



PERMIT TO CONSTRUCT

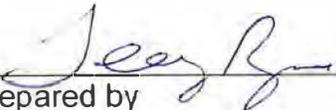
Under the authority of RSMo 643, the Federal Clean Air Act, and/or Saint Louis County Code of Ordinances Title VI Chapter 612, the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number: Saint Louis County Construction Permit #8069
Project Number: 2018-11-019
Installation Number: 189-0308
Parent Company: Champ Landfill Company, LLC
Parent Company Address: 2305 Creve Coeur Mill Road, Maryland Heights, MO 63043
Installation Name: Champ Landfill
Installation Address: 2305 Creve Coeur Mill Road, Maryland Heights, MO 63043
Location Information: St. Louis County

Application for Authority to Construct was made for:

Construct one 2000 SCFM enclosed landfill gas flare, and update existing installation PTE. This review was conducted in accordance with Section (6), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required* and St. Louis County Code of Ordinances Title VI Chapter 612.110, *Permits Required*.

- Standard Conditions (on reverse) are applicable to this permit.
- Standard Conditions (on reverse) and Special Conditions are applicable to this permit.


Prepared by
Jeremy Rogus
Saint Louis County Department of Public Health

DEC 10 2019
Effective Date

STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within two years from the effective date of this permit. Permittee should notify the Air Pollution Control Program (APCP) if construction or modification is not started within two years after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 and Saint Louis County Code of Ordinances Title VI Chapter 612 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

Like kind replacements of permitted equipment may not be approved under Saint Louis County Code of Ordinances Title VI Chapter 612. Any replacement of equipment which emits, captures, or controls air pollutants may be subject to permitting requirements under Saint Louis County Code of Ordinances Title VI Chapter 612. An air construction permit application or request for permit determination shall be submitted to the Saint Louis County Department of Public Health Air Pollution Control Program for any replacement of equipment which emits, captures, or controls air pollutants.

You must notify the Saint Louis County Department of Public Health Air Pollution Control Program (APCP) of the anticipated date of start-up of this (these) air contaminant source(s). The information must be made available within 30 days of actual startup.

A copy of this permit and permit review shall be kept at the installation address and shall be made available to the Saint Louis County Department of Public Health APCP and/or Missouri Department of Natural Resources' personnel upon request.

You may appeal this permit or any of the listed special conditions to the St. Louis County Department of Public Health Air Pollution Control Program Appeal Board, 6121 N. Hanley Rd, Berkeley, MO 63134, as provided in Saint Louis County Code Section 612.090. The appeal shall act of a stay of decision except those issued by the Director pursuant to Saint Louis County Code Section 612.100. If you choose to appeal, petitions must be filed within ten (10) days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the Appeal Board.

If you choose not to appeal, this certificate, the project review and your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant sources(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Saint Louis County Department of Public Health APCP at 314-615-8924. If you prefer to write, please address your correspondence to the Saint Louis County Department of Public Health, Air Pollution Control Program, 6121 North Hanley Rd., Berkeley MO 63134 (or current address).

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Project No.	2018-11-019

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

The special conditions listed in this permit were included based on the authority granted the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060 paragraph (12)(A)10. "Conditions required by permitting authority."

For permits issued under the St. Louis County Code of Ordinances Title VI Chapter 612, the St. Louis County Department of Public Health Director may impose conditions that may be necessary to accomplish the proper operation of air contaminant equipment.

Champ Landfill
St. Louis County, MO

1. Landfill Gas Sulfur Content Testing
 - A. Total sulfur content in the landfill gas prior to combustion shall not exceed 700 ppmv.
 - B. The permittee shall collect representative landfill gas samples to quantify sulfur compounds using ASTM D5504-12 or an alternative approved by the Air Pollution Control Program's Compliance/Enforcement Section. Testing results shall be in units of ppmv.
 - C. Initial testing shall be performed within 60 days after the issuance of this permit. Subsequent testing shall be performed according to the following schedule.
 - 1) If the test results indicate a concentration not exceeding 75% of the 700 ppmv limit (525 ppmv), then subsequent testing shall be performed annually, between 11 and 13 months from the previous test.
 - 2) If the test results indicate a concentration exceeding 75% of the 700 ppmv limit (525 ppmv), then subsequent testing shall be performed at least once quarterly.
 - 3) If four consecutive quarterly tests indicate a concentration not exceeding 525 ppmv, then testing shall revert to C.1).
 - D. Copies of the testing results shall be included in the site's semi-annual monitoring reports and annual compliance certifications.
2. Permit Amendment

