National Parks Conservation Association

Mr. Jason Thomas
Wyoming DEQ Water Quality Division
200 West 17th Street
Cheyenne, WY 82002

Delivered via email to: jason.thomas@wyo.gov

RE: Moneta Divide oil and gas field pollutant discharge permit, WYPDES Permit Number WY0002062 (Aethon Energy)

Please accept comments on behalf of the National Parks Conservation Association (NPCA) regarding the Moneta Divide oil and gas field pollutant discharge permit. After review of the draft Environmental Impact Statement (EIS) NPCA has concluded that EIS lacks the level of analysis, is missing critical information including discharge limits, water quality standards and effect of aquatic biota to permit the discharge of a potential oil and gas pollutant into a national park unit connected reservoir.

The mission of the NPCA is to "protect and enhance America's National Park System for present and future generations." Founded in 1919, NPCA is the leading citizen voice for the national parks. We are a national nonprofit with headquarters in Washington, DC, and 27 regional and field offices across the country including our Grand Teton Field Office located in Jackson, Wyoming. NPCA represents thousands of Wyoming residents who, along with our 1.3 million members and supporters nationwide, understand the need to conserve and protect our National Park System throughout the country.

A top priority for NPCA is protecting the resources within parks, including the larger watersheds in which they are embedded. Poorly planned oil and gas development including the discharge of oil and gas byproducts and pollutants without full understanding of the potential negative impacts can result in significant impacts to national park resources. NPCA is working to ensure that oil and gas development on Wyoming's other public lands, including BLM lands connected to national park units is planned with consideration and care for the many non-drilling uses of the land as well as the potential impacts on park resources, visitor experience and human health.

Draft EIS fails to protect National Park units in Wyoming

The draft EIS fails to adequately account for the impact to national parks. Additionally, it would set an alarming precedent by discharging potentially contaminated water into the Greater Yellowstone River system- a first of its kind proposal for national parks. Wyoming national parks impacted by this proposal are no exception, particularly considering the proposed permit authorize the discharge of up to 8.27 million of gallons per day of untreated and partially treated produced water into surface waters that could directly impact the water quality of Big Horn National Recreation Area, a national park unit. The watershed connected to Big Horn- waters from Boseyn Reservoir flows into both the Bighorn River, a Class I Watershed, and into the Wind River. This watershed and ecosystem, if contaminated, would reach far outside the boundaries of Boseyn Reservoir and trigger serious immediate and long-term impacts to public health, wildlife, and native trout connected to the larger ecosystem. This risk is compounded by the lack of comprehensive assessment or study of the potential impacts of produced water discharges to surface waters in the draft EIS; nor does it

adequately examine their downstream impacts. Permitting the daily discharge of a drilling waste product into public facing water resources without fully understanding existing relevant activities poses extreme risk water quality and at best is premature. Collectively, moving forward with the permit by the state of Wyoming could compromise the critical importance, both legally and in the spirt of America's best idea, which national park units across the country rely on clean water. Additionally, our analysis determined the draft EIS contained inadequate chemical analysis, including limited analytical methods, and in-depth short and long-term toxicity impacts, among others. The draft permit allows Aethon to dump more than 2,100 tons of total dissolved solids, including 719 tons of chloride, into a national park connected reservoir each month. The highly saline wastewater flows from oil wells at temperatures as high as 186° Fahrenheit, according the Bureau of Land Management's Moneta Divide Environmental Impact Statement, which contains a long list of pollutants, yet this issue is not addressed in the state's draft discharge permit. The constitution and range of temperature clearly conflict Wyoming state regulations that designate Boysen Reservoir a "high quality water" requiring "the highest statutory and regulatory requirements for all new and existing point source discharges . . . " Further, additional hydrology analysis conducted raises a series of concerns and questions regarding the impact of Aethon Energy's discharge of produced water into Boydsen Reservior and subsequently Big Horn National Recreation Area include:

• Monitoring data necessary for evaluation of the proposed permit renewal – At a minimum, the temperature, pH, TDS, chloride, alkalinity, and flow of Alkali Creek and Badwater Creek should be monitored at least monthly immediately upstream and downstream of Aethon's current discharge in Alkali and Badwater Creeks and also in Badwater Bay. That monitoring should begin at least one year before a final permit is signed by WDEQ, so knowledge of annual variations of flow, temperature, pH, TDS, chloride and alkalinity in Alkali Creek, Badwater Creek and Badwater Bay can be used to better establish acceptable dilution factors for untreated produced water discharged by Aethon.

• Predicted elevation of pH above the pH 9 Wyoming water quality standard – The chemistry of untreated produced water discharged by Aethon will worsen as it flows down Badwater Creek (i.e., the pH of the water will increase and might exceed the in- stream Wyoming water quality standard for pH if not diluted adequately), thus posing a hazard for aquatic life in Alkali Creek, Badwater Creek and Badwater Bay. If pH becomes elevated in Badwater Creek and approaches or exceeds the Wyoming water quality standard's upper pH level of 9, Aethon's hydrologic analysis should be repeated to take into account the potential for adverse water chemistry changes downstream in Badwater Creek as the untreated produced water equilibrates with the atmosphere. Averting such water chemistry changes might necessitate even greater dilution of the untreated produced water than the currently planned for salinity constraint in the Wind River downstream of Boysen Reservoir necessitates.

