STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION

MISSOURI STATE OPERATING PERMIT

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended,

Permit No.	MO-0098752
Owner:	Anschutz Mining Corporation
Address:	555 Seventeenth St., Suite 2400 Denver, CO 80202
Continuing Authority:	Anschutz Mining Corporation
Address:	555 Seventeenth St., Suite 2400 Denver, CO 80202
Facility Name:	Anschutz, Madison Mine
Facility Address:	401 N. Mine LaMotte Frederickstown, MO 63645
Legal Description:	see next page
Latitude/Longitude:	see next page
Receiving Stream:	see next page
First Classified Stream and ID:	see next page
USGS Basin & Sub-watershed No.:	see next page

is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein:

FACILITY DESCRIPTION

See next page

This permit authorizes only wastewater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 644.051.6 of the Law.

August 29, 2008 October 10, 2008
Effective Date Revised Date

Doyle Childers, Director, Department of Natural Resources
Executive Secretary, Clean Water Commission

August 28, 2013
Expiration Date

Edward Galbraith, Director of Staff, Clean Water Commission

MO 780-0041 (10-93)

Outfall #001 - Stormwater - SIC #1031
Stormwater runoff from tailings piles, and areas adjacent to Tollar Branch.
Actual flow is dependent upon precipitation.
Legal Description: NE ¼ of Land Grant 3089, T33N, R7E Madison County.
Latitude/Longitude: +3732296/ -09016477
Receiving stream: Tollar Branch (U)
First Classified Stream and ID: Saline Creek (P) 02859
USGS Basin and Sub-watershed number: 08020202-020003

Outfall #002 - Stormwater - SIC #1031
Stormwater runoff from tailings piles and areas adjacent to unnamed tributary to Saline Creek, groundwater from a seep, and discharge from Met Pond.
Actual flow is dependent upon precipitation.
Legal Description: SE ¼ of Land Grant 2073, T33N, R7E Madison County.
Latitude/Longitude:+3733061/ -09016490
Receiving stream: Unnamed tributary to Saline Creek (U)
First Classified Stream and ID: Saline Creek (P) 02859
USGS Basin and Sub-watershed number: 08020202-020003

Outfall #003 - Stormwater - SIC #1031. This outfall has been eliminated by plugging the mine opening in 2002.

Instream Monitoring: eliminated

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified for this permit. The interim effluent limitations shall become upon issuance and remain in effect until three (3) years after the effective date of this permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	INTERIM EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Outfalls #001-002						
Flow	MGD	*		*	once/month	24 hr. estimate
Settleable Solids	mL/L/hr	1.5		1.0	once/month	grab
Total Suspended Solids	mg/L	45		30	once/month	grab
pH - Units	SU	***		***	once/month	grab
Sulfate	mg/L	1000		*	once/month	grab
Cobalt, Total Recoverable	µg/L	1000		*	once/month	grab
Copper, Total Recoverable	µg/L	60		*	once/month	grab
Lead, Total Recoverable	µg/L	390		*	once/month	grab
Nickel, Total Recoverable	µg/l	4600		*	once/month	grab
Zinc, Total Recoverable	µg/L	380		*	once/month	grab
Hardness	mg/L	*		*	once/month	grab

THE MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE January 28, 2009. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

Outfall #001 :Whole Effluent Toxicity Test See Special Condition #8	once/year

MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY THE FIRST REPORT IS DUE January 28, 2009. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

Outfall #002: Whole Effluent Toxicity Test See Special Condition #8	once/year

MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE January 28, 2009. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified for this permit. The final effluent limitations shall become effective three (3) years from the effective date of this permit and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Outfalls #001- 002						
Flow	MGD	*		*	once/month	24 hr. estimate
Settleable Solids	mL/L/hr	1.5		1.0	once/month	grab
Total Suspended Solids	mg/L	45		30	once/month	grab
pH - Units	SU	***		***	once/month	grab
Sulfate plus chlorides	mg/L	1000		1000	once/month	grab
Cobalt, Total Recoverable	µg/L	1000		817	once/month	grab
Copper, Total Recoverable	µg/L	26		13	once/month	grab
Lead, Total Recoverable	µg/L	188		94	once/month	grab
Nickel, Total Recoverable	µg/l	818		407	once/month	grab
Zinc, Total Recoverable	µg/L	210		104	once/month	grab
Hardness	mg/L	*		*	once/month	grab

THE MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE January 28, 2012. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

Outfall #001 Whole Effluent Toxicity Test See Special Condition #8	once/year
Outfall #002 Whole Effluent Toxicity Test See Special Condition #8	once/year

MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE January 28, 2012. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

* Monitoring requirement only.

** A representative grab sample shall be collected during the first hour of rainfall which exceeds 0.1 inches and results in a discharge.

*** pH is measured in pH units and is not to be averaged. The pH is limited to the range of 6.5-9.0 pH units.

C. SCHEDULE OF COMPLIANCE

1. By March 31, 2009 submit plan for compliance with final permit limits.
2. By March 31, 2010 submit progress report documenting construction progress or compliance with final permit limits.
3. By March 31, 2011 be in full compliance with final permit limits.

D. SPECIAL CONDITIONS

1. This permit may be reopened and modified, or alternatively revoked and reissued, to:
   (a) Comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a) (2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:
      (1) contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
      (2) controls any pollutant not limited in the permit.
   (b) Incorporate new or modified effluent limitations or other conditions, if the result of a waste load allocation study, toxicity test or other information indicates changes are necessary to assure compliance with Missouri's Water Quality Standards.
   (c) Incorporate new or modified effluent limitations or other conditions if, as the result of a watershed analysis, a Total Maximum Daily Load (TMDL) limitation is developed for the receiving waters which are currently included in Missouri's list of waters of the state not fully achieving the state's water quality standards, also called the 303(d) list.

