

## Gustavus Monitoring Plan Dated August 21, 2015

Groundwater monitoring is not required by the State of Alaska for a Class III landfill unless there is credible evidence that the water quality standards have been violated in a surface water body or an aquifer, or conditions at the landfill may result in harm to public health or the environment. The Gustavus landfill is in close proximity to drinking water wells located up gradient of the landfill and groundwater beneath the landfill may be tidally influenced. Gustavus believes it is in the best interest of the public to know the condition of the groundwater at the landfill boundary in order to protect both drinking water and aquatic resources in the Salmon River. Therefore, Gustavus will perform the following groundwater monitoring requirements.

- I. Gustavus will sample the monitoring wells designated as MW #4 (upgradient) and MW #6 (down gradient) every three years beginning in 2015 and, on an alternating basis, every three years sample the monitoring wells designated as MW #3 (upgradient) and MW #1 (down gradient), beginning in 2016. Beginning in 2015, monitoring at MW #4 and MW #6 shall occur at the peak of a higher-high tide event during the time of the year when precipitation is high in order to get a representative sample of the highest upgradient flow. Beginning in 2016, monitoring at MW #3 and MW #1 shall occur at the peak of the lower-low tide event during the time of the year when precipitation is the lowest. There will be no sampling event in 2017. In 2018, monitoring at MW#4 and MW#6 shall occur at the peak of the lower-low tide event during the time of the year when precipitation is the lowest. In 2019 monitoring at MW#3 and MW#1 shall occur at the peak of the higher-high tide event during the time of the year when precipitation is high. There would be no sampling event in 2020.
- II. The depth to groundwater and the total depth of the well shall be measured relative to the top of the well casing in all four wells mentioned Part I listed above during each sampling event. The time at which each sample is collected, the times at which high and low tides occurred on that day, and the amount of precipitation in the preceding week shall be noted and reported with the results of analysis.
- III. All samples shall include analysis for specific conductance, temperature, chemical oxygen demand, pH, hardness, arsenic, barium, cadmium, manganese, lead, copper, chromium, mercury, selenium, zinc, and nickel using approved EPA methods. The physical/visual description of each sample shall be noted. Upon request, the department will review the results of the tests and determine if the sampling frequency may be reduced. The department may increase the testing frequency with any significant change in the design or operation of the landfill.
- IV. Unfiltered total recoverable metals results shall be reported to the ADEC Solid Waste Program in accordance with the ADEC *Alaska Water Quality Criteria Manual for Toxic And Other Deleterious Organic and Inorganic Substances*, as

amended December 12, 2008 and the Alaska Water Quality Standards in 18 AAC 70.020(c) as amended through September 19, 2009.

- V. Test procedures for analysis of pollutants shall conform to methods cited in 18 AAC 70.020(c) as amended through September 19, 2009, and in the *Alaska Water Quality Criteria Manual for Toxic and Other Deleterious Organic and Inorganic Substances*, dated December 12, 2008 and adopted by reference using EPA methods or as such regulations may be amended.
- VI. Gustavus will compare background (upgradient) MW levels to downgradient MW levels in each sampling event for each of the monitoring parameters or constituents required in this GW monitoring program rather than to the water quality standards under 18 AAC 70.
- VII. Gustavus will furnish groundwater sampling data to ADEC within 60 days of receipt from laboratory. Gustavus will keep copies in the operating record of the facility for at least five years after the data is submitted to ADEC.