Mr. Bruce Young
Deputy Public Works Director
City of Eureka
531 K Street
Eureka, CA 95501-1146

Dear Mr. Young:

Subject: Notice of Incomplete Report of Waste Discharge for Land Application of Biosolids

File: Eureka, City of, Elk River WWTP
NPDES Permit No. CA0022756, WDID No. 1A82151OHUM

On March 25, 2013, the City of Eureka submitted a report of waste discharge (ROWD) for land application of municipal biosolids from the City's Elk River Wastewater Treatment Plant on two City-owned parcels of land that are collectively known as Parcel M. As described in the ROWD, the biosolids application area is approximately 80 acres, 76 acres of which has been identified by the US Army Corps of Engineers as likely jurisdictional wetlands. The City currently leases Parcel M to a private entity for use as pasture for livestock grazing and hay production.

Regional Water Board staff has reviewed the ROWD and has determined that the application is incomplete because it does not demonstrate that the application of biosolids at this site will not degrade groundwater quality and will not result in migration of pollutants from the application site to Humboldt Bay and the Eel River, both waters of the United States. A discussion of what information is needed to complete the ROWD is presented below.

Commented [es1]: Elk?

Effect of the proposed discharge on groundwater quality

Land application of biosolids must not cause exceedance of water quality objectives for groundwater. The Water Quality Control Plan for the North Coast Basin (Basin Plan) specifies water quality objectives for groundwater for taste and odors, bacteria, radioactivity, and chemical constituents identified in Table 3-2 of the Basin Plan. Groundwater at Parcel M is designated in the Basin Plan as Municipal and Domestic Supply (MUN).

Commented [es2]: And thus, these objectives apply? It's a little unclear whether the objectives are related to the MUN use.

The City submits that there are three factors that mitigate potential environmental impacts to groundwater from the proposed project to land application biosolids at Parcel M: 1) the proposed biosolids application rate is well below the recommended agronomic rate for nitrogen; 2) the biosolids application rate would will not result in an exceedance of the cumulative pollutant loading rates for heavy metals set forth in federal regulations; and 3) biosolids will be applied only during dry conditions and when the seasonal groundwater table is at least three feet below ground surface.

The City proposes to land apply biosolids at a rate of 15.21 pounds of nitrogen per acre (lbs N/Ac), a rate well below the agronomic rate of 221 lbs N/ac recommended for the expected pasture crop by a consulting agricultural laboratory. However, even though the application rate is less than the recommended agronomic rate, the proposal assumes that there is 100 percent uptake of applied nitrogen. The nitrogen uptake efficiency for common crops is reported to be about 50 percent or less under ideal conditions. Therefore, it follows that at least 50 percent of nitrogen applied to crops will likely reach groundwater when high seasonal groundwater and infiltrating precipitation effectively eliminate the unsaturated conditions below the disposal area. A permanent unsaturated zone plays a critical role in removing and/or capturing pollutants before they can be transported to groundwater. The ROWD should fully account for the effect of high seasonal groundwater on compliance with water quality objectives for nitrate in the Basin Plan and demonstrate that the discharge of biosolids will not cause degradation of groundwater.

Commented [es3]: Recommend including what they need to demonstrate at the top of the paragraph, with justification below. Otherwise it gets lost.

In the ROWD, the City proposes a range of hypothetical biosolids application rates to assert that the City's biosolids could be applied for many years before reaching regulatory maximum heavy metals concentrations in the soil. However, again, the assessment fails to account for heavy metals (and metal complexes) that will leach into groundwater when an unsaturated soil zone does not exist. Under conditions where there is a permanent unsaturated zone, heavy metals are expected to relatively immobile, binding to soil particles and accumulating in the soil layer. High seasonal groundwater results in changes in the physiochemical properties of the soil that will cause the heavy metals (or their complexes) to desorb and leach into groundwater. Instead of comparing the application rates to the Cumulative Pollutant Loading Rate (CPLR) limits, a more appropriate assessment for this proposal would be whether there is a potential that biosolids application on Parcel M will cause an exceedance of maximum contaminant levels (MCLs) for pollutants in drinking water because groundwater at the site is designated MUN. A table listing the current federal and state MCLs is attached.

Commented [es4]: Same comment as above.

The ROWD states that biosolids will be applied and incorporated into the soil during dry conditions and when the seasonal groundwater table is at least three feet below ground surface. However, climatic conditions in the Eureka area result in a small and unpredictable window to apply and incorporate biosolids so that decomposition, crop uptake, and/or binding to soil particles or other chemical transformation in soil occurs before leaching (and runoff) processes dominate. Regional Water Board staff is concerned that transport induced by wet weather events could occur soon after biosolids application and incorporation into soil.

Commented [es5]: Do you have precipitation trend data you could cite here?

Commented [es6]: Recommend requiring the City to provide data on these processes and a worst-case dry period for Eureka.

Effect of the proposed discharge on surface water quality

The land application of biosolids must not result in the transport of pollutants contained in biosolids to surface waters. This prohibition is consistent with the Water Quality Control Policy for the Enclosed Bays and Estuaries of California (State Water Resources Control Board Resolution No. 95-84), which states that the discharge of municipal and industrial waste sludge to enclosed bays and estuaries shall be prohibited.

Commented [es7]: This is kind of a show-stopper, isn't it? I would indicate that.

Commented [es8]: I would just say the WQC Policy prohibits....

Finished biosolids are commonly between 10 and 15 percent solids and land application of these biosolids presents a relatively low potential for pollutant runoff from the site. However, given the low solids content of City biosolids (3 percent solids), the indication of

seasonal flooding of Parcel M, and the proximity of Parcel M to Elk Creek and Humboldt Bay, there is an elevated threat that pollutants contained in the municipal biosolids will be transported to surface water through direct runoff. Although our concern is mitigated somewhat because the site is relatively flat, Figure 3 of Technical Report indicates that the parcel is crossed by constructed ditches through the site to drain the parcels and the ROWD proposes a setback of only 5-feet to the drainage ditches. A 5-foot buffer is not consistent with the statewide general permit for land application of biosolids (State Water Resources Control Board Water Quality Order No. 2004-12-DWQ), which requires a minimum of 33 foot setback or buffer between the application area and surface waters, including agricultural drainages. The ROWD should justify why the proposed 5-foot setback would be protective of water quality at all times.

Commented [es9]: River?

Commented [es10]: Would the RB really consider a setback that is inconsistent with the SB GP? FYI – it is also inconsistent with federal biosolids requirements.

Consistency with State Antidegradation Policy

State Water Resources Control Board Resolution 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California" requires that whenever existing water quality is better than needed to protect existing and probable future beneficial uses of water, the existing high quality must be maintained unless the following conditions are satisfied:

- Will be consistent with the maximum benefit to the people of the state;
- Will not unreasonably affect present or probable future beneficial uses of such water; and
- Will not result in water quality less than prescribed in state policies.

Unless these three conditions are met, background water quality is to be maintained.

Based on the foregoing, it is expected that some degradation of groundwater and/or surface water quality may occur as a result of the proposed project to land apply municipal biosolids at Parcel M. The ROWD must provide information that demonstrates that the proposed discharge meets the conditions listed above.

In conclusion, Regional Water Board Staff supports the City's desire to have a number of options for disposal or beneficial reuse of biosolids generated at the City's treatment plant. However, the proposed application project at Parcel M presents many significant challenges, and Regional Water Board staff believes that it will be exceedingly difficult for the City to demonstrate that the proposed discharge will not adversely impact groundwater and surface water quality. Regional Water Board staff encourages the City to explore other options.