   The permit as modified or reissued under this paragraph shall also contain any other requirements of the Clean Water Act then applicable.

2. All outfalls must be clearly marked in the field.

3. Changes in Discharges of Toxic Substances

   The permittee shall notify the Director as soon as it knows or has reason to believe:
   (a) That any activity has occurred or will occur which would result in the discharge of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"
      (1) One hundred micrograms per liter (100 µg/L);
      (2) Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2,5 dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;
      (3) Five (5) times the maximum concentration value reported for the pollutant in the permit application;
      (4) The level established in Part A of the permit by the Director.
   (b) That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant, which was not reported in the permit application.

4. Report as no-discharge when a discharge does not occur during the report period.

5. Water Quality Standards
   (a) Discharges to waters of the state shall not cause a violation of water quality standards rule under 10 CSR 20-7.031, including both specific and general criteria.
   (b) General Criteria. The following general water quality criteria shall be applicable to all waters of the state at all times including mixing zones. No water contaminant, by itself or in combination with other substances, shall prevent the waters of the state from meeting the following conditions:
      (1) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses;
      (2) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses;
      (3) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses;
      (4) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life;
      (5) There shall be no significant human health hazard from incidental contact with the water;
      (6) There shall be no acute toxicity to livestock or wildlife watering;
      (7) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community;
      (8) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247.

8. Whole Effluent Toxicity (WET) tests shall be conducted as follows:

SUMMARY OF WET TESTING FOR THIS PERMIT				
OUTFALL	A.E.C. %	FREQUENCY	SAMPLE TYPE	MONTH
001	100%	Annual	grab	Any, report in January
002	100%	Annual	grab	Any, report in January

   (a) Test Schedule and Follow-Up Requirements
      (1) Perform a SINGLE-dilution test in the months and at the frequency specified above. For tests which are successfully passed, submit test results USING THE DEPARTMENT'S WET TEST REPORT FORM #MO-780-1899 along with complete copies of the test reports as received from the laboratory, including copies of chain-of-custody forms within 30 calendar days of availability to the WATER PROTECTION PROGRAM, P.O. Box 176, Jefferson City, MO 65102. If the effluent passes the test, do not repeat the test until the next test period.
         (a) For discharges of stormwater, samples shall be collected within three hours from when discharge first occurs.
         (b) Samples submitted for analysis of stormwater discharges shall be collected as a grab.
         (c) For discharges of non-stormwater, samples shall be collected only when precipitation has not occurred for a period of forty-eight hours prior to sample collection. In no event shall sample collection occur simultaneously with the occurrence of precipitation excepting for stormwater samples.
         (d) A twenty-four hour composite sample shall be submitted for analysis of non-stormwater discharges.
         (e) Upstream receiving water samples, where required, shall be collected upstream from any influence of the effluent where downstream flow is clearly evident.
         (f) Samples submitted for analysis of upstream receiving water may be collected as either a grab or twenty-four-hour composite as appropriate to the nature of the discharge.
         (g) Chemical and physical analysis of the upstream control and effluent sample shall occur immediately upon being received by the laboratory, prior to any manipulation of the effluent sample beyond preservation methods consistent with federal guidelines for WET testing that are required to stabilize the sample during shipping.

(h) Any and all chemical or physical analysis of the effluent sample performed in conjunction with the WET test shall be performed at the 100% Effluent concentration in addition to analyses performed upon any other effluent concentration.

(i) All chemical analyses included in the Missouri Department of Natural Resources WET test report form #MO-780-1899 shall be performed and results shall be recorded in the appropriate field of the report form.

(j) Where flow-weighted composite sample is required for analysis, the samples shall be composited at the laboratory where the test is to be performed.

(k) Where in stream testing is required downstream from the discharge, sample collection shall occur immediately below the established Zone of Initial Dilution in conjunction with or immediately following a release or discharge.

(l) Samples submitted for analysis of downstream receiving water may be collected as either a grab or twenty-four-hour composite as appropriate to the nature of the discharge.

(m) All instream samples, including downstream samples, shall be tested for toxicity at the 100% concentration in addition to any other assigned AEC for in-stream samples.

(2) All failing test results along with complete copies of the test reports as received from the laboratory, INCLUDING THOSE TESTS CONDUCTED UNDER CONDITION (3) BELOW, shall be reported to the WATER PROTECTION PROGRAM, P.O. Box 176, Jefferson City, MO 65102 within 14 calendar days of the availability of the results.

(3) If the effluent fails the test, a multiple dilution test shall be performed for BOTH test species within 30 calendar days and biweekly thereafter (for storm water, tests shall be performed on the next and subsequent storm water discharges as they occur), until one of the following conditions are met:

(a) THREE CONSECUTIVE MULTIPLE-DILUTION TESTS PASS. No further tests need to be performed until next regularly scheduled test period.

(b) A TOTAL OF THREE MULTIPLE-DILUTION TESTS FAIL.

(4) Failure of at least two multiple-dilution tests during any period of accelerated monitoring violates the permit narrative requirement for aquatic life protection.

(5) The permittee shall submit a concise summary of all test results for the test series to the WATER PROTECTION PROGRAM, P.O. Box 176, Jefferson City, MO 65102 within 14 calendar days of the third failed test.

