 2019 Capital Program. MCES will request additional funding as needed.

Known Support / Opposition

See above, under Background.

METROPOLITAN COUNCIL
390 North Robert Street, St. Paul, Minnesota 55101-1634
Phone (651) 602-1000 · TDD (651) 291-0904 · FAX (651) 602-1550 · Metro Info (651) 602-1888

RESOLUTION NO. 2018-19
RESOLUTION APPROVING AND ADOPTING THE
METRO PLANT SOLIDS MANAGEMENT IMPROVEMENTS FACILITY PLAN
PROJECT NO. 806210

WHERE AS:

1. The Metropolitan Council is a public corporation and political subdivision of the State of Minnesota and has statutory responsibility for operating the Twin Cities Metropolitan Area regional wastewater collection and treatment system, and
2. The Metropolitan Council is a public corporation and political subdivision of the State of Minnesota and has statutory responsibility for operating the Twin Cities Metropolitan Area regional wastewater collection and treatment system, and
3. The Metropolitan Council has determined it is necessary and convenient for the fulfillment of its statutory responsibilities to construct the Metro Plant Solids Management Improvements, Project Number 806210, and
4. A draft Facility Plan for the project has been completed and a public hearing was held on August 30, 2018 to discuss the proposed project and the draft Facility Plan

NOW, THEREFORE, BE IT RESOLVED BY THE METROPOLITAN COUNCIL,

that the Facility Plan for the

METRO PLANT SOLIDS MANAGEMENT IMPROVEMENTS
PROJECT NO. 806210

is hereby approved and adopted.

Adopted this 10th day of October, 2018.

Alene Tchourumoff, Chair

Emily Getty, Recording Secretary

Appendix M. MPCA Forms

Appendix M. MPCA Forms

Contents:

- CWRF Facilities Plan Submittal Checklist
- CWRF Cost and Effectiveness Certification Checklist
- CWRF Cost and Effectiveness Certification Form
- CWRF B3 2030 Exemption Form
- Project Priority List Wastewater Application
- PPL Wastewater Existing Facility Improvements Scoring Worksheet
- State Environmental Review Process (SERP) Mailing List Form SERP Form
    - Attached stakeholders and citizens/property owners mailing list is included in Appendix L.
    - The mailing list is also available as an Excel spreadsheet by contacting Tim O'Donnell, Metropolitan Council Environmental Services, at 651-602-1269 or tim.odonnell@metc.state.mn.us

MINNESOTA POLLUTION CONTROL AGENCY
520 Lafayette Road North
St. Paul, MN 55155-4194

CWRF facilities plan submittal checklist

Clean Water Revolving Fund (CWRF) Program

Submissions Required for a Complete Facilities Plan

Minn. R. 7077.0272

Instructions: The Facilities Plan may be submitted via email at ppl.submittals.pca@state.mn.us (and one hard copy submitted to the assigned Minnesota Pollution Control Agency [MPCA] Review Engineer).

Facility information

Project name: Metro Plant Solids Management Improvements

Proposed dates for construction: January 2021 - December 2027

City's authorized representative: Jeannine Clancy

Title: Assistant General Manager, Metropolitan Council Environmental Services Telephone: 651-602-1210

Mailing address: 390 Robert Street North

City: Saint Paul State: MN Zip code: 55101

Technical agent or consulting engineer: Rene Heflin

Name of firm/organization: Metropolitan Council Environmental Services Telephone: 651-602-1083

Check yes or no for the following questions

Is the Facilities Plan signed by an engineer registered in the State of Minnesota? ☒ Yes ☐ No

Has the municipality in which the facility will be located held at least one public hearing to discuss the proposed project?

☒ Yes ☐ No If yes, what was the date the hearing was held: August 30, 2018

Check the boxes below if you have included the following items

If all of the following items are not included with the Facilities Plan, the Facilities Plan is incomplete and may be returned or filed until a complete submittal is received. Facilities Plan review will not begin until a complete submittal is received. Please see Minn. R. 7077.0272 for more information about the content of facilities plan.

- ☒ A completed CWRF cost and effectiveness certification checklist **provided by the MPCA**.
- ☒ A completed CWRF B3 2030 exemption form **provided by the MPCA**.
- ☒ A completed CWRF cost and effectiveness certification form **provided by the MPCA**.
- ☒ A summary of the public hearing documenting that the following items were discussed:
  - ☒ The various treatment alternatives considered
  - ☒ The location of the project site
  - ☒ The reasons for choosing the selected treatment method
  - ☒ The estimated sewer service charges
- ☒ A summary of the comments received at the public hearing and the action taken to address those comments.
- ☒ A complete list of addresses used for public notice purposes on a form **provided by the MPCA.**
- ☒ A copy of the resolution of the municipality's governing body adopting the facilities plan.
- ☐ A list of ordinances or intermunicipal agreements required for the implementation and administration of the project. N/A
- ☐ A signed treatment agreement with each significant industrial user. N/A
- ☐ For surface water dischargers only, a copy of the Preliminary Effluent Limits review letter **provided by the MPCA** N/A (Wastewater treatment alternatives should also consider antidegradation analysis if necessary).
- ☐ A completed Environmental Information Worksheet **provided by the MPCA.** Voluntary EAW included with Appendix K
- ☐ For individual sewage treatment systems that serve more than one structure, an assurance from the municipality stating that all property owners who will be served by the proposed system agree to be part of the system, to participate in the construction project, and to finance future operation, maintenance, and replacement of the system. N/A
- ☒ Copies of all notifications, certifications, and comments received.

