



# ***National Pollutant Discharge Elimination System Permit***

for Discharge to Surface Waters

This Permit Certifies That

***Haile Gold Mine Inc***  
*a subsidiary of ROMARCO Minerals Inc*

has been granted permission to discharge from a facility located at

***7283 Haile Gold Mine Road  
Kershaw, SC  
Lancaster County***

to receiving waters named

***Haile Gold Mine Branch***

in accordance with limitations, monitoring requirements and other conditions set forth herein. This permit is issued in accordance with the provisions of the Pollution Control Act of South Carolina (S.C. Code Sections 48-1-10 *et seq.*, 1976), Regulation 61-9 and with the provisions of the Federal Clean Water Act (PL 92-500), as amended, 33 U.S.C. 1251 *et seq.*, the "Act."



**Jeffrey P. deBessonnet, P.E., Director  
Water Facilities Permitting Division**

***Issue Date: October 7, 2013***

***Expiration Date<sup>1</sup>: November 30, 2018***

***Effective Date: December 1, 2013***

***Permit No.: SC0040479***

<sup>1</sup> This permit will continue to be in effect beyond the expiration date if a complete timely re-application is received pursuant to Regulation 61-9.122.6 and signed per Regulation 61-9.122.22.

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## **PART I. Definitions**

Any term not defined in this Part has the definition stated in the Pollution Control Act or in “Water Pollution Control Permits”, R.61-9 or its normal meaning.

- A. The “Act”, or CWA, shall refer to the Clean Water Act (Formerly referred to as the Federal Water Pollution Control Act) Public Law 92-500, as amended.
- B. “Active mining area” is a place where work or other activity related to the extraction, removal, or recovery of metal ore is being conducted, except, with respect to surface mines, any area of land on or in which grading has been completed to return the earth to desired contour and reclamation work has begun.
- C. “Annual precipitation” and “annual evaporation” are the mean annual precipitation and mean annual lake evaporation, respectively, as established by the U.S. Department of Commerce, Environmental Science Services Administration, Environmental Data Services, or equivalent regional rainfall and evaporation data.
- D. “Appropriate treatment of the recycle water” in subpart J, § 440.104 includes, but is not limited to pH adjustment, settling and pH adjustment, settling, and mixed media filtration.
- E. The “average” or “arithmetic mean” of any set of values is the summation of the individual values divided by the number of individual values.
- F. “Basin” (or “Lagoon”) means any in-ground or earthen structure designed to receive, treat, store, temporarily retain and/or allow for the infiltration/evaporation of wastewater.
- G. “Bypass” means the intentional diversion of waste streams from any portion of a treatment facility.
- H. “Closure” means the act of rendering a mine facility or portion of a mine facility to an inoperative state that prevents the gradual or sudden release of contaminants that are harmful to the environment.
- I. A “composite sample” shall be defined as one of the following four types:
  - 1. An influent or effluent portion collected continuously over a specified period of time at a rate proportional to the flow.
  - 2. A combination of not less than 8 influent or effluent grab samples collected at regular (equal) intervals over a specified period of time and composited by increasing the volume of each aliquot in proportion to flow. If continuous flow measurement is not used to composite in proportion to flow, the following method will be used: An instantaneous flow measurement should be taken each time a grab sample is collected. At the end of the sampling period, the instantaneous flow measurements should be summed to obtain a total flow. The instantaneous flow measurement can then be divided by the total flow to determine the percentage of each grab sample to be combined. These combined samples form the composite sample.
  - 3. A combination of not less than 8 influent or effluent grab samples of equal volume but at variable time intervals that are inversely proportional to the volume of the flow. In other words, the time interval between aliquots is reduced as the volume of flow increases.

4. If the effluent flow varies by less than 15 percent, a combination of not less than 8 influent or effluent grab samples of constant (equal) volume collected at regular (equal) time intervals over a specified period of time.

All samples shall be properly preserved in accordance with Part II.J.4. Continuous flow or the sum of instantaneous flows measured and averaged for the specified compositing time period shall be used with composite results to calculate mass.

- J. “Continuous” effluent flow monitoring is defined as use of a continuous recorder with totalizer.
- K. “Daily discharge” means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the daily discharge is calculated as the average measurement of the pollutant over the day.
- L. “Daily maximum” is the highest average value recorded of samples collected on any single day during the calendar month.
- M. “Daily minimum” is the lowest average value recorded of samples collected on any single day during the calendar month.
- N. The “Department” or “DHEC” shall refer to the South Carolina Department of Health and Environmental Control.
- O. The “geometric mean” of any set of values is the Nth root of the product of the individual values where N is equal to the number of individual values. The geometric mean is equivalent to the antilog of the arithmetic mean of the logarithms of the individual values. For purposes of calculating the geometric mean, values of zero (0) shall be considered to be one (1).
- P. A “grab sample” is an individual, discrete or single influent or effluent portion of at least 100 milliliters collected at a time representative of the discharge and over a period not exceeding 15 minutes and retained separately for analysis.
- Q. “Groundwater” means the water below the land surface found in fractured rock or various soil strata.
- R. “Groundwater infiltration” in § 440.131 means that water which enters the treatment facility as a result of the interception of natural springs, aquifers, or run-off which percolates into the ground and seeps into the treatment facility's tailings pond or wastewater holding facility and that cannot be diverted by ditching or grouting the tailings pond or wastewater holding facility.
- S. “Industry” means a private person, corporation, firm, plant or establishment which discharges sewage, industrial wastes or other wastes into waters of the State.
- T. The “maximum or minimum” is the highest or lowest value, respectively, recorded of all samples collected during the calendar month. These terms may also be known as the instantaneous maximum or minimum.
- U. “Mill” is a preparation facility within which the metal ore is cleaned, concentrated, or otherwise processed before it is shipped to the customer, refiner, smelter, or manufacturer. A mill includes all ancillary operations and structures necessary to clean, concentrate, or otherwise process metal ore, such as ore and gangue storage areas and loading facilities.

- V. "Mine" is an active mining area, including all land and property placed under, or above the surface of such land, used in or resulting from the work of extracting metal ore or minerals from their natural deposits by any means or method, including secondary recovery of metal ore from refuse or other storage piles, wastes, or rock dumps and mill tailings derived from the mining, cleaning, or concentration of metal ores.
- W. "Mine dewatering" or "mine drainage" means any water that is impounded or that collects in the mine and is drained, pumped, siphoned, or otherwise removed from the mine. This will include but it not limited to stormwater runoff from the potential acid generating (PAG) waste rock storage areas.
- X. "Monitoring well" means any well used to sample groundwater for water quality analysis or to measure groundwater levels.
- Y. The "monthly average", other than for fecal coliform and enterococci, is the arithmetic mean of all samples collected in a calendar month period. The monthly average for fecal coliform and enterococci bacteria is the geometric mean of all samples collected in a calendar month period. The monthly average loading is the arithmetic average of all daily discharges made during the month.
- Z. The "PCA" shall refer to the Pollution Control Act (Chapter 1, Title 48, Code of Laws of South Carolina).
- AA. The "practical quantitation limit" (PQL) is the concentration at which the entire analytical system must give a recognizable signal and acceptable calibration point. It is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all the method-specific sample weights, volumes, and processing steps have been followed. It is also referred to as the reporting limit.
- BB. "Quarter" is defined as the first three calendar months beginning with the month that this permit becomes effective and each group of three calendar months thereafter.
- CC. "Quarterly average" is the arithmetic mean of all samples collected in a quarter.
- DD. "Reclamation" means the reasonable rehabilitation of the affected land for useful purposes and the protection of the natural resources of the surrounding area. Although both the need for and the practicability of reclamation control the type and degree of reclamation in a specific instance, the basic objective is to establish on a continuing basis the vegetative cover, soil stability, water conditions, and safety conditions appropriate to the area. Closure activities are a part of reclamation.
- EE. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
- FF. "Sludge" means industrial sludge. Industrial sludge is a solid, semi-solid, or liquid residue generated during the treatment of industrial wastewater in a treatment works. Industrial sludge includes, but is not limited to, industrial septage; scum or solids removed in primary, secondary, or advanced wastewater treatment processes; and a material derived from industrial sludge. Industrial sludge does not include ash generated during the firing of industrial sludge in an industrial sludge incinerator or grit and screenings generated during preliminary treatment of industrial wastewater in a treatment works. Industrial sludge by definition does not include sludge covered under 40 CFR Part 503 or R.61-9.503.

- GG. “Ten (10)-year, 24-hour precipitation event” is the maximum 24-hour precipitation event with a probable recurrence interval of once in 10 years as established by the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Weather Service, or equivalent regional or rainfall probability information.
- HH. “Upset” means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.
- II. “Wastewater” means industrial wastewater. Industrial wastewater is wastewater generated from a federal facility, commercial or industrial process, including waste and wastewater from humans when generated at an industrial facility.
- JJ. “Weekly average” is the arithmetic mean of all the samples collected during a one-week period. For self-monitoring purposes, weekly periods in a calendar month are defined as three (3) consecutive seven-day intervals starting with the first day of the calendar month and a fourth interval containing seven (7) days plus those days beyond the 28th day in a calendar month. The value to be reported is the single highest of the four (4) weekly averages computed during a calendar month. The weekly average loading is the arithmetic average of all daily discharges made during the week.

## **PART II. Standard Conditions**

### **A. Duty to comply**

The permittee must comply with all conditions of the permit. Any permit noncompliance constitutes a violation of the Clean Water Act and the Pollution Control Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. The Department's approval of wastewater facility plans and specifications does not relieve the permittee of responsibility to meet permit limits.

1. The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.
2. Failure to comply with permit conditions or the provisions of this permit may subject the permittee to civil penalties under S.C. Code Section 48-1-330 or criminal sanctions under S.C. Code Section 48-1-320. Sanctions for violations of the Federal Clean Water Act may be imposed in accordance with the provisions of 40 CFR Part 122.41(a)(2) and (3).
3. A person who violates any provision of this permit, a term, condition or schedule of compliance contained within this NPDES permit, or the State law is subject to the actions defined in the State law.

### **B. Duty to reapply**

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. A permittee with a currently effective permit shall submit a new application 180 days before the existing permit expires, unless permission for a later date has been granted by the Department. The Department shall not grant permission for applications to be submitted later than the expiration date of the existing permit.

### **C. Need to halt or reduce activity not a defense**

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

### **D. Duty to mitigate**

The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

E. Proper operation and maintenance

1. The permittee shall at all times properly operate and maintain in good working order and operate as efficiently as possible all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance includes effective performance based on design facility removals, adequate funding, adequate operator staffing and training and also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.
2. Power Failures. In order to maintain compliance with effluent limitations and prohibitions of this permit, the permittee shall either:
  - a. provide an alternative power source sufficient to operate the wastewater control facilities;
  - b. or have a plan of operation which will halt, reduce, or otherwise control production and/or all discharges upon the reduction, loss, or failure of the primary source of power to the wastewater control facilities.
3. The permittee shall develop and maintain at the facility a complete Operations and Maintenance Manual for the waste treatment facilities. The manual shall be made available for on-site review during normal working hours. The manual shall contain operation and maintenance instructions for all equipment and appurtenances associated with the waste treatment facilities and land application system, if applicable. The manual shall contain a general description of the treatment process(es), the operational procedures to meet the requirements of E.1 above, and the corrective action to be taken should operating difficulties be encountered.
4. The permittee shall provide for the performance of daily treatment facility inspections by a certified operator of the appropriate grade as defined in Part V.E of this permit. The Department may make exceptions to the daily operator requirement in accordance with R.61-9.122.41(e)(3)(ii). The inspections shall include, but should not necessarily be limited to, areas which require visual observation to determine efficient operation and for which immediate corrective measures can be taken using the O & M manual as a guide. All inspections shall be recorded and shall include the date, time, and name of the person making the inspection, corrective measures taken, and routine equipment maintenance, repair, or replacement performed. The permittee shall maintain all records of inspections at the permitted facility as required by the permit, and the records shall be made available for on-site review during normal working hours.
5. A roster of operators associated with the facility's operation and their certification grades shall be submitted to the DHEC/Bureau of Water/Water Pollution Control Division. For existing facilities, this roster shall be submitted within thirty (30) days of the effective date of this permit. For new facilities, this roster must be submitted prior to placing the facility into operation. Additionally, any changes in operator or operators (including their certification grades) shall be submitted to the Department as they occur.



## 6. Wastewater Sewer Systems

- a. Purpose. This section establishes rules for governing the operation and maintenance of wastewater sewer systems, including gravity or pressure interceptor sewers. It is the purpose of this section to establish standards for the management of sewer systems to prevent and/or minimize system failures that would lead to public health or environmental impacts.
- b. Applicability. This section applies to all sewer systems that have been or would be subject to a DHEC construction permit under Regulation 61-67 and whose owner owns or operates the wastewater treatment system to which the sewer discharges.
- c. General requirements. The permittee must:
  - (1) Properly manage, operate, and maintain at all times all parts of its sewer system(s), to include maintaining contractual operation agreements to provide services, if appropriate;
  - (2) Provide adequate capacity to convey base flows and peak flows for all parts of the sewer system or, if capital improvements are necessary to meet this standard, develop a schedule of short and long term improvements;
  - (3) Take all reasonable steps to stop and mitigate the impact of releases of wastewater to the environment; and
  - (4) Notify the Department within 30 days of a proposed change in ownership of a sewer system.

## F. Permit actions

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

## G. Property rights

This permit does not convey any property rights of any sort, or any exclusive privilege nor does it authorize any injury to persons or property or invasion of other private rights, or any infringement of State or local law or regulations.

## H. Duty to provide information

The permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the Department upon request, copies of records required to be kept by this permit.

I. Inspection and entry

The permittee shall allow the Department, or an authorized representative (including an authorized contractor acting as a representative of the Department), upon presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
4. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act and Pollution Control Act, any substances or parameters at any location.

J. Monitoring and records

1. a. (1) Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.  
  
(2) Samples shall be reasonably distributed in time, while maintaining representative sampling.  
  
(3) No analysis, which is otherwise valid, shall be terminated for the purpose of preventing the analysis from showing a permit or water quality violation.
- b. Flow Measurements.
  - (1) Where primary flow meters are required, appropriate flow measurement devices and methods consistent with accepted scientific practices shall be present and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated and maintained to ensure that the accuracy of the measurements are consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than 10% from the true discharge rates throughout the range of expected discharge volumes. The primary flow device, where required, must be accessible to the use of a continuous flow recorder.
  - (2) Where permits require an estimate of flow, the permittee shall maintain at the permitted facility a record of the method(s) used in estimating the discharge flow (e.g., pump curves, production charts, water use records) for the outfall(s) designated on limits pages to monitor flow by an estimate.
  - (3) Records of any necessary calibrations must be kept.

2. Except for records of monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by R.61-9.503 or R.61-9.504), the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. This period may be extended by request of the Department at any time.
3. Records of monitoring information shall include:
  - a. The date, exact place, and time of sampling or measurements;
  - b. The individual(s) who performed the sampling or measurements;
  - c. The date(s) analyses were performed;
  - d. The individual(s) who performed the analyses;
  - e. The analytical techniques or methods used; and
  - f. The results of such analyses.
4. a. Analyses for required monitoring must be conducted according to test procedures approved under 40 CFR Part 136, equivalent test procedures approved by the Department or other test procedures that have been specified in the permit.

In the case of sludge use or disposal, analysis for required monitoring must be conducted according to test procedures approved under 40 CFR Part 136, test procedures specified in R.61-9.503 or R.61-9.504, equivalent test procedures approved by the Department or other test procedures that have been specified in the permit.

- b. Unless addressed elsewhere in this permit, the permittee shall use a sufficiently sensitive analytical method that achieves a value below the derived permit limit stated in Part III. If more than one method of analysis is approved for use, the Department recommends for reasonable potential determinations that the permittee use the method having the lowest practical quantitation limit (PQL) unless otherwise specified in Part V of the permit. For the purposes of reporting analytical data on the Discharge Monitoring Report (DMR):
  - (1) Analytical results below the PQL conducted using a method in accordance with Part II.J.4.a above shall be reported as zero (0). Zero (0) shall also be used to average results which are below the PQL. When zero (0) is reported or used to average results, the permittee shall report, in the "Comment Section" or in an attachment to the DMR, the analytical method used, the PQL achieved, and the number of times results below the PQL were reported as zero (0).

- (2) Analytical results above the PQL conducted using a method in accordance with Part II.J.4.a shall be reported as the value achieved. When averaging results using a value containing a “less than,” the average shall be calculated using the value and reported as “less than” the average of all results collected.
  - (3)(a) The mass value for a pollutant collected using a grab sample shall be calculated using the 24-hour totalized flow for the day the sample was collected (if available) or the instantaneous flow at the time of the sample and either the concentration value actually achieved or the value as determined from the procedures in (1) or (2) above, as appropriate. Grab samples should be collected at a time representative of the discharge.
  - (b) The mass value for a pollutant collected using a composite sample shall be calculated using the 24-hour totalized flow measured for the day the sample was collected and either the concentration value actually achieved or the value as determined from the procedures in (1) or (2) above, as appropriate.
5. The PCA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than \$25,000 or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment provided by the Clean Water Act is also by imprisonment of not more than 4 years.

K. Signatory requirement.

1. All applications, reports, or information submitted to the Department shall be signed and certified.
  - a. Applications. All permit applications shall be signed as follows:
    - (1) For a corporation: by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:
      - (a) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or
      - (b) The manager of one or more manufacturing, production, or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.
    - (2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

- (3) For a municipality, State, Federal, or other public agency or public facility: By either a principal executive officer, mayor, or other duly authorized employee or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:
    - (a) The chief executive officer of the agency, or
    - (b) A senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrator, Region IV, EPA).
  - b. All reports required by permits, and other information requested by the Department, shall be signed by a person described in Part II.K.1.a of this section, or by a duly authorized representative of that person. A person is a duly authorized representative only if:
    - (1) The authorization is made in writing by a person described in Part II.K.1.a of this section;
    - (2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.) and,
    - (3) The written authorization is submitted to the Department.
  - c. Changes to authorization. If an authorization under Part II.K.1.b of this section is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Part II.K.1.b of this section must be submitted to the Department prior to or together with any reports, information, or applications to be signed by an authorized representative.
  - d. Certification. Any person signing a document under Part II.K.1.a or b of this section shall make the following certification: "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."
2. The PCA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than \$25,000 per violation, or by imprisonment for not more than two years per violation, or by both.

L. Reporting requirements

1. Planned changes.

The permittee shall give written notice to DHEC/Bureau of Water/Water Facilities Permitting Division as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

- a. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in R 61-9.122.29(b); or
- b. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under Part II.L.8 of this section.
- c. The alteration or addition results in a significant change in the permittee's sewage sludge or industrial sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan (included in the NPDES permit directly or by reference);

2. Anticipated noncompliance.

The permittee shall give advance notice to the DHEC/Bureau of Water/Water Pollution Control Division of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

3. Transfers.

This permit is not transferable to any person except after written notice to the DHEC/Bureau of Water/NPDES Administration. The Department may require modification or revocation and reissuance of the permit to change the name of permittee and incorporate such other requirements as may be necessary under the Pollution Control Act and the Clean Water Act.

- a. Transfers by modification. Except as provided in paragraph b of this section, a permit may be transferred by the permittee to a new owner or operator only if the permit has been modified or revoked and reissued (under R.61-9.122.62(e)(2)), or a minor modification made (under R.61-9.122.63(d)), to identify the new permittee and incorporate such other requirements as may be necessary under CWA.
- b. Other transfers. As an alternative to transfers under paragraph a of this section, any NPDES permit may be transferred to a new permittee if:
  - (1) The current permittee notifies the Department at least 30 days in advance of the proposed transfer date in Part II.L.3.b(2) of this section;

- (2) The notice includes U.S. EPA NPDES Application Form 1 and a written agreement between the existing and new permittees containing a specific date for transfer of permit responsibility, coverage, and liability between them; and
  - (3) Permits are non-transferable except with prior consent of the Department. A modification under this section is a minor modification which does not require public notice.
4. Monitoring reports. Monitoring results shall be reported at the intervals specified elsewhere in this permit.
- a. Monitoring results must be reported on a Discharge Monitoring Report (DMR) or forms provided or specified by the Department for reporting results of monitoring of sludge use or disposal practices including the following:

- (1) Effluent Monitoring: Effluent monitoring results obtained at the required frequency shall be reported on a Discharge Monitoring Report Form (EPA Form 3320-1). The DMR is due postmarked no later than the 28th day of the month following the end of the monitoring period. One original and one copy of the Discharge Monitoring Reports (DMRs) shall be submitted to:

**S.C. Department of Health and Environmental Control  
Bureau of Water/Water Pollution Control Division  
Data and Records Management Section  
2600 Bull Street  
Columbia, South Carolina 29201**

- (2) Groundwater Monitoring: Groundwater monitoring results obtained at the required frequency shall be reported on a Groundwater Monitoring Report Form (DHEC 2110) postmarked no later than the 28th day of the month following the end of the monitoring period. One original and one copy of the Groundwater Monitoring Report Form (DHEC 2110) shall be submitted to:

**S.C. Department of Health and Environmental Control  
Bureau of Water/Water Pollution Control Division  
Data and Records Management Section  
2600 Bull Street  
Columbia, South Carolina 29201**

- (3) Sludge, Biosolids and/or Soil Monitoring: Sludge, biosolids and/or soil monitoring results obtained at the required frequency shall be reported in a laboratory format as stated in Part V of the permit. Two copies of these results shall be submitted to:

**S.C. Department of Health and Environmental Control  
Bureau of Water/Water Pollution Control Division  
Data and Records Management Section  
2600 Bull Street  
Columbia, South Carolina 29201**

(4) All other reports required by this permit shall be submitted at the frequency specified elsewhere in the permit to:

**S.C. Department of Health and Environmental Control  
Bureau of Water/Water Pollution Control Division  
Data and Records Management Section  
2600 Bull Street  
Columbia, South Carolina 29201**

- b. If the permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in R.61-9.503 or R.61-9.504, or as specified in the permit, all valid results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Department. The permittee has sole responsibility for scheduling analyses, other than for the sample date specified in Part V, so as to ensure there is sufficient opportunity to complete and report the required number of valid results for each monitoring period.
- c. Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Department in the permit.

5. Twenty-four hour reporting

- a. The permittee shall report any non-compliance, which may endanger health or the environment. Any information shall be provided orally to local DHEC office within 24 hours from the time the permittee becomes aware of the circumstances. During normal working hours call:

<b>County</b>	<b>DHEC Regional Area</b>	<b>Phone No.</b>
Anderson, Oconee	Upstate Region BEHS Anderson	864-260-5569
Abbeville, Edgefield, Greenwood, Laurens, McCormick, Saluda	Upstate Region BEHS Greenwood	864-223-0333
Greenville, Pickens	Upstate Region BEHS Greenville	864-241-1090
Cherokee, Spartanburg, Union	Upstate Region BEHS Spartanburg	864-596-3800
Fairfield, Lexington, Newberry, Richland	Midlands Region BEHS Columbia	803-896-0620
Chester, Lancaster, York	Midlands Region BEHS Lancaster	803-285-7461
Aiken, Allendale, Bamberg, Barnwell, Calhoun, Orangeburg	Midlands Region BEHS Aiken	803-642-1637
Chesterfield, Darlington, Dillon, Florence, Marion, Marlboro	Pee Dee Region BEHS Florence	843-661-4825
Clarendon, Kershaw, Lee, Sumter	Pee Dee Region BEHS Sumter	803-778-6548
Georgetown, Horry, Williamsburg	Pee Dee Region BEHS Myrtle Beach	843-238-4378
Berkeley, Charleston, Dorchester	Low Country Region BEHS Charleston	843-953-0150



County	DHEC Regional Area	Phone No.
Beaufort, Colleton, Hampton, Jasper	Low Country Region BEHS Beaufort	843-846-1030

\*After-hour reporting should be made to the 24-Hour Emergency Response telephone number 803-253-6488 or 1-888-481-0125 outside of the Columbia area.

A written submission shall also be provided to the address in Part II.L.4.a(4) within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

b. The following shall be included as information which must be reported within 24 hours under this paragraph.

(1) Any unanticipated bypass which exceeds any effluent limitation in the permit. (See R.61-9.122.44(g)).

(2) Any upset which exceeds any effluent limitation in the permit.

(3) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Department in the permit to be reported within 24 hours (See R 61-9.122.44(g)). If the permit contains maximum limitations for any of the pollutants listed below, a violation of the maximum limitations shall be reported orally to the DHEC/Bureau of Water/Water Pollution Control Division within 24 hours or the next business day.

(a) Whole Effluent Toxicity (WET),

(b) tributyl tin (TBT), and

(c) any of the following bioaccumulative pollutants:

$\alpha$ BHC	Mercury
$\beta$ BHC	Mirex
$\delta$ BHC (Lindane)	Octachlorostyrene
BHC	PCBs
Chlordane	Pentachlorobenzene
DDD	Photomirex
DDE	1,2,3,4-Tetrachlorobenzene
DDT	1,2,4,5-Tetrachlorobenzene
Dieldrin	2,3,7,8-TCDD
Hexachlorobenzene	Toxaphene
Hexachlorobutadiene	

- c. The Department may waive the written report on a case-by-case basis for reports under Part II.L.5.b of this section if the oral report has been received within 24 hours.

6. Other noncompliance.

The permittee shall report all instances of noncompliance not reported under Part II.L.4 and 5 of this section and Part IV at the time monitoring reports are submitted. The reports shall contain the information listed in Part II.L.5 of this section.

7. Other information.

Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or information to the Water Facilities Permitting Division. This information may result in permit modification, revocation and reissuance, or termination in accordance with Regulation 61-9.

8. Existing manufacturing, commercial, mining, and silvicultural dischargers.

In addition to the reporting requirements under Part II.L.1-7 of this section, all existing manufacturing, commercial, mining, and silvicultural dischargers must notify the DHEC/Bureau of Water/Water Pollution Control Division of the Department as soon as they know or have reason to believe:

- a. That any activity has occurred or will occur which would result in the discharge on a routine or frequent basis, 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 2,4-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 that pollutant in the permit application;  
or

- (4) The level established by the Department in accordance with section R.61-9.122.44(f).

