ATTACHMENT C

Compliance with Antidegredation

In accordance with Rule 323.1098, an antidegredation demonstration must be submitted for all new or increased facility water discharges. Rule 323.1098 requires a NPDES application so submit a demonstration that identifies the social or economic development and benefits that will be foregone in the area where the waters are located if a permit is not issued.

The following information is provided:

- An analysis of the economic and social development contribution to the area by the proposed Humboldt Mill Project per R 323.1098(4)(a)
- Documentation satisfying R 323.1098(4)(b)(i) and (iii) that any bioaccumulative chemicals of concern (BCC) in the discharge are being reduced through cost-effective pollution prevention alternatives and by the application of best technology in process and treatment (BTPT) that has been adequately demonstrated and is reasonable available in the market place.

Economic Benefits

The purpose of this section is to address R 323.1098 (4)(a). The development of the Humboldt Mill Project will result in a variety of economic benefits for the Marquette County area. Specifically, the Humboldt Mill will increase employment, will encourage industrial, commercial, and residential grown, and will provide social benefits to the project area. A 2013 economic impact report estimates that the Eagle project provides an approximate $4 billion boost to the Marquette County economy during the life of operations. The project will also generate revenue for state and local taxing entities which in turn will promote economic and social benefits for the local area. These benefits are summarized below:

Employment

The project personnel requirements during operations are based on an operating schedule of 24 hours per day, 365 days per year. On-site personnel requirements during operations at the Humboldt Mill are expected to be approximately 100 to 150 employees during full production.

Economic Improvements

The economic effects of the Humboldt Mill on Humboldt Township and Marquette County include:

- Capital investment;
- Jobs, salaries, and benefits;
- Local, state, and federal taxes; and,
- Local and state royalties.

Eagle has estimated that a $400 million capital expenditure is to be spent between July 2013 and July 2014, most of which is required to be invested to bring the mill to a production state. Much of the capital and operating purchases will be from local vendors and suppliers. Approximately $570 million will be spent in local procurement for the project. This will stimulate economic growth as increases in sales and employment typically lead to increase spending on consumer goods. Approximately 300 total mine and mill personnel are expected to be employed at full production. This employment level will be sustained

until the end of mining. About 75% of those hires are expected to be local, with a total annual payroll of $24 million.

State and local revenues that will be positively impacted by the Humboldt Mill project include individual income tax, general sales tax, transportation tax, road tax, and property tax. Projected payments to the state and local governments during the life of the operation are expected to be $240 million.

Social Benefits

Employment, real disposable income, and state and local revenue are forecasted to increase as a result of the operation of the Humboldt Mill. These economic changes will have a positive benefit to the local economy. Eagle intends to fill 75% of its workforce from the Upper Peninsula area. The remaining 25% will be filled from outside the area representing a small local population increase. An increase in employment and population is viewed as a positive economic stimulus to the local economy.

Environmental Improvements

The Humboldt Mill rehabilitation is not only a new economic feature of Marquette County, but the project (which the discharge enables) it is a brownfield cleanup and redevelopment project, substantially improving upon pre-existing environmental conditions at the site. Former operations left residual contamination from ore and material processing activities within the building and storage structures, buried wastes, and wastes exposed on the ground surface that could migrate from the site via storm water. The site has undergone in excess of $2 Million in cleanup effort including removal of approximately 15,000 tons of waste material and 25,000 tons of contaminated soil which represented a former environmental threat to the area. Eagle delineated the extent of underground storage tank contamination, disposed of liquid industrial wastes, completed asbestos, lead, and PCB abatement, and Eagle continues to conduct ongoing due care activities to ensure that the Humboldt Mill site is a properly regulated brownfield site and will maintain financial assurance for new activities and for eventual closure of the site.

Bioaccumulative Chemicals of Concern

Bioaccumulative chemicals of concern, including mercury, will not be used in any aspect of the Humboldt Mill project operation, but may be present in waters of the HTDF via natural means. The estimated surface water concentrations of mercury is 0.3 nanogram per liter (ng/L) or less under expected conditions. Under the HTDF complete mix condition (provided in the original 2008 NPDES permit application, unchanged), the mercury levels at the surface could exceed the permissible exposure limit (PEL) of 1.3 ng/L, however, the water treatment plant (WTP) has been designed for this complete mix scenario and has treatment capability for this condition to reduce the effluence concentration below 1.3 ng/L.

Technical Evaluation of Best Technology in Process and Treatment

R 323.1098 (40(b)(i) requires that an applicant implement cost effective pollution prevention measures as a first step in reducing potential discharges of mercury. As previously stated, mercury will not be used in the Humboldt Mill operations and is only present in the mill discharge and treatment plant wastewaters as a byproduct of natural materials. There are no additional pollution prevention measures that can be implemented for the Humboldt Mill beyond those that are already incorporated into the project plan. As

such, the requirements of R 323.1098(4)9b)(i) are already factored into the operational plans for the Humboldt Mill.

Alternatives Evaluation

The following alternatives were evaluated for the Humboldt Mill project:

- Water minimization and reuse;
- Chemical precipitation using metal hydroxide technologies, and
- Chemical precipitation using metal chelating polymer technologies.

The major sources of water to the HTDF include precipitation, groundwater inflow, and displaced water from the tailings. These sources of water cannot be reasonably reduced. Another major input of water into the HTDF is the water used for conveyance of the tailings to the HTDF. This water will be reused with an average of 116 gallons per minute (gpm) of water being pumped from the HTDF to the mill and reused for conveyance.

Treatment of the wastewater using the aforementioned treatment technologies was evaluated. Metal hydroxide precipitation is commonly used for reduction of metals in the wastewater. Metals such as nickel and copper have reduced solubility at elevated pH levels and produce a metal hydroxide solid precipitate.

As an advanced technology consisting of a metal chelating polymer with a chelating group based on sulfur chemist bonded to an organic molecule was also evaluated. The solubility of metal sulfide compounds are considerably lower than the solubility of metal hydroxide compounds. Therefore the treated water using the sulfur chemistry will have lower metal concentrations than treating with metal hydroxide precipitation alone. Further information on the process and design of the HTDF is provided in **Attachment D** of this application.