MINNESOTA POLLUTION CONTROL AGENCY
520 Lafayette Road North
St. Paul, MN 55155-4194

CWRF cost and effectiveness checklist

Clean Water Revolving Fund (CWRF) Program

Instructions: This checklist must be used with the Minnesota Pollution Control Agency (MPCA) *Minnesota Clean Water Revolving Fund (CWRF) cost and effectiveness guidance* document dated March 2018. The guidance document assists the consulting engineer in completing the cost and effectiveness analysis required by the Federal Water Pollution Control Act (FWPCA) Section 602(b)(13). The cost and effectiveness analysis for a project must be further documented in the project Facilities Plan. This checklist is also an attachment to the MPCA *Facilities Plan submittal checklist.*

Project information

Project name: Metro Plant Solids Management Improvements Date submitted (mm/dd/yyyy): 12/20/2018

City: Metropolitan Council Environmental Services

City's authorized representative: Jeannine Clancy - Assistant General Manager - MCES

Consulting engineer: Rene Heflin - Manager Plant Engineering Services - MCES - In-House

Cost analysis items

Cost analysis items to be completed for all CWRF wastewater projects.

Section		Yes	No
II.	Does the project owner have an Asset Management system in place? Where is the Asset Management system documented in the Facilities Plan: *Metropolitan Council Environmental Services uses Oracle Work and Asset Management (WAM) for its asset management system. This is not specifically documented in the Facility Plan.*	☒	☐
IVA.	Did the Facilities Plan address Energy Conservation Opportunities? Where is the Energy Conservation discussion documented in the Facilities Plan: *Energy recovery and consumption of alternatives is presented in Section 6.2.1.2. The recommended alternative of adding a fourth incinerator includes energy recovery equipment which will recover energy from the incineration of wastewater solids in the form of steam which can be used to generate electricity or used around the plant to heat buildings.*	☒	☐
IVB.	Did the Facilities Plan address Renewable Energy Opportunities? Where is the Renewable Energy discussion documented in the Facilities Plan: *Energy recovery of alternatives is presented in Section 6.2.1.2. The recommended alternative of adding a fourth incinerator includes energy recovery equipment which will recover energy from the incineration of wastewater solids in the form of steam which can be used to generate electricity or used around the plant to heat buildings.*	☒	☐
IV.C.i.	Has the Facilities Plan analyzed Water Reuse options? Where is the Water Reuse options analysis documented in the Facilities Plan: *Reuse of effluent water is presented in Section 4.5. The Metro Plant minimizes water use by reusing over 6,000 gallons per minute of treated effluent water in its existing scrubbers at the Solids Management Building and other processes. The addition of a fourth incinerator will also reuse effluent water in the new scrubber. Effluent water will be used as much as possible where processes allow.*	☒	☐
IV.C.ii.	Has the Facilities Plan analyzed installation of Water Efficient Devices? Where is the use of Water Efficient Devices analysis documented in the Facilities Plan:	☐	☒
IV.C.iii.	Has the Facilities Plan analyzed installation of new Water Meters or replacement of existing Water Meters? Where is the installation of new or replacement Water Meters analysis documented in the Facilities Plan:	☐	☒
IV.C.iv.	Has the Facilities Plan considered or completed Water Audits and/or Conservation Plan?	☐	☒

Section		Yes	No
	Where is the discussion of Water Audits and/or Conservation Plan documented in the Facilities Plan:		
IV.D.	Did the Facilities Plan for the project complete a Buildings, Benchmark, and Beyond (B3) Sustainable Building (SB) Wastewater Treatment Plant (WWTP) or B3 SB 2030 *WWTP exemption form*? Where is the B3 SB 2030 *WWTP exemption form* documented in the Facilities Plan: *This form is presented in Appendix M - MPCA Forms.*	☒	☐

Nonmonetary analysis items

Applicable: **Yes** ☒ **No** ☐

Nonmonetary analysis items to be completed for all new wastewater treatment facilities with design average wet weather (AWW) flow of greater than 100,000 gallons per day, or significant upgrades meaning work on three or more major treatment units for any wastewater treatment facilities with a design AWW flow of greater than 1 million gallons per day.