- b. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed in the highest of the following “notification levels”:

- (1) Five hundred micrograms per liter (500 µg/l);

- (2) One milligram per liter (1 mg/l) for antimony;

(3) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with R.61-9.122.21(g)(7).

(4) The level established by the Department in accordance with section R.61-9.122.44(f).

#### M. Bypass

1. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of Part II.M.2 and 3 of this section.
2. Notice.
  - a. Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible, at least ten days before the date of the bypass to the DHEC/Bureau of Water/ Water Facilities Permitting Division.
  - b. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in Part II.L.5 of this section.
3. Prohibition of bypass
  - a. Bypass is prohibited, and the Department may take enforcement action against a permittee for bypass, unless:
    - (1) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
    - (2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
    - (3) The permittee submitted notices as required under Part II.M.2 of this section.
  - b. The Department may approve an anticipated bypass, after considering its adverse effects, if the Department determines that it will meet the three conditions listed above in Part II.M.3.a of this section.

#### N. Upset

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of Part II.N.2 of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

2. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
  - a. An upset occurred and that the permittee can identify the cause(s) of the upset;
  - b. The permitted facility was at the time being properly operated; and
  - c. The permittee submitted notice of the upset as required in Part II.L.5.b(2) of this section.
  - d. The permittee complied with any remedial measures required under Part II.D of this section.
3. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

O. Misrepresentation of Information

1. Any person making application for a NPDES discharge permit or filing any record, report, or other document pursuant to a regulation of the Department, shall certify that all information contained in such document is true. All application facts certified to by the applicant shall be considered valid conditions of the permit issued pursuant to the application.
2. Any person who knowingly makes any false statement, representation, or certification in any application, record, report, or other documents filed with the Department pursuant to the State law, and the rules and regulations pursuant to that law, shall be deemed to have violated a permit condition and shall be subject to the penalties provided for pursuant to 48-1-320 or 48-1-330.

### Part III. Limitations and Monitoring Requirements

#### A. Effluent Limitations and Monitoring Requirements

- During the period beginning on the effective date of this permit and lasting through the expiration date, the permittee is authorized to discharge from outfall serial number **002**: post-closure flows from closed the facilities Chase Hill Pad, 188 facility, Haile Pit, and Hilltop Pit, flows from the passive treatment system (currently treats Chase Hill Pit, South Pad and a portion of Chase Hill Pad) and rainfall into ponds.

Such discharge shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS		
	Mass		Concentration		Sampling Frequency <sup>4</sup>	Sample Type	
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum			
Flow, effluent	MR <sup>1</sup> , MGD	MR <sup>1</sup> , MGD	--	--	2/month	instantaneous	
pH	Minimum <sup>3</sup> 6.0 su, Maximum <sup>3</sup> 8.5 su				2/month	grab	
Total Suspended Solids (TSS)	--	--	20 mg/l	30 mg/l	2/month	grab	
Copper, total as Cu <sup>2</sup>	--	--	15 µg/l	22 µg/l	2/month	grab	

<sup>1</sup>MR: Monitor and Report

<sup>2</sup>See Part V.A.5.

<sup>3</sup>See Part I.U.

<sup>4</sup>See Part V.A.2.

- Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): at or near the point of discharge, but prior to mixing with the receiving stream.

2. During the period beginning on the effective date of this permit and lasting through the expiration date, the permittee is authorized to discharge from outfall serial number **003**: mine drainage<sup>3</sup>, stormwater falling on the treatment facility<sup>4</sup> and process water<sup>5</sup>.

Such discharge shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
	Mass		Concentration		Sampling Frequency	Sample Type
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum		
Duration of Discharge <sup>2</sup>	--	MR <sup>1</sup> , days	--	--	1/month	calculate
Flow, effluent	MR <sup>1</sup> , MGD	MR <sup>1</sup> , MGD	--	--	daily	continuous
pH <sup>6</sup>	Minimum <sup>7</sup> 6.0 su, Maximum <sup>7</sup> 8.5 su				daily	continuous
Total Suspended Solids (TSS)	--	--	20 mg/l	30 mg/l	1/week	24-hr composite <sup>9</sup>
Cyanide, total <sup>10</sup>	--	--	140 µg/l	204 µg/l	1/week	grab
Cyanide, free <sup>8,10</sup>	--	--	5.2 µg/l	22 µg/l	1/week	grab
Sulfide (as S) <sup>8</sup>	--	--	MR <sup>1</sup> , mg/l	MR <sup>1</sup> , mg/l	1/week	grab
Hydrogen Sulfide Un-Ionized (H <sub>2</sub> S)	--	--	2.0 µg/l	4.0 µg/l	1/week	calculation
Hardness (as CaCO <sub>3</sub> )	--	--	MR <sup>1</sup> , mg/l	MR <sup>1</sup> , mg/l	1/week	grab
Arsenic, total	--	--	10.0 µg/l	14.6 µg/l	1/week	24-hr composite <sup>9</sup>
Cadmium, total	--	--	2.4 µg/l	28.7 µg/l	1/week	24-hr composite <sup>9</sup>
Copper, total <sup>8</sup>	--	--	94.9 µg/l	160.8 µg/l	1/week	24-hr composite <sup>9</sup>
Lead, total	--	--	49.9 µg/l	600.0 µg/l	1/week	24-hr composite <sup>9</sup>
Thallium, total <sup>8</sup>	--	--	0.47 µg/l	0.69 µg/l	1/week	24-hr composite <sup>9</sup>
Zinc, total	--	--	750 µg/l	1500 µg/l	1/week	24-hr composite <sup>9</sup>
Selenium, total <sup>8</sup>	--	--	5.0 µg/l	20.0 µg/l	1/week	24-hr composite <sup>9</sup>
Mercury, total <sup>8</sup>	--	--	51.0 ng/l	74.5 ng/l	1/week	grab

<sup>1</sup>MR: Monitor and Report

<sup>2</sup>Report the number of days that discharge occurs each month.

<sup>3</sup>See Part I.X.

<sup>4</sup>See Part V.A.3.(a).

<sup>5</sup>See Part V.A.3.(b).

<sup>6</sup>See Part V.A.4.

<sup>7</sup>See Part I.U.

<sup>8</sup>See Part V.A.5.

<sup>9</sup>Composite samples shall be collected as specified in Part I. I. 1, 2, or 3.

<sup>10</sup>These parameters are only required to be monitored when a discharge described in Part V.A.3 (a) or (b) occurs.

a. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): after treatment at or near the discharge, but prior to mixing with the receiving waters.

B. Whole Effluent Toxicity and Other Biological Limitations and Monitoring Requirements

1. During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge from outfall **003**: mine drainage<sup>4</sup>.

Such discharge shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS	
	Monthly Average	Daily Maximum	Measurement Frequency	Sample Type
<i>Ceriodaphnia dubia</i> Chronic Whole Effluent Toxicity @ CTC= <b>100%</b>	25 %	40 %	1/month	24-hr composite

See Part V.B.1 for additional toxicity reporting requirements.

The following notes apply only to valid tests. For invalid tests see Part V.B.

Note 1: The overall % effect is defined as the larger of the % survival effect or the % reproduction effect from DMR Attachment Form 3880.

Note 2: If only one test is conducted during a month, the monthly average and daily maximum are each equal to the overall % effect.

Note 3: If more than one test is conducted during a month, the monthly average is the arithmetic mean of the overall % effect values of all tests conducted during the month.

Note 4: The monthly average to be reported on the DMR is the highest monthly average for any month during the monitoring period. There is no averaging of data from tests from one month to another.

Note 5: The daily maximum to be reported on the DMR is the highest of the % survival effect or % reproduction effect of all tests conducted during the monitoring period.

Note 6: When a sample is collected in one month and the test is completed in the next month, the overall % effect applies to the month in which the sample was collected.

Note 7: Tests must be separated by at least 7 days (from the time the first sample is collected to start one test until the time the first sample is collected to start a different test). There is no restriction on when a new test may begin following a failed or invalid test.

Note 8: For any split sample:

- a. Determine the % survival effect and % reproduction effect values separately for each test.
  - b. Determine the arithmetic mean of the % survival effects and of the % reproduction effects for all tests.
  - c. The monthly average and daily maximum shall be the higher of the % effect values from (b) above.
  - d. For the purposes of reporting, split samples are reported as an individual sample regardless of the number of times it is split. All laboratories used shall be identified on the DMR attachment and each test shall be reported individually on DMR Attachment Form DHEC 3880 (08/2005).
- a. Samples used to demonstrate compliance with the discharge limitations and monitoring requirements specified above shall be taken at or near the final point-of-discharge but prior to mixing with the receiving waters or other waste streams.



C. Groundwater Monitoring Requirements

1. During the period beginning on the effective date of this permit and lasting through the expiration date, the permittee shall monitor groundwater monitoring well **MW-1** as specified below:

Parameter	Measurement Frequency	Sample Method
Copper	Semi-Annually	Pump or Bailer Method
Iron	Semi-Annually	Pump or Bailer Method
Sulfate as SO <sub>4</sub>	Semi-Annually	Pump or Bailer Method
Field pH	Semi-Annually	Pump or Bailer Method
Total Dissolved Solids (TDS)	Semi-Annually	Pump or Bailer Method
Field Specific Conductance	Semi-Annually	Pump or Bailer Method
Depth to Groundwater (Report to 0.01 feet)	Semi-Annually	Tape
Groundwater Elevation (Report to 0.01 feet above mean sea level)	Semi-Annually	Tape

2. During the period beginning on the effective date of this permit and lasting through the expiration date, the permittee shall monitor the five (5) groundwater monitoring wells **MW-4, MW-7, MW-8, MW-9** and **MW-10** as specified below:

Parameter	Measurement Frequency	Sample Method
Field Specific Conductance	Semi-Annually	Pump or Bailer Method
Depth to Groundwater (Report to 0.01 feet)	Semi-Annually	Tape
Groundwater Elevation (Report to 0.01 feet above mean sea level)	Semi-Annually	Tape

3. The permittee shall follow the Groundwater Monitoring Sampling Period and Reporting Deadline in the table below for the coordinating Measurement Frequency indicated in the table (in paragraph a.) above:

Measurement Frequency	Sampling Period	Reporting Deadline
Quarterly (Samples must be taken at least 60 days apart.)	January 1 <sup>st</sup> – March 31 <sup>st</sup>	April 28 <sup>th</sup>
	April 1 <sup>st</sup> – June 30 <sup>th</sup>	July 28 <sup>th</sup>
	July 1 <sup>st</sup> – September 30 <sup>th</sup>	October 28 <sup>th</sup>
	October 1 <sup>st</sup> – December 31 <sup>st</sup>	January 28 <sup>th</sup>
Semi-Annually	January 1 <sup>st</sup> – March 31 <sup>st</sup>	April 28 <sup>th</sup>
	July 1 <sup>st</sup> – September 30 <sup>th</sup>	October 28 <sup>th</sup>
Annually	October 1 <sup>st</sup> – December 31 <sup>st</sup>	January 28 <sup>th</sup>

4. See Part V.C

**Part IV. Schedule of Compliance**

A. Schedule(s)

*Not Applicable*

- B. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each scheduled date.

## Part V. Other Requirements

### A. Effluent Requirements

1. There shall be no discharge of floating solids or visible foam in other than trace amounts, nor shall the effluent cause a visible sheen on the receiving waters.
2. For outfall 002, while the facility is still in the reclamation phase, sampling shall be conducted twice per month at a time when discharge is occurring. A discharge occurrence of greater than fifteen (15) days, or more than one discharge in a month requires that two samples be taken during that month. If only one discharge occurs during the month and it is fifteen (15) days or less, only one sample is required. If only one sample is taken the reason should be stated on the DMR.
3. There shall be no discharge of process wastewater from mills that use the froth-flotation process alone, or in conjunction with other processes, for the beneficiation of copper, lead, zinc, gold, silver, or molybdenum ores or any combination of these ores, with the following exceptions:
  - (a) In the event that the annual precipitation falling on the beneficiation process facility and the drainage area contributing surface runoff to the beneficiation process facility exceeds the annual evaporation, a volume of water equal to the difference between annual precipitation falling on the beneficiation process facility and the drainage area contributing surface runoff to the beneficiation process facility and annual evaporation may be discharged subject to the limitations set in outfall 003.
  - (b) In the event there is a build up of contaminants in the recycle water, which significantly interferes with the ore recovery process, and this interference cannot be eliminated through appropriate treatment of the recycle water, the Department may allow a discharge of process wastewater in an amount necessary to correct the interference problem after installation of appropriate treatment. This discharge shall be subject to the limitations set in outfall 003. The facility shall provide a report demonstrating to the Department that the discharge is necessary to eliminate interference in the ore recovery process and that the interference could not be eliminated through appropriate treatment of the recycle water. The Department must grant a written approval before such discharge can occur.
4. Where a permittee continuously measures the pH of wastewater pursuant to a requirement or option in a National Pollutant Discharge Elimination System (NPDES) permit issued pursuant to section 402 of the Act, the permittee shall maintain the pH of such wastewater within the range set forth in the applicable effluent limitations guidelines, except excursions from the range are permitted subject to the following limitations:
  - (a) The total time during which the pH values are outside the required range of pH values shall not exceed 7 hours and 26 minutes in any calendar month; and
  - (b) No individual excursion from the range of pH values shall exceed 60 minutes.

For purposes of this section, an excursion is an unintentional and temporary incident in which the pH value of discharge wastewater exceeds the range set forth in the applicable effluent limitations guidelines. (Secs. 301, 304, 306 and 501 of the Clean Water Act (the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1251 et. seq., as amended by the Clean Water Act of 1977, Pub. L. 95-217))

5. Where the permit limitation Part III is below the practical quantitation limit (PQL), the PQL and analytical method stated below shall be considered as being in compliance with the permit limit. Additionally, where the permit requires only monitoring and reporting (MR) in Part III, the PQL and analytical method stated below shall be used for reporting results.

Parameter	Analytical Method	PQL
Cyanide, free	OIA-1677-09	10 µg/l
Sulfide (as S)	SM 4500 S <sup>2-</sup> E	1000 µg/l
Copper, total	200.7, 200.8, 200.9, SM3113B	10 µg/l
Thallium, total	200.8, 200.9, SM3113B	0.5 µg/l
Selenium, total	200.8, 200.9, SM3113B	5.0 µg/l
Mercury, total	1669 (sampling)/1631E (analysis)	0.0005 µg/l

B. Whole Effluent Toxicity and Other Biological Requirements

1. For the requirements identified in Part III.B:

- a. A *Ceriodaphnia dubia* three brood chronic toxicity test shall be conducted at the frequency stated in Part III.B, Effluent Toxicity Limitations and Monitoring Requirements, using the chronic test concentration (CTC) of **100%** and the following test concentrations: **0% (control), 50%, 60%, 71%, 84% and 100%(CTC)** effluent. The permittee may add additional test concentrations without prior authorization from the Department provided that the test begins with at least 10 replicates in each concentration and all data is used to determine permit compliance.
- b. The test shall be conducted using EPA Method 1002.0 in accordance with “Short-Term Methods for Estimating Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms,” EPA/821/R-02/013 (October 2002).
- c. The permittee shall use the linear interpolation method described in “Short-Term Methods for Estimating Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms,” EPA/821/R-02/013 (October 2002), Appendix M to estimate the percent effect at the CTC according to the equations in d below.

- d. The linear interpolation estimate of percent effect is  $\left(1 - \frac{M_{CTC}}{M_1}\right) * 100$  if the CTC is a tested

concentration. Otherwise, it is  $\left(1 - \frac{M_J - \frac{M_{J+1} - M_J}{C_{J+1} - C_J} * C_J + \frac{M_{J+1} - M_J}{C_{J+1} - C_J} * CTC}{M_1}\right) * 100$ .

- e. A test shall be invalidated if any part of Method 1002.0 is not followed or if the laboratory is not certified at the time the test is conducted.

- f. All valid toxicity test results shall be submitted on the DHEC Form 3880 (08/2005) entitled "DMR Attachment for Toxicity Test Results" in accordance with Part II.L.4. In addition, results from all invalid tests must be appended to DMRs, including lab control data. The permittee has sole responsibility for scheduling toxicity tests so as to ensure there is sufficient opportunity to complete and report the required number of valid test results for each monitoring period.
- g. The permittee is responsible for reporting a valid test during each monitoring period. However, the Department acknowledges that invalid tests may occur. All of the following conditions must be satisfied for the permittee to be in compliance with Whole Effluent Toxicity (WET) testing requirements for a particular monitoring period when a valid test was not obtained.
- (1) A minimum of three (3) tests have been conducted which were invalid in accordance with Part V.B.1.e above;
  - (2) The data and results of all invalid tests are attached to the DMR;
  - (3) At least one additional State-certified laboratory was used after two (2) consecutive invalid tests were determined by the first laboratory. The name(s) and lab certification number(s) of the additional lab(s) shall be reported in the comment section of the DMR; and
  - (4) A valid test was reported during each of the previous three reporting periods.
- If these conditions are satisfied, the permittee may enter "H" in the appropriate boxes on the toxicity DMR and add the statement to the Comment Section of the DMR that "H indicates invalid tests."
- h. This permit may be modified based on new information that supports a modification in accordance with Regulation 61-9.122.62 and Regulation 61-68.D.

## 2. Biological Assessments

- a. The permittee shall conduct a biological assessment using aquatic macroinvertebrates as the bioindicator. The permittee shall use the document "South Carolina Department of Health and Environmental Control Standard Operating and Quality Control Procedures for Macroinvertebrate Sampling," Bureau of Water, Water Monitoring, Assessment, and Protection Division, Aquatic Biology Section, Columbia, SC, SCDHEC Technical Report No. #004-98 as guidance for writing proposed macroinvertebrate studies.
- b. A biological assessment shall be conducted annually during April or May by a laboratory certified for macroinvertebrate assessments by the Department's Office of Environmental Certification.
- c. An assessment/study plan shall be prepared by a laboratory certified for macroinvertebrate assessments by the Department's Office of Environmental Certification and submitted to the Department for review within 30 days of the effective date of the permit. The Department must approve the plan prior to commencement of actual sampling efforts. The plan shall be submitted to the address in Part II.L.4(a)(4) for approval.
- d. The results of each biological assessment must be submitted to the Department within 90 days after completion of the sampling.

### C. Groundwater Requirements

1. For new in-ground wastewater treatment units, background groundwater quality data must be submitted prior to final approval to place into operation.
2. All groundwater monitoring wells must be properly maintained at all times and are to yield a representative sample of the aquifer. If the groundwater elevation drops to a level that prevents the collection of a sample for two consecutive sampling periods, then this well shall be considered as “rendered unusable.” In accordance with Regulation 61-71, any monitoring well which is destroyed, rendered unusable, or abandoned, shall be reported to the Department, and shall be properly abandoned, revitalized, or replaced. The permittee shall revitalize or replace the dry well within six months after recording the second dry sampling period.
3. Sample collection methods shall be in accordance with EPA publication SESDPROC 301-R2, dated October 28, 2011. Analytical methods must be EPA-approved, appropriate for the media being analyzed, and must be able to achieve a practical quantitation limit (i.e. reporting limit) below the standard for Class GB groundwater as established in South Carolina Water Classifications and Standards R.61-68 if applicable to the parameter being analyzed.
4. In accordance with R.61-9.505.5(d), “If a deleterious impact to the groundwaters of the State from the permitted use or disposal practices is documented through groundwater monitoring levels exceeding the standards set forth in R.61-68 or a significant adverse trend occurs, then it will be the obligation of the permittee as directed by the Department to conduct an investigation to determine the vertical and horizontal extent of groundwater impact. The Department may require remediation of the groundwater to within acceptable levels for groundwater as set forth in R.61-68.”
5. Should the closed pads and the “lime addition” wastewater treatment system be removed then ongoing monitoring of these wells will be removed from the permit. If a new wastewater treatment system is installed, a completely different set of groundwater monitoring requirements may be required.

### D. Sludge Requirements

1. The permittee shall apply in writing to the DHEC/Bureau of Water requesting written approval for wastewater sludge disposal. A letter of acceptance from the facility that will accept the wastewater sludge for disposal or reuse shall be included with the request. If the wastewater sludge is to be disposed in the on-site tailings impoundment, then an approval from the Department’s Bureau of Land and Waste Management’s Division of Mining and Solid Waste Management will serve as the letter of acceptance from the facility that will accept the wastewater sludge.

### E. Other Conditions

1. The “lime addition” wastewater treatment system used during the reclamation phase is assigned a classification of **Group I-Physical/Chemical**. This classification corresponds to an operator with a **Grade D-Physical/Chemical** wastewater operator’s license. If the “lime addition” treatment system is closed out then the requirement for this operator will be voided.

2. The “active mining and processing” wastewater treatment plant will be assigned a classification of **Group III-Physical/Chemical**. This classification corresponds to an operator with a **Grade B-Physical/Chemical** wastewater operator’s license. The requirement to have this operator will not be effective until the Department issues an approval to operate the “active mining and processing” wastewater treatment plant.
3. The permittee shall maintain an all weather access road to the wastewater treatment plant and appurtenances at all times.
4. All waste oil and solid and hazardous waste shall be disposed of in accordance with the rules and regulations of SCDHEC's Bureau of Land and Waste Management.
5. The permittee shall not receive, process, or dispose of ore from lands not owned or controlled by the permittee.
6. Nothing in this permit will supersede any permits or requirements of the Department’s Mining and Solid Waste Section.
7. For Outfall 002, the permittee shall monitor all parameters consistent with conditions established by this permit on the **1<sup>st</sup> Tuesday** of every calendar month in which sampling is required, unless otherwise approved by this Department. If no discharge occurs on this day, the permittee shall collect an effluent sample during the reporting period on a day when there is a discharge, or report “no discharge” for all parameters when there is no discharge at any point during the reporting period. Additional monitoring as necessary to meet the frequency requirements of this permit shall be performed by the permittee.
8. The permittee shall monitor all parameters from Outfall 003 consistent with conditions established by this permit for weekly sampling on **Thursday** of each week and for monthly sampling (toxicity) on the **second Thursday** of every calendar month, unless otherwise approved by this Department. If no discharge occurs on the designated day, the permittee shall monitor on the first day thereafter that a discharge occurs. Additional monitoring, as necessary to meet the frequency requirements of this permit shall be performed by the permittee.
9. The permittee shall take all practicable measures to ensure that the discharge of wastewater authorized by this permit does not result in sediment and erosion control problems from the point of discharge to the point of mixing with the receiving stream.
10. The permittee shall notify the affected downstream water treatment plant(s) of any emergency condition, plant upset, bypass or other system failure which has the potential to affect the quality of water withdrawn for drinking water purposes. This notification should be made as soon as possible and in anticipation of such event, if feasible, without taking away from any response time necessary to attempt to alleviate the situation.
11. For outfall 003, within 2 years of the commencement of discharge from the “active mining and processing” wastewater treatment plant, the permittee must fully complete and submit an EPA Application Form 2C in accordance with Regulation 61-9.122.21(k)(5)(vi).

12. If the water body to which the permittee is discharging is listed as impaired on the 303(d) list, prior to submittal of the application to renew NPDES permit coverage, the permittee must collect at a minimum three (3) samples of each Form 2C parameter appearing on the 303(d) list for the receiving water body. Each sample for a single parameter must be separated by at least one calendar month, and all sample results must be received early enough to be included in the permit renewal application. Please note that the permit renewal application must be received no later than 180 days prior to the permit expiration date. For these parameters the data should not be any older than 18 months from the date that the permit renewal is submitted to the Department.
  
13. Any stormwater that passes through Outfall 002 or Outfall 003 that is subject to the definition of “stormwater associated with industrial activity” shall meet the requirements of **Appendix A**. Other stormwater outfalls that are not combined with wastewater should be covered under the NPDES General Permit for Storm Water Associated with Industrial Activity via number SCR004763. Combined stormwater and wastewater outfalls where the stormwater can be sampled separately prior to mixing with the wastewater, the stormwater portion should be covered under the General Permit. Note that the stormwater runoff from the potential acid generating (PAG) waste rock storage areas are considered process wastewater, under the definition of mine drainage, and shall not be considered for coverage under the General Permit.



## APPENDIX A - Storm Water Pollution Prevention Plan (SWPPP) Requirements

You must prepare a SWPPP for your facility covered by this permit. The SWPPP must be prepared in accordance with good engineering practices. The plan shall identify potential sources of pollution that may reasonably be expected to affect the quality of storm water discharges associated with industrial activity from the facility. In addition, the plan shall describe the implementation of practices which are to be used to reduce the pollutants in storm water discharges associated with industrial activity at the facility and to assure compliance with the terms and conditions of this permit. The SWPPP is intended to document the selection, design, and installation of control measures. The facility must implement the provisions of the storm water pollution prevention plan required under this part as a condition of this permit. If you prepared a SWPPP for coverage under a previous NPDES permit, you must review and update the SWPPP to implement all provisions of this permit. Consider using the Department's template on the following web page in preparing your SWPPP, with appropriate changes for this permit: <http://www.scdhec.gov/environment/water/swater/docs/npdes-ind-swppp.doc>.

### I. Contents of Your SWPPP

- A. For coverage under this permit, your SWPPP must contain all of the following elements:
  - 1. Storm water pollution prevention team (see Section II);
  - 2. Site description (see Section III);
  - 3. Summary of potential pollutant sources (see Section IV);
  - 4. Description of control measures (see Section V);
  - 5. Schedules and procedures pertaining to control measures (see Section VI); and
  - 6. Signature requirements (see Section VII).
- B. Where your SWPPP refers to procedures in other facility documents, such as a Spill Prevention, Control, and Countermeasure (SPCC) Plan, a copy of the relevant portions of those documents must be kept with or within close proximity to your SWPPP.

### II. Storm Water Pollution Prevention Team

You must identify the staff members (by name or title) that comprise the facility's storm water pollution prevention team as well as their individual responsibilities. Your storm water pollution prevention team is responsible for assisting the facility manager in developing and revising the facility's SWPPP as well as maintaining control measures and taking corrective actions where required. Each member of the storm water pollution prevention team must have ready access to either an electronic or paper copy of applicable portions of this permit and your SWPPP.

