

STATEMENT OF BASIS

To: Reviewers
Through: Lori Bocchino, Operating Permit Program Manager
From: Despina Nikolova, Air Quality Engineer
Subject: Draft Operating Permit 3-2-103, The Western Sugar Cooperative
Lovell Facility
Date: March 11, 2011

Introduction:

Attached is the draft Wyoming Air Quality Standards and Regulations (WAQSR) Ch 6, Sec 3 operating permit for The Western Sugar Cooperative, Lovell Facility. The plant is rated at a slicing capacity of 3,100 tons of beets per day with the beets averaging 16.7 percent sugar content. The products of the plant are white sugar, animal feed pulp pellets, and molasses. The operation of the plant is seasonal. Emission sources include a 150 MMBtu/hr Erie City boiler, a 100 MMBtu/hr Union boiler, a coal or natural gas fired beet pulp dryer with a cyclone and scrubber, a 20 MMBtu/hr Cleaver Brooks Boiler, a 4.6 ton/hr coal fired lime kiln with a baghouse, and seven processing sources including a pellet mill with a cyclone, pellet cooler with a cyclone and baghouse, pulp conveyor with a cyclone and baghouse, steam heated sugar granulator, air drying sugar granulator, coal handling system with a baghouse, and two lime slaker vent fans. Fugitive emissions include coke, limestone and beet handling; truck hauling. There are also insignificant emissions sources at the facility, including storage tanks that are less than 90,000 gallons and four 150,000 BTU space heaters.

Permitting History:

Parts of this facility were constructed in 1917. Permit MD-82 (11/18/87): was issued to modify the pulp dryer to allow coal or natural gas firing. Opacity from the coal handling baghouse is limited to 20 percent, the pulp dryer scrubber is required to be operated during all periods of pulp dryer operation, and emission rates for the pulp dryer were set at 27.5 lb/hr for particulate, 9.0 lb/hr for SO₂, and 10.3 lb/hr for NO_x. The maximum process weight used to set the particulate emission limit in the permit analysis was calculated to be 26.3 tons/hour including pulp and coal.

Permit MD-293 (8/6/96): This permit was issued for the addition of a baghouse on the lime kiln. Applicable requirements include a particulate emission limit for the lime kiln of 0.5 lb/hr with an opacity limit of 10 percent as determined by Method 9. WAQSR Chapter 3, Section 3 does not apply to the lime kiln because it is direct-fired.

Permit CT-1648 (11/30/99): allowed modification of operations to increase the allowable NO_x limit on the pulp dryer. Applicable requirements for the pulp dryer include a NO_x emission limit of 25.0 lb/hr and 67.2 tons/year, an annual operating hours limit of 5,374, a timer device to determine the operating hours to be maintained according to manufacturer's specifications, and annual operating hours be submitted with the annual emission inventory.

Waiver AP-0928 (7/24/03): modified operations with use of a second lime slaker vent. Particulate emissions from each lime slaker vent are limited to 1.5 lb/hr. Opacity from each slaker vent is limited to 20%.

Waiver AP-9479 (7/6/09): was issued for replacing/repairing economizer B on the Union Boiler. The waiver AP-10267 superseded all conditions of this waiver.

Waiver AP-10267 (2/2/10): authorized the Lovell Facility with the repair/replacement of the economizer on the Erie Boiler. The conditions of waiver AP-9479 were incorporated into this waiver. The waiver set a limit of 73 TPY total actual NO_x emissions, on a calendar year basis, from the Erie City and Union boilers for a period of 5 years following resumption of regular operations after the economizers are repaired.

Note: The Union Boiler economizer repair has been completed, and the notice of startup dated September 7, 2010 was submitted to the Division. The Erie Boiler repair is planned for 2011.

Applicable Requirements:

Applicable requirements include visible and particulate emission limits. Allowable particulate emission limits for several of the units are derived from WAQSR Chapter 3, Section 2 process weight tables. NO_x emission limits have been set for the fuel burning equipment under WAQSR Chapter 3, Section 3. A maintenance plan is required for the timer device, baghouses and cyclones. This facility is not major for Hazardous Air Pollutants (HAPs). The pulp dryer with a cyclone and baghouse is subject to compliance assurance monitoring (CAM) requirements. The boilers use natural gas as the primary fuel source, but in the event natural gas is unavailable, fuel oil is used. The use of fuel oil has been addressed in an Alternative Operating Scenario included in the operating permit.

Periodic Monitoring

For periodic monitoring of visible emissions from the boilers the permittee will monitor the type of fuel burned to ensure natural gas is the sole fuel source for these units (except as provided in the Alternative Operating Scenario). The remaining particulate sources, except the pulp dryer, require Method 9 type observations for periodic monitoring of visible and particulate emissions.

For the pulp dryer, Method 9 observations are required twice per campaign period. For particulate emissions, the permittee shall monitor the water flow rate in gallons per minute to the scrubber and comply with the submitted CAM plan. Proper operation of the scrubber also assures removal of SO₂. Additionally, for SO₂ emissions, the permittee shall test the pulp dryer at least once every five years; for NO_x, testing shall be conducted at least once per beet processing campaign.

Periodic monitoring of NO_x emissions from the Erie City boiler, the Union boiler, and the Cleaver Brooks boiler shall consist of operating and maintaining each unit in accordance with the manufacturer's specifications and recommendations, or if unavailable, in accordance with good maintenance practices. Additionally, the Erie City and Union boilers shall be tested for NO_x using State of Wyoming's Portable Analyzer Protocol or EPA reference methods.

The Cleaver Brooks boiler is fuel burning equipment as defined in WAQSR Chapter 1. This is a small natural gas fired unit called the "summer boiler" and is used during the inter-campaign period to provide heat and energy. Actual NO_x emissions from the unit, using AP-42 factors, have been 1.1 tons per year for the last five years. In the absence of more stringent permit limits, the NO_x emission limit for fuel burning equipment defaults to 0.23 pounds per million BTUs (lb/MMBtu) for sources constructed before April 9, 1973 (Cleaver Brooks boiler is constructed in 1965), as stated in WAQSR, Ch 3, Sec 3 emission standards for nitrogen oxides from existing sources. These regulatory limits have not been updated since 1973. The summer boiler is uncontrolled and operates at a steady state; emission variations are not likely. The AP-42 emission factors were developed by the EPA to help estimate the quantity of a pollutant from a given source type. In developing an AP-42 emission factor, emission data is averaged from sources of similar size and type, and is then assigned a reliability rating based on quality and quantity of the data used. The rating scale runs from A to E with an A rating providing the highest quality. The AP-42 emission factor for gaseous fuel burning sources less than 100 MMBtu/hr (Cleaver Brooks boiler is rated 20 MMBtu/hr) is 0.1 lb/MMBtu with a B rating. Considering the amount of data evaluated to develop the AP-42 emission factor and considering that the Chapter 3, Section 3 emission limit is more than twice that value, the Division feels it is extremely unlikely this source will operate out of compliance and considers further monitoring uneconomical.