Section		Yes	No
V.A.i.	Does the Facilities Plan analyze the project sustainability and climate resilience? Where is the discussion on project sustainability and climate resilience documented in the Facilities Plan: *Sustainability and greenhouse gas emissions for alternatives analyzed is presented in Section 6.2.1.*	☒	☐
V.A.ii.	Does the Facilities Plan analyze how a project addresses Water Quality objectives? Where is the discussion on how the project addresses Water Quality objectives documented in the Facilities Plan: *This is not specifically discussed in the facility plan. The facility plan identifies adding additional solids processing capacity at the Metro Plant to preserve existing wastewater treatment plant infrastructure and accommodate regional population growth. Sufficient solids processing capacity allows for the liquids treatment processes to operate properly and meet effluent limits.*	☐	☒
V.A.iii.	During the project planning process, did the owner consider project alternatives, such as consolidation or regionalization with another or other service area? Where is the discussion on how the project addresses possible consolidation or regionalization documented in the Facilities Plan: *This is not specifically discussed in the facility plan as Metropolitan Council Environmental Services is already a regional wastewater treatment provider to the Twin Cities region. The solids processing system at the Metro Plant treats 75% of the Twin Cities wastewater solids.*	☐	☒
V.B.i.	Is the project location and physical aspects discussed in the Facilities Plan? Where is the discussion on the project location and physical aspects located in the Facilities Plan: *The project location and physical aspects are presented in Section 1.2.*	☒	☐
V.B.ii.	Is the project reliability discussed in the Facilities Plan? Where is the discussion on the project reliability located in the Facilities Plan: *Reliability of the different alternatives evaluated is presented in Section 6.2.3.*	☒	☐
V.B.iii.	Is the project feasibility and operability discussed in the Facilities Plan? Where is the discussion on the project feasibility and operability located in the Facilities Plan: *The recommended plan and operations are presented in Section 7.0.*	☒	☐
V.C.i.	Are possible water conservation practices, water reuse and/or water recapture opportunities discussed in the Facilities Plan? Where is the discussion on the project water conservation practices, water reuse, and/or water recapture opportunities located in the Facilities Plan: *Reuse of effluent water is presented in Section 4.5. The Metro Plant minimizes water use by reusing over 6,000 gallons per minute of treated effluent water in its existing scrubbers at the Solids Management Building and other processes. The addition of a fourth incinerator will also reuse effluent water in the new scrubber. Effluent water will be used as much as possible where processes allow.*	☒	☐
V.C.ii.	Are possible energy conservation practices discussed in the Facilities Plan? Where are the possible energy conservation practices discussed in the Facilities Plan:	☒	☐

Section		Yes	No
	Energy recovery and consumption of alternatives is presented in Section 6.2.1.2. The recommended alternative of adding a fourth incinerator includes energy recovery equipment which will recover energy from the incineration of wastewater solids in the form of steam which can be used to generate electricity or used around the plant to heat buildings.		
V.C.iii.	Are possible opportunities to recover and recycle or reuse other resources discussed in the Facilities Plan? Where are possible opportunities to recover and recycle or reuse other resources options discussed in the Facilities Plan: *Opportunities to recover energy from scum and beneficially reuse ash is presented in Sections 1.3.2 and 1.3.3 respectively.*	☒	☐
V.C.iv.	Are possible opportunities to use green infrastructure components within the project discussed in the Facilities Plan? Where are possible opportunities to use green infrastructure components within the project discussed in the Facilities Plan: *This is not specifically discussed in the facility plan. The use of green infrastructure components will be evaluated further into design.*	☐	☒
V.C.v.	Are possible other environmental impacts of the project discussed in the Facilities Plan? Where are the possible other environmental impacts of the project discussed in the Facilities Plan: *A voluntary Environmental Assessment Worksheet (EAW) has been performed and is presented in Appendix K.*	☒	☐
V.D.i.	Are possible considerations which may be part of a local trend or demographics affecting the need or demand for a project discussed in the Facilities Plan? Where are the possible considerations which may be part of a local trend or demographics affecting the need or demand for a project discussed in the Facilities Plan: *Project need including population growth, current, and projected wastewater solids production are presented in Sections 1.2 and 1.3.*	☒	☐
V.D.ii.	Are possible considerations which may be part of a local trend or demographics affecting the need or demand for a project discussed in the Facilities Plan? Where are the possible considerations which may be part of a local trend or demographics affecting the need or demand for a project discussed in the Facilities Plan: *Project need including population growth, current, and projected wastewater solids production are presented in Sections 1.2 and 1.3.*	☒	☐
V.D.iii.	Are there possible environmental justice issues which may be considered for the project discussed in the Facilities Plan? Where are the possible environmental justice issues which may be considered for the project discussed in the Facilities Plan: *Environmental justice impacts were evaluated for the project but were not specifically discussed in the facility plan. MCES evaluated impacts of adding a fourth incinerator to surrounding communities. A preliminary assessment indicates adding a fourth incinerator will have no adverse health risks at the Metro Plant fence line or in surrounding communities.*	☐	☒
V.D.iv.	Are there possible acceptability or affordability issues which may be considered for the project discussed in the Facilities Plan? Where are the possible acceptability or affordability issues which may be considered for the project discussed in the Facilities Plan: *Financial stewardship and the impacts of raising rates for the different alternatives was evaluated and is presented in Section 6.2.2.1.*	☒	☐

Integrating cost and effectiveness analysis **Applicable: Yes ☒ No ☐**

Integrating cost and effectiveness analysis to be completed for all new wastewater treatment facilities with design AWW flow of greater than 100,000 gallons per day, or significant upgrades meaning work on three or more major treatment units for any wastewater treatment facilities with a design AWW flow of greater than 1 million gallons per day.

Section		Yes	No
VI.	Has an integrated cost and effectiveness analysis of the cost factors and the other/nonmonetary factors for a project been completed in the Facilities Plan? Where is the integrated cost and effectiveness analysis of the cost factors and the other/nonmonetary factors for a project discussed/located in the Facilities Plan? The alternatives analysis included an evaluation of monetary and non-monetary factors. The cost analysis included a 20-year net present worth of capital, operating, and maintenance costs for each alternative. Non-monetary factors evaluated for each alternative included sustainability, community impact, and reliability. The alternatives analysis is presented in Section 6.0.	☒	☐

MINNESOTA POLLUTION CONTROL AGENCY
520 Lafayette Road North
St. Paul, MN 55155-4194

CWRF cost and effectiveness certification form

Clean Water Revolving Fund (CWRF) Program

Federal Water Pollution Control Act Section 602(b)(13)
and Minn. R. 7077.0272, subp. 2.D. or 7077.0277, subp. 2.C.