If at any time landfill gas sulfur content exceeds the limit in Special Conditions 1.A., then Champ Landfill shall submit an Application for Authority to Construct to

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Permit No.	STL County #8069
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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

the Air Pollution Control Program within ninety (90) days of the exceedance. The application shall account for the revised project potential emissions (based on total flare MHDR) and ambient modeling.

3. Record Keeping and Reporting Requirements

- A. Champ Landfill shall maintain all record required by this permit for not less than five years and shall make them available immediately to any St. Louis County and/or Missouri Department of Natural Resources' personnel upon request.
- B. Champ Landfill shall report to St. Louis County Department of Public Health Air Pollution Control Program, 6121 N. Hanley Road, Berkeley, MO 63134 or AirComplianceReporting.dph@stlouisco.com and to Missouri Department of Natural Resources Air Pollution Control Program Compliance/Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than ten (10) days after the end of the month which any record required by this permit shows an exceedance of a limitation imposed by this permit.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE
SECTION (6) REVIEW

Project Number: 2018-11-019
Installation ID Number: 189-0308
Permit Number: STL County #8069

Installation Address:
Champ Landfill
2305 Creve Coeur Mill Road
Maryland Heights, MO 63043

Parent Company:
Champ Landfill Company, LLC
2305 Creve Coeur Mill Road
Maryland Heights, MO 63043

Saint Louis County, MO

REVIEW SUMMARY

- Champ Landfill has applied for authority to construct one (1) 2000 SCFM enclosed flare. The existing installation PTE is being updated to reflect higher SO₂ concentration than previously used AP-42 value.
- Hazardous Air Pollutant (HAP) emissions are expected from the equipment.
- 40 CFR 60 Subpart WWW, *Standards of Performance for Municipal Solid Waste Landfills* applies to the equipment.
- 40 CFR 61 Subpart M, *National Emission Standards for Asbestos* applies to installations that have accepted asbestos containing waste. MACT AAAA, *National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills* applies to the equipment.
- Flares are used to control the emissions from the landfill. Flares reduce volatile organic compounds (VOC), non-methane organic compounds (NMOC), methane (CH₄), and HAPs in landfill gas. Flares will reduce sulfur compounds (including TRS and RSC) to SO₂. Flares are also an emission source of combustion products including, but not limited to PM, PM₁₀, PM_{2.5}, SO₂, NO_x, CO, and CO₂.
- This review was conducted in accordance with Section (6) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of SO₂ are above de minimis levels.
- This installation is located in Saint Louis County, a nonattainment area for the 2015 8-hour ozone standard and an attainment area for all other criteria pollutants.
- This installation is not on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2.
- Ambient air quality modeling was performed to determine the ambient impact of SO₂.

- Emission testing is required as a part of this permit. Testing may be required as part of other state, federal, or applicable rules.
- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

Champ Landfill is an active municipal solid waste landfill equipped with a gas collection system, leachate pretreatment system, and two (2) 3,000 scfm enclosed flares. The existing blower/flare and flares were installed in 2006 when the gas collection and control system installation was being updated at the facility. The installation is subject to 40 CFR Part 60 Subpart WWW, *Standards for Municipal Solid Waste*. Champ Landfill has a Part 70 Title V Operating Permit.

The following permits have been issued to Champ Landfill from the Air Pollution Control Program.

