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April 6, 2017

Comments submitted by:

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Re: Permit #5264 AFIN-51-00164

Dear Director Keogh and Governor Hutchinson,

Thank you for the opportunity to comment on C&H Hog Farms Inc. (C&H) proposed Regulation 5 permit #5264. I am providing my comments to you as a concerned Arkansan who has floated the Buffalo National River (BNR) for the past 40 years, hiked her trails, and conducted research within the NPS boundaries. I am also a Newton County landowner whose property values will be impacted if the Buffalo National River is no longer a tourist destination because it is too contaminated with pathogens or choked by algae for people to want to spend time recreating in the park.

C&H should be denied a Regulation 5 (No Discharge Permit ) because of the available evidence presented within this document and from many other commenters, inclusive by reference, that demonstrates C&H is discharging into the waters of the United States and thus ineligible for a No-Discharge Regulation 5 permit.

Background and Legislative Requirements:

The Buffalo National River is the nation's first national river established in 1972. In 2015, the Buffalo National River received 1.46 million visitors who spent over \$72 million dollars and employed 969 people to provide meals, outfitting services, cabins, gas and groceries for visitors to the river.<sup>1</sup>

The goal of the Clean Water Act (CWA) is to eliminate the discharge of pollutants into the nation's waterways.<sup>2</sup> The CWA also includes an Anti-Degradation Policy<sup>3</sup> that requires the state to "develop and adopt a statewide anti-degradation policy...that at a minimum shall be consistent with... (3) where high quality waters constitute an outstanding National resource, such as waters of National and State parks and wildlife refuges and waters of exceptional recreational or ecological significance, that **water shall be maintained and protected.**" Waters must be protected at a level reflecting the highest use achieved since

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<sup>1</sup> Cullinane Thomas, C. and L. Koontz. 2016. 2015 National Park visitor spending effects: Economic contributions to local communities, states, and the nation. Natural Resource Report NPS/NRSS/EQD/NRR-2016/1200. National Park Service, Fort Collins, Colorado.

<sup>2</sup> 33 U.S.C. Section 1251 (a)(1)

<sup>3</sup> 40 CFR 131.12

**November 1975** regardless of whether water quality has declined since then or whether that use is recoverable.<sup>4</sup>

EPA has delegated authority to ADEQ to enforce the CWA and ADEQ has established the most protective designation under state regulations called Extraordinary Resource Water (ERW). According to ADEQ (Regulation 2.302), the ERW designation is defined as “...(The) beneficial use is a combination of the chemical, physical and biological characteristics of a waterbody and **its watershed** (emphasis added) which is characterized by scenic beauty, aesthetics, scientific values, broad scope recreation potential and intangible social values.” That definition embodies the Buffalo National River and its watershed.

ADEQ receives a significant portion of its operating, research, permit and project funding from the federal government. ADEQ may have been required to conduct a NEPA review prior to approval of C&H Regulation 6 and NPDES permit. The actions taken by the ADEQ in permit approval have environmentally significant impacts to a federal entity (BNR) and were a “federalized” action under the NPDES permit.<sup>5</sup>

#### C&H Operation and Location:

In 2012, C&H Hog Farms submitted a Notice of Intent (NOI) to ADEQ and obtained a NPDES Regulation 6 permit on August 3, 2012.<sup>6</sup> The hog factory became operational in May 2013 and initiated manure application in the fall of 2013. C&H is located outside of Mt. Judea, AR at Lat 35°55' 13.60' N and Long 93°4.0' 51.00' W in Newton County, Arkansas. C&H is the largest hog Concentrated Animal Feeding Operation (CAFO) in the Ozark Region and the only large hog CAFO sited on karst limestone of the Boone Formation. The NOI indicates C&H planned to house 6500 hogs and to spread their manure containing high levels of phosphorous and nitrogen on 17 different fields. Many of these fields are adjacent to Big Creek and experience moderate flooding from time to time. Five of these fields, the CAFO barns and holding ponds are less than ½ mile from Mt. Judea elementary and high school. Many studies have shown an increase in health related issues such as MRSA and respiratory problems in workers and residents that live in close proximity to a CAFO.<sup>7</sup> Since 2013, C&H has distributed an average of 2.5 million gallons of hog waste yearly onto the permitted fields. The phosphorous waste generated annually from C&H is equivalent to a human population of up to 23,000 people. According to the 2016 population estimate, the entire population of Newton County is 7,936 people.<sup>9</sup> C&H generates over three times the amount of waste of all the people living in Newton County. The hog waste and manure application is concentrated in a discrete valley spread on thin soils fields underlain by karst and is untreated. A recent journal article noted that 60% of all human pathogens are transmitted by other species.<sup>10</sup> Most notable, interspecies transfer accounts for the majority of the newly introduced infectious diseases to the human population.