Instructions: The project representative must check boxes 1), 2), and either Z) or ZZ) below, and the form must be signed by both the Project Representative and the Professional Engineer for the project.

☒ 1) The municipality has studied and evaluated the cost and effectiveness of the processes, materials, techniques, and technologies for carrying out the proposed project or activity for which the assistance is sought under the Clean Water Revolving Fund (Minn. Stat. § 446.07); and

☒ 2) The municipality has selected, to the maximum extent practicable, a project or activity that maximizes the potential for efficient water use, reuse, recapture, conservation, and energy conservation[Z&ZZ], taking into account:

a) The cost of constructing the project or activity.
b) The cost of operating and maintaining the project or activity over the life of the project or activity.
c) The cost of replacing the project or activity.

☐ Z) If this project exempt from Building, Benchmarks, and Beyond (B3) provisions of the Sustainable Building (SB) 2030 Guidelines (B3 SB 2030) Wastewater Treatment Plants (WWTP) Review (attach a completed *B3 SB 2030 exemption form*).

☒ ZZ) If this project not exempt from B3 SB 2030 WWTP Review.

Project information

Municipality name: Metropolitan Council Environmental Services

Project number: Metro Plant Solids Management Improvements - 806210

Certification

We certify that the project has completed requirements (1 and 2, and either Z or ZZ) as checked above.

Project Representative

Print name: Jeannine Clancy - Assistant General Manager

Signature: Jeannine Clancy

Date (mm/dd/yyyy): 01/04/2019

Professional Engineer

Print name: Rene Heflin - Plant Engineering Manager

Signature: Rene Heflin

Date (mm/dd/yyyy): 01/02/2019

Footnote: If ZZ) is checked, the Professional Engineer has submitted a Facilities Plan to the B3 SB 2030 WWTP Review and will consider the Review water and energy conservation recommendations.

MINNESOTA POLLUTION CONTROL AGENCY
520 Lafayette Road North
St. Paul, MN 55155-4194

CWRF B3 SB 2030 exemption form

Clean Water Revolving Fund (CWRF) Program
Wastewater Projects
(Minn. Stat. § 216B.241, sub. 1-10 and 16B, sub. 1-4)

Instructions: If at least one of the "**Yes**" statements is checked, the project is considered to have completed these requirements and is not required to submit additional information to meet the Building, Benchmarks, and Beyond (B3) provisions of the Sustainable Building (SB) 2030 Guidelines (B3 SB 2030). Sign and send the completed form to the Minnesota Pollution Control Agency (MPCA) project engineer.

If the answer to **all of the statements is** "**No**", the project will submit a preliminarily approved Facilities Plan [Minn. R. 7077.0272] to B3 SB 2030 Wastewater Treatment Plant Review. Sign and send the completed form to the MPCA project engineer.

Project information

Project name: Metro Plant Solids Management Improvements

MPCA review engineer: _____ MPCA project number: _____

Exempt criteria

	Yes	No
1. The project is limited to environmental study.	☐	☒
2. The project is limited to planning and design.	☐	☒
3. The project is for emergency/disaster relief and/or protection.	☐	☒
4. The project is limited to minor modifications to an existing treatment facility.	☐	☒
5. The project is limited to modifications within a new or an existing building less than 10,000 square feet.	☐	☒
6. The project is limited to a new or existing collection system including lift stations.	☐	☒
7. The project is limited to pond system.	☐	☒
8. The project is limited to installation of a backup power generator.	☐	☒
9. The project is limited to a stormwater project	☐	☒

If "Yes" to any of 1- 9 above, please provide a brief written description of the project and complete the Certification Statement below.

Certification statement

I certify that the information provided on this form is complete and accurate and that this project:

☐ Meets the exempt criteria established by the Minnesota Pollution Control Agency.

☒ Does not meet the exempt criteria and a preliminary approved Facilities Plan will be sent to the B3 SB 2030 Wastewater Treatment Plant Review

Project Representative or Professional Engineer

Print name: Rene Heflin

Organization: Metropolitan Council Environmental Services

Signature: Rene Heflin

Date (mm/dd/yyyy): 12/20/2018

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Project Priority List (PPL)

Wastewater Application

1. **Applicant name:** Metropolitan Council Environmental Serices
   Project area: Metropolitan Wastewater Treatment Plant
   Town/city: Saint Paul, MN
   Population: 1,949,354 (2020)
   County: Ramsey

2. **Contact person:** Rene Heflin
   Address: 390 Robert Street North; Saint Paul, MN 55101
   Phone: 651-602-1077 Fax: 651-602-1083
   E-mail: rene.heflin@metc.state.mn.us

3. **Project consultants/Firm name (if applicable):** N/A
   Contact name:
   Address:
   Phone: Fax:
   E-mail:

4. **Project area description:**	☒ **Sewered:**	☐ **Unsewered** (submit map of project area)
a. Number of existing households:	802,694	
b. Number of non-residential users:	1,201,684	