(6) Additionally, the following shall apply upon failure of the third MULTIPLE DILUTION test: A toxicity identification evaluation (TIE) or toxicity reduction evaluation (TRE) is automatically triggered. The permittee shall contact THE WATER PROTECTION PROGRAM within 14 calendar days from availability of the test results to ascertain as to whether a TIE or TRE is appropriate. The permittee shall submit a plan for conducting a TIE or TRE to the WATER PROTECTION PROGRAM within 60 calendar days of the date of DNR's direction to perform either a TIE or TRE. This plan must be approved by DNR before the TIE or TRE is begun. A schedule for completing the TIE or TRE shall be established in the plan approval.

(7) Upon DNR's approval, the TIE/TRE schedule may be modified if toxicity is intermittent during the TIE/TRE investigations. A revised WET test schedule may be established by DNR for this period.

(8) If a previously completed TIE has clearly identified the cause of toxicity, additional TIEs will not be required as long as effluent characteristics remain essentially unchanged and the permittee is proceeding according to a DNR approved schedule to complete a TRE and reduce toxicity. Regularly scheduled WET testing as required in the permit, without the follow-up requirements, will be required during this period.

(9) When WET test sampling is required to run over one DMR period, each DMR report shall contain a copy of the Department's WET test report form that was generated during the reporting period.

(10) Submit a concise summary in tabular format of all test results with the annual report.

(b) PASS/FAIL procedure and effluent limitations:

(1) To pass a single-dilution test, mortality observed in the AEC test concentration shall not be significantly different (at the 95% confidence level; $p = 0.05$) than that observed in the upstream receiving-water control sample. Where upstream receiving water is not available mortality observed in the AEC test concentration shall not be significantly different (at the 95% confidence level; $p = 0.05$) than that observed in the laboratory control. The appropriate statistical tests of significance shall be consistent with the most current edition of METHODS FOR MEASURING THE ACUTE TOXICITY OF EFFLUENTS AND RECEIVING WATERS TO FRESHWATER AND MARINE ORGANISMS or other Federal guidelines as appropriate or required.

(2) To pass a multiple-dilution test:
   (a) For facilities with a computed percent effluent at the edge of the zone of initial dilution, Allowable Effluent Concentration (AEC) OF 30% OR LESS, the AEC must be less than three-tenths (0.3) of the LC_{50} concentration for the most sensitive of the test organisms; **OR**,
   (b) For facilities with an AEC greater than 30% the LC50 concentration must be greater than 100%; **AND**,
   (c) all effluent concentrations equal to or less than the AEC must be nontoxic. Mortality observed in all effluent concentrations equal to or less than the AEC shall not be significantly different (at the 95% confidence level; p = 0.05) than that observed in the upstream receiving-water control sample. Where upstream receiving water is not available mortality observed in the AEC test concentration shall not be significantly different (at the 95% confidence level; p = 0.05) than that observed in the laboratory control. The appropriate statistical tests of significance shall be consistent with the most current edition of METHODS FOR MEASURING THE ACUTE TOXICITY OF EFFLUENTS AND RECEIVING WATERS TO FRESHWATER AND MARINE ORGANISMS or other federal guidelines as appropriate or required. Failure of one multiple-dilution test may be considered an effluent limit violation.

(c) Test Conditions
(1) Test Type: Acute Static non-renewal.
(2) All tests, including repeat tests for previous failures, shall include both test species listed below.
(3) Test species: Ceriodaphnia dubia and Pimephales promelas (fathead minnow). Organisms used in WET testing shall come from cultures reared for the purpose of conducting toxicity tests and cultured in a manner consistent with the most current USEPA guidelines. All test animals shall be cultured as described in the most current edition of METHODS FOR MEASURING THE ACUTE TOXICITY OF EFFLUENTS AND RECEIVING WATERS TO FRESHWATER AND MARINE ORGANISMS.
(4) Test period: 48 hours at the "Acceptable Effluent Concentration" (AEC) specified above.
(5) When dilutions are required, upstream receiving stream water shall be used as dilution water. If upstream water is unavailable or if mortality in the upstream water exceeds 10%, "reconstituted" water will be used as dilution water. Procedures for generating reconstituted water will be supplied by the MDNR upon request.
(6) Single-dilution tests will be run with:
   (a) Effluent at the AEC concentration;
   (b) 100% receiving-stream water (if available), collected upstream of the outfall at a point beyond any influence of the effluent; and
   (c) reconstituted water.
(7) Multiple-dilution tests will be run with:
   (a) 100%, 50%, 25%, 12.5%, and 6.25% effluent, unless the AEC is less than 25% effluent, in which case dilutions will be 4 times the AEC, two times the AEC, AEC, 1/2 AEC and 1/4 AEC;
   (b) 100% receiving-stream water (if available), collected upstream of the outfall at a point beyond any influence of the effluent; and
   (c) reconstituted water.
(8) If reconstituted-water control mortality for a test species exceeds 10%, the entire test will be rerun.
(9) If upstream control mortality exceeds 10%, the entire test will be rerun using reconstituted water as the dilutant.