C&H also submitted land use contracts signed by the asserted land owners giving permission to spread manure on approximately 630 acres. However, several of the

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<sup>4</sup> <https://www.epa.gov/sites/production/files/2014-10/documents/handbook-chapter4.pdf>

<sup>5</sup> <https://www.epa.gov/laws-regulations/summary-national-environmental-policy-act>

<sup>6</sup> [https://www.adeg.state.ar.us/downloads/WebDatabases/PermitsOnline/NPDES/PermitInformation/ARG590001\\_NOI\\_20120625.pdf](https://www.adeg.state.ar.us/downloads/WebDatabases/PermitsOnline/NPDES/PermitInformation/ARG590001_NOI_20120625.pdf)

<sup>7</sup> <https://www.wired.com/2014/01/mrsa-col-cafo/>

<sup>8</sup> [https://www.cdc.gov/nceh/ehs/docs/understanding\\_cafos\\_nalboh.pdf](https://www.cdc.gov/nceh/ehs/docs/understanding_cafos_nalboh.pdf)

<sup>9</sup> <https://www.census.gov/quickfacts/table/PST045216/05101>

<sup>10</sup> <http://www.sciencedirect.com/science/article/pii/S2352771415300136>

landowner contracts were fraudulently signed without the landowners' permission<sup>11</sup> or the location of the field was misidentified. The proposed Regulation 5 permit bases its foundation of the Nutrient Management Plan and engineering designs on the information provided in the NOI for Regulation 6 (Section 2 & 3 C&H Permit Application Regulation 5). Therefore any comments citing the Regulation 6 permit are applicable to the new Regulation 5 permit application review herein.

Under the CWA's Anti-Degradation Policy, ADEQ is required to determine if new or increased discharge would affect the Buffalo National River. ADEQ did not conduct an evaluation, investigation or review prior to issuing C&H's Regulation 6 permit in 2012. The current Regulation 6 NPDES permit allows for discharge into Big Creek which flows 6 miles downstream into the Buffalo National River (ERW, Tier 3 water). ADEQ failed to follow the requirements of the CWA by not conducting a water quality or geological evaluation prior to the approval of C&H permit (#ARG-590001-ARR-153893).

#### Lack of Monitoring Requirement:

APC&E Regulations 5 and 6 that govern CAFOs in Arkansas do not require independent monitoring of the CAFO facility or manure application. The entire hog operation is self-monitored by the grower. This includes the number of hogs on site, carcass treatment and disposal, disease management (drug and antibody regimes), maintenance and discharge of holding ponds, manure transportation, compliance with permitted manure field application sites, and manure application levels. The grower also collects annual soil and water samples. ADEQ may inspect the facility from time to time largely driven by citizen complaints. Because C&H is a private facility, inspection by concerned citizens would be considered trespassing. ADEQ by their own admission lacks a sufficient number of inspectors and funding to ensure compliance with the law.

#### Soil Test Results and Use of the API:

C&H manure application fields are located on highly fractured mantled karst in the Boone Formation of the Springfield Plateau.<sup>12</sup> Numerous studies and USGS maps indicate C&H and its 17 spreading fields contain thin soils "feather-edge up to 8 meters" and are "underlain by thin chert and limestone layers that have been fractured by slight uplift". In addition, soils are underlain by a system of well-developed fast-flow pathways and voids which pass water and entrained contaminants downgradient to resurgent springs and streams quickly and with little attenuation of the pollutants" in the Boone Formation.<sup>13</sup> Since 2013, C&H has distributed an average of 2.5 million gallons of hog waste yearly onto the permitted fields.

All 17 fields are now above optimum soil test phosphorus (STP) agronomic levels.<sup>14</sup> The latest soil tests available were collected in December, 2015 and since that time over 3 million gallons of additional untreated hog manure have been spread on these fields. The above optimum level for phosphorous for all fields was achieved in less than 3 years requiring C&H to find new fields to deposit waste. Currently C&H is working in conjunction

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<sup>11</sup> Earthjustice letter to ADEQ February 12, 2014.