Need or problem project addresses: (Check all that apply)

- ☐ Failing on-site systems # of failing systems:
- ☐ Connection to an existing system
- ☒ Rehab of an existing facility
- ☐ Rehab collection system
- ☒ Expansion of existing treatment plant
- ☐ New treatment and/or collection system
- ☐ Advanced treatment

5. **Please indicate if this project may be a Green Project Reserve (GPR) which are wastewater projects that are either categorical or non-categorical and have components or the entire project is applying to be determined GPR eligible.**

The U.S. Environmental Protection Agency (EPA) provided a guidance document listing examples of projects that will qualify for Green Project Reserve dollars. Below is a list of those examples. If the proposed project matches one or more of the examples, check the box next to the example that describes the project. For more information, see *CW Green Guidance* at http://www.pca.state.mn.us/water/wastewater-financial.html.

Categorical eligible project types

☐ 1. **Water Efficiency**

- ☐ a. Installation of water meters (applies only to drinking water distribution systems – contact the Minnesota Department of Health)
- ☐ b. Retrofit or replacement of water using fixtures, fittings, equipment or appliances
- ☐ c. Efficient landscape or agricultural irrigation equipment
- ☐ d. Systems to recycle gray water
- ☐ e. Reclamation, recycling, and reuse of existing rainwater, condensate, degraded water, stormwater, and/or wastewater streams.
- ☐ f. Collection system leak detection equipment
- ☐ g. Development and initial distribution of public education materials

☐ **2. Energy Efficiency**

- ☐ a. Energy efficient retrofits and upgrades to pumps and treatment processes
- ☐ b. Leak detection equipment for treatment works
- ☐ c. Producing clean power for 212 treatment works on site (wind, solar, hydroelectric, geothermal, biogas powered combined heat and power)
- ☐ d. Pro-rata share of capital costs for offsite publicly owned clean energy facilities that provide power to a treatment works.

☐ **3. Green Infrastructure**

- ☐ a. Implementation of comprehensive street tree or urban forestry programs, including expansion of tree box sizes to manage additional stormwater and enhance tree health.
- ☐ b. Implementation of green streets (combinations of green infrastructure practices in transportation rights-of-ways), for either new development, redevelopment or retrofits
- ☐ c. Implementation of water harvesting and reuse programs or projects, where consistent with state and local laws and policies.
- ☐ d. Implementation of wet weather management systems for parking areas which include: the incremental cost of porous pavement, bioretention, trees, green roofs, and other practices that mimic natural hydrology and reduce effective imperviousness at one or more scales.
- ☐ e. Establishment and restoration of riparian buffers, floodplains, wetlands and other natural features.
- ☐ f. Downspout disconnection to remove stormwater from combined sewers and storm sewers.
- ☐ g. Comprehensive retrofit programs designed to keep wet weather out of all types of sewer systems using green infrastructure technologies and approaches.

☐ **4. Environmentally Innovative Projects**

- ☐ a. Green Infrastructure/Low Impact development stormwater projects
- ☐ b. Decentralized wastewater treatment and/or reuse projects that reduce energy consumption, recharge aquifers and reduce water withdrawals and treatment costs
- ☐ c. Projects that employ development and redevelopment practices that preserve or restore site hydrologic processes through sustainable landscaping and site design.
- ☐ d. Projects that use water balance approaches (water budgets) at the project, local or state level that preserve site, local or regional hydrology. Such an effort could pilot and show-case efforts to plan and manage in a concerted manner, surface and groundwater withdrawals, stream base flow (aquatic species protection), wetland and floodplain storage, groundwater recharge and regional or local reuse and harvesting strategies using a quantified methodology.
- ☐ e. Projects that demonstrate the energy savings and climate change implications of sustainable site design practices and the use of green infrastructure such as green roofs, increased tree canopy, reduced water consumption and potable water use due to sustainable site designs, rainwater harvesting and reuse and reductions in hard or infrastructure needed to manage stormwater and Combined Sewers Overflow (CSOs).
- ☐ f. Projects that demonstrate the differential uses of water based on the level of treatment and potential uses as a means to reducing the costs of treating all water to potable water standards.
- ☐ g. Projects that identify and quantify the benefits of using integrated water resources management approaches.

☐ **5. Non-categorical (describe)**

_____

_____

6. Possible solution and cost estimates (if known): Construct a fourth incineration unit first so that it is operable while renewing three existing incinerators. Three existing incinerators, which will be 25 years old at the start of the renewal work, will be taken out of service one at a time for 6 months to 12 months for construction of the renewal work. The estimated project cost to construct a fourth incinerator is $150 M; the estimated project cost to renew three incinerators is $30 M.

7. Current project status: Public Outreach and Public Notice, Completion of Planning

8. Desired construction start date, if financing is available (month/year): June 2021

NOTE: Required attachments for unsewered area projects. A map of the project service area which has an identifiable scale, identifies all the structures with wastewater flows, and has the maximum impact zone clearly encircled.