### III. Site Description

Your SWPPP must include the following:

- A. *Activities at the Facility.* Provide a description of the nature of the industrial activities at your facility.
- B. *General location map.* Provide a general location map (e.g., U.S. Geological Survey (USGS) quadrangle map) with enough detail to identify the location of your facility and all receiving waters for your storm water discharges.
- C. *Site map.* Provide a map showing:
  - 1. The size of the property in acres;
  - 2. The location and extent of significant structures and impervious surfaces;
  - 3. Directions of storm water flow (use arrows);
  - 4. Locations of all existing structural control measures;

5. Locations of all receiving waters in the immediate vicinity of your facility, indicating if any of the waters are impaired and, if so, whether the waters have TMDL established for them;
6. Locations of all storm water conveyances including ditches, pipes, and swales;
7. Locations of potential pollutant sources identified under Section IV.B;
8. Locations where significant spills or leaks identified under Section IV.C. have occurred;
9. Locations of all storm water monitoring points;
10. Locations of storm water inlets and outfalls, with a unique identification code for each outfall (e.g., Outfall No. 1, No. 2, etc), indicating if you are treating one or more outfalls as “substantially identical” (i.e., discharge substantially identical effluents) and an approximate outline of the areas draining to each outfall with an indication of the applicable Sector(s) for each outlined area;
11. Municipal separate storm sewer systems, where your storm water discharges to them;
12. Locations and descriptions of all non-storm water discharges;
13. Locations of the following activities where such activities are exposed to precipitation:
  - a. Fueling stations;
  - b. Vehicle and equipment maintenance and/or cleaning areas;
  - c. Loading/unloading areas;
  - d. Locations used for the treatment, storage, or disposal of wastes;
  - e. Liquid storage tanks;
  - f. Processing and storage areas;
  - g. Immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material, or by-products used or created by the facility;
  - h. Transfer areas for substances in bulk; and
  - i. Machinery; and
14. Locations and sources of run-on to your site that contains significant quantities of pollutants from adjacent property.

#### IV. Summary of Potential Pollutant Sources

You must document areas at your facility where industrial materials or activities are exposed to storm water. *Industrial materials or activities* include, but are not limited to: material handling equipment or activities; industrial machinery; raw materials; industrial production and processes; and intermediate products, by-products, final products, and waste products. *Material handling activities* include, but are not limited to: the storage, loading and unloading, transportation, disposal, or conveyance of any raw material, intermediate product, final product or waste product. For each area identified, the description must include:

- A. **Activities in the area.** A list of the industrial activities exposed to storm water (e.g., material storage; equipment fueling, maintenance, and cleaning; cutting steel beams).
- B. **Pollutants.** A list of the pollutant(s) or pollutant constituents (e.g., crankcase oil, zinc, sulfuric acid, and cleaning solvents) associated with each identified activity. The pollutant list must include all significant materials that have been handled, treated, stored, or disposed, and that have been exposed to storm water in the 3 years prior to the date you prepare or amend your SWPPP.

- C. ***Spills and Leaks.*** You must document where potential spills and leaks could occur that could contribute pollutants to storm water discharges, and the corresponding outfall(s) that would be affected by such spills and leaks. You must document all significant spills and leaks of oil or toxic or hazardous pollutants that actually occurred at exposed areas, or that drained to a storm water conveyance, in the 3 years prior to the date you prepare or amend your SWPPP.

Note: Significant spills and leaks include, but are not limited to, releases of oil or hazardous substances in excess of quantities that are reportable under CWA Section 311 (see 40 CFR 110.6 and 40 CFR 117.21) or Section 102 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 USC §9602. This permit does not relieve you of the reporting requirements of 40 CFR 110, 40 CFR 117, and 40 CFR 302 relating to spills or other releases of oils or hazardous substances. Also, you must appropriately notify the Department's Emergency Response Section at 803/253-6488 or 888/481-0125.

D. ***Salt Storage and Pavement De-icing.***

1. You must document the location of any storage piles containing salt used for de-icing or other commercial or industrial purposes and areas where de-icing is expected to occur.
2. ***Pavement de-icing activities.*** For any pavement de-icing activities at facilities, other than airports, covered under this permit, the SWPPP must include measures to assure that no SARA 313 chemical[s] is used for deicing and that no deicing occurs where spills or leaks of toxic or hazardous materials have occurred (unless all spilled material has been removed). Deicing is to be carried out only for safety purposes during inclement weather and must meet water quality standards and MS4 permit conditions (pertinent to the discharge).

- E. ***Sampling Data.*** You must summarize all storm water discharge sampling data collected at your facility during the previous permit term.

V. **Description of Control Measures**

***Control Measures to Meet Technology-Based and Water Quality-Based Effluent Limits.*** You must select, design, install, and implement control measures (including best management practices [BMP]) to meet the non-numeric effluent limits in Section VI. The selection, design, installation, and implementation of these control measures must be in accordance with good engineering practices and manufacturer's specifications. Note that you may deviate from such manufacturer's specifications where you provide justification for such deviation and include documentation of your rationale in the part of your SWPPP that describes your control measures. If you find that your control measures are not achieving their intended effect of minimizing pollutant discharges, you must modify these control measures as expeditiously as practicable. Regulated storm water discharges from your facility include storm water run-on that commingles with storm water discharges associated with industrial activity at your facility.

You must document the location and type of control measures you have installed and implemented at your site. This documentation must describe how the control measures at your site address both the pollutant sources identified in Section IV, and any storm water run-on that commingles with any discharges covered under this permit. You must keep, operate, and maintain any permanent storm water detention or retention pond or other permanent storm water management device installed under the requirements of State or local regulatory authority, unless you receive a written waiver from the Department.

## VI. Schedules and Procedures Pertaining to Control Measures

### A. Control Measures

1. *Minimize Exposure.* You must minimize the exposure of manufacturing, processing, and material storage areas (including loading and unloading, storage, disposal, cleaning, maintenance, and fueling operations) to rain, snow, snowmelt, and runoff by either locating these industrial materials and activities inside or protecting them with storm resistant coverings (although significant enlargement of impervious surface area is not recommended). In minimizing exposure, you should pay particular attention to the following:
  - a. Use grading, berming, or curbing to prevent runoff of contaminated flows and divert run-on away from these areas;
  - b. Locate materials, equipment, and activities so that leaks are contained in existing containment and diversion systems (confine the storage of leaky or leak-prone vehicles and equipment awaiting maintenance to protected areas);
  - c. Clean up spills and leaks promptly using dry methods (e.g., absorbents) to prevent the discharge of pollutants;
  - d. Use drip pans and absorbents under or around leaky vehicles and equipment or store indoors where feasible;
  - e. Use spill/overflow protection equipment;
  - f. Drain fluids from equipment and vehicles prior to on-site storage or disposal;
  - g. Perform all cleaning operations indoors, under cover, or in bermed areas that prevent runoff and run-on and also that capture any overspray; and
  - h. Ensure that all wash water drains to a proper collection system (i.e., not the storm water drainage system).
2. *Good Housekeeping.* You must keep clean all exposed areas that are potential sources of pollutants, using such measures as sweeping at regular intervals, keeping materials orderly and labeled, and storing materials in appropriate containers. A schedule for regular pickup and disposal of waste materials, along with routine inspections for leaks and conditions of drums, tanks and containers must be documented in your SWPPP.
3. *Maintenance.* You must regularly inspect, test, maintain, and repair all industrial equipment and systems to avoid situations that may result in leaks, spills, and other releases of pollutants in storm water discharged to receiving waters. You must maintain in effective operating condition all control measures that are used to achieve the effluent limits required by this permit. Nonstructural control measures must also be diligently maintained (e.g., keeping spill response supplies available, training personnel appropriately). If you find that your control measures need to be replaced or repaired, you must make the necessary repairs or modifications as expeditiously as practicable. Preventative maintenance procedures, including regular inspections, testing, maintenance, and repair of all industrial equipment and systems, and control measures, to avoid situations that may result in leaks, spills, and other releases, and any back-up practices in place should a runoff event occur while a control measure is off-line must be documented in your SWPPP.
4. *Spill Prevention and Response Procedures.* You must minimize the potential for leaks, spills, and other releases that may be exposed to storm water and develop plans for effective response to such spills if or when they occur. At a minimum, you must implement:
  - a. Procedures for plainly labeling containers (e.g., “used oil,” “spent solvents,” “fertilizers and pesticides,” etc.) that could be susceptible to spillage or leakage to encourage proper handling and facilitate rapid response if spills or leaks occur;

- b. Preventative measures such as barriers between material storage and traffic areas, secondary containment provisions, and procedures for material storage and handling;
- c. Procedures for expeditiously stopping, containing, and cleaning up leaks, spills, and other releases. Employees who may cause, detect, or respond to a spill or leak must be trained in these procedures and have necessary spill response equipment available. If possible, one of these individuals should be a member of your storm water pollution prevention team (see Part 5.1.1); and
- d. Procedures for notification of appropriate facility personnel, emergency response agencies, and regulatory agencies. Where a leak, spill, or other release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under either 40 CFR Part 110, 40 CFR Part 117, or 40 CFR Part 302, occurs during a 24-hour period, you must notify the National Response Center (NRC) at (800) 424-8802 in accordance with the requirements of 40 CFR Part 110, 40 CFR Part 117, and 40 CFR Part 302 and the Department's Emergency Response Section at (803/253-6488 or 888-481-0125) as soon as you have knowledge of the discharge. State or local requirements may necessitate reporting spills or discharges to local emergency response, public health, or drinking water supply agencies. Contact information must be in locations that are readily accessible and available.

You must document in your SWPPP procedures for preventing and responding to spills and leaks. You may reference the existence of other plans for Spill Prevention Control and Countermeasure (SPCC) developed for the facility under Section 311 of the CWA or BMP programs otherwise required by an NPDES permit for the facility, provided that you keep a copy of that other plan onsite and make it available for review.

5. *Erosion and Sediment Controls.* You must stabilize exposed areas and manage runoff using structural and/or non-structural control measures to minimize onsite erosion and sedimentation and the resulting discharge of pollutants. Among other actions you must take to meet this limit, you must place flow velocity-dissipation devices at discharge locations and within outfall channels where necessary to reduce erosion and/or settle out pollutants. In selecting, designing, installing, and implementing appropriate control measures, you are encouraged to consult with U.S. EPA's internet-based resources relating to BMP for erosion and sedimentation, including the sector-specific *Industrial Stormwater Fact Sheet Series*, (<http://cfpub.epa.gov/npdes/stormwater/swsectors.cfm>), *National Menu of Stormwater BMPs* ([www.epa.gov/npdes/stormwater/menuofbmps](http://www.epa.gov/npdes/stormwater/menuofbmps)), in particular the Post-Construction link on this page, and *National Management Measures to Control Nonpoint Source Pollution from Urban Areas* ([www.epa.gov/owow/nps/urbanmm/index.html](http://www.epa.gov/owow/nps/urbanmm/index.html)), and any similar State or Tribal publications.
6. *Management of Runoff.* You must divert, infiltrate, reuse, contain, or otherwise reduce storm water runoff, to minimize pollutants in your discharges. In selecting, designing, installing, and implementing appropriate control measures, you are encouraged to consult with EPA's internet-based resources relating to runoff management, including the sector-specific *Industrial Stormwater Fact Sheet Series*, (<http://cfpub.epa.gov/npdes/stormwater/swsectors.cfm>), *National Menu of Stormwater BMPs* ([www.epa.gov/npdes/stormwater/menuofbmps](http://www.epa.gov/npdes/stormwater/menuofbmps)), in particular the Post-Construction link on this page, and *National Management Measures to Control Nonpoint Source Pollution from Urban Areas* ([www.epa.gov/owow/nps/urbanmm/index.html](http://www.epa.gov/owow/nps/urbanmm/index.html)), and any similar State or Tribal publications.
7. *Salt Storage and Pavement Deicing.*
  - a. *Salt Storage Piles or Piles Containing Salt.* You must enclose or cover storage piles of salt, or piles containing salt, used for de-icing or other commercial or industrial purposes, including maintenance of paved surfaces. You must implement appropriate measures (e.g., good housekeeping, diversions, containment) to minimize exposure resulting from adding to or removing materials from the pile. Piles do not need to be enclosed or covered if storm water runoff from the piles is not discharged or if discharges from the piles are authorized under another NPDES permit.

- b. *Pavement De-icing Activities.* For any pavement deicing activities at facilities, other than airports, covered under this permit, the SWPPP must include measures to assure that no SARA 313 chemicals are used for de-icing and that no de-icing occurs where spills or leaks of toxic or hazardous materials have occurred (unless all spilled material has been removed). Deicing is to be carried out only for safety purposes during inclement weather and must meet water quality standards and meet MS4 permit conditions (pertinent to the discharge).
8. *Sector Specific Non-Numeric Effluent Limits.* You must achieve any additional non-numeric limits stipulated in the relevant sector-specific section(s) of Section X.
9. *Employee Training.* You must train all employees who work in areas where industrial materials or activities are exposed to storm water, or who are responsible for implementing activities necessary to meet the conditions of this permit (e.g., inspectors, maintenance personnel), including all members of your Pollution Prevention Team. Training must cover both the specific control measures used to achieve the effluent limits in this Part. The Department recommends that training be conducted at least annually (or more often if employee turnover is high). A schedule for all types of training necessary to implement specific control measures must be documented in your SWPPP.
10. *Waste, Garbage, and Floatable Debris.* You must ensure that waste, garbage, and floatable debris are not discharged to receiving waters by keeping exposed areas free of such materials or by intercepting them before they are discharged.
11. *Dust Generation and Vehicle Tracking of Industrial Materials.* You must minimize generation of dust and off-site tracking of raw, final, or waste materials.

## B. Inspections

1. *Inspection Procedures.* Routine inspections (at least quarterly) should be conducted of all areas of the facility where industrial materials or activities are exposed to storm water and of all storm water control measures. These inspections should occur when the facility is in operation and must be performed by qualified personnel with at least one member of your storm water pollution prevention team participating. At least once each calendar year, the routine inspection should be conducted during a period when a storm water discharge is occurring. The requirement to conduct routine inspections does not apply to facilities where there are no industrial materials or activities exposed to storm water.
2. *Inspection Documentation.*
  - a. For each type of inspection performed, your SWPPP should identify: the person(s) or position(s) of person(s) responsible for inspection; schedules for conduction inspections; and specific items to be covered by the inspection.
  - b. The findings of each routine inspection should be documented and maintained onsite with your SWPPP. This documentation should include:
    - i. Inspection date and time;
    - ii. Name(s) and signature(s) of the inspector(s);
    - iii. Weather information and a description of any discharges occurring during the inspection;
    - iv. Any previously unidentified pollutants from the site;
    - v. Any control measures needing maintenance, repairs, or replacement;
    - vi. Any additional control measures needed.

## C. Corrective Actions

1. *Conditions Requiring Review and Revision to Eliminate a Problem.* If any of the following conditions occur, you must review and revise the selection, design, installation, and implementation of your control measures to ensure that the condition is eliminated and will not be repeated in the future:

- a. An unauthorized release or discharge (e.g., spill, leak, or discharge of non-storm water not authorized by this or another NPDES permit);
  - b. A discharge violates a numeric effluent limit as a result of the storm water component of your discharge;
  - c. You become aware, or the Department notifies you, that your control measures are not stringent enough for the discharge to meet applicable water quality standards as a result of the storm water component of your discharge;
  - d. An inspection or evaluation of your facility by the Department, determines that modifications to the control measures are necessary to meet the effluent limits in this permit; or
  - e. You find in your routine inspection that your control measures are not being properly operated and maintained.
2. *Conditions Requiring Review to Determine if Modifications are Necessary.* If construction or a change in design, operation, or maintenance at your facility significantly changes the nature of pollutants discharged in storm water from your facility or significantly increases the quantity of pollutants discharged, then you must review the selection, design, installation, and implementation of your control measures to determine if modifications are necessary to meet effluent limits in this permit.
3. *Corrective Action Deadlines.* You must document your discovery of any of the conditions listed in Conditions VI.C.1 and VI.C.2 above within 24 hours of making the discovery. If there are extenuating circumstances that prevent documentation within the 24-hour time frame (such as occurrence over a weekend or holiday), then the documentation must occur by the end of the next business day after discovery. Subsequently, within 14 days of discovery, you must document any corrective action(s) to be taken to eliminate or further investigate the deficiency, or if no corrective action is needed, the basis for that determination. Specific documentation required is detailed in Condition VI.C.4 below. If you determine that changes are necessary following your review, any modifications to your control measures must be made before the next storm event, if possible, or as soon as practicable following that storm event.
4. *Corrective Action Documentation.*
- a. Within 24 hours of discovery (or by the end of the next business day (see Condition VI.C.3 above)) of any condition listed in Conditions VI.C.1 and VI.C.2 above, you must document the following information: identification of the condition triggering the need for corrective action review; description of the problem identified; and date the problem was identified.
  - b. Within 14 days of discovery of any condition listed in Conditions VI.C.1 and VI.C.2, you document the following information:
    - i. Summary of the corrective action taken or to be taken or the basis for why corrective action is not necessary.
    - ii. Notice of whether or not SWPPP modifications are required as a result of this discovery or corrective action;
    - iii. Date corrective action is initiated; and
    - iv. Date corrective action is completed or expected to be completed.

## **VII. Signature Requirements**

You must sign and date your SWPPP in accordance with Part II.K (signatory requirements).

### **VIII. Required SWPPP Modifications**

You must modify your SWPPP whenever there is construction or a change in design, operation, or maintenance at your facility that significantly changes the nature of pollutants discharged in storm water or significantly increases the quantity of pollutants discharged in storm water and which has not otherwise been addressed in the plan or if the storm water pollution prevention plan proves to be ineffective in eliminating or significantly minimizing pollutants from sources identified in the plan or in otherwise achieving the general objectives of controlling pollutants in storm water discharges associated with industrial activity.

The Department may notify you at any time that the plan does not meet one or more of the minimum requirements of this Part. Within thirty (30) days of such notification from the Department, (or as otherwise provided by the Department), or authorized representative, the permittee shall make the required changes to the plan and shall submit to the Department a written certification that the requested changes have been made.

Changes to your SWPPP document must be signed and dated in accordance with Section VII above.

### **IX. SWPPP Availability**

Your SWPPP must be completed within six (6) months of the effective date of this permit (and updated as appropriate). Plans shall provide for compliance with the terms of the plan within one (1) year of the effective date of the permit. You must retain a copy of the current SWPPP required by this permit at the facility, and it must be immediately available to the Department at the time of an onsite inspection or upon request. The Department may provide access to portions of your SWPPP to a member of the public upon request. Confidential Business Information (CBI) may be withheld from the public, but may not be withheld from those staff cleared for CBI review within the Department or EPA.

### **X. Additional Documentation Requirements**

You are required to maintain the following inspection, monitoring, and certification records and make them readily available to the Department:

- A. Descriptions and dates of any incidences of any incidences of significant spills, leaks, or other releases that resulted in discharges of pollutants to waters of the State through storm water; the circumstances leading to the release and actions taken in response to the release; and measures taken to prevent the recurrence of such releases;
- B. Records of employee training, including the date training is received, documentation of maintenance and repairs on control measures, including the date(s) of regular maintenance, date(s) of discovery of areas in need of repair/replacement, and for repairs, date(s) that the control measure(s) returned to full function, and the justification for any extended maintenance/repair schedules;
- C. All Routine Inspection Reports; and
- D. Description of any corrective action taken at your site, including triggering event and dates when problems were discovered and modifications occurred.

### **XI. Sector-Specific SWPPP Requirements and Control Measures**

You must comply with sector-specific requirements associated with your primary industrial activity and any co-located industrial activities, as defined in Section XII. The sector-specific requirements apply to those areas of your facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.



## A. Sector G – Metal Mining.

### 1. Covered Storm Water Discharges.

The requirements in this section apply to storm water discharges associated with industrial activity from Metal Mining facilities, including mines abandoned on Federal lands, as identified by the SIC Codes specified under Sector G in Table XIII-1. Coverage is required for metal mining facilities that discharge storm water contaminated by contact with, or that has come into contact with, any overburden, raw material, intermediate product, finished product, byproduct, or waste product located on the site of the operation.

- a. *Covered Discharges from Inactive Facilities.* All storm water discharges.
- b. *Covered Discharges from Active and Temporarily Inactive Facilities.* Only the storm water discharges from the following areas are covered: waste rock and overburden piles if composed entirely of storm water and not combining with mine drainage; topsoil piles; offsite haul and access roads; onsite haul and access roads constructed of waste rock, overburden, or spent ore if composed entirely of storm water and not combining with mine drainage; onsite haul and access roads not constructed of waste rock, overburden, or spent ore except if mine drainage is used for dust control; runoff from tailings dams or dikes when not constructed of waste rock or tailings and no process fluids are present; runoff from tailings dams or dikes when constructed of waste rock or tailings and no process fluids are present, if composed entirely of storm water and not combining with mine drainage; concentration building if no contact with material piles; mill site if no contact with material piles; office or administrative building and housing if mixed with storm water from industrial area; chemical storage area; docking facility if no excessive contact with waste product that would otherwise constitute mine drainage; explosive storage; fuel storage; vehicle and equipment maintenance area and building; parking areas (if necessary); power plant; truck wash areas if no excessive contact with waste product that would otherwise constitute mine drainage; unreclaimed, disturbed areas outside of active mining area; reclaimed areas released from reclamation requirements prior to December 17, 1990; and partially or inadequately reclaimed areas or areas not released from reclamation requirements.
- c. *Covered Discharges from Exploration and Construction of Metal Mining and/or Ore Dressing Facilities.* All storm water discharges.
- d. *Covered Discharges from Facilities Undergoing Reclamation.* All storm water discharges.

### 2. Definitions.

The following definitions are not intended to supersede the definitions of active and inactive mining facilities established by 40 CFR 122.26(b)(14)(iii).

- a. *Mining operation* - Consists of the active and temporarily inactive phases, and the reclamation phase, but excludes the exploration and construction phases.
- b. *Exploration phase* - Entails exploration and land disturbance activities to determine the viability of a site. The exploration phase is not considered part of “mining operations.”
- c. *Construction phase* - Includes the building of site access roads and removal of overburden and waste rock to expose mineable minerals. The construction phase is not considered part of “mining operations.”
- d. *Active phase* - Activities including the extraction, removal or recovery of metal ore. For surface mines, this definition does not include any land where grading has returned the earth to a desired contour and reclamation has begun. This definition is derived from the definition of “active mining area” found at 40 CFR 440.132(a). The active phase is considered part of “mining operations.”

- e. *Reclamation phase* - Activities undertaken, in compliance with applicable mined land reclamation requirements, following the cessation of the “active phase”, intended to return the land to an appropriate post-mining land use in order to meet applicable Federal and State reclamation requirements. The reclamation phase is considered part of "mining operations."
  - f. *Active metal mining facility* - A place where work or other activity related to the extraction, removal, or recovery of metal ore is being conducted. For surface mines, this definition does not include any land where grading has returned the earth to a desired contour and reclamation has begun. This definition is derived from the definition of “active mining area” found at 40 CFR 440.132(a).
  - g. *Inactive metal mining facility* - A site or portion of a site where metal mining and/or milling occurred in the past but is not an active facility as defined above, and where the inactive portion is not covered by an active mining permit issued by the applicable State or Federal agency. An inactive metal mining facility has an identifiable owner / operator. Sites where mining claims are being maintained prior to disturbances associated with the extraction, beneficiation, or processing of mined materials and sites where minimal activities are undertaken for the sole purpose of maintaining a mining claim are not considered either active or inactive mining facilities and do not require an NPDES industrial storm water permit.
  - h. *Temporarily inactive metal mining facility* - A site or portion of a site where metal mining and/or milling occurred in the past but currently are not being actively undertaken, and the facility is covered by an active mining permit issued by the applicable State or Federal agency.
  - i. *Final Stabilization* - A site or portion of a site is “finally stabilized” when it has implemented all applicable Federal and State reclamation requirements.
- 3. Control Measures for Clearing, Grading, and Excavation Activities.**
- Clearing, grading, and excavation activities being conducted as part of the exploration and construction phase of mining activities are covered under this permit.
- a. Management Practices for Clearing, Grading, and Excavation Activities.
    - i. *Selecting and installing control measures.* For all areas affected by clearing, grading, and excavation activities, you must select, design, install, and implement appropriate control measures.
    - ii. *Good Housekeeping.* Litter, debris, and chemicals must be prevented from becoming a pollutant source in storm water discharges.
    - iii. *Retention and Detention of Storm Water Runoff.* For drainage locations serving more than one acre, sediment basins and/or temporary sediment traps should be used. At a minimum, silt fences, vegetative buffer strips, or equivalent sediment controls are required for all down slope boundaries (and for side slope boundaries as necessary based on individual site conditions) of the development area unless a sediment basin providing storage for a calculated volume of runoff from a 2-year, 24-hour storm or 3,600 cubic feet of storage per acre drained is provided. You are required to remove sediment from sediment traps or sedimentation ponds when design capacity has been reduced by 50 percent. Due to high sediment discharges from some Sector G facilities, permittees may need to implement a combination of structural BMP approaches to sufficiently decrease discharge of sediment from their facilities.
  - b. Inspection of Clearing, Grading, and Excavation Activities.
    - i. *Inspection Frequency.* Inspections must be conducted either at least once every 7 calendar days, or at least once every 14 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater. Inspection frequency may be reduced to at least once every month if the entire site is temporarily stabilized (pursuant to Condition 3.c.ii. below), if runoff is unlikely due to winter (e.g., site is covered with snow or ice) or frozen conditions, or construction is occurring during seasonal dry periods in arid areas and semi-arid areas.