<sup>12</sup> Braden and Ausbrooks, 2003. Geological map of the Mt. Judea Quadrangle, Newton County, Arkansas: Arkansas Geological Commission

<sup>13</sup>Brahana et al. (2017) In Press. Utilizing Fluorescent Dyes to Identify Meaningful Water-Quality Sampling Locations and Enhance Understanding of Groundwater Flow Near a Hog CAFO on Mantled Karst—Buffalo National River, Southern Ozarks.

<sup>14</sup>[https://www.adeq.state.ar.us/downloads/WebDatabases/PermitsOnline/NPDES/PermitInformation/ARG590001\\_2015%20Annual%20Report\\_20160115.pdf](https://www.adeq.state.ar.us/downloads/WebDatabases/PermitsOnline/NPDES/PermitInformation/ARG590001_2015%20Annual%20Report_20160115.pdf) pages 14-15, 17-18, 19, 22

with EC Farms to obtain a permit to spread up to 6.5 million gallons of waste generated by the C&H hog factory to over 30 different locations in the BNR without independent monitoring. If this permit is approved, C&H waste will expand the spread of untreated hog sewage more broadly and extensively throughout the Buffalo National River watershed.<sup>15</sup> The Little Buffalo River may see its water quality precipitously decline once manure application in the watershed begins.

Under Regulation 5, ADEQ is not required to use the Arkansas Phosphorous Index (API), but C&H has requested its use as a method to evaluate phosphorous levels to determine if they can continue to apply manure. The API does not take into consideration the underlying geology of a region and thus does not consider the probability of water quality degradation and contamination through sink holes, voids, fractures in pastures. The API functions as an excessively complex algorithm that allows over-application of nutrients that consistently exceed the agronomic rate of absorption. More importantly, the public does not have access to the model or algorithms used to calculate an API by field. These algorithms are not publicly available making independent analysis of the model difficult, if not impossible. Using the API that allows exceedance of crop adsorption leads to long term build of phosphorous. Up to 80% of applied Phosphorous can “enter stores in soil, river sediments, groundwater, wetlands, riparian flood plains, lakes and estuaries. These stores can release legacy Phosphorous as storage capacity becomes saturated...”<sup>16</sup> The buildup of Phosphorous from manure application in the BNR can result in continued release of Phosphorous into the watershed for many decades and in some cases centuries and can mask “downstream improvements in water quality”.<sup>17</sup>

One of the key authors of the API is Dr. Andrew Sharpley at the University of Arkansas and the leader of the tax payer funded Big Creek Research and Extension Team (BCRET). He has an apparent conflict of interest in researching the hog operation that uses the API and is a research professor who must search and receive outside funding to continue at the UA. Much of his funding comes from large corporate agriculture, the very industry C&H works within. As evidenced by the title, BCRET does not even hide its bias and advocacy of the C&H operation. By its very title “Monitoring the *Sustainable* Management of Nutrients on C&H Farm in Big Creek Watershed” BCRET has demonstrated that the team and its study have lost the pretext of impartiality and objective research. BCRET’s poor sampling design, lack of fundamental testing such as DNA tracking, isotope analysis or dye tracing that would determine if C&H was impacting water quality has by design, tried not to find any water contamination or degradation.

The Arkansas taxpayer has spent in excess of \$700,000 on the BCRET since its inception, yet no analysis or final report has been presented to ADEQ or the taxpayers who are funding the investigation. Until such an expensive project produces a peer reviewed final report complete with extensive data analysis and interpretation, C&H should be denied any new permits.

### Big Creek Water Quality Indicators (1985-2011)

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<sup>15</sup> [https://www.adeq.state.ar.us/home/pdssql/p\\_permit\\_details\\_water\\_spb.aspx?AFINDash=51-00020&AFIN=5100020&PmtNbr=5282-W](https://www.adeq.state.ar.us/home/pdssql/p_permit_details_water_spb.aspx?AFINDash=51-00020&AFIN=5100020&PmtNbr=5282-W)

<sup>16</sup> Jarvie, H.P. et al. Water Legacy Remediation Faces Unprecedented Challenges from “Legacy Phosphorous”. Environmental Science Technology. July 2013.

<sup>17</sup> Ibid.

Over the past twenty-six years, the National Park Service (NPS) had conducted a state approved and utilized water quality monitoring program on the Buffalo National River. In the past, ADEQ used NPS data to determine water quality status with the national river.