On behalf of an eligible project as their authorized authority, I hereby submit this application for placement on the PPL:

Print Authorized Representaive Name: Jeannine Clancy

Signature: Jeannine Clancy

Title: Assistant General Manager

Date: 01/04/2019

For more information, contact:

Bill Dunn, Clean Water Revolving Fund Coordinator at 651-757-2324 or bill.dunn@state.mn.us
www.pca.state.mn.us/water/wastewater-financial.html

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

PPL Wastewater Existing Facility Improvements Scoring Worksheet

Project Priority List (PPL)
Minnesota Rule Chapter 7077.0117

Doc Type: PPL Points Determination

MPCA Use Only

Project Number
Staff Engineer
Total Points
Date

Facility Information (please print)

Project name: Metro Plant Solids Management Improvements
Applicant name (if different): Metropolitan Council Evnironmental Services
Contact name: Rene Heflin Title: Manager Plant Engineering Services
E-mail address: rene.heflin@metc.state.mn.us Phone: 651-602-1077

Instructions: This worksheet is used to score all requests for state financial assistance for wastewater improvement projects for Minnesota Pollution Control Agency (MPCA) permitted facilities. Scoring is based on the environmental criteria contained in Minnesota Rule Chapter 7077. The result of scoring is a ranked list called the Project Priority List (PPL) from which projects will be selected for funding.

Applicants must complete their sections of the worksheet and submit it with their requests for placement on the PPL. As part of completing the worksheet, the applicant must provide sufficient documentation to support the award of points. Complete application information is located on the MPCA website at http://www.pca.state.mn.us/ppl.

Complete this form if your proposal includes improvements to wastewater collection and/or treatment facilities that have an existing National Pollutant Discharge Elimination System (NPDES) Permit or a State Disposal System (SDS) Permit.

For more information, contact: Bill Dunn, Clean Water Revolving Fund Coordinator at 651-757-2324, Fax 651-297-8324, or bill.dunn@state.mn.us.

Applicant completes questions 15-40 and 85; MPCA completes 45-80, 90-95

Points

[15] Existing and proposed stabilization ponds located in karst areas and SDS facilities with high ground water table [subp. 6]

15.1 Does this project replace or rehabilitate stabilization ponds located over karst areas? ☐ Yes ☒ No

15.2 Does this project replace or rehabilitate wastewater treatment facilities having a disposal site (spray irrigation, rapid infiltration, etc.) with less than three feet of vertical separation from the treated wastewater discharge point to the seasonally high ground water table or to bedrock? ☐ Yes ☒ No

If Yes to either 15.1 or 15.2, enter 20 points **0**

[20] Existing facility at or above 85% capacity [subp. 1]

Complete 20.1 *if project improves only the treatment facility or improves both the treatment facility and the collection facilities.*

20.1 Is this treatment facility at or above 85% of either its permitted hydraulic flow or organic loading capacity as determined by the last 12 month average wet weather flow (AWW) or average annual discharge, **and** will the project proposal appropriately resolve capacity issues either through expansion of treatment capacity or reduction of loadings? ☒ Yes ☐ No

Permitted hydraulic and/or organic loading capacity: Liquids treatment limited to 193 mgd by solids treatment capacity.

Actual hydraulic and/or organic loading capacity: 180 mgd

Complete 20.2 *if project improves only the collection facilities.*

20.2 Is this collection facility at or above 85% of the design peak instantaneous wet weather flow (PIWW) or provide documentation of other physical conditions, such as by-passing to show the peak flow has exceeded the design PIWW, **and** will the project proposal appropriately resolve capacity issues through expansion of collection facility capacity? ☐ Yes ☒ No

Design PIWW: _____

Documented peak flow: _____

If Yes to either 20.1 or 20.2, enter 5 points **5**

[25] Existing age of treatment or collection facilities within the proposed project service area [subp. 2]
(*Age is determined by the construction year of all or a substantial portion of the existing facility addressed by project.)*

25.1 Last significant construction year of treatment or collection facilities, which are proposed to be repaired or replaced within the service area? ☒ Yes ☐ No

Enter Year: 2005

25.2 Are the facilities 20 years or more old? If yes, attach documentation of last significant construction year. ☒ Yes ☐ No

If Yes, enter 20 points **20**

[30] Existing excessive infiltration/inflow (i/i) with proposed reduction plan [subp. 3]

30.1 Does this facility have excessive infiltration or inflow? (Minn. R. 7077.0105, subp. 12 and 13)

Calculate infiltration: _____ gallon/capita/day Greater than 120 gallon/capita/day? ☐ Yes ☒ No

Calculate inflow: _____ gallon/capita/day Greater than 275 gallon/capita/day? ☐ Yes ☒ No

30.2 Does the proposal include measures to correct excessive infiltration or inflow? ☐ Yes ☒ No

If Yes to both 30.1 and 30.2, enter 15 points **0**

[35] Existing or proposed land (including sub-surface) discharge [subp. 4]

35.1 Does the facility currently land discharge treated wastewater effluent, will it continue to land discharge, **and** not create or contribute to known ground water nitrate levels over 10 mg/L? ☐ Yes ☒ No

35.2 Does the proposed alternative call for the consumptive use (nitrogen or volume) spray irrigation or on-land disposal systems, that are required by permit to denitrify (nitrate limit)? ☐ Yes ☒ No

If Yes to either 35.1 or 35.2, enter 20 points **0**

[40] Existing stringent limit that exceeds secondary treatment [subp. 5]

40.1 Is the existing facility currently subject to CBOD or TSS permit limits that are more stringent than secondary treatment (25 mg/l and 30 mg/l), or has an ammonia, total nitrogen or phosphorus limit? (Minn. R. 7050.0211) Exclude facilities discharging to Class 7 waters that are subject to 15 CBOD. ☒ Yes ☐ No