- ii. *Location of Inspections.* Inspections must include all areas of the site disturbed by clearing, grading, and/or excavation activities and areas used for storage of materials that are exposed to precipitation. Sedimentation and erosion control measures must be observed to ensure proper operation. Discharge locations must be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to waters of the United States, where accessible. Where discharge locations are inaccessible, nearby downstream locations must be inspected to the extent that such inspections are practicable. Locations where vehicles enter or exit the site must be inspected for evidence of significant off-site sediment tracking.
  - iii. *Inspection Reports.* For each inspection required above, you must complete an inspection report. At a minimum, the inspection report must include the information required in Section VI.B.2.b.
- c. **Requirements for Cessation of Clearing, Grading, and Excavation Activities.**
- i. *Inspections and Maintenance.* Inspections and maintenance of control measures, including BMPs, associated with clearing, grading, and excavation activities being conducted as part of the exploration and construction phase of a mining operation must continue until final stabilization has been achieved on all portions of the disturbed area, or until the commencement of the active mining phase for those areas that have been temporarily stabilized as a precursor to mining.
  - ii. *Temporary Stabilization of Disturbed Areas.* Stabilization measures should be initiated immediately in portions of the site where clearing, grading and/or excavation activities have temporarily ceased, but in no case more than 14 days after the clearing, grading and/or excavation activities in that portion of the site have temporarily ceased. In arid, semiarid, and drought-stricken areas, or in areas subject to snow or freezing conditions, where initiating perennial vegetative stabilization measures is not possible within 14 days after mining, exploration, and/or construction activity has temporarily ceased, temporary vegetative stabilization measures must be initiated as soon as practicable. Until temporary vegetative stabilization is achieved, interim measures such as erosion control blankets with an appropriate seed base and tackifiers, hydroseeding, mulching, etc. must be employed. In areas of the site, where exploration and/or construction has permanently ceased prior to active mining, temporary stabilization measures must be implemented to minimize mobilization of sediment or other pollutants until such time as the active mining phase commences.
  - iii. *Final Stabilization of Disturbed Areas.* Stabilization measures should be initiated immediately in portions of the site where exploration and/or construction activities have permanently ceased, but in no case more than 14 days after the exploration and/or construction activity in that portion of the site has permanently ceased. In arid, semiarid, and drought-stricken areas, or in areas subject to snow or freezing conditions, where initiating perennial vegetative stabilization measures is not possible within 14 days after mining, exploration, and/or construction activity has permanently ceased, final vegetative stabilization measures must be initiated as soon as possible. Until final stabilization is achieved temporary stabilization measures, such as erosion control blankets with an appropriate seed base and tackifiers, must be used.
- 4. Additional Control Measures.**
- a. *Employee Training.* Conduct employee training at least annually at active and temporarily inactive sites.
  - b. *Storm Water Controls.* Consider implementing the following control measures at your site. The potential pollutants identified in Condition 5.c below shall determine the priority and appropriateness of the control measures selected.

- i. *Storm Water Diversions*: Consider diverting storm water away from potential pollutant sources. Following are some options: interceptor or diversion controls (e.g., dikes, swales, curbs, or berms); pipe slope drains; subsurface drains; conveyance systems (e.g., channels or gutters, open-top box culverts, and waterbars; rolling dips and road sloping; roadway surface water deflector and culverts); or their equivalents.
- ii. *Capping*: When capping is necessary to minimize pollutant discharges in storm water, identify the source being capped and the material used to construct the cap.
- iii. *Treatment*: If treatment of storm water (e.g., chemical or physical systems, oil and water separators, artificial wetlands) is necessary to protect water quality, describe the type and location of treatment used. Passive and/or active treatment of storm water runoff is encouraged where practicable.

**5. Additional SWPPP Requirements.**

- a. *Nature of Industrial Activities*. (See also Section III) Briefly document in your SWPPP the mining and associated activities that can potentially affect the storm water discharges covered by this permit, including a general description of the location of the site relative to major transportation routes and communities.
- b. *Site Map*. (See also Section III) Document in your SWPPP the locations of the following (as appropriate): mining or milling site boundaries; access and haul roads; outline of the drainage areas of each storm water outfall within the facility with indications of the types of discharges from the drainage areas; location(s) of all permitted discharges covered under an individual NPDES permit, outdoor equipment storage, fueling, and maintenance areas; materials handling areas; outdoor manufacturing, outdoor storage, and material disposal areas; outdoor chemicals and explosives storage areas; overburden, materials, soils, or waste storage areas; location of mine drainage (where water leaves mine) or other process water; tailings piles and ponds (including proposed ones); heap leach pads; off-site points of discharge for mine drainage and process water; surface waters; boundary of tributary areas that are subject to effluent limitations guidelines; and location(s) of reclaimed areas.
- c. *Potential Pollutant Sources*. (See also Section IV.) For each area of the mine or mill site where storm water discharges associated with industrial activities occur, identify the types of pollutants (e.g., heavy metals, sediment) likely to be present in significant amounts. Consider these factors: the mineralogy of the ore and waste rock (e.g., acid forming); toxicity and quantity of chemicals used, produced, or discharged; the likelihood of contact with storm water; vegetation of site (if any); and history of significant leaks or spills of toxic or hazardous pollutants. Also include a summary of any existing ore or waste rock or overburden characterization data and test results for potential generation of acid rock. If any new data is acquired due to changes in ore type being mined, update your SWPPP with this information.
- d. *Documentation of Control Measures*. Document all control measures that you implement consistent with Condition 4.b above. If control measures are implemented or planned but are not listed in Condition 4.b (e.g., substituting a less toxic chemical for a more toxic one), include descriptions of them in your SWPPP.
- e. *Employee Training*. All employee training(s) must be documented in the SWPPP.

**6. Additional Inspection Requirements.**

Except for areas of the site subject to clearing, grading, and/or excavation activities conducted as part of the exploration and construction phase, which are subject to Condition 3.b.i above, inspect sites at least quarterly unless adverse weather conditions make the site inaccessible. Sites which discharge to waters designated as outstanding waters or waters that are impaired for sediment or nitrogen must be inspected monthly.

## 7. Applicability of Section Coverage.

- a. *Coverage for Sites Reclaimed After December 17, 1990.* A site or a portion of a site that has been released from applicable state or federal reclamation requirements after December 17, 1990, is not required to comply with this section of the permit. If the site or portion of a site reclaimed after December 17, 1990, was not subject to reclamation requirements, the site or portion of the site is no longer required to comply with this section of the permit if the site or portion of the site has been reclaimed as defined in 6.b below.
- b. *Coverage for Sites Reclaimed Before December 17, 1990.* A site or portion of a site that was released from applicable state or federal reclamation requirements before December 17, 1990, or that was otherwise reclaimed before December 17, 1990, is not required to comply with this section of the permit if the site or portion of the site has been reclaimed. A site or portion of a site is considered to have been reclaimed if: (1) storm water runoff that comes into contact with raw materials, intermediate byproducts, finished products, and waste products does not have the potential to cause or contribute to violations of state water quality standards, (2) soil disturbing activities related to mining at the sites or portion of the site have been completed, (3) the site or portion of the site has been stabilized to minimize soil erosion, and (4) as appropriate depending on location, size, and the potential to contribute pollutants to storm water discharges, the site or portion of the site has been re-vegetated, will be amenable to natural re-vegetation, or will be left in a condition consistent with the post-mining land use.

## XII. Definitions, Abbreviations and Acronyms

### A. Definitions (for the purposes of this section):

**Action Area** – all areas to be affected directly or indirectly by the storm water discharges, allowable non-storm water discharges, and storm water discharge-related activities, and not merely the immediate area involved in these discharges and activities.

**Best Available Technology Economically Achievable (BAT)** – Best Available Technology Economically Achievable (BAT) is defined at Section 304(b)(2) of the CWA. In general, Best Available Technology Economically Achievable (BAT) represents the best available economically achievable performance of plants in the industrial subcategory or category. The factors considered in assessing BAT include the cost of achieving BAT effluent reductions, the age of equipment and facilities involved, the process employed, potential process changes, non-water quality environmental impacts, including energy requirements and other such factors as the EPA Administrator deems appropriate. EPA retains considerable discretion in assigning the weight according to these factors. BAT limitations may be based on effluent reductions attainable through changes in a facility's processes and operations. Where existing performance is uniformly inadequate, BAT may reflect a higher level of performance than is currently being achieved within a particular subcategory based on technology transferred from a different subcategory or category. BAT may be based upon process changes or internal controls, even when these technologies are not common industry practice.

**Best Conventional Pollution Control Technology (BCT)** – Best Conventional Pollutant Control Technology (BCT) is defined at Section 304(b)(4) of the CWA. The 1977 amendments to the CWA required EPA to identify effluent reduction levels for conventional pollutants associated with BCT for discharges from existing industrial point sources. In addition to the other factors specified in section 304(b)(4)(B), the CWA requires that EPA establish BCT limitations after consideration of a two part "cost-reasonableness" test. EPA explained its methodology for the development of BCT limitations in a Federal Register notice on July 9, 1986 (51 FR 24974).

**Best Management Practices (BMP)** – schedules of activities, practices (and prohibitions of practices), structures, vegetation, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants to waters of the United States. BMP also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. See S.C. R.61-9.122.2.

**Best Practicable Control Technology Currently Available (BPT)** – Best Practicable Control Technology Currently Available (BPT) is defined at Section 304(b)(1) of the Clean Water Act (CWA). EPA sets Best Practicable Control Technology Currently Available (BPT) effluent limitations for conventional, toxic, and non-conventional pollutants. Section 304(a)(4) designates the following as conventional pollutants: biochemical oxygen demand (BOD5), total suspended solids, fecal coliform, pH, and any additional pollutants defined by the Administrator as conventional. The Administrator designated oil and grease as an additional conventional pollutant on July 30, 1979 (see 44 FR 44501).

EPA has identified 65 pollutants and classes of pollutants as toxic pollutants, of which 126 specific substances have been designated priority toxic pollutants (see Appendix A to part 403, reprinted after 40 CFR 423.17). All other pollutants are considered to be non-conventional.

In specifying BPT, EPA looks at a number of factors. EPA first considers the total cost of applying the control technology in relation to the effluent reduction benefits. The Agency also considers the age of the equipment and facilities, the processes employed and any required process changes, engineering aspects of the control technologies, non-water quality environmental impacts (including energy requirements), and such other factors as the EPA Administrator deems appropriate. Traditionally, EPA establishes BPT effluent limitations based on the average of the best performance of facilities within the industry of various ages, sizes, processes or other common characteristics. Where existing performance is uniformly inadequate, BPT may reflect higher levels of control than currently in place in an industrial category if the Agency determines that the technology can be practically applied.

**Co-located Industrial Activities** – Any industrial activities, excluding your primary industrial activity, located on-site that are defined by the storm water regulations at 122.26(b)(14)(i)-(ix) and (xi). An activity at a facility is not considered co-located if the activity, when considered separately, does not meet the description of a category of industrial activity covered by the storm water regulations or identified by the SIC code list in Appendix D.

**Control Measure** – refers to any BMP or other method (including effluent limitations) used to prevent or reduce the discharge of pollutants to waters of the United States.

**The Department** - the South Carolina Department of Health and Environmental Control.

**Director** – a Regional Administrator of the Environmental Protection Agency or an authorized representative. See 40 CFR 122.2.

**Discharge** – when used without qualification, means the "discharge of a pollutant." See S.C. R.61-9. 122.2.

**Discharge of a Pollutant** – any addition of any “pollutant” or combination of pollutants to waters of the State or “waters of the United States” from any “point source,” or any addition of any pollutant or combination of pollutants to the waters of the “contiguous zone” or the ocean from any point source other than a vessel or other floating craft which is being used as a means of transportation. This includes additions of pollutants into waters of the United States from: surface runoff which is collected or channeled by man; discharges through pipes, sewers, or other conveyances, leading into privately owned treatment works. See S.C. R.61-9. 122.2.

**Discharge-related Activities** – activities that cause, contribute to, or result in storm water and allowable non-storm water point source discharges, and measures such as the siting, construction, and operation of BMP to control, reduce, or prevent pollution in the discharges.

**Drought-stricken area** – a period of below average water content in streams, reservoirs, ground-water aquifers, lakes and soils.

**EPA Approved or Established Total Maximum Daily Loads (TMDL)** – “EPA Approved TMDL” are those that are developed by the Department and approved by EPA. “EPA Established TMDL” are those that are developed by EPA.

**Existing Discharger** – an operator applying for coverage under this permit for discharges authorized previously under an NPDES general or individual permit.

**Facility or Activity** – any NPDES “point source” (including land or appurtenances thereto) that is subject to regulation under the NPDES program. See S.C. R.61-9. 122.2.

**Federal Facility** – any buildings, installations, structures, land, public works, equipment, aircraft, vessels, and other vehicles and property, owned by, or constructed or manufactured for the purpose of leasing to, the federal government.

**Impaired Water** (or “Water Quality Impaired Water” or “Water Quality Limited Segment”) – A water is impaired for purposes of this permit if it has been identified by a State or EPA pursuant to Section 303(d) of the Clean Water Act as not meeting applicable State water quality standards (these waters are called “water quality limited segments” under 40 CFR 30.2(j)). Impaired waters include both waters with approved or established TMDL, and those for which a TMDL has not yet been approved or established. Refer to the following website for more information on impaired waterbodies: <http://www.scdhec.gov/tmdl/>

**Indian Country** – (a) all land within the limits of any Indian reservation under the jurisdiction of the United States Government, notwithstanding the issuance of any patent, and including rights-of-way running through the reservation; (b) all dependent Indian communities within the borders of the United States, whether within the original or subsequently acquired territory thereof, and whether within or without the limits of a State, and (c) all Indian allotments, the Indian titles to which have not been extinguished, including rights-of-way running through the same. This definition includes all land held in trust for an Indian tribe. (18 U.S.C. 1151)

**Industrial Activity** – the 10 categories of industrial activities included in the definition of “storm water discharges associated with industrial activity” as defined in S.C. R.61-9.122.26(b)(14)(i)-(ix) and (xi). NOTE: Storm water associated with construction activity, as defined at S.C. R.61-9.122.26(b)(14)(x) and (15), are not covered by this permit.

**Industrial Storm Water** – storm water runoff from industrial activity.

**Minimize** - reduce and/or eliminate to the extent achievable using control measures (including best management practices) that are technologically available and economically practicable and achievable in light of best industry practices.

**Municipal Separate Storm Sewer** – a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

- (i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States;
- (ii) Designed or used for collecting or conveying storm water;
- (iii) Which is not a combined sewer; and
- (iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at S.C. R.61-9.122.2. See S.C. R.61-9.122.26(b)(4) and (b)(7).

*Note: Additional information on the State's MS4 program, including a listing of small MS4, may be found at <http://www.scdhec.gov/environment/water/swnsms4.htm>.*

**Natural Background Pollutant Levels** – Concentrations or mass loadings of specific chemical parameters in storm water runoff that result from naturally occurring levels in soils, groundwater, or native biota. Natural background pollutant levels do not include legacy pollutants from earlier activity on your site, or pollutants in run-on from neighboring sources which are not naturally occurring.

**New Discharger** – an operator applying for coverage under this permit for discharges not authorized previously under an NPDES general or individual permit.

**New Source** – any building, structure, facility, or installation from which there is or may be a “discharge of pollutants,” the construction of which commenced:

- a. after promulgation of standards of performance under section 306 of the CWA which are applicable to such source, or
- b. after proposal of standards of performance in accordance with section 306 of the CWA which are applicable to such source, but only if the standards are promulgated in accordance with section 306 within 120 days of their proposal. See S.C. R.61-9. 122.2.

**New Source Performance Standards (NSPS)** – technology-based standards for facilities that qualify as new sources under S.C. R.61-9.122.2 and 122.29.

**No exposure** – all industrial materials or activities are protected by a storm-resistant shelter to prevent exposure to rain, snow, snowmelt, and/or runoff. See S.C. R.61-9. 122.26(g).

**Operator** – any entity with a storm water discharge associated with industrial activity that meets either of the following two criteria:

- a. The entity has operational control over industrial activities, including the ability to modify those activities; or
- b. The entity has day-to-day operational control of activities at a facility necessary to ensure compliance with the permit (e.g., the entity is authorized to direct workers at a facility to carry out activities required by the permit).

**Person** – an individual, association, partnership, corporation, municipality, State or Federal agency, or an agent or employee thereof. See S.C. R.61-9. 122.2.



**Point source** – any discernible, confined, and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel, or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff. See S.C. R.61-9. 122.2.

**Pollutant** – dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials (except those regulated under the Atomic Energy Act [42 U.S.C. 2011, et seq.]), heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal, and agricultural waste discharged into water. See S.C. R.61-9. 122.2.

**Pollutant of concern** – A pollutant which causes or contributes to a violation of a water quality standard, including a pollutant which is identified as causing an impairment in a state's 303(d) list.

**Primary industrial activity** – includes any activities performed on-site which are (1) identified by the facility's primary SIC code; or (2) included in the narrative descriptions of 122.26(b)(14)(i), (iv), (v), or (vii), and (ix). [For co-located activities covered by multiple SIC codes, it is recommended that the primary industrial determination be based on the value of receipts or revenues or, if such information is not available for a particular facility, the number of employees or production rate for each process may be compared. The operation that generates the most revenue or employs the most personnel is the operation in which the facility is primarily engaged. In situations where the vast majority of on-site activity falls within one SIC code, that activity may be the primary industrial activity.] Narrative descriptions in S.C. R.61-9. 122.26(b)(14) identified above include: (i) activities subject to storm water effluent limitations guidelines, new source performance standards, or toxic pollutant effluent standards; (iv) hazardous waste treatment storage, or disposal facilities including those that are operating under interim status or a permit under subtitle C of the Resource Conservation and Recovery Act (RCRA); (v) landfills, land application sites and open dumps that receive or have received industrial wastes; (vii) steam electric power generating facilities; and (ix) sewage treatment works as defined at S.C. R.61-9.122.26(b)(14)(ix).

**Qualified Personnel** – personnel who possess the knowledge and skills to assess conditions and activities that could impact storm water quality at your facility, and who can also evaluate the effectiveness of control measures.

**Reportable Quantity Release** – a release of a hazardous substance at or above the established legal threshold that requires emergency notification. Refer to 40 CFR Parts 110, 117, and 302 for complete definitions and reportable quantities for which notification is required.

**Runoff coefficient** – the fraction of total rainfall that will appear at the conveyance as runoff. See S.C. R.61-9.122.26(b)(11).

**Significant materials** – includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under section 101(14) of CERCLA; any chemical the facility is required to report pursuant to section 313 of Title III of SARA; fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with storm water discharges. See S.C. R.61-9.122.26(b)(12).

**Special Aquatic Sites** – sites identified in 40 CFR 230 Subpart E. These are geographic areas, large or small, possessing special ecological characteristics of productivity, habitat, wildlife protection, or other important and easily disrupted ecological values. These areas are generally recognized as significantly influencing or positively contributing to the general overall environmental health or vitality of the entire ecosystem of a region.

**Storm Water** – storm water runoff, snow melt runoff, and surface runoff and drainage. See S.C. R.61-9.122.26(b)(13).

**Storm Water Discharges Associated with Construction Activity** – a discharge of pollutants in storm water runoff from areas where soil disturbing activities (e.g., clearing, grading, or excavating), construction materials, or equipment storage or maintenance (e.g., fill piles, borrow areas, concrete truck washout, fueling), or other industrial storm water directly related to the construction process (e.g., concrete or asphalt batch plants) are located. See S.C. R.61-9. 122.26(b)(14)(x) and (15).

**Storm Water Discharges Associated with Industrial Activity** – the discharge from any conveyance that is used for collecting and conveying storm water and that is directly related to manufacturing, processing or raw materials storage areas at an industrial plant. The term does not include discharges from facilities or activities excluded from the NPDES program under Part 122. For the categories of industries identified in this section, the term includes, but is not limited to, storm water discharges from industrial plant yards; immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material, or by-products used or created by the facility; material handling sites; refuse sites; sites used for the application or disposal of process waste waters (as defined at 40 CFR part 401); sites used for the storage and maintenance of material handling equipment; sites used for residual treatment, storage, or disposal; shipping and receiving areas; manufacturing buildings; storage areas (including tank farms) for raw materials, and intermediate and final products; and areas where industrial activity has taken place in the past and significant materials remain and are exposed to storm water. For the purposes of this paragraph, material handling activities include storage, loading and unloading, transportation, or conveyance of any raw material, intermediate product, final product, by-product or waste product. The term excludes areas located on plant lands separate from the plant's industrial activities, such as office buildings and accompanying parking lots as long as the drainage from the excluded areas is not mixed with storm water drained from the above described areas. Industrial facilities include those that are federally, State, or municipally owned or operated that meet the description of the facilities listed in S.C. R.61-9. 122.26(b)(14). The term also includes those facilities designated under the provisions of S.C. R.61-9. 122.26(a)(1)(v).

**Substantially Identical Outfalls** - outfalls that have generally similar industrial activities, control measures, exposed materials that may significantly contribute pollutants to stormwater, and runoff coefficients of their drainage areas.

**Total Maximum Daily Load (TMDL)** –a calculation of the maximum amount of a pollutant that a water body can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources. A TMDL includes wasteload allocations (WLA) for point source discharges; load allocations (LA) for nonpoint sources and/or natural background, and must include a margin of safety (MOS) and account for seasonal variations. (See section 303(d) of the Clean Water Act and 40 CFR 130.2 and 130.7).

**Uncontaminated** - free from the presence of pollutants attributable to industrial activity.

**Water Quality Impaired** – See ‘Impaired Water’.

**Water Quality Standards** – definition of the water quality goals of a water body, or portion thereof, by designating the use or uses to be made of the water and by setting criteria necessary to protect the uses. States and EPA adopt water quality standards to protect public health or welfare, enhance the quality of water and serve the purposes of the Clean Water Act (See CWA sections 101(a)2 and 303(c)) and the S.C. Pollution Control Act, S.C. Code 48-1-10, et seq. Water quality standards also include an anti-degradation policy.

**Waters of the State** - means lakes, bays, sounds, ponds, impounding reservoirs, springs, wells, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic Ocean within the territorial limits of the State, and all other bodies of surface or underground water, natural or artificial, public or private, inland or coastal, fresh or salt, which are wholly or partially within or bordering the State or within its jurisdiction.

**“You” and “Your”** – as used in this permit are intended to refer to the permittee, the operator, or the discharger as the context indicates and that party’s facility or responsibilities. The use of “you” and “your” refers to a particular facility and not to all facilities operated by a particular entity. For example, “you must submit” means the permittee must submit something for that particular facility. Likewise, “all your discharges” would refer only to discharges at that one facility.

B. Abbreviations and Acronyms

BAT – Best Available Technology Economically Achievable

BCT - Best Conventional Pollutant Control Technology

BOD<sub>5</sub> – Biochemical Oxygen Demand (5-day test)

BMP – Best Management Practice

BPT – Best Practicable Control Technology Currently Available

CERCLA – Comprehensive Environmental Response, Compensation and Liability Act

CGP – Construction General Permit

COD – Chemical Oxygen Demand

CWA – Clean Water Act (or the Federal Water Pollution Control Act, 33 U.S.C. §1251 *et seq*)

CWT – Centralized Waste Treatment

DMR – Discharge Monitoring Report

EPA – U. S. Environmental Protection Agency

ESA – Endangered Species Act

FWS – U. S. Fish and Wildlife Service

IGP - S.C. Industrial Storm Water General NPDES permit

LA – Load Allocations

MDMR – MSGP Discharge Monitoring Report

MGD – Million Gallons per Day

MOS – Margin of Safety

MS4 – Municipal Separate Storm Sewer System

MSDS – Material Safety Data Sheet

MSGP – Multi-Sector General Permit

NAICS – North American Industry Classification System

NEPA – National Environmental Policy Act

NHPA – National Historic Preservation Act

NMFS – U. S. National Marine Fisheries Service

NOI – Notice of Intent

NOT – Notice of Termination

NPDES – National Pollutant Discharge Elimination System

NRC – National Response Center

NRHP – National Register of Historic Places

NSPS – New Source Performance Standard

NTU – Nephelometric Turbidity Unit

OMB – U. S. Office of Management and Budget

ORW – Outstanding Resource Water

ONRW - Outstanding National Resource Water

OSM – U. S. Office of Surface Mining

PCA – the South Carolina Pollution Control Act, S.C. Code 48-1-10, et. seq.

POTW – Publicly Owned Treatment Works

RCRA – Resource Conservation and Recovery Act

RQ – Reportable Quantity

SARA – Superfund Amendments and Reauthorization Act

SHPO – State Historic Preservation Officer

SIC – Standard Industrial Classification

SMCRA – Surface Mining Control and Reclamation Act

SPCC – Spill Prevention, Control, and Countermeasures

SWPPP – Storm Water Pollution Prevention Plan

THPO – Tribal Historic Preservation Officer

TMDL – Total Maximum Daily Load

TSDf – Treatment, Storage, or Disposal Facility

TSS – Total Suspended Solids

USGS – United States Geological Survey

WLA – Wasteload Allocation

WQS – Water Quality Standard

### XIII. Facilities and Activities Covered

These sector descriptions are based on Standard Industrial Classification (SIC) Codes and Industrial Activity Codes. References to “sectors” in this permit (e.g., sector-specific monitoring requirements) refer to these groupings.