The Watershed Conservation Resource Center (WRC) recently published a review of the water quality data collected throughout the BNR and selected tributaries during the past 26 years.<sup>18</sup> During that time samples were collected on Big Creek (T-6) for dissolved oxygen, pH, conductance, water temperature, turbidity, fecal coliform, and nitrate. Phosphate information was collected from 1998-2011. Big Creek (T-6) in Newton County had very good water quality for all parameters collected from 1985-2011. Average fecal coliform levels from 1995-2011 were 20.4 colonies/100ml with an average geometric mean of 4.6. The state limit is 400 colonies/100ml for a single grab sample and 200 colonies/100ml for geometric mean during primary contact season. Fecal coliform levels at Big Creek were substantially lower than the state limit indicating very low pathogen rates. Similarly, Big Creek (T-6) had relatively low levels of nitrate (NO<sub>3</sub>-N) with a mean of .16 mg/L compared to other 23 tributary sites. Currently there are no state standards for nitrate, but the EPA limit for nitrate in drinking water is 10.0 mg/L. Average chloride and sulfate levels were 3.31 mg/L and 7.35 mg/L respectively, well below the state limit of 20 mg/L. Although very little data was collected for dissolved oxygen readings (n=102), three readings indicated low dissolved oxygen below the state standard of 6 mg/L. In sum, prior to 2014 Big Creek (T-6) Newton County appeared to be a healthy stream with good water quality indicators that were well below any state exceedance limits.<sup>19,20</sup>

#### Big Creek E. coli Data (2013-2016)

Multiple agencies and citizen science groups have begun or expanded water quality monitoring on Big Creek since C&H became operational. Currently there are two USGS gauging stations that record at 15 minute intervals up to nine different parameters (e.g., DO, pH, nitrates, water temperature, etc.); the NPS has three weekly water quality collection sites, a state funded water quality investigation from the University of Arkansas Division of Agriculture, (BCRET) has two weekly water quality collection sites-one upstream of the C&H manure spreading fields (site #6) and one below (site #7) C&H and a citizen science group (KHBNR) collects water on an intermittent basis.

Based on the information collected by the NPS from sampling locations at Carver, NPS submitted a request to ADEQ asking that three tributaries of the BNR be listed as impaired and placed on the 303(d) list in 2015.<sup>21</sup> Big Creek-Newton County had exhibited declines in dissolved oxygen, high temperatures and very high E. coli readings.

ADEQ has an exceptionally high exceedance standard of 25% of all samples taken for E.coli throughout the year. The ADEQ standard is considerably more tolerant of high levels of E. coli than the EPA recommended 10% exceedance of 126 cfu/100ml during primary recreational season.<sup>22</sup>

Analysis of the BCRET project data during the 303(d) period of record (April 1, 2010-March 31, 2015) supported the NPS findings that Big Creek experienced signification impairment

<sup>18</sup> Watershed Conservation Resource Center, March 9, 2017 "Surface Water Quality in the Buffalo National River (1985-2011).

<sup>19</sup> Table A3.15. Watershed Conservation Resource Center, March 9, 2017 "Surface Water Quality in the Buffalo National River (1985-2011).

<sup>20</sup> <https://www.nps.gov/buff/learn/nature/upload/Usrey-2013-Assessment-of-E-coli-on-Surface-Waters.pdf>

<sup>21</sup> [https://buffaloriveralliance.org/resources/Documents/NPS%20303\(d\)%20Letter.pdf](https://buffaloriveralliance.org/resources/Documents/NPS%20303(d)%20Letter.pdf)

<sup>22</sup> <https://www.epa.gov/wqc/2012-recreational-water-quality-criteria-documents>

particularly in 2014. Using ADEQ's ERW limit in the primary recreational season (Regulation 2.507) for E.coli, at BCRET Station BC 7 the levels exceeded the geometric mean standard of 126 colonies per 100ml for ERW streams 76% of the time or 13 of 17 geometric mean values. Using the individual grab sample for ERW and non-ERW limits, the standard was exceeded 33% of the time during the 2014 primary contact season. Similarly at the BCRET site 6 upstream from C&H, during the primary contact season of 2014 the geometric mean for *E. coli* was exceeded 71% of the time or 12 of 17 geometric mean values. Using the single grab sample of the ERW standard, E.coli levels were exceeded 8 out of 21 samples for 38% of the time and using the less protection, non-ERW standard, E.coli levels were exceeded 6 out of 21 samples or 28% of the time. Even with the less protective ADEQ standards, E.coli consistently exceeded the state limits. Poor water quality of this nature during the primary recreational contact season presents a health risk to recreational users of Big Creek and the BNR.