Table 1: Permit History

Saint Louis County Construction Permit #	Description
6995	Enclosed Flare #1, 3,000 scfm, Installed 2006
6996	Enclosed Flare #2, 3,000 scfm, Installed 2006
8054	Leachate Pretreatment System, No Control – This permit is not a State Construction Permit issued under 10 CSR 10-6.060

PROJECT DESCRIPTION

Champ Landfill proposes to install a 2,000 scfm enclosed flare. This installation currently operates two 3,000 scfm enclosed flares. The flare will combust landfill gas produced by the decomposition of waste.

EMISSIONS/CONTROLS EVALUATION

Emission factors were obtained from several references:

- EPA Document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, Chapter 2.4, *Municipal Solid Waste Landfills*, November 1998.
- AP-42, Chapter 2.4, *Municipal Solid Waste Landfills*, October 2008 draft
- The default NMOC concentration of 2420 ppmv (expressed as hexane) was used for co-disposal waste. Co-disposal waste is described in EPA Document AP-42, Chapter 2.4, *Municipal Solid Waste Landfills*, November 1998 as MSW and non-residential industrial/commercial/organic type wastes. For purposes of this emissions evaluation, co-disposal does not include hazardous waste. Champ Landfill does not accept hazardous waste.
- The default landfill gas sulfur concentration was not used. Limited test data from other landfills shows much higher concentrations than the default. A value of 700

ppmv was chosen. The AP-42 default concentrations for individual species were used, but ratioed by the total 700 value in order to calculate RSC, TRS, H₂S, and carbonyl sulfide. This permit requires testing to verify the LFG sulfur content, which will be used to verify the flare's SO₂ PTE. On May 30, 2019 Champ Landfill performed LFG sampling and subsequent analysis using ASTM D5504 to determine ppmv of TRS. Results of three separate samples taken on May 30, 2019 were 410, 420, and 430 ppmv TRS. The use of 700 ppmv to calculate SO₂ is based on sampling performed May 30, 2019 with a safety margin. It is reasonably possible that concentrations may reach 700 ppmv.

- Formaldehyde was obtained from an August 1999 San Diego County document for enclosed flares, referencing other EPA data. The D-rated AP-42 value was not used.
- Hydrogen fluoride was obtained from an August 2011 BAAQMD preliminary engineering evaluation.
- PAH and metallic HAPs was obtained from an April 2007 EPA document, *Field Test Measurements at Five Municipal Solid Waste Landfills with Landfill Gas Control Technology*.
- GHG was obtained from 40 CFR 98. CO₂ inherently part of the LFG prior to combustion was added to the CO₂ generated by combustion.

The selected landfill gas data used for this permit is summarized in Table 2.

Table 2: Landfill gas characteristics for permit basis

Parameter	Value	Units
Existing Flares LFG Flow Rate	6000	scfm
Proposed Flare LFG Flow Rate	2000	scfm
Net Heating Value	506	btu/scf
LFG temperature	25	C
Methane Fraction	50	%
VOC concentration	2420	ppmv as hexane

LFG

LFG flow rate was based on maximum capacity of existing flares (6000 scfm) and the proposed new flare (2000 scfm). The landfill continues to grow and install additional gas collection infrastructure which results in an increase in LFG production over time.

The collection system was assigned 85% capture efficiency per the range in AP-42 and the NSPS XXX cost analysis referencing Global Mitigation of Non-CO₂ Greenhouse Gases: 2010-2030, EPA-430-R-13-011.

The following table provides an emissions summary for this project. Flare potentials are based on Table 2 data, including flow rate. Existing potential emissions are based on the two existing flares (6000 scfm). Existing actual emissions from the 2018 Emission Inventory includes fugitive emissions. The installation is not a named source, therefore fugitive emissions are not counted towards major source status for NSR and Title V.