<b>Table XIII-1. Sectors of Industrial Activity</b>		
<b>Subsector (May be subject to more than one sector/subsector)</b>	<b>SIC Code or Activity Code<sup>1</sup></b>	<b>Activity Represented</b>
<b>SECTOR A: TIMBER PRODUCTS</b>		
A1	2421	General Sawmills and Planing Mills
A2	2491	Wood Preserving
A3	2411	Log Storage and Handling

<b>Table XIII-1. Sectors of Industrial Activity</b>		
<b>Subsector (May be subject to more than one sector/subsector)</b>	<b>SIC Code or Activity Code<sup>1</sup></b>	<b>Activity Represented</b>
A4	2426	Hardwood Dimension and Flooring Mills
	2429	Special Product Sawmills, Not Elsewhere Classified
	2431-2439 (except 2434)	Millwork, Veneer, Plywood, and Structural Wood (see Sector W)
	2448	Wood Pallets and Skids
	2449	Wood Containers, Not Elsewhere Classified
	2451, 2452	Wood Buildings and Mobile Homes
	2493	Reconstituted Wood Products
	2499	Wood Products, Not Elsewhere Classified
A5	2441	Nailed and Lock Corner Wood Boxes and Shook
<b>SECTOR B: PAPER AND ALLIED PRODUCTS</b>		
B1	2631	Paperboard Mills
B2	2611	Pulp Mills
	2621	Paper Mills
	2652-2657	Paperboard Containers and Boxes
	2671-2679	Converted Paper and Paperboard Products, Except Containers and Boxes
<b>SECTOR C: CHEMICALS AND ALLIED PRODUCTS</b>		
C1	2873-2879	Agricultural Chemicals
C2	2812-2819	Industrial Inorganic Chemicals
C3	2841-2844	Soaps, Detergents, and Cleaning Preparations; Perfumes, Cosmetics, and Other Toilet Preparations
C4	2821-2824	Plastics Materials and Synthetic Resins, Synthetic Rubber, Cellulosic and Other Manmade Fibers Except Glass
C5	2833-2836	Medicinal Chemicals and Botanical Products; Pharmaceutical Preparations; in vitro and in vivo Diagnostic Substances; and Biological Products, Except Diagnostic Substances
	2851	Paints, Varnishes, Lacquers, Enamels, and Allied Products
	2861-2869	Industrial Organic Chemicals
	2891-2899	Miscellaneous Chemical Products
	3952 (limited to list of inks and paints)	Inks and Paints, Including China Painting Enamels, India Ink, Drawing Ink, Platinum Paints for Burnt Wood or Leather Work, Paints for China Painting, Artist's Paints and Artist's Watercolors
	2911	Petroleum Refining
<b>SECTOR D: ASPHALT PAVING AND ROOFING MATERIALS AND LUBRICANTS</b>		
D1	2951, 2952	Asphalt Paving and Roofing Materials
D2	2992, 2999	Miscellaneous Products of Petroleum and Coal
<b>SECTOR E: GLASS, CLAY, CEMENT, CONCRETE, AND GYPSUM PRODUCTS</b>		
E1	3251-3259	Structural Clay Products
	3261-3269	Pottery and Related Products
E2	3271-3275	Concrete, Gypsum, and Plaster Products
E3	3211	Flat Glass
	3221, 3229	Glass and Glassware, Pressed or Blown
	3231	Glass Products Made of Purchased Glass
	3241	Hydraulic Cement
	3281	Cut Stone and Stone Products
	3291-3299	Abrasive, Asbestos, and Miscellaneous Nonmetallic Mineral Products
<b>SECTOR F: PRIMARY METALS</b>		
F1	3312-3317	Steel Works, Blast Furnaces, and Rolling and Finishing Mills
F2	3321-3325	Iron and Steel Foundries

<b>Table XIII-1. Sectors of Industrial Activity</b>		
<b>Subsector (May be subject to more than one sector/subsector)</b>	<b>SIC Code or Activity Code<sup>1</sup></b>	<b>Activity Represented</b>
F3	3351-3357	Rolling, Drawing, and Extruding of Nonferrous Metals
F4	3363-3369	Nonferrous Foundries (Castings)
F5	3331-3339	Primary Smelting and Refining of Nonferrous Metals
	3341	Secondary Smelting and Refining of Nonferrous Metals
	3398, 3399	Miscellaneous Primary Metal Products
<b>SECTOR G: METAL MINING (ORE MINING AND DRESSING)</b>		
G1	1021	Copper Ore and Mining Dressing Facilities
G2	1011	Iron Ores
	1021	Copper Ores
	1031	Lead and Zinc Ores
	1041, 1044	Gold and Silver Ores
	1061	Ferroalloy Ores, Except Vanadium
	1081	Metal Mining Services
	1094, 1099	Miscellaneous Metal Ores
<b>SECTOR H: [Reserved.] COAL MINES AND COAL MINING-RELATED FACILITIES</b>		
<b>SECTOR I: [Reserved.] OIL AND GAS EXTRACTION AND REFINING</b>		
<b>SECTOR J: [Reserved.] MINERAL MINING AND DRESSING</b>		
<b>SECTOR K: HAZARDOUS WASTE TREATMENT, STORAGE, OR DISPOSAL FACILITIES</b>		
K1	HZ	Hazardous Waste Treatment, Storage, or Disposal Facilities, including those that are operating under interim status or a permit under subtitle C of RCRA
<b>SECTOR L: LANDFILLS, LAND APPLICATION SITES, AND OPEN DUMPS</b>		
L1	LF	All Landfill, Land Application Sites and Open Dumps
L2	LF	All Landfill, Land Application Sites and Open Dumps, except Municipal Solid Waste Landfill (MSWLF) Areas Closed in Accordance with 40 CFR 258.60
<b>SECTOR M: AUTOMOBILE SALVAGE YARDS</b>		
M1	5015	Automobile Salvage Yards
<b>SECTOR N: SCRAP RECYCLING FACILITIES</b>		
N1	5093	Scrap Recycling and Waste Recycling Facilities except Source-Separated Recycling
N2	5093	Source-separated Recycling Facility
<b>SECTOR O: STEAM ELECTRIC GENERATING FACILITIES</b>		
O1	SE	Steam Electric Generating Facilities, including coal handling sites
<b>SECTOR P: LAND TRANSPORTATION AND WAREHOUSING</b>		
P1	4011, 4013	Railroad Transportation
	4111-4173	Local and Highway Passenger Transportation
	4212-4231	Motor Freight Transportation and Warehousing
	4311	United States Postal Service
	5171	Petroleum Bulk Stations and Terminals
<b>SECTOR Q: WATER TRANSPORTATION</b>		
Q1	4412-4499	Water Transportation Facilities
<b>SECTOR R: SHIP AND BOAT BUILDING AND REPAIRING YARDS</b>		
R1	3731, 3732	Ship and Boat Building or Repairing Yards
<b>SECTOR S: AIR TRANSPORTATION FACILITIES</b>		
S1	4512-4581	Air Transportation Facilities

<b>Table XIII-1. Sectors of Industrial Activity</b>		
<b>Subsector (May be subject to more than one sector/subsector)</b>	<b>SIC Code or Activity Code<sup>1</sup></b>	<b>Activity Represented</b>
<b>SECTOR T: TREATMENT WORKS</b>		
T1	TW	Treatment Works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated to the disposal of sewage sludge that are located within the confines of the facility, with a design flow of 1.0 mgd or more, or required to have an approved pretreatment program under 40 CFR Part 403. Not included are farm lands, domestic gardens or lands used for sludge management where sludge is beneficially reused and which are not physically located in the confines of the facility, or areas that are in compliance with section 405 of the CWA
<b>SECTOR U: FOOD AND KINDRED PRODUCTS</b>		
U1	2041-2048	Grain Mill Products
U2	2074-2079	Fats and Oils Products
U3	2011-2015	Meat Products
	2021-2026	Dairy Products
	2032-2038	Canned, Frozen, and Preserved Fruits, Vegetables, and Food Specialties
	2051-2053	Bakery Products
	2061-2068	Sugar and Confectionery Products
	2082-2087	Beverages
	2091-2099	Miscellaneous Food Preparations and Kindred Products
	2111-2141	Tobacco Products
<b>SECTOR V: TEXTILE MILLS, APPAREL, AND OTHER FABRIC PRODUCT MANUFACTURING; LEATHER AND LEATHER PRODUCTS</b>		
V1	2211-2299	Textile Mill Products
	2311-2399	Apparel and Other Finished Products Made from Fabrics and Similar Materials
	3131-3199	Leather and Leather Products (note: see Sector Z1 for Leather Tanning and Finishing)
<b>SECTOR W: FURNITURE AND FIXTURES</b>		
W1	2434	Wood Kitchen Cabinets
	2511-2599	Furniture and Fixtures
<b>SECTOR X: PRINTING AND PUBLISHING</b>		
X1	2711-2796	Printing, Publishing, and Allied Industries
<b>SECTOR Y: RUBBER, MISCELLANEOUS PLASTIC PRODUCTS, AND MISCELLANEOUS MANUFACTURING INDUSTRIES</b>		
Y1	3011	Tires and Inner Tubes
	3021	Rubber and Plastics Footwear
	3052, 3053	Gaskets, Packing and Sealing Devices, and Rubber and Plastic Hoses and Belting
	3061, 3069	Fabricated Rubber Products, Not Elsewhere Classified
Y2	3081-3089	Miscellaneous Plastics Products
	3931	Musical Instruments
	3942-3949	Dolls, Toys, Games, and Sporting and Athletic Goods
	3951-3955 (except 3952 – see Sector C)	Pens, Pencils, and Other Artists' Materials
	3961, 3965	Costume Jewelry, Costume Novelties, Buttons, and Miscellaneous Notions, Except Precious Metal
	3991-3999	Miscellaneous Manufacturing Industries



<b>Table XIII-1. Sectors of Industrial Activity</b>		
<b>Subsector (May be subject to more than one sector/subsector)</b>	<b>SIC Code or Activity Code<sup>1</sup></b>	<b>Activity Represented</b>
<b>SECTOR Z: LEATHER TANNING AND FINISHING</b>		
Z1	3111 (also see sector V.)	Leather Tanning and Finishing
<b>SECTOR AA: FABRICATED METAL PRODUCTS</b>		
AA1	3411-3499 (except 3479)	Fabricated Metal Products, Except Machinery and Transportation Equipment, and Coating, Engraving, and Allied Services.
	3911-3915	Jewelry, Silverware, and Plated Ware
AA2	3479	Fabricated Metal Coating and Engraving
<b>SECTOR AB: TRANSPORTATION EQUIPMENT, INDUSTRIAL OR COMMERCIAL MACHINERY</b>		
AB1	3511-3599 (except 3571-3579)	Industrial and Commercial Machinery, Except Computer and Office Equipment (see Sector AC)
	3711-3799 (except 3731, 3732)	Transportation Equipment Except Ship and Boat Building and Repairing (see Sector R)
<b>SECTOR AC: ELECTRONIC, ELECTRICAL, PHOTOGRAPHIC, AND OPTICAL GOODS</b>		
AC1	3571-3579	Computer and Office Equipment
	3812-3873	Measuring, Analyzing, and Controlling Instruments; Photographic and Optical Goods, Watches, and Clocks
	3612-3699	Electronic and Electrical Equipment and Components, Except Computer Equipment
<b>SECTOR AD: NON-CLASSIFIED FACILITIES</b>		
AD1	Other stormwater discharges designated by the Director as needing a permit (see 40 CFR 122.26(a)(9)(i)(C) & (D)) or any facility discharging stormwater associated with industrial activity not described by any of Sectors A-AC. NOTE: Facilities may not elect to be covered under Sector AD. Only the Director may assign a facility to Sector AD.	

<sup>1</sup> A complete list of SIC Codes can be found at: [http://www.osha.gov/pls/imis/sic\\_manual.html](http://www.osha.gov/pls/imis/sic_manual.html)  
Conversions to and from the newer North American Industry Classification System” (NAICS)) can be obtained from the Internet at: <http://www.census.gov/eos/www/naics/concordances/concordances.html> or in paper form from various locations in the document titled *Handbook of Standard Industrial Classifications*, Office of Management and Budget, 1987

**FACT SHEET  
AND  
PERMIT RATIONALE**



**Haile Gold Mine Inc  
NPDES Permit No. SC0040479**

Permitting Engineer: Byron M Amick

July 10, 2013

Facility Rating:  Major  Minor

Issuance (New)  Reissuance  Modification  Minor Modification

If any part of this application is for a new facility or expansion of an existing facility or increase in permitted limits, an antidegradation review may be required per the requirements of R.61-68.D. If required, the antidegradation review will be included as part of the permit application.

Site Address: 7283 Haile Gold Mine Road, Kershaw, SC 29067

County: Lancaster

Watershed: Basin 04 (Pee Dee Basin)

Facility Description (include SIC code): This facility is a historic open pit gold mining and processing operation, which has been mined intermittently since 1827. The site is currently in the "Interim Reclamation" phase. The facility proposes to restart active mining and ore processing in the near future. SIC Code is 1041; Metal Mining-Gold Ores

Receiving Waters and Classification by outfall: 002 - Haile Gold Mine Creek (FW), 003 (proposed) - North Fork of Haile Gold Mine Creek (FW)

Is any discharge to Impaired Waters? Yes (see State 303(d) list for impaired waters)

If Yes, list the monitoring station number(s) and parameter(s) causing impairment: PD-006 (Little Lynches), fecal coliform and PD-632 (Little Lynches), biological

Is any discharge to a waterbody or for a parameter listed in an approved TMDL? No

If Yes, list the parameter(s) for which the TMDL is written and the waterbody segments impacted:

Does any discharge have the potential to affect a threatened or endangered species? No (endangered species information from SCDNR Heritage Trust, 2008)

If Yes, list the species and the waterbody in which the species resides:

Outfalls are discussed in Section I of this rationale with a general description of the discharge, treatment system, stream flows and other pertinent information about each outfall.

**EPA review of the draft permit is required if any box below is checked (Mark all that apply)**

Permits with discharges which may affect the waters of another State (Coordination with the other State is also required)

List State and name of waterbody(ies) that reach affected state: NA

Major permits

Permits with any discharge subject to any of the primary industrial categories (see R.61-9.122, Appendix A)

Permits with any discharge of process wastewater with an average flow exceeding 0.5 MGD

Permits which incorporate pollutant trading

Priority permits

Modification(s) to any permit listed above or a mod that changes a permit to put it into one of the above categories (where it previously was not)

List of Attachments to this Rationale:

Attachment 1	Permit Application
Attachment 2	Water Quality Spreadsheets
Attachment 3	Map of Drinking Water Intake/Source Water Protection Area Relative to Discharge
Attachment 4	Effluent Guidelines

I. PERMIT LIMITATIONS AND MONITORING REQUIREMENTS

**General Site Information**

Haile Gold Mine is located at the site of a historic intermittent mining operation dating back to 1827. Modern open pit gold mining and processing operations began in 1984 with the first NPDES permit issued in 1988. During the most recent operations gold was mined from eight separate pits. Ore was hauled to the processing facilities and the overburden and waste rock was placed in waste rock dumps. Heap leach, cyanide extraction, and carbon absorption methods were used to process gold and silver. Ore mining was discontinued in 1991 with processing for gold recovery ceasing in 1992. Since that time, both leach pad facilities have been capped for final closure. At this time the facility is in the "Interim Reclamation" phase of closure. There is a proposal to restart active mining at this site.

**Outfall 002**

Description of outfall, receiving water and wastewater treatment system: While still in the reclamation phase, the only wastewater at this facility is minimized drainage from closed facilities and storm water that enters the 002-collection system. This wastewater is treated by lime addition and is discharged to Haile Gold Mine Creek. This outfall is only allowed while the facility remains an inactive mine, prior to the start of active mining operation this outfall must be closed and a new outfall for the treated process wastewater discharge will be used (proposed outfall 003). The effluent guidelines for the Ore Mining and Dressing Point Source Category (40CFR 440) do not apply to this outfall. The sanitary wastewater from this facility discharges to a septic tank system.

Operator requirements: Based on the treatment system described above and the Pollution Control Act (PCA), the treatment system is classified as Group I-Physical/Chemical. The Environmental Certification Board Rules require that a Grade D-Physical/Chemical operator be assigned to operate this facility. Inspections of the facility will be required on a daily basis per Regulation 61-9.122.41(e).

Information for this outfall is based on the corrected NPDES Permit Application: 2C dated 1/9/2013

Data from Discharge Monitoring Reports (DMRs) and NPDES permit application (including all subsequent data presented) from 9/1/07 - 12/18/12 has been used to evaluate permit limitations.

This outfall is outside a state-approved source water protection area (SWPA) for a surface water drinking water intake, but has the potential to affect the intake. The affected intake (Intake #S22101) is owned by the City of Georgetown. The 7Q10 and AAF to be used for permitting MCL and water/organism criteria are given on the spreadsheet. Additional information on source water protection is provided in sections III.B and G of this rationale.

Previous permit limits are based on the permit (or modification) effective date of September 1, 2007.

All waterbody data is provided on the attached Water Quality Spreadsheets. This data includes 7Q10, annual average flow, dilution factors, hardness, TSS and other information as explained in this rationale. Additional information as necessary to explain the values used will be provided below.

**A. Flow, effluent**

1. Previous permit limits:
  - Monthly Average: MR, MGD
  - Daily Maximum: MR, MGD
  - Sampling Frequency: 2/month
  - Sample Type: instantaneous
2. NPDES Application: (No. of flow analyses: 11)
  - Long Term Average Value: 0.252 MGD
  - Maximum 30-day Value: 0.835 MGD
  - Maximum Daily Value: 0.835 MGD
3. DMR Data: The highest flow was reported in 11/10 as 0.604 MGD
4. Actual long-term average flow (from DMR): 0.178933 MGD
5. Conclusion: While the facility remains in the “Interim Reclamation” phase, flow monitoring will continue as previously permitted.
  - Monthly Average: MR, MGD
  - Daily Maximum: MR, MGD
  - Sampling Frequency: 2/month
  - Sample Type: instantaneous

**B. pH**

1. Previous permit limits: 6.0 – 8.5 standard units.
  - Sampling Frequency: 2/month
  - Sample Type: grab
2. NPDES Application: (No. of pH analyses: 14)
  - minimum: 6.98 standard unit
  - maximum: 8.43 standard units
3. DMR Data: The highest value was reported in 3/08 as 8.43 standard units. The lowest value was reported in 3/09 as 6.4 standard units.
4. *S.C. Water Classifications and Standards (S.C. Reg. 61-68)*: Section G.10.f. states that the Class **FW** standards for pH shall be “between 6.0 and 8.5”.
5. Conclusion: Based on SC Water Standards, the limitation shall remain between 6.0 and 8.5.
  - Sampling Frequency: 2/month
  - Sample Type: grab

**C. Total Suspended Solids (TSS)**

1. Previous permit limits:
  - Monthly Average: 20 mg/l
  - Daily Maximum: 30 mg/l
  - Sampling Frequency: 2/month
  - Sample Type: grab
2. NPDES Application: (No. of TSS analyses: 1)
  - Long Term Average Value: --
  - Maximum 30-day Value: --
  - Maximum Daily Value: 9.0 mg/l
3. DMR Data: The highest TSS was reported in 8/10 as 12 mg/l
4. PQL: 1.0 mg/l (Method SM2540D)
5. Conclusion: Due to antibacksliding regulations the limitation shall remain as previously permitted.
  - Monthly Average: 20 mg/l
  - Daily Maximum: 30 mg/l
  - Sampling Frequency: 2/month
  - Sample Type: grab

**D. Copper, total**

1. Previous permit limits:
  - Monthly Average: 0.015 mg/l
  - Daily Maximum: 0.022 mg/l
  - Sampling Frequency: 2/month
  - Sample Type: grab
2. NPDES Application: (No. of analyses: 1)
  - Long Term Average Value: --
  - Maximum 30-day Value: --
  - Maximum Daily Value: <0.0011 mg/l
3. Background Data from Station PD-334 from June 1999 to March 2008:  
(8 samples taken; only one was above the State PQL, it is: 9/30/99 – 0.010 mg/l)
  - Median: 0.0000 mg/l
  - 90<sup>th</sup> percentile: 0.0030 mg/l
4. DMR Data: The highest value was reported in 1/11 as 0.096 mg/l
5. Water Quality Criteria: See Spreadsheet in Appendix 1.
6. Does the discharge cause, have the Reasonable Potential to Cause or Contribute: Yes (considering the DMR data)
7. PQL: 10.0 µg/l (Methods 200.7, 200.8, 200.9, SM3113B)
8. Conclusion: The occasional copper detection in the DMR sampling is enough to show that there is a reasonable potential, therefore a limit must remain on the permit. Due to anti-backsliding regulations the permit limit will remain as previously permitted.
  - Monthly Average: 0.015 mg/l = 15 µg/l
  - Daily Maximum: 0.022 mg/l = 22 µg/l
  - Sampling Frequency: 2/month
  - Sample Type: grab

**E. Silver, total**

1. Previous permit limits: not limited
2. NPDES Application: (No. of analyses: 1)
  - Long Term Average Value: --
  - Maximum 30-day Value: --
  - Maximum Daily Value: 0.62 µg/l
3. Background Data from Station PD-334 from June 1999 to March 2008: not sampled
4. DMR Data: not limited
5. Water Quality Criteria: See Spreadsheet in Appendix 1.
6. Does the discharge cause, have the Reasonable Potential to Cause or Contribute: No
7. PQL: 5.0 µg/l (Methods 200.8, 200.9, SM3113B)
8. Conclusion: After using the dissolved metal calculation with up-to-date effluent hardness data, silver was shown to have NO Reasonable Potential to Cause or Contribute, therefore no limit for silver will be placed on this outfall.

**F. Total Residual Chlorine (TRC)**

1. Previous permit limits: not limited
2. NPDES Application: (No. of analyses: 1)
  - Long Term Average Value: --
  - Maximum 30-day Value: --
  - Maximum Daily Value: < 1.0 mg/l
3. DMR Data: not limited

4. Additional Data: The data reported on the 2C application was less than detect, but the lab did not have a detection limit equal to or better than the State's acceptable PQL. Therefore an additional sample was tested to replace the data reported on the 2C application. On May 6, 2013 the Department received the test result that were < 0.05 mg/l. This new information will be used to determine reasonable potential for this parameter.
5. Water Quality Criteria: See Spreadsheet in Appendix 1.
6. Does the discharge cause, have the Reasonable Potential to Cause or Contribute: No
7. PQL: 50 µg/l (Methods SM4500Cl B, C, D, E, F or G)
8. Conclusion: Chlorine is not used to treat this wastestream. With the new data showing that the TRC concentration reported is less than the State's PQL there is no longer a reasonable potential. Based on this information the limitation for TRC will be removed from the draft permit.

#### **G. Other Parameters**

The Department ran a Reasonable Potential analysis on all other data reported on the 2C application. This analysis indicated that there was no reasonable potential for any other parameters to cause or contribute to a water quality violation.

#### **Outfall 003**

Description of outfall, receiving water and wastewater treatment system: This outfall will be located on the North Fork of Haile Gold Mine Creek, and will be used when the facility starts mining and processing ore. Outfall 002 will be eliminated around the time that outfall 003 becomes active. The effluent guidelines for the Ore Mining and Dressing Point Source Category (40CFR 440) Subpart J: New Source Performance Standards (NSPS) are applicable to this outfall. The WWTP to be built will be a 2-stage hydroxide precipitation process to remove insoluble metals from the water. During the new mining operation, Haile will tie their sanitary into the Town of Kershaw's sewer system; the septic systems from the existing operation will be closed as the new areas are built.

Operator requirements: It is anticipated that the treatment system described above, as per the Pollution Control Act (PCA), will be classified as Group III-Physical/Chemical. The Environmental Certification Board Rules would require that a Grade B-Physical/Chemical operator be assigned to operate this facility. Inspections of the facility will be required on a daily basis per Regulation 61-9.122.41(e).

Information for this outfall is based on the corrected NPDES Permit Application: 2D dated 12/26/2012

This outfall is outside a state-approved source water protection area (SWPA) for a surface water drinking water intake, but has the potential to affect the intake. The affected intake (Intake #S22101) is owned by the City of Georgetown. The 7Q10 and AAF to be used for permitting MCL and water/organism criteria are given on the spreadsheet. Additional information on source water protection is provided in sections III.B and G of this rationale.

All waterbody data is provided on the attached Water Quality Spreadsheets. This data includes 7Q10, annual average flow, dilution factors, hardness, TSS and other information as explained in this rationale. Additional information as necessary to explain the values used will be provided below.

#### **A. Flow, effluent**

1. Previous permit limits: new proposed outfall
2. NPDES Application:  
Average Flow: 1.7 MGD
3. Conclusion: The Department will require regular monitoring and reporting of the effluent flow to waters of the State, also it is important to understand how often this discharge occurs. Therefore this outfall will include a requirement to report the number of days the discharge occurs each month, plus the following.  
Monthly Average: MR, MGD  
Daily Maximum: MR, MGD  
Sampling Frequency: daily  
Sample Type: continuous

## B. pH

1. Previous permit limits: new proposed outfall
2. NPDES Application: not reported
3. 40 CFR Part 440-Ore Mining and Dressing Point-Source Category  
Subpart J-Copper, Lead, Zinc, Gold, Silver and Molybdenum Ores Subcategory  
Within the range of 6.0 to 9.0 at all times
4. *S.C. Water Classifications and Standards (S.C. Reg. 61-68)*: Section G.10.f. states that the Class **FW** standards for pH shall be “between 6.0 and 8.5”.
5. Conclusion: Based on SC Water Standards, the limitation shall be between 6.0 and 8.5.  
Sampling Frequency: daily  
Sample Type: continuous

## C. Total Suspended Solids (TSS)

1. Previous permit limits: new proposed outfall
2. NPDES Application: not reported
3. 40 CFR Part 440-Ore Mining and Dressing Point-Source Category  
Subpart J-Copper, Lead, Zinc, Gold, Silver and Molybdenum Ores Subcategory  
Section: § 440.104 – New Source Performance Standards  
Monthly Average: 20 mg/l  
Daily Maximum: 30 mg/l
4. PQL: 1.0 mg/l (Method SM2540D)
5. Conclusion: Limit will be set based on the federal regulations.  
Monthly Average: 20 mg/l  
Daily Maximum: 30 mg/l  
Sampling Frequency: 1/week  
Sample Type: 24-hour composite

## D. Cyanide, total

1. Previous permit limits: new proposed outfall
2. NPDES Application: not reported
3. Water Quality Criterion: see spreadsheet  
SC Regulation 61-68, *WATER CLASSIFICATIONS & STANDARDS* states that the aquatic life criteria are expressed as free cyanide, while the human health criteria are total cyanide.
4. PQL: 10 µg/l (Methods 335.4 Rev 1.0, SM4500Cn C,E)
5. Conclusion: The facility intends the gold extraction process to be a closed-loop process at the mill. The Federal Guidelines 40 CFR 440 states, that there shall be no discharge of process wastewater, except under specific conditions. The conditions that would allow a process wastewater discharge are listed in Part V.A of the permit. If the specified conditions are met and a discharge is needed, the permittee must meet the limits established in this outfall. It is expected that the facility will not need to discharge process wastewater at anytime during mining operations, but in order to be conservative and protect the receiving stream under these specified conditions cyanide limitations will be in the permit, and monitored only when conditions require the facility to discharge process wastewater. Therefore the Department will place cyanide limits on the discharge, based on the State Standards.  
Monthly Average: 140 µg/l  
Daily Maximum: 204 µg/l  
Sampling Frequency: 1/week  
Sample Type: grab

**E. Cyanide, free**

1. Previous permit limits: new proposed outfall
2. NPDES Application: not reported
3. Water Quality Criterion: see spreadsheet  
SC Regulation 61-68, *WATER CLASSIFICATIONS & STANDARDS* states that the aquatic life criteria are expressed as free cyanide, while the human health criteria are total cyanide.
4. PQL: 10 µg/l (Method OIA-1677-09)
5. Conclusion: The facility intends the gold extraction process to be a closed-loop process at the mill. The Federal Guidelines 40 CFR 440 states, that there shall be no discharge of process wastewater, except under specific conditions. The conditions that would allow a process wastewater discharge are listed in Part V.A of the permit. If the specified conditions are met and a discharge is needed the permittee must meet the limits established in this outfall. It is expected that the facility will not need to discharge process wastewater at anytime during mining operations, but in order to be conservative and protect the receiving stream under these specified conditions cyanide limitations will be in the permit, and monitored only when conditions require the facility to discharge process wastewater. Therefore the Department will place cyanide limits on the discharge, based on the State Standards.  
Monthly Average: 5.2 µg/l  
Daily Maximum: 22 µg/l  
Sampling Frequency: 1/week  
Sample Type: grab

**F. Total Sulfides as S**

1. Previous permit limits: new proposed outfall
2. NPDES Application: 6.1 mg/l (treated effluent)
3. Water Quality Data: See hydrogen sulfide.
4. Does the discharge cause, have the Reasonable Potential to Cause or Contribute: Yes
5. PQL: 1000 µg/l (Methods SM 4500 S<sup>2-</sup> E)
6. Conclusion: Based on reasonable potential a limit is required. But as stated in the SC Regulation 61-68, *WATER CLASSIFICATIONS & STANDARDS* the sulfide standard is sulfide-hydrogen sulfide. Therefore sulfide as S will be monitored.  
Monthly Average: MR mg/l  
Daily Maximum: MR mg/l  
Sampling Frequency: 1/week  
Sample Type: grab

**G. Hydrogen Sulfide Un-Ionized (H<sub>2</sub>S)**

1. Previous permit limits: new proposed outfall
2. NPDES Application: 6.1 mg/l (treated effluent)
3. Water Quality Data: see spreadsheet in Attachment 2  
Aquatic Life  
Water Quality Criteria from Reg. 61-68, Appendix  
Freshwater and saltwater:  
CCC = 2.0 µg/l  
CMC = None  
Monthly Average: 2 µg/l  
Daily Maximum: 2 x 2 µg/l = 4 µg/l



4. Other Information:

When soluble sulfides are added to water, they react with hydrogen ions to form hydrosulfide ( $\text{HS}^-$ ) and hydrogen sulfide ( $\text{H}_2\text{S}$ ), the proportion depending on the pH. The toxicity of sulfides drives primarily from  $\text{H}_2\text{S}$  rather than  $\text{HS}^-$  or sulfide (S).