The KHBNR team collected opportunistic *E. coli* samples during base and storm flow conditions starting in 2013. Sample sites were located down gradient from manure application fields on landowner approved areas or locations accessible by public roads. Data were collected using USGS protocols and analyzed by a state permitted laboratory. *E.coli* levels during storm flow conditions demonstrated consistently high of *E.coli* over 20,000cfu/100 ml at various sites along Big Creek. Although nutrient and *E.coli* data are provided an "agricultural exemption" under the CWA, these high levels show the conditions and timing for nutrient and pathogen transport into streams.

#### Big Creek Dissolved Oxygen Data (2014-2017)

Data from the USGS station (USGS 07055814) indicated chronic low dissolved oxygen readings particularly during the summer of 2014. ADEQ ignored these data citing that they had no methodology available to assimilate or assess the so called "continuous" data, although samples were only collected every 15 minutes. It is almost unheard of for a scientific institution or management agency to reject and dismiss additional data that provides greater certainty and reduces error. Usually an agency does not have enough data, but in this instance, the ADEQ rejected extremely reliable information.

In the fall of 2016, ADEQ requested the United States Geological Service (USGS) to conduct a review of the current water quality standards for dissolved oxygen using the USGS 15 minute interval data for 5 different streams. The USGS found that low dissolved oxygen (less than 6 mg/L) during the critical time period (temperatures were in excess of 22°C) occurred greater than 20% of the time in Big Creek-Newton County. ADEQ standard is 10% of the time during the critical period for streams with watersheds greater than 100 mi<sup>2</sup>.<sup>23</sup> Low DO was present 20.5% in Big Creek-Newton County thereby exceeding the ADEQ standard by more than twice and thus further demonstrating that Big Creek-Newton County is impaired.

According to ADEQ's draft 2016 Integrated Water Quality and Assessment Monitoring Report, these data meet the standard of a Tier IV data quality and should be considered for Category 5 designation as impaired.

If ADEQ had listed Big Creek, Newton County as impaired on the EPA 303(d) list and with EPA concurrence, a Total Maximum Daily Load (TMDL) would be developed. A TMDL is

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<sup>23</sup> APC&E Regulation 2.505

designed to identify the sources of contamination affecting stream water quality throughout stream reach or section. Once a survey identifying the sources of contamination is completed, then actions are taken to reduce the discharge of the contaminants. ADEQ should follow the CWA-303(d) requirements and list Big Creek-Newton County as impaired. The state has violated the CWA by ignoring the sufficient and corroborative data from several sources that Big Creek is impaired.

#### Big Creek Chloride Data (2013-2016)

Chloride is a naturally occurring mineral that is considered a “conservative tracer” because it is not readily absorbed by biota and is relatively inert<sup>24</sup>. According to Mott, “chloride levels may become elevated in surface and groundwater receiving significant amounts of agricultural run-off and infiltration”. Data from BCRET indicate elevated chloride levels in the Left Fork of Big Creek and the BCRET site #7 downstream of the C&H. Comparisons between the upstream site #6 and downstream site #7 were statistically significant with derived concentrations 64% greater at the downstream site #7.<sup>25</sup>

#### Big Creek Nitrate Data (2013-2016)

Nitrogen is present in hog manure and is an important plant nutrient. Excessive levels of nitrogen and/or phosphorous can create algal growth and cause stream impairment. Mott examined data from BCRET and found derived higher concentrations of nitrate over 300 times higher at the BCRET downstream site #7 than BCRET upstream site #6. Median nitrate concentrations increased by 124 percent and the increase was statistically significant. Increases in nitrate concentrations are very common and often the first indicator of nutrient pollution from CAFOs. Nitrates often contaminant wells used for drinking water by local residents and pose a considerable health risk to infants and the elderly.<sup>26 27</sup>