SUMMARY OF TEST METHODOLOGY FOR WHOLE-EFFLUENT TOXICITY TESTS

Whole-effluent-toxicity test required in NPDES permits shall use the following test conditions when performing single or multiple dilution methods. Any future changes in methodology will be supplied to the permittee by the Missouri Department of Natural Resources (MDNR). Unless more stringent methods are specified by the DNR, the procedures shall be consistent with the most current edition of Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms,

Test conditions for Ceriodaphnia dubia:

Test duration:	48 h
Temperature:	25 ± 1°C Temperatures shall not deviate by more than 3°C during the test.
Light Quality:	Ambient laboratory illumination
Photoperiod:	16 h light, 8 h dark
Size of test vessel:	30 mL (minimum)
Volume of test solution:	15 mL (minimum)
Age of test organisms:	<24 h old
No. of animals/test vessel:	5
No. of replicates/concentration:	4
No. of organisms/concentration:	20 (minimum)
Feeding regime:	None (feed prior to test)
Aeration:	None
Dilution water:	Upstream receiving water; if no upstream flow, synthetic water modified to reflect effluent hardness.
Endpoint:	Pass/Fail (Statistically significant Mortality when compared to upstream receiving water control or synthetic control if upstream water was not available at $p \leq 0.05$)
Test acceptability criterion:	90% or greater survival in controls

Test conditions for (Pimephales promelas):

Test duration:	48 h
Temperature:	25 ± 1°C Temperatures shall not deviate by more than 3°C during the test.
Light Quality:	Ambient laboratory illumination
Photoperiod:	16 h light/ 8 h dark
Size of test vessel:	250 mL (minimum)
Volume of test solution:	200 mL (minimum)
Age of test organisms:	1-14 days (all same age)
No. of animals/test vessel:	10
No. of replicates/concentration:	4 (minimum) single dilution method 2 (minimum) multiple dilution method
No. of organisms/concentration:	40 (minimum) single dilution method 20 (minimum) multiple dilution method
Feeding regime:	None (feed prior to test)
Aeration:	None, unless DO concentration falls below 4.0 mg/L; rate should not exceed 100 bubbles/min.
Dilution water:	Upstream receiving water; if no upstream flow, synthetic water modified to reflect effluent hardness.
Endpoint:	Pass/Fail (Statistically significant Mortality when compared to upstream receiving water control or synthetic control if upstream water was not available at $p \leq 0.05$)
Test Acceptability criterion:	90% or greater survival in controls

MISSOURI DEPARTMENT OF NATURAL RESOURCES
RENEWAL FACT SHEET FOR RENEWAL OF MO-0098752
ANSCHUTZ, MADISON MINE
MADISON CO., MO

The Federal Water Pollution Control Act ("Clean Water Act" Section 402 Public Law 92-500 as amended) established the National Pollution Discharge Elimination System (NPDES) permit program. This program regulates the discharge of pollutants from point sources into the waters of the United States, and the release of storm water from certain point sources. All such discharges are unlawful without a permit (Section 301 of the "Clean Water Act"). After a permit is obtained, a discharge not in compliance with all permit terms and conditions is unlawful. Missouri State Operating Permits (MSOPs) are issued by the Director of the Missouri Department of Natural Resources (department) under an approved program, operating in accordance with federal and state laws (Federal "Clean Water Act" and "Missouri Clean Water Law" Section 644 as amended). MSOPs are issued for a period of five (5) years unless otherwise specified.

As per [40 CFR Part 124.8(a)] and [10 CSR 20-6.020(1)2.] a Fact sheet shall be prepared to give pertinent information regarding the applicable regulations, rationale for the development of effluent limitations and conditions, and the public participation process for the Missouri State Operating Permit (operating permit) listed below.

A Fact sheet is not an enforceable part of an operating permit.

This Fact sheet is for a Major ☐, Minor ☒, Industrial Facility ☒; Variance ☐;
Master General Permit ☐; General Permit Covered Facility ☐; and/or permit with widespread public interest ☐.

Part I – Facility Information

Facility Address: 401 N. Mine Lamotte, Fredickstown, MO
Facility Type: Industrial- storm water only
Facility SIC Code(s): 1031

Facility Description: metals mine, closed since 1961.

Application Date: November 11, 2007
Expiration Date: June 19, 2002
Last Inspection: August 8, 2007 In Compliance ☐; Non-Compliance ☒

OUTFALL(S) TABLE:

OUTFALL	FLOW (CFS)	TREATMENT LEVEL	EFFLUENT TYPE	DISTANCE TO CLASSIFIED SEGMENT (MI)
001	1.4	none	Storm water	1.5 mile
002	0.9	none	Storm water and groundwater	0.6 mile

Outfall #001 - Stormwater - SIC #1031
Stormwater runoff from tailings piles, and areas adjacent to Tollar Branch.
Actual Flow: dependent on precipitation
Legal Description: NW1/4, NW1/4, Section 21, T33N, R7E Madison Co.
Latitude/Longitude:+3732296/ -0906477
Receiving stream: Tollar Branch (U)
First Classified Stream and ID: Saline Creek (P)
USGS Basin and Sub-watershed number: 08020202-000511

Outfall #002 - Stormwater - SIC #1031
Stormwater runoff from tailings piles and areas adjacent to unnamed tributary to Saline Creek, groundwater from a seep upstream of the outfall, and discharge from Met Pond
Actual Flow: dependent on precipitation
Legal Description: SE1/4 NW1/4,Section 16, T33N, R7E Madison Co
Latitude/Longitude: +3733061/ - 09016490
Receiving stream: unnamed tributary (U)
First Classified Stream and ID: Saline Creek (P)
USGS Basin and Sub-watershed 08020202-000511

Water Quality History: The TSS daily maximum for outfall #001 has only been exceeded once on February 2, 2006. Copper was exceeded at outfall #001 on October 30, 2006 and November 28,2005. Outfall 002 not meeting Copper and Cobalt limits. Both outfalls have failed WET tests.

Comments: currently doing Toxicity Reduction Evaluation on outfall #002. Previous TIE identified Nickel and Copper as toxicants.

Part II – Receiving Stream Information

APPLICABLE DESIGNATIONS OF WATERS OF THE STATE:
As per Missouri's Effluent Regulations [10 CSR 20-7.015], the waters of the state are divided into the below listed seven (7) categories. Each category list effluent limitations for specific parameters, which are presented in each outfall's Effluent Limitation Table and further discussed in the Derivation & Discussion of Limits section.