5. PQL: 1.0 mg/l

6. Conclusion:  $\text{H}_2\text{S}$  is determined by calculation from total sulfides, temperature and pH data. Monitoring for temperature and pH must be performed at the time the sulfide sample is taken.

Monthly Average: 2.0  $\mu\text{g/l}$

Daily Maximum: 4.0  $\mu\text{g/l}$

Sampling Frequency: 1/week

Sample Type: calculation

**H. Hardness (as  $\text{CaCO}_3$ )**

1. Previous permit limits: new proposed outfall

2. NPDES Application: 2,200 mg/l (treated effluent)

3. Conclusion: Hardness data will be collected for use in the dissolved metals calculation.

Monthly Average: MR, mg/l

Daily Maximum: MR, mg/l

Sampling Frequency: 1/week

Sample Type: grab

**I. Arsenic, total**

1. Previous permit limits: new proposed outfall

2. NPDES Application: 3.7  $\mu\text{g/l}$  (treated effluent)

3. Water Quality Criteria: See Spreadsheet in Appendix 1.

4. Does the discharge cause, have the Reasonable Potential to Cause or Contribute: Yes

5. PQL: 5.0  $\mu\text{g/l}$  (Methods 200.8, 200.9, SM3113B)

6. Conclusion: Based on reasonable potential a limit is required. The permit limitation shall be:

Monthly Average: 10.0  $\mu\text{g/l}$

Daily Maximum: 14.6  $\mu\text{g/l}$

Sampling Frequency: 1/week

Sample Type: 24-hour composite

**J. Cadmium, total**

1. Previous permit limits: new proposed outfall

2. NPDES Application: not reported

3. 40 CFR Part 440-Ore Mining and Dressing Point-Source Category

Subpart J-Copper, Lead, Zinc, Gold, Silver and Molybdenum Ores Subcategory

Section: § 440.104 – New Source Performance Standards

Monthly Average: 0.05 mg/l

Daily Maximum: 0.10 mg/l

4. Water Quality Criteria: See Spreadsheet in Appendix 1.

5. Does the discharge cause, have the Reasonable Potential to Cause or Contribute: No

6. PQL: 0.10  $\mu\text{g/l}$  (Methods 200.8, 200.9, SM3113B)

7. Conclusion: Even though this parameter has no reasonable potential, the federal guidelines require it to be limited. The Department must compare the federal guideline concentrations to the concentrations derived from the State Standards and use the more stringent number as the permit limitation. Using the dissolved metal calculation to determine the State Standard, the standard is more stringent than the effluent guideline, therefore the permit limitation shall be:

Monthly Average: 2.4 µg/l  
Daily Maximum: 28.7 µg/l  
Sampling Frequency: 1/week  
Sample Type: 24-hour composite

#### **K. Copper, total**

1. Previous permit limits: new proposed outfall
2. NPDES Application: 8.2 µg/l (treated effluent)
3. 40 CFR Part 440-Ore Mining and Dressing Point-Source Category  
Subpart J-Copper, Lead, Zinc, Gold, Silver and Molybdenum Ores Subcategory  
Section: § 440.104 – New Source Performance Standards  
Monthly Average: 0.15 mg/l  
Daily Maximum: 0.30 mg/l
4. Water Quality Criteria: See Spreadsheet in Appendix 1.
5. Does the discharge cause, have the Reasonable Potential to Cause or Contribute: Yes
6. PQL: 10 µg/l (Methods 200.7, 200.8, 200.9, SM3113B)
7. Conclusion: There is a reasonable potential and a limitation is also required by the federal guidelines. The Department must compare the federal guideline concentrations to the concentrations derived from the State Standards and use the more stringent number as the permit limitation. Using the dissolved metal calculation to determine the State Standard, the standard is more stringent than the effluent guideline, therefore the permit limitation shall be:

Monthly Average: 94.9 µg/l  
Daily Maximum: 160.8 µg/l  
Sampling Frequency: 1/week  
Sample Type: 24-hour composite

#### **L. Lead, total**

1. Previous permit limits: new proposed outfall
2. NPDES Application: 0.16 µg/l (treated effluent)
3. 40 CFR Part 440-Ore Mining and Dressing Point-Source Category  
Subpart J-Copper, Lead, Zinc, Gold, Silver and Molybdenum Ores Subcategory  
Section: § 440.104 – New Source Performance Standards  
Monthly Average: 0.3 mg/l  
Daily Maximum: 0.6 mg/l
4. Water Quality Criteria: See Spreadsheet in Appendix 1.
5. Does the discharge cause, have the Reasonable Potential to Cause or Contribute: No
6. PQL: 2.0 µg/l (Methods 200.8, 200.9, SM3113B)
7. Conclusion: Even though this parameter has no reasonable potential, the federal guidelines require it to be limited. The Department must compare the federal guideline concentrations to the concentrations derived from the State Standards and use the more stringent number as the permit limitation. Using the dissolved metal calculation to determine the State Standard, the standard is more stringent than the effluent guideline for the monthly average, but the effluent guideline is the more stringent daily maximum, therefore the permit limitation shall be:

Monthly Average: 49.9 µg/l  
Daily Maximum: 600.0 µg/l  
Sampling Frequency: 1/week  
Sample Type: 24-hour composite

**M. Thallium, total**

1. Previous permit limits: new proposed outfall
2. NPDES Application: 0.29 µg/l (treated effluent)
3. Water Quality Criteria: See Spreadsheet in Appendix 1.
4. Does the discharge cause, have the Reasonable Potential to Cause or Contribute: Yes
5. PQL: 0.5 µg/l (Methods 200.8, 200.9, SM3113B)
6. Conclusion: Based on reasonable potential a limit is required. The permit limitation shall be:
  - Monthly Average: 0.47 µg/l
  - Daily Maximum: 0.69 µg/l
  - Sampling Frequency: 1/week
  - Sample Type: 24-hour composite

**N. Nickel, total**

1. Previous permit limits: new proposed outfall
2. NPDES Application: 8.6 µg/l (treated effluent)
3. Water Quality Criteria: See Spreadsheet in Appendix 1.
4. Does the discharge cause, have the Reasonable Potential to Cause or Contribute: No
5. PQL: 10 µg/l (Methods 200.8, 200.9, SM3113B)
6. Conclusion: After using the dissolved metal calculation with up-to-date effluent hardness data, nickel was shown to have NO Reasonable Potential to Cause or Contribute, therefore no limit for nickel will be placed on this outfall.

**O. Zinc, total**

1. Previous permit limits: new proposed outfall
2. NPDES Application: 5.7 µg/l (treated effluent)
3. 40 CFR Part 440-Ore Mining and Dressing Point-Source Category  
Subpart J-Copper, Lead, Zinc, Gold, Silver and Molybdenum Ores Subcategory  
Section: § 440.104 – New Source Performance Standards
  - Monthly Average: 0.75 mg/l
  - Daily Maximum: 1.5 mg/l
4. Water Quality Criteria: See Spreadsheet in Appendix 1.
5. Does the discharge cause, have the Reasonable Potential to Cause or Contribute: No
6. PQL: 10 µg/l (Methods 200.7, 200.8, 200.9, SM3113B)
7. Conclusion: Even though this parameter has no reasonable potential, the federal guidelines require it to be limited. The Department must compare the federal guideline concentrations to the concentrations derived from the State Standards and use the more stringent number as the permit limitation. Using the dissolved metal calculation to determine the State Standard, the effluent guideline is more stringent than the standard, therefore the permit limitation shall be:
  - Monthly Average: 750 µg/l
  - Daily Maximum: 1500 µg/l
  - Sampling Frequency: 1/week
  - Sample Type: 24-hour composite

**Q. Selenium, total**

1. Previous permit limits: new proposed outfall
2. NPDES Application: 2.1 µg/l (treated effluent)
3. Water Quality Criteria: See Spreadsheet in Appendix 1.
4. Does the discharge cause, have the Reasonable Potential to Cause or Contribute: Yes

5. PQL: 5.0 µg/l (Methods 200.8, 200.9, SM3113B)
6. Conclusion: Based on reasonable potential a limit is required. The permit limitation shall be:  
Monthly Average: 5.0 µg/l  
Daily Maximum: 20.0 µg/l  
Sampling Frequency: 1/week  
Sample Type: 24-hour composite

**R. Total Residual Chlorine (TRC)**

1. Previous permit limits: new proposed outfall
2. NPDES Application: not reported
3. Other Information: In the past when the facility was actively processing ore the NPDES permit had a TRC limitation.
4. Conclusion: After reviewing the proposed wastewater treatment system design, the new wastewater treatment system will be a 2-stage hydroxide precipitation process to remove insoluble metals from the water. This new system does not require chlorination, therefore no limit for this parameter will be established.

**S. Mercury, total**

1. Previous permit limits: new proposed outfall
2. NPDES Application: not reported
3. 40 CFR Part 440-Ore Mining and Dressing Point-Source Category  
Subpart J-Copper, Lead, Zinc, Gold, Silver and Molybdenum Ores Subcategory  
Section: § 440.104 – New Source Performance Standards  
Monthly Average: 0.001 mg/l  
Daily Maximum: 0.002 mg/l
4. Water Quality Criteria: See Spreadsheet in Appendix 1.
5. Does the discharge cause, have the Reasonable Potential to Cause or Contribute: No
6. PQL: 0.0005 µg/l (Methods 1669 (sampling)/1631E (analysis))
7. Conclusion: Even though this parameter has no reasonable potential, the federal guidelines require it to be limited. The Department must compare the federal guideline concentrations to the concentrations derived from the State Standards and use the more stringent number as the permit limitation. Therefore the permit limitation shall be:  
Monthly Average: 51.0 ng/l  
Daily Maximum: 74.5 ng/l  
Sampling Frequency: 1/week  
Sample Type: grab

**Whole Effluent Toxicity (WET) Requirements**

1. Previous permit limits: new proposed outfall
2. DMR Data: not limited
3. Discharge Method (outfall 003): The proposed discharge will be a single pipe discharge directly into North Fork of Haile Gold Mine Creek.
4. Mixing Zone and Zone of Initial Dilution (ZID) Information: discharge to a zero (0) 7Q10 stream, therefore no mixing zone or dilution is allowed.
5. Conclusion: This is a complex wastewater with metals and many of the permit limits are below the State's PQL; therefore the WET limits will be remain as previously permitted. The limitations are  
Monthly average\* = 25%  
Daily Maximum = 40%  
Chronic whole effluent toxicity testing shall be performed at a CTC = 100% using the dilution series  
0%(control) 50%, 60%, 71%, 84%, 100%  
Sampling Frequency: 1/month  
Sample Type: grab

### **Biological Monitoring Requirements**

As indicated on page one of this permit rationale, there is a monitoring station on the Little Lynches River below where Haile Gold Mine Creek enters the Little Lynches that is listed as impaired for biological. The Department has over two decades of assessment data conducted mostly in April and May in Haile Gold Mine Creek and Little Lynches River. It is recommended that assessments continue to be conducted in April or May of each year according to the approved Assessment/Study Plan, which will continue to include locations of the Little Lynches River. Therefore the Instream Macroinvertebrate Assessments will continue on an annual basis.

### **Groundwater Monitoring Requirements**

While the facility continues to operate in the interim reclamation phase, groundwater monitoring requirements will remain.

The Department's Groundwater Management Section has reviewed the permit conditions for possible changes. It is recommended that the permit maintain semi-annual sampling for monitoring well MW-1 for the following parameters:

- Water Table Elevation (to be reported to 0.01 feet above mean sea level)
- Depth to the Water (to be reported to 0.01 feet)
- Field pH
- Field Specific Conductance
- Total Dissolved Solids (TDS)
- Copper
- Iron
- Sulfate as SO<sub>4</sub>

It is also recommended that the permit maintain semi-annual sampling for five (5) other groundwater monitoring wells MW-4, MW-7, MW-8, MW-9 and MW-10 for the following parameters:

- Water Table Elevation (to be reported to 0.01 feet above mean sea level)
- Depth to the Water (to be reported to 0.01 feet)
- Field Specific Conductance

Should the closed pads or lime treatment system be removed then ongoing monitoring of these wells will no longer be necessary.

For future active mining operations at the site, the Department's Groundwater Management Section has determined that the Bureau of Land and Waste Management's Division of Mining and Solid Waste Management should handle any onsite groundwater monitoring. This permit would only include groundwater requirements if the groundwater is directly affected by the wastewater treatment from the onsite process.

A determination as to whether groundwater monitoring will be required for the proposed wastewater treatment basins will be taken once the designs for these basins have been finalized. As part of an overall wastewater treatment system these basins will require a permit to construct from the Industrial Wastewater Permitting Section.

**Threatened and Endangered Species Information**

There are no species that live in the Little Lynches River, which are listed by either the federal or state authorities as legally Endangered.

Within a 5-mile radius of the site there are six plant species and one animal that are “of concern”, the species, with their global and state rankings are as follows:

Species	Ranking	Species	Ranking
Sandhills Chub	G3, S2	Granite Rock Stonecrop	G3, S2
American Ginseng	G3G4, S4	Missouri Rock-cress	G5, S1
Necklace Sedge	G5, SH	Eastern Wahoo	G5, S1
Blue Cohosh	G4G5, S2		

Global rankings:

- G1 - Critically imperiled globally because of extreme rarity or because of some factor(s) making it especially vulnerable to extinction
- G2 - Imperiled globally because of rarity or factor(s) making it vulnerable
- G3 - Either very rare throughout its range or found locally in a restricted range, or having factors making it vulnerable
- G4 - Apparently secure globally, though it may be rare in parts of its range
- G5 - Demonstrably secure globally, though it may be rare in parts of its range
- G? - Status unknown

Q - **Questionable taxonomy that may reduce conservation priority** - Distinctiveness of this entity as a taxon or ecosystem type at the current level is questionable; resolution of this uncertainty may result in change from a species to a subspecies or hybrid, or inclusion of this taxon or type in another taxon or type, with the resulting taxon having a lower-priority (numerically higher) conservation status rank. The “Q” modifier is only used at a global level and not at a national or subnational level.

State or Subnational rankings:

- S1 -Critically imperiled state-wide because of extreme rarity or because of some factor(s) making it especially vulnerable to extirpation
- S2 -Imperiled state-wide because of rarity or factor(s) making it vulnerable
- S3 - Rare or uncommon in state
- S4 - Apparently secure in state
- S5 - Demonstrably secure in state
- S? - Status unknown

SNR - **Unranked**—National or subnational conservation status not yet assessed.

SH - **Possibly Extirpated**— Known from only historical records but still some hope of rediscovery. There is evidence that the species or ecosystem may no longer be present in the jurisdiction, but not enough to state this with certainty. Examples of such evidence include (1) that a species has not been documented in approximately 20-40 years despite some searching or some evidence of significant habitat loss or degradation; (2) that a species or ecosystem has been searched for unsuccessfully, but not thoroughly enough to presume that it is no longer present in the jurisdiction.

There does not appear to be any limitations that could be placed in this permit, which will have any impact on any of the species listed above.

II. GENERAL INFORMATION

- A. The effluent from this facility may be subject to the requirements of any of the following regulations: R.61-68, R.61-69, R.61-9.122, 124, 125, 129, 133, and 403; 40 CFR Part 136; Subchapter N (40 CFR Parts 400 through 402 and 404 through 471); and R.61-9.503, 504 and 505.
- B. Authority: This permit is written in accordance with applicable laws and regulations including, but not limited to, Regulation 61-9, Regulation 61-68, Pollution Control Act and Clean Water Act.

- C. Under R.61-9.124.8 (Fact Sheet), a fact sheet shall be prepared for every draft permit for a major NPDES facility or activity, for every Class I sludge management facility, for every NPDES draft permit that incorporates a variance or requires an explanation under section 124.56(b), and for every draft permit which the Department finds is the subject of wide-spread public interest or raises major issues.
- D. The conclusions noted in the Rationale establish proposed effluent limitations and permit requirements addressed in R.61-9.122.43 (Establishing Permit Conditions), R.61-9.122.44 (Establishing Limitations, Standards and other permit conditions) and other appropriate sections of R.61-9.

### III. BACKGROUND AND PROCEDURES FOR PERMIT LIMIT DEVELOPMENT

- A. The receiving waterbody 7Q10, annual average flow or other critical flow condition at the discharge point, and 7Q10, annual average flow, or other critical flow condition for source water protection are determined by the SCDHEC's Wasteload Allocation Section. The 7Q10, Annual Average Flow or other critical flow conditions are based on information published or verified by the USGS, an estimate extrapolation from published or verified USGS data or from data provided by the permittee. These flows may be adjusted by the Wasteload Allocation Section to account for existing water withdrawals that impact the flow. The 7Q10 (or 30Q5 if provided by the applicant), annual average flow at the discharge point, or other critical flow condition or 7Q10 (or 30Q5 if provided by the applicant), annual average flow or other critical flow condition for source water protection for a proposed or existing surface water drinking water intake will be used to determine dilution factors, as appropriate, in accordance with R.61-68.C.4.a & 4.b for aquatic life, human health, and organoleptic effects respectively.
- B. Water and organism consumption and drinking water MCL criteria will be evaluated for protection of human health when calculating dilution factors. "The Department may, after Notice of Intent included in a notice of a proposed NPDES permit in accordance with Regulation 61-9.124.10, determine that drinking water MCLs or W/O shall not apply to discharges to those waterbodies where there is: no potential to affect an existing or proposed drinking water source and no state-approved source water protection area." For permitting purposes, "a proposed drinking water source is one for which a complete permit application, including plans and specifications for the intake, is on file with the Department at the time of consideration of an NPDES permit application for a discharge that will affect or has the potential to affect the drinking water source" (R.61-68.E.14.c(5)).

The Department will implement this protection in NPDES permits using the source water protection program already developed for the drinking water program. A source water protection program was developed originally in 1999 to define the source water protection areas for each drinking water intake. The program was designed to identify source water protection areas (SWPAs) to aid drinking water systems in identifying sources of potential contamination that could affect their intakes. In September 2009, this program was modified to redefine the SWPAs as smaller, more manageable areas. The revised document developed in September 2009 is entitled "South Carolina Drinking Water Source Assessment and Protection Program." For the purposes of NPDES permitting, the SWPA referred to in Regulation 61-68.E.14.c(5) is the Primary Protection Area defined in the revised assessment and protection document. More information regarding the use of these protection areas is provided later in this rationale with the discussion of the procedure for establishing permit limits in Section G.2.

- C. Application of numeric criteria to protect human health: If separate numeric criteria are given for organism consumption, water and organism consumption (W/O), and drinking water Maximum Contaminant Levels (MCLs), they shall be applied as appropriate. The most stringent of the criteria shall be applied to protect the existing and classified uses of the waters of the State (R.61-68.E.14.b(1)).
- D. Numeric criteria have been established in R.61-68 based on organoleptic data (prevention of undesirable taste and odor). For those substances which have aquatic life and/or human health numeric criteria and organoleptic numeric criteria, the most stringent of the three shall be used for derivation of permit effluent limitations. See R.61-68.E.13.

E. Sampling Frequency: Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. Monitoring results must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in the permit (R.61-9.122.41(j)(4)). Typically, requirements to report monitoring results shall be established on a case-by-case basis with a frequency dependent on the nature and effect of the discharge but in no case less than once a year (R.61-9.122.44(i)(2)).

F. Compliance Schedules:

1. A person issued an NPDES permit by the Department who is not in compliance with applicable effluent standards and limitations or other requirements contained therein at the time the permit is issued, shall be required to achieve compliance within a period of time as set forth by the Department, with effluent standards and limitations, with water quality standards, or with specific requirements or conditions set by the Department. The Department shall require compliance with terms and conditions of the permit in the shortest reasonable period of time as determined thereby or within a time schedule for compliance which shall be specified in the issued permit. (R.61-9.122.47(c)(1))
2. If a time schedule for compliance specified in an NPDES permit which is established by the Department, exceeds nine (9) months, the time schedule shall provide for interim dates of achievement for compliance with certain applicable terms and conditions of the permit. (R.61-9.122.47(c)(2))

G. Procedure for establishing effluent limitations:

1. Effluent limits (mass and concentration) for Five day Biochemical Oxygen Demand (BOD<sub>5</sub>), Ultimate Oxygen Demand (UOD), Dissolved Oxygen (DO), Total Ammonia Nitrogen (as N), and Nutrients (e.g., nitrogen and phosphorus) are established by the Wasteload Allocation (WLA) Section, with consideration given to technology-based limitations.

- a. Five day Biochemical Oxygen Demand BOD<sub>5</sub>, Ultimate Oxygen Demand (UOD), Dissolved Oxygen (DO):

Effluent limits for conventional oxygen demanding constituents (BOD<sub>5</sub>, UOD and DO) are established to protect in-stream water quality, while utilizing a portion of the assimilative capacity of the receiving water. The ability of a water body to assimilate oxygen-demanding substances is a function of its physical and chemical characteristics above and below the discharge point. Various mathematical techniques, called models, have been developed to estimate this capacity. The Department follows the procedures as outlined in the "State/EPA Region IV Agreement on the Development of Wasteload Allocations/Total Maximum Daily Loads and NPDES Permit Limitations" dated October 30, 1991 (as updated) for determining the assimilative capacity of a given water body. Mathematical models such as QUAL2E and QUAL2E-UNCAS are used in accordance with "Enhanced Stream Water Quality Models QUAL2E and QUAL2E-UNCAS: Documentation and Users Manual" (EPA/600/3-87/007; dated May 1987) as updated. BOD<sub>5</sub> and UOD values determined from modeling results will be used in permitting as monthly average derived limits ( $C_{wla}$ ). Daily maximum derived limits will typically be determined by multiplying the monthly average value by two.

For facilities subject to effluent guidelines limitations or other technology-based limitations, BOD<sub>5</sub> will also be evaluated in accordance with the applicable industrial categorical guidelines. These guidelines will be identified in Part I of this rationale when they are applicable to the permit.

- b. Total Ammonia Nitrogen (as N):

Ammonia limitations based on oxygen demand will be determined from modeling information as described above. These values will be used as monthly average derived limits and a daily maximum will typically be determined by multiplying the monthly average derived limit by two. These values will be compared with the ammonia water quality criteria for protection of aquatic life from Regulation 61-68, Attachment 3 and any categorical limitations. The more stringent of the limitations will be imposed. Calculations for aquatic life criteria and other wasteload recommendations are shown in Part I of this rationale when ammonia is a pollutant of concern.



c. Discharges of Nutrients:

In order to protect and maintain lakes and other waters of the State, consideration is given to the control of nutrients reaching the waters of the State. Therefore, in accordance with regulation R.61-68.E.11, the Department controls the nutrients as prescribed below. Nutrient limitations will be determined from the best available information and/or modeling performed by the Wasteload Allocation Section to meet these water quality standards.

- i. Discharges of nutrients from all sources, including point and nonpoint, to waters of the State shall be prohibited or limited if the discharge would result in or if the waters experience growths of microscopic or macroscopic vegetation such that the water quality standards would be violated or the existing or classified uses of the waters would be impaired. Loading of nutrients shall be addressed on an individual basis as necessary to ensure compliance with the narrative and numeric criteria.
- ii. Numeric nutrient criteria for lakes are based on an ecoregional approach which takes into account the geographic location of the lakes within the State and are listed below. These numeric criteria are applicable to lakes of 40 acres or more. Lakes of less than 40 acres will continue to be protected by the narrative criteria.
  1. For the Blue Ridge Mountains ecoregion of the State, total phosphorus shall not exceed 0.02 mg/l, chlorophyll *a* shall not exceed 10 ug/l, and total nitrogen shall not exceed 0.35 mg/l
  2. For the Piedmont and Southeastern Plains ecoregions of the State, total phosphorus shall not exceed 0.06 mg/l, chlorophyll *a* shall not exceed 40 ug/l, and total nitrogen shall not exceed 1.50 mg/l
  3. For the Middle Atlantic Coastal Plains ecoregion of the State, total phosphorus shall not exceed 0.09 mg/l, chlorophyll *a* shall not exceed 40 ug/l, and total nitrogen shall not exceed 1.50 mg/l.
- iii. In evaluating the effects of nutrients upon the quality of lakes and other waters of the State, the Department may consider, but not be limited to, such factors as the hydrology and morphometry of the waterbody, the existing and projected trophic state, characteristics of the loadings, and other control mechanisms in order to protect the existing and classified uses of the waters.
- iv. The Department shall take appropriate action, to include, but not limited to: establishing numeric effluent limitations in permits, establishing Total Maximum Daily Loads, establishing waste load allocations, and establishing load allocations for nutrients to ensure that the lakes attain and maintain the narrative and numeric criteria and other applicable water quality standards.
- v. The criteria specific to lakes shall be applicable to all portions of the lake. For this purpose, the Department shall define the applicable area to be that area covered when measured at full pool elevation.