#### Pathway to Pollution-from C&H to Big Creek and the Buffalo National River:

Dye tracing studies were conducted by KHBNR during 2014 in close proximity to C&H. C&H denied requests to inject dye into manure lagoons, wells and streams adjacent to the CAFO barns and manure application fields. Therefore alternative sites close to manure application fields were used as injection points as a proxy to the CAFO facility and fields. Brahana et al. demonstrated the rapid transport (approximately 660 meters/day) and connectivity (visual observation and instrumental recording from Big Creek downstream) from dye injected into a hand dug well (BS-39) 500 meters down gradient from the CAFO.<sup>28</sup> A second dye injection location (BS-36) demonstrated wide hydrological connectivity (cross basin and cross formation) between the main fork of Big Creek and Left Fork of Big Creek with dye traveling approximately 800 meters/day. Dye from the BS-36 injection site was found upstream of BCRET “upstream of farm” sampling site #6. These data highly suggest the transport of nutrients from C&H upstream of BCRET’s presumed control sampling location #6. These results cast doubt on the results of C&H monitoring efforts, and invalidate the conclusions BCRET and other investigators have drawn from the upstream/downstream comparisons.

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<sup>24</sup> Mott, D. 2016. Permitted Concentrated Animal Feeding Operation Assessment Buffalo National River.

<sup>25</sup> Ibid.

<sup>26</sup> <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1474580/pdf/envhper00427-0031.pdf>

<sup>27</sup> <https://thinkprogress.org/this-washington-state-case-could-have-a-national-impact-on-agricultural-pollution-608916133daf>

<sup>28</sup> Ibid at 8.

BS-36 dye injection also demonstrated the incredibly complex hydrology underneath C&H by finding positive tests for dye as far away as Mitch Hill Spring (approximately 10 miles NE straight line distance) on the North side of the Buffalo National River.

#### Increase in Algae and Algal Blooms

Due to the complex hydrology noted in Mott, Brahana and other authors, waste from C&H is affecting an increase in algal growth in Big Creek, the BNR and especially the Left Fork of Big Creek. As previously discussed, dye tracing studies have shown the complex and diverse pathway from C&H manure spreading fields to Big Creek, the Left Fork of Big Creek, the BNR and Mitch Hill Spring. Regulation 2.509 states “Materials stimulating algal growth shall not be present in concentrations sufficient to cause objectionable algal densities or other nuisance aquatic vegetation or otherwise impair many designated use of the waterbody.” C&H is discharging nutrients to these streams that contribute to impairment and violated Regulation 2.509. Increase in algae and algal blooms are an additional indicator that C&H is discharging into the waters of the state and the nation.

#### Conclusions and Summary

The corroborative data and information presented from a variety of studies and investigators show a significant decline in water quality along Big Creek and the BNR at Carver during the past 4 years. C&H became operational in May 2013 and began applying manure to fields in fall of 2013. The decline in water quality for dissolved oxygen, nitrate, chloride, and E. coli correlates to the application of manure, in some cases, to fields directly adjacent to Big Creek on thin alluvial soils that experience moderate flooding events. Even without storm or flooding events, the karst substrate is populated with fissures and voids that can leach nutrients into subterranean channels carrying unfiltered and unattenuated waste into Big Creek and the BNR. Dye tracing studies have demonstrated the complex hydrology in the area illustrate how nutrients are rapidly transported to areas as far away as 10 miles from C&H.

In addition to immediately impacting the water quality of Big Creek, the over application of phosphorous creates a surplus reservoir of legacy phosphorus that can continue to be transported to Big Creek and the BNR for decades, if not centuries, to come.

C&H generates over three times the amount of waste of all the people living in Newton County. The hog waste and manure application is concentrated in a discrete valley, spread on thin soils in fields underlain by karst, in close proximity to Mt. Judea elementary and high school, and is untreated. Untreated hog waste can contaminate drinking water and people who come in direct contact with water. Interspecies (between humans and animals) transfer of pathogens account for 60% of all human disease and are responsible for the majority of the newly introduced infectious diseases to the human population. Big Creek is the fifth largest tributary in the Buffalo River watershed and feeds into the BNR at Carver, one of the most heavily used sections of the river. Over 1.46 million people visited the BNR in 2015 with many of them recreating on the river and coming into direct contact with the water. The hog waste generated from C&H presents a significant health risk to local residents through airborne contaminants and a health and environmental risk to residents who obtain water from wells and recreationalist that frequent Big Creek and the BNR.