Please mark the correct designated waters of the state categories of the receiving stream.

Missouri or Mississippi River [10 CSR 20-7.015(2)]:	Yes ☐; No ☒
Lake or Reservoir [10 CSR 20-7.015(3)]:	Yes ☐; No ☒
Losing [10 CSR 20-7.015(4)]:	Yes ☐; No ☒
Metropolitan No-Discharge [10 CSR 20-7.015(5)]:	Yes ☐; No ☒
Special Stream [10 CSR 20-7.015(6)]:	Yes ☐; No ☒
Subsurface Water [10 CSR 20-7.015(7)]:	Yes ☐; No ☒
All Other Waters [10 CSR 20-7.015(8)]:	Yes ☒; No ☐

10 CSR 20-7.031 Missouri Water Quality Standards, the department defines the Clean Water Commission water quality objectives in terms of "water uses to be maintained and the criteria to protect those uses." The receiving stream and/or 1st classified receiving stream's beneficial water uses to be maintained are located in the Receiving Stream Table located below in accordance with [10 CSR 20-7.031(3)].

RECEIVING STREAM(S) TABLE:

WATERBODY NAME	CLASS	WBID	DESIGNATED USES*	8-DIGIT HUC	EDU**
Tollar Branch (001)	U		Narrative criteria	08020202	Ozark/Upper St. Francis/ Castor
Unnamed tributary Saline Creek (002)	U		Narrative criteria		
Saline Creek ***	P	2859	LWW, AQL		

* - Irrigation (IRR), Livestock & Wildlife Watering (LWW), Protection of Warm Water Aquatic Life and Human Health-Fish Consumption (AQL), Cool Water Fishery(CLF), Cold Water Fishery (CDF), Whole Body Contact Recreation (WBC), Secondary Contact Recreation (SCR), Drinking Water Supply (DWS), Industrial (IND).
** - Ecological Drainage Unit
*** - UAA has not been conducted.

RECEIVING STREAM(S) LOW-FLOW VALUES TABLE:

RECEIVING STREAM (U, C, P)	LOW-FLOW VALUES (CFS)		
	1Q10	7Q10	30Q10
Tollar Branch (trib of Saline Cr.) (U)	0	0	0
Unnamed Tributary (trib of Saline Cr.) (U)	0	0	0
Saline Cr. (P)	0	0.1	0.1

RECEIVING STREAM MONITORING REQUIREMENTS:

No receiving water monitoring requirements recommended at this time. The existing instream monitoring has been removed from the permit because no trends were discernable.

Part III – Rationale and Derivation of Effluent Limitations & Permit Conditions

ALTERNATIVE EVALUATIONS FOR NEW FACILITIES:
As per [10 CSR 20-7.015(4)(A)], discharges to losing streams shall be permitted only after other alternatives including land application, discharges to a gaining stream and connection to a regional wastewater treatment facility have been evaluated and determined to be unacceptable for environmental and/or economic reasons.

Not Applicable ☒;
The facility does not discharge to a Losing Stream as defined by [10 CSR 20-2.010(36)] & [10 CSR 20-7.031(1)(N)], or is an existing facility.

ANTI-BACKSLIDING:
A provision in the Federal Regulations [CWA §303(d)(4); CWA §402(c); 40 CFR Part 122.44(I)] that requires a reissued permit to be as stringent as the previous permit with some exceptions.

☒ - All limits in this Factsheet are at least as protective as those previously established; therefore, backsliding does not apply.

ANTIDEGRADATION:
In accordance with Missouri's Water Quality Standard [10 CSR 20-7.031(2)], the department is to document by means of Antidegradation Review that the use of a water body's available assimilative capacity is justified. Degradation is justified by documenting the socio-economic importance of a discharging activity after determining the necessity of the discharge.

☒ - Renewal. No degradation proposed and no further review necessary.

APPLICABLE PERMIT PARAMETERS:
Effluent parameters contained in Factsheets and Missouri State Operating Permits are obtained from Technology Based Effluent Limit (TBEL), Missouri's Effluent Regulations [10 CSR 20-7.015], Missouri's Water Quality Standards [10 CSR 20-7.031], previous Missouri State Operating Permits, and from Operating Permit Applications.

BIO-SOLIDS, SLUDGE, & SEWAGE SLUDGE:
Bio-solids are solid materials resulting from wastewater treatment that meet federal and state criteria for beneficial uses (i.e. fertilizer). Sludge is any solid, semi-solid, or liquid waste generated from a municipal, commercial, or industrial wastewater treatment plant, water supply treatment plant, or air pollution control facility or any other such waste having similar characteristics and effect. Sewage sludge is solids, semi-solids, or liquid residue generated during the treatment of domestic sewage in a treatment works; including but not limited to,

domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment process; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screening generated during preliminary treatment of domestic sewage in a treatment works.

Not Applicable ☒;
This condition is not applicable to the permittee for this specific facility.

COMPLIANCE AND ENFORCEMENT:
Action taken by the department to resolve violations of the Missouri Clean Water Law, its implementing regulations, and/or any terms and condition of an operating permit.

Applicable ☒;
The permittee/facility is currently under enforcement action due to Whole Effluent Toxicity Test failure and metals excedences
.

PRETREATMENT PROGRAM:
The reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to or in lieu of discharging or otherwise introducing such pollutants into a Publicly Owned Treatment Works [40 CFR Part 403.3(q)].

