



January 16, 2020

Kevin Frederick, Administrator
Water Quality Division, WDEQ
200 West 17th Street
Cheyenne, WY 82002

Re: WYPDES Permit No. WY0002062, Response to Letter of Violation

Dear Administrator Frederick:

Aethon is providing written response regarding your correspondence dated 12/17/2019 outlining specific violations in accordance with WYPDES permit authorization WY0002062. Aethon appreciates the opportunity to provide its plan and schedule to resolve these violations.

Presence of Petroleum Hydrocarbons below Outfall 006 and at the DMP

Aethon has immediately implemented increased visual monitoring of the active discharge pits to assess the presence of oil accumulation. Pit skimming operations are now being conducted if the presence of oil on the pit surface approaches 25%. During monthly compliance sampling, a visual assessment will occur to verify there is not accumulation of oil below the outfall. During quarterly channel stability monitoring, a visual assessment will occur to verify there is not accumulation in Alkali Creek.

Presence of black sediment deposits below the discharge

Aethon has identified three potential solutions to address the black sediment deposits downstream of its outfalls. The first option is chemical oxidation where batch treatments of sodium hypochlorite (bleach) would be injected upstream in the pit system and eliminate the sulfide. The primary disadvantage of this approach is the resulting increase in TDS load that will occur as the TDS of the surface discharge will increase. The other options include increased aeration and/or introduction of dissolved oxygen to facilitate a SuperOxygenation process upstream of the pit system. The disadvantage of these approaches are that they have not been pilot tested.



Regardless of which solution is selected, Aethon is also evaluating consolidation of the surface discharge to one active outfall location (016). The advantages Aethon anticipates by centralizing the water management system include increased retention time as all water would flow through mechanical separation systems at the Hendry Water facility, decreased water temperature prior to surface discharge, and increased efficiency for implementation of a sulfide treatment solution.

The following schedule is proposed to select and implement a sulfide reduction technology:

Q2 2020 – begin water consolidation testing (to a single outfall)

Q3 2020 – submit permit for pilot project (if consolidation testing unsuccessful)

Q4 2020 – conduct pilot testing (if consolidation testing unsuccessful)

Q1 2021 – evaluate data from pilot testing efforts and select final sulfide reduction solution

Q4 2021 – implement final sulfide reduction solution

Presence of foam below the discharge

Aethon has consulted with our chemical supplier regarding the presence of foam downstream of its outfalls and an evaluation was conducted (see enclosure). A total of 5 chemicals that Aethon uses were confirmed to contain trace amounts of surfactants (3 corrosion inhibitors, 1 scale inhibitor and 1 water clarifier). Testing conducted by our supplier indicate foam issues only arising at >5,000 ppm treatment, whereas Aethon's maximum treatment level on any given injection point is 30 ppm. The water clarifier (RBW213), however, did exhibit presence of surface bubbles at levels as low as 50 ppm. Aethon's treatment rate for this chemical is 6 ppm. Aethon will continue to investigate this particular chemical to determine if a suitable replacement exists. It is possible that use of this chemical could be reduced or eliminated altogether based on results from the water consolidation testing that will occur in Q2 2020.

Aethon understands that Energy Labs performed Methylene Blue Active Substances (MBAS) colorimetric test (A5540C) to identify presence of anionic surfactants. Enclosed is a Hach TNT874 method for Anionic Surfactants. This method indicates interference may be possible with chloride levels exceeding 500 ppm. Considering detections were representative of chloride levels approximately 2,000 ppm, interference may be possible if a 4-5x dilution was not made. Aethon has reached out to Energy Labs to understand the method used in Lab Analysis C19081203 dated 9/10/2019. Considering a qualifier is not listed on the analytical report, it does not appear that a dilution occurred. Nonetheless, Aethon continues to monitor for the presence of foam. On 1/11/2020, Aethon operators walked the four active outfall drainages to Alkali Creek and no presence of foam was observed. Due to winter freeze conditions along Alkali Creek, no observation was possible along Alkali itself.



Aethon appreciates the opportunity to provide its assessment and proposed resolution to these concerns. Please contact me if you have questions regarding Aethon's written response.

Sincerely,

A handwritten signature in blue ink that reads "Andrea Taylor".

Andrea Taylor
Regulatory & HSE Manager
307-200-4391
ataylor@aethonenergy.com

pdf: Tom Nelson, VP Operations Support

Enclosures: Field Project Foaming Evaluation, Baker Hughes
TNT 874 Anionic Surfactants, Hach Company, dated 5/2018, Edition 2
Analytical Summary Report, C19081203, Energy Laboratories dated
9/10/2019