2. Effluent concentration limits ( $C_{efflim}$ ) for parameters other than the parameters listed in G.1.a-c (except ammonia toxicity calculations) above are established using the following procedures:

$Q_{7Q10}$	7Q10 or other critical flow condition of the receiving water at the discharge point in mgd. (may require adjustment for withdrawals)
$AAF_d$	Average Annual Flow (AAF) or other critical flow condition of the receiving water at the discharge point in mgd. (may require adjustment for withdrawals)
$Q_{7Q10}$	7Q10 or other critical flow condition of the receiving water at either the SWP Area 15-river mile boundary or at the intake, as appropriate, in mgd.
$AAF_i$	Average Annual Flow (AAF) of the receiving water at either the SWP Area 15-river mile boundary or at the intake, as appropriate, in mgd.
$Q_d$	Long term average discharge flow in mgd.

a. Determine dilution factors:

The following information is to be used (where applicable) for establishing effluent concentration limits:

$DF_1$ : This dilution factor is based on 7Q10 or other critical flow condition of the receiving water at the discharge point ( $Q_{7Q10}$ ). This dilution factor is used to determine the derived limits for protection of the following aquatic life and human health concerns for the reasons indicated:

- i. Aquatic Life (see R.61-68.C.4.a(1)). Protection of aquatic life on a short-term basis is needed at the point where aquatic organisms become exposed to the discharge.
- ii. Human Health – Organism Consumption for parameters identified as non-carcinogens per R.61-68.C.4.b(1). Protection for human health on a short-term basis for consumption of aquatic organisms is needed at the point the aquatic organisms become exposed to the discharge.

$$DF_1 = \left( \frac{Q_{7Q10} + Q_d}{Q_d} \right)$$

$DF_2$ : This dilution factor is based on the Average Annual Flow or other critical flow of the receiving water at the discharge point ( $AAF_d$ ). This dilution factor is used to determine the derived limits for protection of the following human health and organoleptic concerns for the reasons indicated:

- i. Human Health – Organism Consumption for parameters identified as carcinogens per R.61-68.C.4.b(1). Protection for human health on a long-term basis to prevent cancer due to consumption of aquatic organisms is needed at the point the aquatic organisms become exposed to the discharge.
- ii. Organoleptic effects per R.61-68.C.4.b(1). Protection for taste and odor issues related to the discharge is needed at the point where the discharge enters the receiving water.

$$DF_2 = \left( \frac{AAF_d + Q_d}{Q_d} \right)$$

$DF_3$ : This dilution factor is based on the 7Q10 or other critical flow condition ( $Q_{7Q10}$ ) for protection of a proposed or existing surface water drinking water intake that the discharge has the potential to affect. This dilution factor is used to determine the derived limits for protection of the following human health concerns for the reasons indicated:

- i. Human Health – Water and Organism (W/O) Consumption for parameters identified as non-carcinogens per R.61-68.C.4.b(1) and E.14.c(5) to protect for short-term health effects when the discharge has the potential to affect a surface water drinking water intake. Protection of human health relative to drinking the water from the waterbody and consuming aquatic organisms from the same waterbody is provided by this criterion, but drinking the water withdrawn from the waterbody may require a higher level of protection in terms of applicable dilution than consumption of organisms.
- ii. Human Health - Drinking Water Maximum Contaminant Level (MCL) for parameters identified as non-carcinogens per R.61-68.C.4.b(1) and E.14.c(5) to protect for short-term health effects when the discharge has the potential to affect a surface water drinking water intake. Protection of human health relative to drinking the water from the waterbody after conventional treatment per R.61-68.G is provided by this criterion.

$$DF_3 = \left( \frac{Q_{7Q10} + Q_d}{Q_d} \right)$$

$DF_4$ : This dilution factor is based on the Average Annual Flow or other critical flow condition ( $AAF_i$ ) for protection of a proposed or existing surface water drinking water intake that the discharge has the potential to affect. This dilution factor is used to determine the derived limits for protection of the following human health concerns for the reasons indicated:

- i. Human Health–Water and Organism Consumption for parameters identified as carcinogens per R.61-68.C.4.b(1) and E.14.c(5) to protect for long-term health effects due to cancer when the discharge has the potential to affect a surface water drinking water intake. Protection of human health relative to drinking the water from the waterbody and consuming aquatic organisms from the same waterbody is provided by this criterion, but drinking the water withdrawn from the waterbody may require a higher level of protection in terms of applicable dilution than consumption of organisms.
- ii. Human Health - Drinking Water Maximum Contaminant Level (MCL) for parameters identified as carcinogens per R.61-68.C.4.b(1) and E.14.c(5) to protect for long-term health effects due to cancer when the discharge has the potential to affect a surface water drinking water intake. Protection of human health relative to drinking the water from the waterbody after conventional treatment per R.61-68.G is provided by this criterion.

$$DF_4 = \left( \frac{AAF_i + Q_d}{Q_d} \right)$$

For both  $DF_3$  and  $DF_4$ , to satisfy the mixing zone requirements of R.61-68.C.10(a) for both W/O and MCL criteria, the Department will use the following flows to determine dilution:

1. The following applies to discharges and intakes in flowing rivers:
  - a. Where the discharge is within the SWPA (15 river miles) of the intake, the flow at the 15-river mile boundary of the tributary with the largest applicable critical flow will be used.
  - b. Where the discharge is outside the SWPA (15 river miles) of the intake, the applicable critical flow at the intake will be used.
2. When the discharge is either in the tributary to a lake or in a lake and the intake is in the same lake that does not behave as a run-of- river impoundment\*, the flow is determined using the sum of the applicable critical flows of all tributaries entering the lake.
3. The following applies when both the discharge and the intake are in a lake arm that behaves as a run-of- river impoundment\*:
  - a. Where the discharge is within the SWPA (15-mile buffer which may include both lake and river miles) of the intake, the flow at the 15-mile boundary of the tributary with the largest applicable critical flow will be used.
  - b. Where the discharge is outside the SWPA (15-mile buffer which may include both lake and river miles) of the intake, the applicable critical flow at the intake will be used.
4. Where the discharge is in the arm of a lake and the intake is in the upper reach of another arm of the lake, no protection of W/O or MCL criteria is needed because the discharge does not have the potential to affect the intake,

5. If the discharge has the potential to affect multiple intakes, the SWPA of the intake closest to the discharge will be protected. However, the permittee may be required to provide notification to all potentially affected intakes.

\* Run-of-river impoundment is defined as a lake or reservoir (or arm of a lake or reservoir) that is narrow and/or shallow offering little dilution or delay in contaminant flow toward an intake.

- b. Determine derived limits using the following procedures:

$WQS_{al}$  Freshwater Standard (based on an established criteria or other published data per R.61-68) for protection of Aquatic Life; may be a CCC or CMC as defined below

$WQS_{org}$  Standard (based on an established criteria or other published data per R.61-68) for protection of Human Health – Organism Consumption

$WQS_{wo}$  Standard (based on an established criteria or other published data per R.61-68) for protection of Human Health – Water & Organism Consumption.

$WQS_{mcl}$  Standard (based on an established criteria or other published data per R.61-68) for Drinking Water MCL (Maximum Contaminant Level).

$WQS_{ol}$ : Standard (based on an established criteria or other published data per R.61-68) based on Organoleptic Data.

$C_{aqlife}$  Concentration limit derived from aquatic life data

$C_{HH}$  Concentration limit derived from human health data as determined from organism ( $C_{org}$ ), water/organism ( $C_{wo}$ ) and MCL ( $C_{mcl}$ ) data

$C_{ol}$  Concentration limit derived from organoleptic data

$C_b$  The background concentration of the concerned parameter in mg/l is typically determined from ambient monitoring data or data provided by applicant. If the waterbody to which the discharge flows is not on the 303(d) list, the 90<sup>th</sup> percentile of ambient monitoring data for aquatic life protection for the parameters identified in the Appendix (Water Quality Numeric Criteria) to Regulation 61-68 from the last 3 years, or whatever is available if less than 3 years, will typically be used. If the waterbody to which the discharge flows is not on the 303(d) list, the median value of ambient monitoring data for human health protection for the parameters identified in the Appendix (Water Quality Numeric Criteria) to Regulation 61-68 from the last 3 years, or whatever is available if less than 3 years, will typically be used. The background concentration is assumed to be zero (0) in the absence of actual data based on Departmental guidance and EPA recommendation.

- i. Determine the derived limits for protection of Aquatic Life ( $C_{aqlife}$ )

1. The following guidelines apply to determining aquatic life limits using this basic equation:

$$C_{aqlife} = (DF_1 \times WQS_{al}) - \left\{ C_b \times \left( \frac{Q_{7Q10}}{Q_d} \right) \right\}$$

- a. Typically, the Criterion Maximum Concentration (CMC) is applied as a daily maximum derived limit and the Criterion Continuous Concentration (CCC) is applied as a monthly average derived limit, after consideration of dilution and background concentrations. The CMC and CCC for specific metals will be adjusted using the procedures in 60 FR 22229, “Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants; States’ Compliance-Revision of Metals Criteria,” May 4, 1995 and the “Technical Guidance on Interpretation and Implementation of Aquatic Life Metals Criteria,” Oct. 1, 1993 and applied as a daily maximum and monthly average, respectively, after consideration of dilution and background concentrations. For specific metals, this calculation is explained in detail later in this rationale.

monthly average =  $C_{aqlife}$  using CCC as  $WQS_{al}$   
daily maximum =  $C_{aqlife}$  using CMC as  $WQS_{al}$

- b. If only a CMC exists for a particular parameter, the daily maximum derived permit limit will be set using that value, after consideration of dilution and background concentrations. If no other values (e.g., human health) exist for that parameter on which to base a monthly average limit and the discharge is continuous, the monthly average will be set equal to the daily maximum to satisfy Regulation 61-9.122.45(d). In no case shall the monthly average limit be set higher than the daily maximum limit. If only a CCC is given, it will be used as a monthly average derived limit and the daily maximum derived limit will be two (2) times the value obtained for the monthly average based on a simplified statistical procedure for determining permit limits recommended in Section 5.4.2 of the US EPA's "Technical Support Document for Water Quality-based Toxics Control", EPA/505/2-90-001, March 1991 (hereafter known as the TSD).

If a CCC exists and no CMC exists and no other acute or chronic data exists, the aquatic life limits are

$$\begin{aligned}\text{monthly average} &= C_{\text{aquife}} \text{ using CCC as } WQS_{al} \\ \text{daily maximum} &= 2 \times C_{\text{aquife}}\end{aligned}$$

If a CMC and no CCC exists, and no other acute or chronic data exists, the aquatic life limits are

$$\begin{aligned}\text{monthly average} &= C_{\text{aquife}} \text{ using CMC as } WQS_{al} \\ \text{daily maximum} &= C_{\text{aquife}} \text{ using CMC as } WQS_{al}\end{aligned}$$

- c. If only an acute toxicity effect concentration for a number of species for a particular pollutant is given as a  $LC_{50}$ , the lowest concentration should be divided by an acute-to-chronic ratio (ACR) of 10 and a sensitivity factor of 3.3, for an acceptable instream concentration in order to protect against chronic toxicity effects (R.61-68.E.16.a(1)). Other acute toxicity data will be handled similarly. The value obtained from this calculation will be used as a monthly average derived limit after consideration of dilution and background concentrations. The daily maximum will be two (2) times the value obtained for the monthly average based on a simplified statistical procedure for determining permit limits recommended in Section 5.4.2 of the TSD.

$$\begin{aligned}\text{monthly average} &= C_{\text{aquife}} \text{ using other data as } WQS_{al} \\ \text{daily maximum} &= 2 \times C_{\text{aquife}}\end{aligned}$$

- d. If a chronic toxicity effect concentration for a number of species for a particular pollutant is given as a no observed effect concentration (NOEC), the lowest concentration should be divided by a sensitivity factor of 3.3 in order to protect against chronic toxicity to the most sensitive species (R.61-68.E.16.a(2)). Other chronic toxicity data will be handled similarly. The value obtained from this calculation will be used as a monthly average derived limit after consideration of dilution and background concentrations. The daily maximum will be two (2) times the value obtained for the monthly average based on a simplified statistical procedure for determining permit limits recommended in Section 5.4.2 of the TSD.

$$\begin{aligned}\text{monthly average} &= C_{\text{aquife}} \text{ using other data as } WQS_{al} \\ \text{daily maximum} &= 2 \times C_{\text{aquife}}\end{aligned}$$

- e. If both acute and chronic data are available for a particular pollutant, monthly average derived limit will be calculated as in c and d above for each acute and chronic, respectively. The more stringent of the monthly average derived limits will be the monthly average derived limit used after consideration of dilution and background concentrations. The daily maximum will be two (2) times the value obtained for the monthly average based on a simplified statistical procedure for determining permit limits recommended in Section 5.4.2 of the TSD.

$$\begin{aligned}\text{monthly average} &= C_{\text{aquife}} \text{ using other data as } WQS_{al} \\ \text{daily maximum} &= 2 \times C_{\text{aquife}}\end{aligned}$$

- f. Consider the background concentration ( $C_b$ ) of the parameter of concern. If the background concentration is equal to or greater than the applicable standard ( $WQS$ , as defined above) for the parameter of concern, then the derived concentration limit ( $C_{aqlife}$ ) for that parameter is established equal to the standard ( $WQS$ ) so that no additional amount of that pollutant is added to the waterbody. An exception exists where the naturally occurring instream concentration for a substance is higher than the derived permit effluent limitation. In those situations, the Department may establish permit effluent limitations ( $C_{efflim}$ ) at a level higher than the derived limit, but no higher than the natural background concentration (i.e. a “rise above background” limit). In such cases, the Department may require biological instream monitoring and/or whole effluent toxicity (WET) testing (R.61-68.E.14.c(2)).

If  $C_b$  is not based on naturally occurring concentrations and

$$C_b \geq WQS$$

Then, generally,

$$C_{aqlife} = WQS.$$

If  $C_b$  is based on naturally occurring concentrations and

$$C_b \geq WQS$$

Then, generally,

$$C_{aqlife} < C_{eff\ lim} \leq C_b.$$

2. Metals: Regulation 61-9.122.45(c) requires that permit limits be expressed in terms of total recoverable metal (with limited exceptions). In order to translate from the water quality criterion to a total recoverable metal, Regulation R.61-68.E.14.c(4) provides for the use of the EPA Office of Water Policy and "Technical Guidance on Interpretation and Implementation of Aquatic Life Metals Criteria", October 1, 1993. A subsequent revision published in the Federal Register (60 FR 22229) on May 4, 1995 updated the data in the original report. See R.61-68 Appendix for CMC and CCC values and equations, Attachment 1 for “Conversion Factors for Dissolved Metals” and Attachment 2 “Parameters for Calculating Freshwater Dissolved Metals Criteria that are Hardness-Dependent”.

Per R.61-68.E.14.a(3), the CMC and CCC are based on a hardness of 25 mg/l if the ambient or mixed stream hardness is equal to or less than 25 mg/l. Concentrations of hardness less than 400 mg/l may be based on the mixed stream hardness if it is greater than 25 mg/l and less than 400 mg/l and 400 mg/l if the ambient stream hardness is greater than 400 mg/l. The ambient stream hardness is assumed to be 25 mg/l in the absence of actual stream data. Mixed stream hardness may be determined using flow-weighted effluent hardness and stream hardness.

The following equations and constants will be used to calculate aquatic life metals limits based on these documents. The values of the terms referenced in this section and determined from the equations below are included in the Metals spreadsheet attached to this rationale. The following metals are subject to this section:

arsenic	lead
cadmium	mercury
chromium (III & VI)	nickel
copper	zinc

The equation for  $C_d$  below changes the total metal to dissolved metal. From Technical Guidance Manual for Performing Waste Load Allocations Book II, Rivers and Streams, EPA/440/484/022,

$$S = CCC \text{ or } CMC \text{ (adjusted for hardness)}$$

$$C_d = S \times CF$$

where  $C_d$  = Dissolved metal concentration ( $\mu\text{g/l}$ )  
 $S$  = a constant to represent the CCC or CMC ( $\mu\text{g/l}$ )  
 $CF$  = Conversion factor considered most relevant in fresh water for aquatic life as defined by EPA for each metal

Once the dissolved metal concentration is known, determine  $C_p$  using the equation for  $C_d$  above and the following equations.

$$C_p = C_d \times \left\{ 1 + \left( K_{pb} \times TSS_b \times 10^{-6} \right) \right\}$$

$$K_{pb} = K_{po} \times (TSS_b)^a$$

where  $C_p$  = Particulate sorbed metal concentration ( $\mu\text{g/l}$ ). This value represents the revised water quality criterion for the metal to be used for ambient data comparison.  
 $K_{pb}$  = Linear partition coefficient using the stream TSS (liters/mg)  
 $K_{po}$  = Metal-specific equilibrium constant (liters/mg)  
 $a$  = Metal-specific constant  
 $TSS_b$  = Background or in-stream Total Suspended Solids (TSS) concentration (mg/l). The background TSS is assumed to be 1 mg/l in the absence of actual instream data based on the 5th percentile of ambient TSS data on South Carolina waterbodies from 1993-2000.

To determine the effluent limit ( $C_{aqlife}$ ), use the following equations to translate the limits into a total recoverable metal concentration.

$$TSS_{avg} = \frac{(Q_d \times TSS_e) + (Q_{7Q10} \times TSS_b)}{Q_d + Q_{7Q10}}$$

where  $TSS_e$  = Effluent Total Suspended Solids (TSS) concentration (mg/l) determined from actual long-term average data or proposed permit limits if no data available.  
 $TSS_{avg}$  = Average in-stream (mixed) TSS concentration (mg/l)

$$C_t = C_d \times \left\{ 1 + \left( K_p \times TSS_{avg} \times 10^{-6} \right) \right\}$$

$$K_p = K_{po} \times (TSS_{avg})^a$$

where  $C_t$  = Total metal concentration ( $\mu\text{g/l}$ )  
 $K_p$  = Linear partition coefficient (liters/mg). This is the distribution of metal at equilibrium between the particulate and dissolved forms.

Once  $C_t$  has been calculated, it is multiplied by  $DF_1$  and background concentrations are accounted for to obtain the derived limit (max or avg) ( $C_{aqlife}$ ):

$$C_{aqlife} = (C_t \times DF_1) - \left\{ C_b \times \left( \frac{Q_{7Q10}}{Q_d} \right) \right\}$$

monthly average =  $C_{aqlife}$  based on CCC  
daily maximum =  $C_{aqlife}$  based on CMC

3. Where a Water Effects Ratio (WER) is used to adjust a criterion, derived limits for the adjusted aquatic life criterion ( $C_{aqlife-adj}$ ) are calculated as follows. The WER is a type of site-specific permit effluent limit (as allowed by R.61-68.E.14.c(7)) derived using a ratio determined from EPA methodology. Both DHEC and EPA must approve the WER prior to implementation. See EPA's 1994 "Interim Guidance on the Determination and Use of Water-Effect Ratios (WERs) for Metals." The approved WER will be shown in the water quality spreadsheets on the Data sheet. The revised aquatic life value will be shown with the WER, hardness and dissolved metals adjustments, as appropriate, in the aquatic life columns on the Pollutant spreadsheet.

- a. For metals identified in #2 above, revise the equation for S as follows:

$$S = [\text{CCC or CMC (adjusted for hardness)}] \times \text{WER}$$

Follow the remaining calculations in #2 above to get an adjusted  $C_{aqlife}$  value that will be used to determine derived limits:

$$\begin{aligned} \text{monthly average} &= C_{aqlife-adj} \text{ based on CCC} \\ \text{daily maximum} &= C_{aqlife-adj} \text{ based on CMC} \end{aligned}$$

- b. For other parameters, use the appropriate equation in #1 above to derive an adjusted  $C_{aqlife}$  value. The monthly average will be calculated as follows using the appropriate  $WQS_{dl}$  and the daily maximum calculated using the appropriate equations in #1 above.

$$C_{aqlife-adj} = (DF_1 \times WQS_{dl} \times \text{WER}) - \left\{ C_b \times \left( \frac{Q_{7Q10}}{Q_d} \right) \right\}$$

4. Where the Recalculation Procedure is used to adjust a criterion, derived limits for the adjusted aquatic life criterion ( $C_{aqlife-adj}$ ) are calculated as follows. The Recalculation Procedure is intended to cause a site-specific criterion to appropriately differ from the State-adopted national aquatic life criterion if justified by demonstrated pertinent toxicological differences between the aquatic species that occur at the site and those that were used in the derivation of the criterion. It is important to note that the site (the portion of the waterbody or watershed being affected) must be clearly defined. This procedure is used to develop site-specific criteria in accordance with R.61-68.C.12. Both DHEC and EPA must approve the recalculated criterion prior to implementation. The recalculated criterion will require an update to the Water Classifications and Standards Regulations, R.61-68 and 61-69.

The approved recalculated aquatic life criteria (SS-CCC and SS-CMC, as appropriate) will be shown adjusted for hardness on the Data spreadsheet. The additional dissolved metals adjustments, as appropriate, will be shown in the aquatic life columns on the Pollutant spreadsheet. If the parameter being adjusted is one of the metals in #2 above, SS will include all the appropriate metals adjustments.

$$C_{aqlife-adj} = (DF_1 \times SS - \left\{ C_b \times \left( \frac{Q_{7Q10}}{Q_d} \right) \right\})$$

$$\begin{aligned} \text{monthly average} &= C_{aqlife-adj} \text{ based on CCC} \\ \text{daily maximum} &= C_{aqlife-adj} \text{ based on CMC} \end{aligned}$$

5. Where a WER and recalculation procedure are combined to adjust a criterion, derived limits ( $C_{aqlife-adj}$ ) for aquatic life protection are calculated by combining the calculations in #3 and #4.

$$C_{aqlife-adj} = (DF_1 \times SS \times \text{WER}) - \left\{ C_b \times \left( \frac{Q_{7Q10}}{Q_d} \right) \right\}$$

$$\begin{aligned} \text{monthly average} &= C_{aqlife-adj} \text{ based on CCC} \\ \text{daily maximum} &= C_{aqlife-adj} \text{ based on CMC} \end{aligned}$$



6. Other scientifically defensible methods for developing site-specific aquatic life effluent limits or site-specific criterion may be used on a case-by-case basis.
- ii. Determine derived limits for protection of Human Health

1. The following guidelines apply to determining human health limits:

- a. The human health criterion given by Regulation 61-68 will be applied as a monthly average derived limit after consideration of dilution and background concentrations ( $C_{HH-avg}$ ). Exceptions exist based on EPA criteria and are indicated for specific parameters. No limits on human health based on water and organism consumption or drinking water MCLs will be imposed if there is no potential to affect an existing or proposed surface water drinking water intake and no state-approved source water protection area in accordance with Regulation 61-68.E.14.c(5).
- b. The daily maximum permit limit will be determined from the monthly average value from (a) above and a multiplier ( $M$ ) determined using a statistical procedure recommended in Section 5.5 using average = 95<sup>th</sup> percentile from Table 5-3 in the TSD. The permitted or proposed number of samples per month ( $n$ ) is used with the coefficient of variation ( $CV$ ) to determine  $M$ .

$$M = \frac{e^{(z_m \sigma - 0.5 \sigma^2)}}{e^{(z_a \sigma_n - 0.5 \sigma_n^2)}}$$

where:

$$\sigma_n^2 = \ln \left( \frac{CV^2}{n} + 1 \right)$$

$$\sigma^2 = \ln(CV^2 + 1)$$

$CV$  = coefficient of variation of the effluent concentration. For a data set where  $n > 10$ , the  $CV$  is calculated as standard deviation divided by mean for the data set being evaluated. For data set where  $n < 10$ , the  $CV$  is estimated to equal 0.6. For less than 10 items of data, the uncertainty in the  $CV$  is too large to calculate a standard deviation or mean with sufficient confidence.

$n$  = the number of effluent samples per month (where frequency is less than 1/month,  $n = 1$ )

$z_m$  = the percentile exceedance probability for the daily maximum permit limit (=2.326 for 99<sup>th</sup> percentile basis)

$z_a$  = the percentile exceedance probability for the monthly average permit limit (=1.645 for 95<sup>th</sup> percentile basis)

$$C_{HH-max} = M * C_{HH-avg}$$

- c. Consider the background concentration ( $C_b$ ) of the parameter of concern. If the background concentration is equal to or greater than the applicable standard ( $WQS$ , as defined above) for the parameter of concern, then the derived concentration limit ( $C_{HHC}$ ) for that parameter and for the protection of that standard is established equal to the standard ( $WQS$ ). An exception exists where the naturally occurring instream concentration for a substance is higher than the derived permit effluent limitation. In those situations, the Department may establish permit effluent limitations ( $C_{efflim}$ ) at a level higher than the derived limit, but no higher than the natural background concentration (i.e. a “rise above background” limit). In such cases, the Department may require biological instream monitoring and/or whole effluent toxicity (WET) testing (See R.61-68.E.14.c(3)).