Applicable ☐;
Permittee shall implement and enforce its approved pretreatment program in accordance with the requirements of [40 CFR Part 403]. The approved pretreatment program is hereby incorporated by reference. Permittee shall submit to the department on or before March 31st of each year a report briefly describing its pretreatment activities during the previous calendar year.

Not Applicable ☒;
At this time, the permittee is not required to implement and enforce a Pretreatment Program.

REASONABLE POTENTIAL ANALYSIS (RPA):
Limitations must control all pollutants or pollutant parameters that are or may be discharged at a level which will cause, have reasonable potential to cause, or contribute to an excursion above the Missouri Water Quality Standards.

Not Applicable ☒;
A RPA was not conducted for this facility.

REMOVAL EFFICIENCY:
Removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to Biochemical Oxygen Demand 5-day (BOD_5) and Total Suspended Solids (TSS) for Publicly Owned Treatment Works (POTWs). Please see the United States Environmental Protection Agency's (EPA) website for interpretation of percent removal requirements for National Pollutant Discharge Elimination System Permit Application Requirements for Publicly Owned Treatment Works and Other Treatment Works Treating Domestic Sewage @ www.epa.gov/fedrgstr/EPA-WATER/1999/August/Day-04/w18866.htm

Not Applicable ☒;
This wastewater treatment facility is not a POTW. Influent monitoring is not being required to determine percent removal.

SANITARY SEWER OVERFLOWS (SSOS), AND INFLOW & INFILTRATION (I&I):
Collection systems are a critical element in the successful performance of the wastewater treatment process. Under certain conditions, poorly designed, built, managed, operated, and/or maintained systems can pose risks to public health, the environment, or both. Causes of SSOs include, but are not limited to, the following: high levels of I&I during wet weather; blockages; structural, mechanical, or electrical failures; collapsed or broken sewer pipes; insufficient conveyance capacity; and vandalism. Effective and continuous management, operation, and maintenance, as well as ensuring adequate capacity and rehabilitation when necessary are critical to maintaining collection system capacity and performance while extending the life of the system.
.
Not Applicable ☒;
This facility is not required to develop or implement a program for maintenance and repair of the collection system; however, it is a violation of Missouri State Environmental Laws and Regulations to allow untreated wastewater to discharge to waters of the state.

SCHEDULE OF COMPLIANCE (SOC):
A schedule of remedial measures included in this permit, including an enforceable sequence of interim requirements (actions, operations, or milestone events) leading to compliance with the Missouri Clean Water Law, its implementing regulations, and/or the terms and conditions of an operating permit.

STORM WATER POLLUTION PREVENTION PLAN (SWPPP):
A plan to schedule activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the state. The plan may include, but is not limited to, treatment requirements, operating procedures, and practices to control facility site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Applicable ☐;
A SWPPP shall be developed and implemented for each site and shall incorporate required practices identified by the department with jurisdiction, incorporate erosion control practices specific to site conditions, and provide for maintenance and adherence to the plan.

Not Applicable ☒;
At this time, the permittee is not required to develop and implement a SWPPP.

VARIANCE:
As per the Missouri Clean Water Law § 644.061.4, variances shall be granted for such period of time and under such terms and conditions as shall be specified by the commission in its order. The variance may be extended by affirmative action of the commission. In no event shall the variance be granted for a period of time greater than is reasonably necessary for complying with the Missouri Clean Water Law §§644.006 to 644.141 or any standard, rule or regulation promulgated pursuant to Missouri Clean Water Law §§644.006 to 644.141.

Not Applicable ☒;
This operating permit is not drafted under premises of a petition for variance.

WASTELOAD ALLOCATIONS (WLA) FOR LIMITS:
As per [10 CSR 20-2.010(78)], the amount of pollutant each discharger is allowed by the department to release into a given stream after the department has determined to total amount of pollutant that may be discharged into that stream without endangering its water quality.

Applicable ☒;
Wasteload allocations were calculated where applicable using water quality criteria or water quality model results and the dilution equation below:

$$C = \frac{(Cs \times Qs) + (Ce \times Qe)}{(Qe + Qs)}$$ (EPA/505/2-90-001, Section 4.5.5)

Where C = downstream concentration
Cs = upstream concentration
Qs = upstream flow
Ce = effluent concentration
Qe = effluent flow

Chronic wasteload allocations were determined using applicable chronic water quality criteria (CCC: criteria continuous concentration) and stream volume of flow at the edge of the mixing zone (MZ). Acute wasteload allocations were determined using applicable water quality criteria (CMC: criteria maximum concentration) and stream volume of flow at the edge of the zone of initial dilution (ZID).

Water quality based maximum daily and average monthly effluent limitations were calculated using methods and procedures outlined in USEPA's "Technical Support Document For Water Quality-based Toxics Control" (EPA/505/2-90-001).

.**WLA MODELING:**

Not Applicable ☒;
A WLA study was either not submitted or determined not applicable by department staff.

WHOLE EFFLUENT TOXICITY (WET) TEST:
As per [10 CSR 20-7.031(1)(CC)], a toxicity test conducted under specified laboratory conditions on specific indicator organism; and as per [40 CFR Part 122.2], the aggregate toxic effect of an effluent measured directly by a toxicity test.

Applicable ☒;
Effective July 15, 2005, upon revision, renewal, modification, or issuance, all Missouri State Operating Permits under the NPDES will incorporate use of the following guidelines for determining the applicability and requirements for WET testing. WET testing requirements are established by the WET Test Policy, Section 308 of the Federal Water Pollution Control Act, and [40 CFR § 136]. Please check WET tests applicability for this facility:

- All major discharge facilities ☒;
- Facilities that are exceeding or routinely exceed their design flow ☐;
- Most municipals, domestic sewage dischargers ☐;
- Industrial dischargers or other dischargers that may alter their production processes throughout the year ☐;
- Facilities that may handle large quantities of toxic substances, or substances that are toxic in large amounts ☒; and
- Facilities that have been granted seasonal relief of numeric limitations ☐.