If Yes, enter 10 points **10**

[45] Existing effluent discharge violations *(Enforcement staff)* [subp. 7]

45.1 Is the existing facility on the Significant Noncompliance List (CFR, title 40, section 123.45, appendix A) **and** would the proposed project designed to eliminate the problem? ☐ Yes ☒ No

If Yes, enter 5 points **0**

[50] Existing repeated facility failures *(Enforcement staff)* [subp. 8]

50.1 Has the existing treatment or collection facility experienced bypasses, overflows and/or surcharges during two or more storm events within a 12-month period when operating at less than "peak instantaneous wet weather flow" **and** is the proposed project designed to eliminate such failures? ☐ Yes ☒ No

If Yes, enter 10 points **0**

[55] Existing discharge to outstanding resource value water (ORVW) or impaired water (*Effluent Limits Coord.)* [subp. 9]

55.1 Does the existing facility currently discharge into an ORVW or Impaired water? ☐ Yes ☒ No

If Yes, enter 5 points **0**

55.2 If yes, does the existing facility also have existing acute/chronic effluent discharge standards violations? (see question 45.1 or subp. 7)? ☐ Yes ☒ No

If Yes to both 55.1 and 55.2, enter 5 points **0**

55.3 If yes, does the existing facility also have existing chronic failures? (see question 50.1 or subp. 8) ☐ Yes ☒ No

If Yes to 55.1, 55.2, and 55.3, enter 5 points **0**

[60] Existing discharge near potable water intake (*Effluent Limits Coordinator)* [subp. 10]

60.1 Is there potable water intake within 25 miles downstream of the existing facility discharge? ☐ Yes ☒ No

If Yes, enter 5 points **0**

[65] Existing endangered or threatened species (*Effluent Limits Coordinator)* [subp. 11]

65.1 Does the receiving water downstream from the existing facility discharge support any endangered or threatened species? ☒ Yes ☐ No

If Yes, enter 5 points **5**

[70] Proposed introduction of more stringent discharge limits for an existing facility (*Effluent Limits Coordinator)* [subp. 12]
Does this existing treatment facility need to meet more intensive and/or extensive wastewater treatment standards because of:

70.1 More stringent facility discharge limits as incorporated into MPCA permit revisions? ☐ Yes ☒ No

70.2 Discontinuation of an existing permit variance? ☐ Yes ☒ No

70.3 Need to treat additional hydraulic or organic loading capacities without increasing either the permitted frozen effluent mass limit or concentration of discharges to the receiving waters? ☐ Yes ☒ No

If Yes to 70.1, 70.2 or 70.3, enter 10 points **0**

[75] Existing receiving water classification *(Effluent Limits Coordinator)* [subp. 13]

Only the most strict classification can be used, 7 points maximum

75.1 Receiving water classification is 2A ☐ Yes ☒ No

If Yes to 75.1, enter 7 points **0**

75.2 Receiving water classification is 1, 2Bd ☐ Yes ☒ No

If No to 75.1 and Yes to 75.2, enter 5 points **0**

75.3 Receiving water classification is 2B, 2C, 2D ☒ Yes ☐ No

If No to 75.1 and 75.2 and Yes to 75.3, enter 3 points **3**

75.4 Receiving water classification is 7 ☐ Yes ☒ No

If No to 75.1, 75.2 and 75.3 and Yes to 75.4, enter 1 point **0**

[80] Project facility effluent to stream impact dilution ratio *(Effluent Limits Coordinator)* [subp. 14]

*For all discharges to rivers, streams, or ditches (flowing receiving water), calculate the facility effluent low flow by averaging the influent flow reported on the monthly discharge monitoring reports (DMRs) for the three consecutive months with the lowest **influent** flow in three climatic years, April 1 to March 31.*

80.1 What is the ratio of the **influent** low flow of the facility to the 7Q10 flow of the receiving water?

Dilution Ratio* = Wastewater Treatment Facility (WWTF) Low Flow (million gallons per day [mgd]) / Receiving water low flow (mgd)

(163 mgd/ 1117 mgd = Dilution Ratio) Dilution Ratio = 0.15

*For all "Dilution Ratios" greater than 1.0 or if the 7Q10 receiving water flow = 0 mgd set dilution ratio = 1.0

Note: Round up calculated value for dilution ratio to the next whole number (e.g., 8.3 = 9). 15 x dilution ratio = **2**

[85] Proposed project implements corrective measures (*Effluent Limits Coordinator)* [subp. 15]

85.1 Will the project implement corrective measure(s) for problems identified in a study, such as: ☒ Yes ☐ No

- Clean Water Partnership Project
- Impaired Water Study
- EPA-approved Watershed Restoration Action Strategy
- Equivalent (other) study, e.g., County Water Plan

Type of Study: *Attach supporting documentation and identify relevant sections.*

If Yes, enter 5 points **5**

[90] Proposed project helps meet a total maximum daily load (TMDL) for a receiving water *(Effluent Limits Coord)* [subp. 16]

90.1 Does this project contribute to the achievement of a TMDL by being designed to reduce the discharge of pollutants as required by an Agency approved TMDL implementation plan or does the project require an National Pollutant Discharge Elimination System (NPDES) Permit or State Disposal System (SDS) Permit that will require the reduced discharge of pollutants based on a TMDL? ☐ Yes ☒ No

If Yes, enter 20 points **0**

[95] Propose project points reduction for new/expanded discharges into specified waters *(Effluent Limits Coord)* [subp. 17]

95.1 Does the proposed project involve a new or expanded discharge* to one or more of the following specified waters? ☐ Yes ☒ No

a) Outstanding Resource Value Waters (Minn. R. 7050.0180)

b) Impaired waters (Section 303(d) of the Clean Water Act)

c) Classification 2A, lake, or wetland that exceeds 200,000 gallons per day

* If new permit requirements include frozen effluent mass limits from the existing permit, the facility is not defined as expanding and negative points will not be assigned.