• Predicted toxicity of Aethon's untreated produced water – Based on a published model of the toxicity of saline oil and gas industry produced water to freshwater fish and invertebrates, Aethon's untreated produced water would have to be diluted at least 10- fold to avoid decreasing short-term survival of aquatic organisms; and it is likely that even more dilution would be needed to avoid longer-term, sublethal impairment (e.g., decreased growth and/or reproduction). Thus, averting such adverse effects in Alkali Creek, Badwater Creek and possibly in Badwater Bay might necessitate even greater dilution of the untreated production water than the currently-planned-for salinity constraint necessitates (which is based on projected salinity changes in the Wind River downstream of Boysen Reservoir).

• Contributions of potassium to the toxicity of Aethon's produced water discharge – The lack of an analysis for potassium in the water chemistry reported by Aethon means we have no way of knowing if the reportedly most-toxic major ion in the water, potassium, will be present at a high enough concentration to impair survival, growth, or reproduction of fish and other aquatic organisms.

• Inadequate hydrogen sulfide analyses in the permit application – The analytical method used for sulfides in the water chemistry reported by Aethon was not sensitive enough to determine whether the Wyoming water quality standard for sulfide will be exceeded and thus impair survival, growth, or reproduction of fish and other aquatic organisms.

• Cumulative effects of all discharges – Any analysis of the potential effects of Aethon's discharge of produced water should include the cumulative effects of all discharges into the Badwater Creek drainage (Aethon, Burlington, and any other discharges, current and future). And when evaluating the potential effects in the Wind River downstream of Boysen Reservoir, the cumulative effects of all discharges (current and future) in the entire Boysen Reservoir drainage should be considered.
• Toxicity testing requirements in the permit – To test whether Aethon's produced water discharges might adversely affect fish and/or other aquatic organisms in Alkali Creek, Badwater Creek and Badwater Bay, stricter toxicity testing requirements will be needed in a final discharge permit. Whole Effluent Toxicity (WET) tests should be required quarterly (rather than annually), include each outfall rather than a flow-weighted composite sample, include acute 48-hour lethality tests with Daphnia magna and acute 96-hour lethality tests with Fathead Minnows, and include chronic toxicity tests for 7-day larval Fathead Minnow growth and 7-day Ceriodaphnia magna reproduction (this Ceriodaphnia chronic test is now not included in the draft permit but would be important in evaluating potential effects of the discharge in Alkali Creek and Badwater Creek). Additionally, WDEQ should require Aethon to conduct a preliminary toxicity study before the discharge permit is finalized, to ensure the required dilution of untreated produced water is sufficient to avoid long-term toxicity downstream. To evaluate the possible effects of pH shifts to greater than pH 9 due to CO2 de-gassing, these tests should include testing of both "fresh" untreated produced water and "aged" untreated produced water, with the length of the "aging" determined by the longest projected transit time for water between its discharge into Alkali Creek and its entry into Badwater Bay.
Elevating these concerns is disclosure that the State of Wyoming Water Quality Division relied on modeling and analysis from a consultant hired by Aethon Energy to determine adverse impacts to human health to the reservoir, a negligent and alarming action by the state, who failed to independently analyze the impacts, and opted to accept the findings of a potentially biased, or narrowly focused assessment- which by omission or inadvertence, could have failed to capture impacts that would be determinative in the permit process. The permit proposal is highly technical, however in total, the permit allows for the discharge of over 508 million gallons of oil and gas drilling byproduct per year into a national park connected public reservoir, rather than call for the thorough study using highest level of science and analytics to determine impacts, both direct and cumulative in nature, to the environment and human health.

Summary

Considering the weight of the risks of contamination of the west's most valuable resource, NPCA urges the state of Wyoming to immediately conduct additional, independent study of this proposed discharge, which accounts for impact to national parks and the broader connected watershed. At a minimum, the state of Wyoming should prohibit any oil and gas byproduct to be dumped into

Alkali and Badwater Creeks, which would exacerbate potential environmental risks and impacts, until thorough, comprehensive analysis is conducted. As solution to wastewater disposal issue, we urge Aethon and state of Wyoming to pursue 21st century solutions that will ensure protection of human health and our national parks as well as allowing for oil and gas development to occur where appropriate without immense risk to Wyoming's watershed. Use of state-of-the-art water treatment facilities, technology and regulatory oversight, including whole effluent toxicity testing, full disclosure of chemicals to state regulators would aide in ensuring the protection of national parks and communities in the Yellowstone River watershed.

Sincerely,

Sharon Mader
Senior Grand Teton Program Manager
National Parks Conservation Association

July 5th, 2019

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