If  $C_b$  is not based on naturally occurring concentrations and

$$C_b \geq WQS$$

Then, generally,

$$C_{HH} = WQS.$$

If  $C_b$  is based on naturally occurring concentrations and

$$C_b \geq WQS$$

Then, generally,

$$C_{HH} < C_{eff\ lim} \leq C_b.$$

2. Human Health – Organism Consumption ( $C_{org}$ ).

a. For Carcinogens

The Monthly Average is calculated as follows:

$$C_{org} = (DF_2 \times WQS_{org}) - \left\{ C_b \times \left( \frac{AAF_d}{Q_d} \right) \right\}$$

The Daily Maximum is calculated as

$$C_{org-max} = M * C_{org}$$

b. For Non-carcinogens

The Monthly Average is calculated as follows:

$$C_{org} = (DF_1 \times WQS_{org}) - \left\{ C_b \times \left( \frac{Q_{7Q10}}{Q_d} \right) \right\}$$

The Daily Maximum is calculated as

$$C_{org-max} = M * C_{org}$$

3. Human Health – Water and Organism Consumption ( $C_{wo}$ )

a. For Carcinogens

The Monthly Average is calculated as follows:

$$C_{wo} = (DF_4 \times WQS_{wo}) - \left\{ C_b \times \left( \frac{AAF_i}{Q_d} \right) \right\}$$

The Daily Maximum is calculated as

$$C_{wo-max} = M * C_{wo}$$

b. For Non-carcinogens

The Monthly Average is calculated as follows:

$$C_{wo} = (DF_3 \times WQS_{wo}) - \left\{ C_b \times \left( \frac{Q_{7Q10i}}{Q_d} \right) \right\}$$

The Daily Maximum is calculated as

$$C_{wo-max} = M * C_{wo}$$

4. Human Health – Drinking Water Maximum Contaminant Level (MCL) ( $C_{mcl}$ ).

a. For Carcinogens

The Monthly Average is calculated as follows:

$$C_{mcl} = (DF_4 \times WQS_{mcl}) - \left\{ C_b \times \left( \frac{AAF_i}{Q_d} \right) \right\}$$

The Daily Maximum is calculated as

$$C_{mcl-max} = M * C_{mcl}$$

b. For Non-carcinogens

The Monthly Average is calculated as follows:

$$C_{mcl} = (DF_3 \times WQS_{mcl}) - \left\{ C_b \times \left( \frac{Q_{7Q10i}}{Q_d} \right) \right\}$$

The Daily Maximum is calculated as

$$C_{mcl-max} = M * C_{mcl}$$

5. Organoleptic criteria ( $C_{ol}$ ).

The Monthly Average is calculated as follows:

$$C_{ol} = (DF_2 \times WQS_{ol}) - \left\{ C_b \times \left( \frac{AAF_d}{Q_d} \right) \right\}$$

The Daily Maximum is calculated as

$$C_{ol-max} = M * C_{ol}$$

iii. Parameters given in a wasteload allocation for oxygen-demanding pollutants and nutrients will be limited as

$$\begin{aligned} \text{monthly average} &= C_{ww} \\ \text{daily maximum} &= 2 \times C_{ww} \end{aligned}$$

c. Determine the most stringent of applicable water quality data using the derived limits determined above:

$$\begin{aligned} \text{monthly average } C_{efflim} &= \text{minimum of derived monthly averages } (C_{aqlife}, C_{org}, C_{wo}, C_{mcl}, C_{ol}, C_{wla}) \\ \text{daily maximum } C_{efflim} &= \text{minimum of derived daily maximums } (C_{aqlife}, C_{org-max}, C_{wo-max}, C_{mcl-max}, C_{ol-max}, C_{wla-max}) \end{aligned}$$

d. Determine whether the discharge causes, has the reasonable potential to cause or contributes to a water quality violation.

Regulation 61-9.122.44(d)(1)(i) states: "Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Department determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality."

When determining whether a discharge causes, has the reasonable potential to cause or contributes to an instream excursion, the Department will use procedures which account for controls on point and nonpoint sources of pollution, the variability of the pollutant in the effluent, the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity), and, where appropriate, the dilution of the effluent in the receiving water (R.61-9.122.44(d)(1)(ii)).

Based on the above statements, there are three scenarios when limitations are required, as follows:

- i. When data provided by the permit applicant indicates discharge values greater than the proposed limitation derived above, that discharge may cause an excursion above a narrative or numeric water quality criterion.
- ii. A discharge may be determined to contribute to an excursion of a water quality criterion when the waterbody is impaired (e.g., on the 303(d) list) for the parameter of concern and that parameter is also being discharged at levels above the water quality criterion.
- iii. Reasonable potential to cause a water quality violation is determined using the following information:

The Department will primarily use EPA's Technical Support Document (TSD) for determining reasonable potential using effluent data. Other methods may be used as well to evaluate data sets. All pollutants given in a wasteload allocation or an effluent limitation guideline will be limited in the permit.

When effluent data consists of non-quantifiable/non-detectable values or when no effluent data is available, other factors and information are considered to determine reasonable potential. In situations where a pollutant is known to be present in the wastestream (due to production data or other information), we know it is being discharged and has the potential to impact even though it may not be quantifiable. The fact that it is present will be enough information to say reasonable potential exists for that pollutant. Therefore, a reasonable potential decision is based on various data and information, and not just non-quantifiable/non-detectable data. Consideration is given to existing data, dilution in the waterbody, type of receiving water, designated use, type of industry/wastestream, ambient data, history of compliance, and history of toxic impact. If any source of information indicates reasonable potential to cause or contribute to an exceedance of the water quality standard, a water quality limit will be established.

Note: The result of the following calculations may indicate that reasonable potential does not exist. However, as stated above, other information may "override" this numerical determination to justify the need for a limit.

1. The procedure for determining reasonable potential from actual effluent data is explained in Box 3-2 on page 53 of the TSD. Multiplying factors are determined from Table 3-2 at a 95% confidence level and 95% probability in Section 3.3.2. The following describes the procedures used for determining reasonable potential for chemical-specific parameters and WET, under certain circumstances. More information on determining reasonable potential for WET is given in Item 2 below.

Step 1: Data Analysis: The statistical calculations involved in the "Reasonable Potential" analysis require discrete numerical data. The following describes how the effluent data will be used in determining reasonable potential.

Actual analytical results should be used whenever possible. Results less than detection and quantification should be used as follows:

- a. If the permittee reports results below the practical quantitation limit (PQL) (as defined by the permit), then the reported "less than PQL" value for a given sample is generally assumed to be zero.
- b. If the permittee uses a detection/quantification level that is **greater** than the PQL, then the reported "less than" value for a given sample is generally assumed to be a discrete value equal to the detection/quantification level used by the permittee.
- c. If the reported data consists of both discrete and non-discrete values and/or the data is reported using varying detection/quantification levels, then, generally, a combination of the above two approaches is used, or the data is evaluated in a manner that is most appropriate for that data set.

Note: For information on the acceptable analytical methods and PQLs please refer to NPDES permit application attachment titled “Practical Quantitation Limits (PQL) and Approved Test Methods.”

Step 2: Using data from the permit application, other data supplied by the applicant and/or Discharge Monitoring Report (DMR) data, determine the total number of observations ( $n$ ) for a particular set of effluent data and determine the highest value ( $C_{max}$ ) from that data set. For the monthly average comparison, the data set will include monthly average results and  $n$  will be the number of months in which they sampled in the time period being evaluated. For the daily maximum comparison, the data set will include daily maximum results and  $n$  will be the total number of samples in the time period being evaluated. Individual results may not necessarily be used in the calculation.

Step 3: Determine the coefficient of variation ( $CV$ ) for the data set. For a data set where  $n > 10$ , the  $CV$  is calculated as standard deviation divided by mean for the data set being evaluated. For data set where  $n < 10$ , the  $CV$  is estimated to equal 0.6. For less than 10 items of data, the uncertainty in the  $CV$  is too large to calculate a standard deviation or mean with sufficient confidence.

$$CV = 0.6 \quad \text{for } n < 10$$

$$CV = \frac{\sigma}{\mu} \quad \text{for } n > 10$$

where:  $\sigma$  = Standard Deviation of the samples  
 $\mu$  = Mean of the samples

Step 4: Determine the appropriate multiplying factor ( $MF$ ) from either Table 3-2 or using the formulae in Section 3.3.2 of the TSD.

a. Determine the percentile represented by the highest concentration in the sample data.

$$p_n = (1 - \text{Confidence Level})^{1/n}$$

where:  $p_n$  = Percentile represented by the highest concentration in the data  
 $n$  = number of samples  
Confidence Level = 0.95 i.e. 95%

b. Determine the multiplying factor ( $MF$ ), which is the relationship between the percentile described above ( $C_p$ ) and the selected upper bound of the lognormal effluent distribution, which in this case will be the 95<sup>th</sup> percentile ( $C_{95}$ ).

$$MF = \frac{C_{95}}{C_p} = \frac{e^{(Z_{95}\sigma + 0.5\sigma^2)}}{e^{(Z_p\sigma + 0.5\sigma^2)}}$$

where:  $Z_{95}$  is the standardized Z-score for the 95<sup>th</sup> percentile of the standardized normal distribution = 1.645

$Z_p$  is the standardized Z-score for the  $p^{\text{th}}$  percentile of the standardized normal distribution.(determined in (b) above)

Note: The values of Z-scores are listed in tables for the normal distribution. If using Microsoft® Excel, this can be calculated using the NORMSINV function.

$$\sigma^2 = \ln(CV^2 + 1)$$

$$\sigma = \sqrt{\ln(CV^2 + 1)}$$

Step 5: Multiply the highest value from the data set ( $C_{max}$ ) by the multiplying factor ( $MF$ ) determined in Step 4 to obtain the maximum receiving water concentration ( $RWC$ ).

$$RWC = C_{max} \times MF$$

Step 6:  $RWC \leq$  Derived limit ( $C_{efflim}$ ) implies that reasonable potential does not exist.

$RWC >$  Derived limit ( $C_{efflim}$ ) implies that reasonable potential exists.

2. Reasonable potential for Whole Effluent Toxicity (WET) may be determined from numerical data using the following procedure:

a. When the effluent data is given in terms of percent effluent as an  $IC_{25}$ ,  $LC_{50}$  and/or NOEC values:

Step 1: Convert the given values to toxic units:  $TU_a$  for acute data and  $TU_c$  for chronic data, respectively, using the following formulae. Please note that an NOEC derived using the  $IC_{25}$  is approximately the analogue of an NOEC derived using hypothesis testing. The  $IC_{25}$  is the preferred statistical method for determining the NOEC (EPA TSD, March 1991, p.6).

$$TU_a = \frac{100}{LC_{50}}$$

$$TU_c = \frac{100}{NOEC} \text{ or } TU_c = \frac{100}{IC_{25}} \text{ if } IC_{25} \text{ available}$$

Step 2: Using DMR data or other data provided by the applicant, determine the total number of observations ( $n$ ) for a particular set of effluent data and determine the highest value ( $TU_{a, max}$  or  $TU_{c, max}$ ) from that data set.

Step 3: Determine the coefficient of variation ( $CV$ ) for the data set. For a data set where  $n > 10$ , the  $CV$  is calculated as standard deviation divided by mean. For data set where  $n < 10$ , the  $CV$  is estimated to equal 0.6. For less than 10 items of data, the uncertainty in the  $CV$  is too large to calculate a standard deviation or mean with sufficient confidence.

Step 4: Determine the appropriate multiplying factor ( $MF$ ) from either Table 3-2 or using the formulae in Section 3.3.2. (see iii.1, Step 4 above).

Step 5: Multiply the highest value of  $TU_{a, max}$  or  $TU_{c, max}$  from the data set by the multiplying factor ( $MF$ ) determined in Step 4 and the dilution at the edge of the mixing zone (the test concentration obtained from mixing zone modeling or demonstration) to obtain the maximum receiving water concentration ( $RWC$ )

$$RWC \text{ for Acute Toxicity} = [TU_{a, max} * MF * conc. \text{ at MZ boundary}]$$

$$RWC \text{ for Chronic Toxicity} = [TU_{c, max} * MF * conc. \text{ at MZ boundary}]$$

Step 6:  $RWC$  for Acute Toxicity  $\leq 0.3TU_c$  implies that a reasonable potential does not exist  
 $RWC$  for Acute Toxicity  $> 0.3TU_c$  implies that a reasonable potential exists

$RWC$  for Chronic Toxicity  $\leq 1.0TU_c$  implies that a reasonable potential does not exist  
 $RWC$  for Chronic Toxicity  $> 1.0TU_c$  implies that a reasonable potential exists

b. Other methods for determining reasonable potential may be used if appropriately justified.

e. Consider Effluent Limitations Guidelines (ELG or Categorical guidelines)

The more stringent of the effluent limitations guidelines average and maximum derived limits and water quality-derived average and maximum limits shall be used as permit limits, unless other information indicates more stringent limits are needed (e.g. previous permit limits due to backsliding). Categorical limitations based on mass may be converted to concentration using the long-term average flow of the discharge for comparison to the monthly average and daily maximum derived limits.

1. For effluent guidelines based on production, limits will be calculated as follows:

$$ELG \text{ lim} = \sum (ELG_{prod})(ELG) \text{ where}$$

$ELG_{lim}$ : the mass limit, in lbs/day, for an applicable pollutant based on the production

$ELG_{prod}$ : the production rate, in lbs, for the applicable guideline(s), usually based on long-term average data

$ELG$ : the effluent guideline limitation, given as a measure of production (e.g. lbs/1000 lbs), for an applicable pollutant

2. For effluent guidelines based on flow, limits will typically be calculated as follows:

$$ELG \text{ lim} = \sum (ELG_{flow})(ELG)(8.345)$$

$ELG_{lim}$ : the mass limit, in lbs/day, for the applicable pollutant based on the applicable flow

$ELG_{flow}$ : the long-term average process flow rate, in MGD, for the applicable guideline(s) (unless otherwise specified in the guideline)

$ELG$ : the concentration limitation, in mg/l, for the applicable pollutant from the applicable guideline(s)

H. Other considerations

1. When the derived permit effluent limitation based on aquatic life numeric criteria is below the practical quantitation limit for a substance, the derived permit effluent limitation shall include an accompanying statement in the permit that the practical quantitation limit using approved analytical methods shall be considered as being in compliance with the limit. Appropriate biological monitoring requirements shall be incorporated into the permit to determine compliance with appropriate water quality standards (R.61-68.E.14.c(2)).
2. When the derived permit effluent limitation based on human health numeric criteria is below the practical quantitation limit for a substance, the derived permit effluent limitation shall include an accompanying statement in the permit that the practical quantitation limit using approved analytical methods shall be considered as being in compliance with the limit (R.61-68.E.14.c(3)).
3. The effluent concentration limits determined above may not necessarily be the NPDES permit limit. NPDES Permit limits are determined after a reasonable potential analysis is conducted using these derived limits and also after evaluating other issues such as anti-backsliding and antidegradation.
4. When mass limits are calculated, the formula to be used is as follows.

$$\text{Mass (lb/day)} = \text{Flow (mgd)} * \text{Concentration (mg/l)} * 8.345$$

5. Per Regulation 61-9.122.45(d), for continuous discharges all permit effluent limitations, standards, and prohibitions, including those necessary to achieve water quality standards, shall unless impracticable be stated as maximum daily and average monthly discharge limitations for all dischargers other than publicly owned treatment works.
6. Antibalancing: When a permit is reissued, the terms and conditions of the reissued permit must be at least as stringent as those final limits in the previous permit unless certain exceptions are met (see Regulation 61-9.122.44.1).

#### IV. PROCEDURES FOR REACHING A FINAL PERMIT DECISION

##### A. Comment Period (R.61-9.124.10 and 11)

The Department of Health and Environmental Control proposes to issue an NPDES permit to this applicant subject to the effluent limitations and special conditions outlined in this document. These determinations are tentative.

During the public comment period, any interested person may submit written comments on the draft permit to the following address:

**SC Dept. of Health and Environmental Control  
Water Facilities Permitting Division  
Bureau of Water  
2600 Bull Street  
Columbia, South Carolina 29201**

For additional information, interested persons may contact Byron M Amick at 803-898-4236.

All written comments received during the public comment period shall be considered in making the final decision and shall be responded to as prescribed below.

Per R.61-9.124.17, the Department is only required to issue a response to comments when a final permit is issued. This response shall:

1. Specify which provisions, if any, of the draft permit have been changed in the final permit decision, and the reasons for the change; and
2. Briefly describe and respond to all significant comments on the draft permit raised during the public comment period, or during any hearing.

The response to comments shall be available to the public.

##### B. Public Hearings (R.61-9.124.11 and 12)

During the public comment period, any interested person may request a public hearing, if no hearing has already been scheduled. A request for a public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing.

Determinations and Scheduling.

1. Within the thirty (30) day comment period or other applicable comment period provided after posting or publishing of a public notice, an applicant, any affected state or interstate agency, the Regional Administrator or any other interested person or agency may file a petition with the Department for a public hearing on an application for a permit. A petition for a public hearing shall indicate the specific reasons why a hearing is requested, the existing or proposed discharge identified therein and specifically indicate which portions of the application or other permit



form or information constitutes necessity for a public hearing. If the Department determines that a petition constitutes significant cause or that there is sufficient public interest in an application for a public hearing, it may direct the scheduling of a hearing thereon.

2. A hearing shall be scheduled not less than four (4) nor more than eight (8) weeks after the Department determines the necessity of the hearing in the geographical location of the applicant or, at the discretion of the Department, at another appropriate location, and shall be noticed at least thirty (30) days before the hearing. The notice of public hearing shall be transmitted to the applicant and shall be published in at least one (1) newspaper of general circulation in the geographical area of the existing or proposed discharge identified on the permit application and shall be mailed to any person or group upon request thereof. Notice shall be mailed to all persons and governmental agencies which received a copy of the notice or the fact sheet for the permit application.
3. The Department may hold a single public hearing on related groups of permit applications.
4. The Department may also hold a public hearing at its discretion, whenever, for instance, such a hearing might clarify one or more issues involved in the permit decision;
5. Public notice of the hearing shall be given in accordance with R.61-9.124.10.

Any person may submit oral or written statements and data concerning the draft permit. Reasonable limits may be set upon the time allowed for oral statements, and the submission of statements in writing may be required. The public comment period under R.61-9.124.10 shall automatically be extended to the close of any public hearing under this section. The hearing officer may also extend the comment period by so stating at the hearing.

A tape recording or written transcript of the hearing shall be made available to the public.

C. Obligation to raise issues and provide information during the public comment period. (R.61-9.124.13)

All persons, including applicants, who believe any condition of a draft permit is inappropriate or that the Department's tentative decision to deny an application, terminate a permit, or prepare a draft permit is inappropriate, must raise all reasonably ascertainable issues and submit all reasonably available arguments supporting their position by the close of the public comment period (including any public hearing). No issue shall be raised during an appeal by any party that was not submitted to the administrative record as part of the preparation and comment on a draft permit, unless good cause is shown for the failure to submit it. Any supporting materials which are submitted shall be included in full and may not be incorporated by reference, unless they are already part of the administrative record in the same proceeding, or consist of State or Federal statutes and regulations, Department and EPA documents of general applicability, or other generally available reference materials. Commenters shall make supporting materials not already included in the administrative record available. (A comment period longer than 30 days may be necessary to give commenters a reasonable opportunity to comply with the requirements of this section. Additional time shall be granted under R.61-9.124.10 to the extent that a commenter who requests additional time demonstrates the need for such time).

D. Issuance and Effective Date of the Permit

1. After the close of the public comment period on a draft permit, the Department shall issue a final permit decision. The Department shall notify the applicant and each person who has submitted written comments or requested notice of the final permit decision. This notice shall include reference to the procedures for appealing a decision on a permit. For the purposes of this section, a final permit decision means a final decision to issue, deny, modify, revoke and reissue, or terminate a permit.
2. A final permit decision shall become effective 30 days after the service of notice of the decision unless:
  - (a) A later effective date is specified in the decision; or
  - (b) No comments requested a change in the draft permit, in which case the permit shall become effective on the effective date shown in the issued permit.

3. Issuance or Denial of Permits. An appeal to a final determination of the Department or to a condition of a permit issued or the denial of a permit pursuant to the State law and Regulation 61-9, shall be in accordance with and subject to 48-1-200 of the SC Code (see E below).

#### E. Adjudicatory Hearings

The decision of the South Carolina Department of Health and Environmental Control (Department) becomes the final agency decision fifteen (15) calendar days after notice of the decision has been mailed to the applicant, permittee, licensee and affected persons who have requested in writing to be notified, unless a written request for final review accompanied by a filing fee in the amount of \$100 is filed with Department by the applicant, permittee, licensee or affected person.

Applicants, permittees, licensees, and affected parties are encouraged to engage in mediation during the final review process.

If the Board declines in writing to schedule a final review conference, the Department's decision becomes the final agency decision and an applicant, permittee, licensee, or affected person may request a contested case hearing before the Administrative Law Court within thirty (30) calendar days after notice is mailed that the Board declined to hold a final review conference.

##### 1. Filing of Request for Final Review

- (a) A written Request for Final Review (RFR) and the required filing fee of one hundred dollars (\$100) must be received by Clerk of the Board within fifteen (15) calendar days after notice of the staff decision has been mailed to the applicant, permittee, licensee, or affected persons. If the 15th day occurs on a weekend or State holiday, the RFR must be received by the Clerk on the next working day. RFRs will not be accepted after 5:00 p.m.
- (b) RFRs shall be in writing and should include, at a minimum, the following information:
  - the grounds for amending, modifying, or rescinding the staff decision;
  - a statement of any significant issues or factors the Board should consider in deciding how to handle the matter;
  - the relief requested; and
  - a copy of the decision for which review is requested.
- (c) RFRs should be filed in person or by mail at the following address:

**South Carolina Board of Health and Environmental Control**  
**Attention: Clerk of the Board**  
**2600 Bull Street**  
**Columbia, South Carolina 29201**

Alternatively, RFR's may be filed with the Clerk by facsimile (803-898-3393) or by electronic mail (boardclerk@dhec.sc.gov).

- (d) The filing fee may be paid by cash, certified check or credit card. If a RFR is filed by facsimile or electronic mail, the filing fee may be mailed to the Clerk of the Board and the envelope must be postmarked within the time allowed for filing a RFR.

- (e) If there is any perceived discrepancy in compliance with this RFR filing procedure, the Clerk should consult with the Chairman or, if the Chairman is unavailable, the Vice-Chairman. The Chairman or the Vice-Chairman will determine whether the RFR is timely and properly filed and direct the Clerk to (1) process the RFR for consideration by the Board or (2) return the RFR and filing fee to the requestor with a cover letter explaining why the RFR was not timely or properly filed. Processing an RFR for consideration by the Board shall not be interpreted as a waiver of any claim or defense by the agency in subsequent proceedings concerning the RFR.
- (f) If the RFR will be processed for Board consideration, the Clerk will send an Acknowledgement of RFR to the Requestor and the applicant, permittee, or licensee, if other than the Requestor.
- (g) The Clerk will email the RFR to all Board members for review, and all Board members will confirm receipt of the RFR to the Clerk by email. If a Board member does not confirm receipt of the RFR within twenty-four (24) hour period, the Clerk will contact the Board member and confirm receipt. If a Board member believes the RFR should be considered by the RFR Committee, he or she will respond to the Clerk's email within forty-eight (48) hours and will request further review. If no Board member requests further review of the RFR within the forty-eight (48) hour period, the Clerk will send a letter by certified mail to the Requestor, with copy by regular mail to the applicant, permittee, or licensee, if not the Requestor, stating the Board will not hold a Final Review Conference. A copy of the Notice of Appeal Procedure will be included with the letter.

*NOTE: If the time periods described above end on a weekend or State holiday, the time is automatically extended to 5:00 p.m. on the next business day.*

- (h) If the RFR is to be considered by the RFR Committee, the Clerk will forward a copy of the RFR to Department staff and Office of General Counsel. A Department response to the RFR should be provided by Department staff to the Clerk within eight (8) working days after the RFR is forwarded.

## **2. Final Review Conference Scheduling**

- (a) If a Conference will be held, the Clerk will send a letter by certified mail to the Requestor, with copy by regular mail to the applicant, permittee, or licensee, if not the Requestor, informing the Requestor of the determination.
- (b) The Clerk will request Department staff provide the Administrative Record.
- (c) The Clerk will send Notice of Final Review Conference to the parties at least ten (10) days before the Conference. The Conference will be publically noticed and should:
  - include the place, date and time of the Conference;
  - state the presentation times allowed in the Conference;
  - state evidence may be presented at the Conference;
  - if the conference will be held by committee, include a copy of the Chairman's order appointing the committee; and
  - inform the Requestor of his or her right to request a transcript of the proceedings of the Conference prepared at Requestor's expense.
- (d) If a party requests a transcript of the proceedings of the Conference and agrees to pay all related costs in writing, including costs for the transcript, the Clerk will schedule a court reporter for the Conference.

### 3. Final Review Conference and Decision

- (a) The order of presentation in the Conference will, subject to the presiding officer's discretion, be as follows:
- Department staff will provide an overview of the staff decision and the applicable law to include [10 minutes]:
    - Type of decision (permit, enforcement, etc.) and description of the program.
    - Parties
    - Description of facility/site
    - Applicable statutes and regulations
    - Decision and materials relied upon in the administrative record to support the staff decision.
  - Requestor(s) will state the reasons for protesting the staff decision and may provide evidence to support amending, modifying, or rescinding the staff decision. [15 minutes] *NOTE: The burden of proof is on the Requestor(s)*
  - Rebuttal by Department staff [15 minutes]
  - Rebuttal by Requestor(s) [10 minutes]

Note: Times noted in brackets are for information only and are superseded by times stated in the Notice of Final Review Conference or by the presiding officer.

- (b) Parties may present evidence during the conference; however, the rules of evidence do not apply.
- (c) At any time during the conference, the officers conducting the conference may request additional information and may question the Requestor, the staff, and anyone else providing information at the conference.
- (d) The presiding officer, in his or her sole discretion, may allow additional time for presentations and may impose time limits on the Conference.
- (e) All Conferences are open to the public.
- (f) The officers may deliberate in closed session.
- (g) The officers may announce the decision at conclusion of the Conference or it may be reserved for consideration.
- (h) The Clerk will mail the written final agency decision (FAD) to parties within 30 days after the Conference. The written decision must explain the basis for the decision and inform the parties of their right to request a contested case hearing before the Administrative Law Court. The FAD will be sent by certified mail, return receipt requested.
- (i) Communications may also be sent by electronic mail, in addition to the forms stated herein, when electronic mail addresses are provided to the Clerk.

**The above adjudicatory information is provided as a courtesy; parties are responsible for complying with all applicable legal requirements.**