Table 3: Emissions Summary (tons per year)

Pollutant	Regulatory <i>De Minimis</i> Levels	Existing Potential Emissions	Existing Actual Emissions (2018 EIQ)	Potential Emissions of the Project	New Installation Conditioned Potential
PM _{2.5}	10.0	11.83	8.28	3.94	N/A
PM ₁₀	15.0	11.83	14.15	3.94	N/A
PM	25.0	2.96	N/A	0.99	N/A
SO ₂	40.0	180.52	6.16	60.17	N/A
NO _x	40.0	47.87	17.62	15.96	N/A
VOC	40.0	2.62	6.51	0.87	N/A
CO	100.0	159.57	330.41	53.19	N/A
HAPs	10.0/25.0	TBD	3.13	TBD	N/A
Largest HAP – Hydrogen Chloride	10.0	10.64	N/D	3.55	N/A
CO ₂	N/A	91,589.25	N/D	30,529.75	N/A
GHG Mass Basis	N/A	180,184.60	N/D	60,061.53	N/A

N/A = Not Applicable; N/D = Not Determined

TBD – HCl emissions will be based on factors currently being reviewed in the Title V permit. Potential HCl emissions for this project are minor when calculated using 74 ppmv for concentration of total chloride from AP-42, Chapter 2.4, *Municipal Solid Waste Landfills*, October 2008 draft

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (6) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of SO₂ are above de minimis levels.

APPLICABLE REQUIREMENTS

Champ Landfill shall comply with the following applicable requirements. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with these emission standards, based on information submitted in the application, has been verified at the time this application was approved. For a complete list of applicable requirements for your installation, please consult the operating permit.

SAINT LOUIS COUNTY CODE OF ORDINANCES

- 612.110, *Permits Required*

- 612.120, *Permits to be Visibly Affixed or Placed*
- 612.260, *Permit Fees-Schedules*
- 612.290 *Right of Entry; Inspections; Samples.*

GENERAL REQUIREMENTS

- *Operating Permits*, 10 CSR 10-6.065
- *Start-Up, Shutdown, and Malfunction Conditions*, 10 CSR 10-6.050
- *Submission of Emission Data, Emission Fees and Process Information*, 10 CSR 10-6.110
- *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*, 10 CSR 10-6.170
- *Restriction of Emission of Visible Air Contaminants*, 10 CSR 10-6.220
- *Restriction of Emission of Odors*, 10 CSR 10-6.165

SPECIFIC REQUIREMENTS

- *New Source Performance Regulations*, 10 CSR 10-6.070
Standards of Performance for Municipal Solid Waste Landfills, 40 CFR Part 60, Subpart WWW
- *MACT Regulations*, 10 CSR 10-6.075
National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills, 40 CFR Part 63, Subpart AAAA
- *Control of Sulfur Dioxide Emissions*, 10 CSR 10-6.261

AMBIENT AIR QUALITY IMPACT ANALYSIS

Ambient air quality modeling was performed to determine the ambient impact of SO₂, because potential emissions of SO₂ were greater than the de minimis level. A NAAQS compliance demonstration was required because SO₂ exceeded the significance levels outlined in 10 CSR 10-6.060(5)(F)3 Table 1. Results show that the facility is in compliance with the NAAQS for SO₂ when the flare is operated at 2,000 scfm. In addition to demonstrating compliance with the NAAQS, Champ Landfill must demonstrate that they will not deteriorate the air quality beyond limits outlined in 10 CSR 10-6.060(5)(F)5 Table 2. Results show the facility is in compliance with the increment for SO₂ when the flare is operated at 2,000 scfm.

More information regarding the AAQIA can be found in the memorandum "Ambient Air Quality Impact Analysis (AAQIA) for Champ Landfill Company, LLC – Flare Construction Project" dated September 24, 2019.

STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (6), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*, it is recommended that this permit be granted with special conditions.

SAINT LOUIS COUNTY APCP CONSTRUCTION PERMIT #8069
ENCLOSED FLARE
2000 SCFM
INSTALLED 2019
MDNR PROJECT #2018-11-019

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form and supplied attachments dated November 12, 2018, designating Champ Landfill Company, LLC as the owner and operator of the installation.
- Memo titled, "Ambient Air Quality Impact Analysis (AAQIA) for Champ Landfill Company, LLC – Flare Construction Project" dated September 24, 2019.