303(d) LIST & TOTAL MAXIMUM DAILY LOAD (TMDL):
Section 303(d) of the federal Clean Water Act requires that each state identify waters that are not meeting water quality standards and for which adequate water pollution controls have not been required. Water quality standards protect such beneficial uses of water as whole body contact (such as swimming), maintaining fish and other aquatic life, and providing drinking water for people, livestock and wildlife. The 303(d) list helps state and federal agencies keep track of waters that are impaired but not addressed by normal water pollution control programs.

A TMDL is a calculation of the maximum amount of a given pollutant that a body of water can absorb before its water quality is affected. If a water body is determined to be impaired as listed on the 303(d) list, then a watershed management plan will be developed that shall include the TMDL calculation

Not Applicable ☒;
This facility does not discharge to a 303(d) listed stream.

Part IV – Effluent Limits Determination

***Outfall #001* and #002**
FINAL EFFLUENT LIMITATIONS TABLE:

PARAMETER	UNIT	BASIS FOR LIMITS	DAILY MAXIMUM		MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
FLOW	GPD	1	*		*	NO	NA
CHEMICAL OXYGEN DEMAND	MG/L					YES	REMOVED
TSS	MG/L	1	45		30	NO	S
PH (S.U.)	SU	1	6.5-9		6.5-9	NO	S
SETTLEABLE SOLIDS	ML/L/ HR	8	1.5		1.0	YES	S
SULFATE	mg/L		1000		*	YES	REMOVED
SULFATE PLUS CHLORIDE	mg/L	3	1000		1000	YES	ADDED
COBALT, TOTAL RECOVERABLE	µg/L	3	1000		817	YES	1000
COPPER, TOTAL RECOVERABLE	µg/L	3	26		13	YES	60
LEAD, TOTAL RECOVERABLE	µg/L	3	188		94	YES	390
NICKEL, TOTAL RECOVERABLE	µg/L	3	818		407	YES	4600
MANGANESE, TOTAL RECOVERABLE	µg/L					REMOVED	*
ZINC, TOTAL RECOVERABLE	µg/L	3	210		104	YES	380
HARDNESS	mg/L	11	*		*	YES	ADDED
WHOLE EFFLUENT TOXICITY (WET) TEST	Please see WET Test in the Derivation and Discussion Section below.						
MONITORING FREQUENCY	Please see Minimum Sampling and Reporting Frequency Requirements in the Derivation and Discussion Section below.						

***** - Monitoring requirement only

S – Same as previous operating permit

Basis for Limitations Codes:

1. State or Federal Regulation/Law
2. Water Quality Standard (includes RPA)
3. Water Quality Based Effluent Limits
4. Lagoon Policy
5. Ammonia Policy
6. Antidegradation Policy
7. Water Quality Model
8. Best Professional Judgement
9. TMDL or Permit in lieu of TMDL
10. WET test Policy
11. Needed for metals data

OUTFALL #001 – DERIVATION AND DISCUSSION OF LIMITS:

- **Chemical Oxygen Demand (COD).** Effluent limitations have been eliminated from state operating permit because there is no source of oxygen demanding pollutants in this discharge.

- **Settleable Solids.** Effluent limitations have been retained from previous state operating permit.

- **Total Suspended Solids (TSS).** Effluent limitations have been retained from previous state operating permit.,

- **pH**. Effluent limitations have been retained from previous state operating permit.

- **Sulfate.** Effluent limitations have been retained from previous permit for interim limits.

- **Sulfate plus Chloride.** Effluent limitations have been added per 10 CSR 20-7.031 (4) (L) for final limits.

- **Manganese.** Monitoring has been eliminated from the permit because there is nothing to indicate that the discharge is entering groundwater. Manganese only has limits for groundwater.

Metals

Effluent limitations for total recoverable metals were developed using methods and procedures outlined in EPA/505/2-90-001 and "The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From A Dissolved Criterion" (EPA 823-B-96-007). General warm-water fishery criteria apply and water hardness = 193 mg/L

Due to the absence of contemporaneous effluent and instream data for total recoverable metals, dissolved metals, hardness, and total suspended solids with which to calculate metals translators, partitioning between the dissolved and absorbed phases was assumed to be minimal (Section 5.7.3, EPA/505/2-90-001). Freshwater criteria conversion factors for dissolved metals were used as the metals translator as recommended in guidance (Section 1.3, 1.5.3, and Table 1, EPA 823-B-96-007). If concurrent site-specific data for total recoverable metals, dissolved metals, hardness, and total suspended solids are provided to the department, partitioning evaluations may be considered and site-specific translators developed.