If Yes, enter minus 5 points **0**

[100] Project includes wastewater reuse

100.1 Does the project include the beneficial use of treated wastewater effluent that will reduce or replace the use of a groundwater, surface water, or potable water source? ☒ Yes ☐ No

100.2 Do the project components needed to beneficially use treated wastewater effluent account for at least 20% of the total eligible project cost? ☐ Yes ☒ No

100.3 Does the project receive points under item 35 (Minn. R. 7077.0117, subp. 4) for land discharge? ☐ Yes ☒ No

If Yes to both 100.1 and 100.2, enter 30 points **0**

Total **50**

Minnesota Pollution Control Agency
520 Lafayette Road
St. Paul, MN 55155-4194

State Environmental Review Process (SERP) Mailing List Form

Clean Water State Revolving Fund Program

Minnesota Rules 7077.0272, subp. 2.a.A.
Minnesota Rules 7077.0277, subp. 3.B.

Doc Type: Wastewater Point Source

Instructions: This is the complete mailing list that the Minnesota Pollution Control Agency (MPCA) will use to public notice the Environmental Summary or other environmental review documents. Please type names and addresses on this form and return to the MPCA staff engineer. This list should be considered minimum. If a more substantial mailing list is available for the Public Participation Program, it should be added to this mailing list. **Please return this mailing list in MS Word format only.**

Example address blocks:

The Honorable Mark Anderson
Minnesota State Senator
135 State Office Building
St. Paul, MN 55113

Marv Johnson, City Administrator
City of Willmar
236 Oriole Avenue
Willmar, MN 55699

Municipality name: Metropolitan Council Environmental Services **Project number:** 806210

Contact name: Tim O'Donnell **Phone number:** 651-602-1269
(person completing the form)

Public notice address information

1.	**The Honorable State Senator:**	**6.**	**City Administrator/Clerk:**
	See attached stakeholder mailing list in Appendix L		See attached stakeholder mailing list in Appendix L
2.	**The Honorable State Representative:**	**7.**	**Engineering Consultant:**
	See attached stakeholder mailing list in Appendix L		N/A (facility plan completed in house)
3.	**The Honorable County Board Chair:**	**8.**	**County Planning and Zoning Office:**
	See attached stakeholder mailing list in Appendix L		See attached stakeholder mailing list in Appendix L
4.	**The Honorable Mayor:**	**9.**	**Watershed District (if established):**
	See attached stakeholder mailing list in Appendix L		See attached stakeholder mailing list in Appendix L
5.	**Township Board Clerk:***	**10.**	**Regional Development Commission:**
	See attached stakeholder mailing list in Appendix L		Metropolitan Council Attn: Lisa Barajas 390 Robert St. N. St. Paul, MN 55101-1805

***Include if any portion of the project (including the facility, interceptor, influent or outfall lines) will be located in the township(s).*

To add rows, place your cursor in the last row of the second column and hit tab.

Interested citizens:	**Interested groups:** (i.e., homeowners associations, environmental, business, civic, etc., organizations)
See attached stakeholder mailing list in Appendix L	See attached stakeholder mailing list in Appendix L

To add rows, place your cursor in the last row of the second column and hit tab.

Property owners:

Property owner list should include all property owners of the site to be, or which has been previously acquired. For pond systems, include the property owner(s) of the pond site, spray irrigation site(s) and all property owners of homes within one-fourth mile of the pond site and any clusters of homes within one-half mile of the pond site.

See attached stakeholder mailing list in Appendix L	

Federal agencies:

ATTN: Field Supervisor
U.S. Fish and Wildlife Service
Twin Cities Field Office
4101 American Boulevard East
Bloomington, MN 55425-1665

ATTN: Environmental Compliance Chief
U.S. Army Corps of Engineers
St. Paul District
180 Fifth Street East, Suite 700
St. Paul, MN 55101-1678

ATTN: Regional Environmental Officer
Federal Emergency Management Agency
Region V Office
536 South Clark Street, 6th Floor
Chicago, IL 60605

State agencies:

ATTN: Environmental Review Supervisor
MN Department of Natural Resources
Division of Ecological and Water Resources
500 Lafayette Road, Box 25
St. Paul, MN 55155 -4025

ATTN: Manager of Government Programs and Compliance
MN Historical Society
Minnesota Historic Preservation Office
345 West Kellogg Boulevard
St. Paul, MN 55102-1906

ATTN: Cultural Resource Director
MN Indian Affairs Council
161 St. Anthony Avenue, Suite 919
St. Paul, MN 55103

MPCA regional office(s):