METAL	CONVERSION FACTORS	
	ACUTE	CHRONIC
Cadmium	0.924	0.889
Chromium III	0.316	0.860
Chromium VI	0.982	0.962
Copper	0.960	0.960
Lead	0.720	0.720
Nickel	0.998	0.997
Silver	0.85	N.A.
Zinc	0.978	0.986

Conversion factors for Cd and Pb are hardness dependent. Values calculated using equation found in Section 1.3 of EPA 823-B-96-007 and hardness = 193 mg/L

	Protection of Aquatic Life		Conversion Factors for hardness variable parameter		Total Recoverable WQS	
Parameter (µg/L)	Acute WQS	Chronic WQS	Acute	Chronic	Acute	Chronic
Aluminum	N.A.	750	N.A.	N.A.	N.A.	750
Arsenic	N.A.	20.0	N.A.	N.A.	N.A.	20
Cadmium	9.0	0.4	0.916	0.881	9.8	0.5
Chromium III	976	182	0.316	0.860	3089	212
Chromium VI	15.0	10.0	0.982	0.962	15.3	10.4
Copper	25.0	13.1	0.960	0.960	26.0	13.6
Iron	N.A.	1000	N.A.	N.A.	N.A.	1000
Lead	131	5.1	0.695	0.695	188.44	7.3
Nickel	817	90.8	0.998	0.997	819	91
Silver	10.0	N.A.	0.850	N.A.	11.8	N.A.
Zinc	205	187	0.978	0.986	210	190
		193				

If instream hardness data is available, enter it in the column below to calculate the 25th Percentile.
In the absense of site specific hardness data, use 162 mg/L, the statewide default hardness value.

Hardness data	25th Percentile for Hardness
193	193

- **Cobalt, Total Recoverable**. Cobalt is not hardness dependent
  Chronic = 1000 µg/L

  LTAc = 1000 (0.527) = 527 µg/L [CV = 0.6, 99th Percentile]

  MDL = 527 (3.11) = 1,639 µg/L [CV = 0.6, 99th Percentile]
  (use previous limit of 1000 mg/L, to not backslide)
  AML = 527 (1.55) = 817 µg/L [CV = 0.6, 95th Percentile, n = 4]

  Copper, Total Recoverable
  Acute = 26 µg/L

  LTA_a = 26 (0.321) = 8.35 µg/L [CV = 0.6, 99th Percentile]

  MDL = 8.35 (3.11) = 26 µg/L [CV = 0.6, 99th Percentile]
  AML = 8.35 (1.55) = 13 µg/L [CV = 0.6, 95th Percentile, n = 4]

- **Lead, Total Recoverable**.
  Acute = 188.44 µg/L

  LTA_a = 188.44 (0.321) = 60.49 µg/L [CV = 0.6, 99th Percentile]

  MDL = 60.49 (3.11) = 188 µg/L [CV = 0.6, 99th Percentile]
  AML = 60.49 (1.55) = 94 µg/L [CV = 0.6, 95th Percentile, n = 4]

- **Nickel, Total Recoverable**.
  Acute = 819 µg/L

  LTA_a = 819 (0.321) = 262.9 µg/L [CV = 0.6, 99th Percentile]

  MDL = 262.9 (3.11) = 818 µg/L [CV = 0.6, 99th Percentile]
  AML = 262.9 (1.55) = 407 µg/L [CV = 0.6, 95th Percentile, n = 4]

- **Zinc, Total Recoverable**. .
  Acute = 210 µg/L

  LTA_a = 210 (0.321) = 67.41 µg/L [CV = 0.6, 99th Percentile]

MDL = 67.41 (3.11) = 210 µg/L [CV = 0.6, 99th Percentile]
AML = 67.41 (1.55) = 104 µg/L [CV = 0.6, 95th Percentile, n = 4]

- **WET Test**. Whole Effluent Toxicity test shall be conducted as follows:

Summary of Wet Testing for This Permit				
Outfall	A.E.C. %	Frequency	Sample Type	Month
001	100	Once/year	24 hr. composite	Any
002	100	Once/year	24 hr. composite	Any

- **Minimum Sampling and Reporting Frequency Requirements**. .

PARAMETER	SAMPLING FREQUENCY	REPORTING FREQUENCY
FLOW	ONCE/MONTH	ONCE/MONTH
SETTLEABLE SOLIDS	ONCE/MONTH	ONCE/MONTH
TSS	ONCE/MONTH	ONCE/MONTH
PH (S.U.)	ONCE/MONTH	ONCE/MONTH
SULFATE (INTERIM)	ONCE/MONTH	ONCE/MONTH
SULFATE PLUS CHLORIDE (FINAL)	ONCE/MONTH	ONCE/MONTH
COBALT, TOTAL RECOVERABLE	ONCE/MONTH	ONCE/MONTH
COPPER, TOTAL RECOVERABLE	ONCE/MONTH	ONCE/MONTH
LEAD, TOTAL RECOVERABLE	ONCE/MONTH	ONCE/MONTH
NICKEL, TOTAL RECOVERABLE	ONCE/MONTH	ONCE/MONTH
ZINC, TOTAL RECOVERABLE	ONCE/ MONTH	ONCE/MONTH
HARDNESS	ONCE/MONTH	ONCE/MONTH

Part V – Administrative Requirements

On the basis of preliminary staff review and the application of applicable standards and regulations, the Department, as administrative agent for the Missouri Clean Water Commission, proposes to issue a permit(s) subject to certain effluent limitations, schedules, and special conditions contained herein and within the operating permit. The proposed determinations are tentative pending public comment.

PUBLIC NOTICE:
As per the Missouri Clean Water Law, the Missouri Clean Water Commission, and the federal Clean Water Act, persons wishing to comment on Missouri State Operating Permits are directed to do so by a department approved Public Notice coversheet. This Public Notice coversheet is attached to a Missouri State Operating Permit during the Public Notice period.

☒ - The Public Notice period for this operating permit is tentatively schedule to begin in March 2007.

DATE OF FACT SHEET: FEBRUARY 26, 2008, REVISED SEPTEMBER 29, 2008

COMPLETED BY:

TIM STALLMAN, ENVIRONMENTAL SPECIALIST
WATER PROTECTION PROGRAM
PERMITTING AND ENGINEERING SECTION
NPDES AND STORM WATER PERMITS UNIT