The conspicuous absence of regulations allows for self-monitoring of the CAFO and leaves the public concerned about the fox guarding the hen house. The lack of waste management



oversight by the Department of Health and ADEQ is troubling given documented high incidence of MRSA and respiratory problems associated with living close to a CAFO. High use by recreationalists on the BNR is a disease outbreak waiting to happen. Recent anecdotal information from 2 adolescents who floated the BNR from Tyler Bend to the White River in 2016, immediately following the trip, experienced severe and life threatening health issues. The two adolescents are intermittently in the hospital with undiagnosed conditions from an unknown origin of the disease. It is unclear if they will ever fully recover or lead normal lives.

ADEQ is funded by the taxpayers of Arkansas and the nation. ADEQ professes to “protect, enhance and restore the natural environment for the well-being of all Arkansans”. Please do your job and live up to your tag line by denying this permit and any future permit that allows C&H to continue to operate in the Buffalo National River watershed.

1. ADEQ violated the CWA and the provision of the Anti-Degradation Act section of both federal and state (Reg. 2.203) by not maintaining Big Creek, Newton County, (HQW) and the Buffalo National River (ORW) to water quality standard of these streams in 1975 or to their highest water quality level achieved. In addition, prior to approval of the C&H Reg 6 permit, at a minimum, a water quality inspection and analysis for dissolved oxygen (Reg. 2.505) should have been conducted.
2. ADEQ is in violation of Regulation 2.303 in its designated uses for not including Big Creek, Newton County, and other tributaries of the Buffalo National River as an Extraordinary Resource Waters (ERW) when clearly the regulation includes the watershed of the ERW. The ERW designation for these tributaries is critical when evaluating the tributary’s water quality against state standards.
3. Review of the pre-CAFO and current CAFO water quality information from Big Creek shows a dramatic decline in water quality with increases in E. coli, nitrate, chloride, and decreases in dissolved oxygen. The appearance of C&H correlates to significant decreases in water quality. Any comparison between upstream and downstream levels of nutrients and E. coli are invalid because dye tracing results indicate nutrients from manure application fields are contributing to Big Creek upstream of BCRET’s upstream site #6.
4. Algae have appeared in large quantities on the Left Fork of Big Creek. Brahana’s dye tracing study also demonstrated a nutrient pathway from a hand dug well immediately down gradient of C&H to springs on the Left Fork of Big Creek. The algae and the dye tracing studies indicate C&H is discharging to the Left Fork of Big Creek and contributing to low water quality and algal blooms in violation of Regulation 2.509.
5. The Regulation 5 permit should be denied until a peer reviewed report complete with full data analysis and interpretation from the BCRET is made available.
6. The Arkansas Department of Health should take samples in investigate new and existing pathogens on Big Creek and the BNR to ensure the water is safe for local residents to drink and recreate and tourist to enjoy the great experience of traveling along the BNR.
7. A river wide dye tracing study should be initiated immediately to better understand the complex and extensive hydrological connectivity within the BNR. From these studies, source of contamination can be mapped back to their origin, and nutrient and contamination reduction measures can be taken.

**There is copious and compelling evidence that indicates C&H is discharging into Big Creek and should be denied a Regulation 5 permit.**

I request ADEQ provide an answer to the following questions:

1. Please provide evidence that you have reviewed all the calculations made to access the current API contained in the NMP of the existing and proposed manure application fields.
2. Please provide evidence that you have reviewed and have confirmed that all land application contracts are accurate and the signatures valid.
3. Please provide documentation and analysis to account for sludge being applied to manure fields. I did not see a different calculation in the NMP that accounts for higher phosphorous and nitrogen contained in the sludge from the manure lagoons.
4. Please provide a copy of ADEQ's monitoring plan to assess compliance with all aspects of the permit and ensure that citizens coming in contact with water from Big Creek or the BNR are safe from pathogens.
5. Please provide a copy of your eco-monitoring of Big Creek to ensure that algae blooms and excessive growth are in compliance with Regulation 2 requirements and to ensure the public that cyanobacteria or other harmful types of algae are not present in Big Creek or the BNR.
6. Please provide a copy of your economic assessment plan that ensures property values of land adjacent or in the vicinity of the BNR do not decline. Please include in your plan a guarantee that jobs will not be lost nor businesses impacted from your past decisions and any future decisions that allow C&H to remain operational in the Buffalo River Watershed.
7. Please provide a copy of ADEQ's long term plan to draw down legacy phosphorous stores created by C&H.
8. Please provide a copy of your emergency action plan if a waterborne disease outbreak occurs in Big Creek or the BNR.
9. Please provide a copy of your emergency action plan if a breach, overtopping, or large discharge occurs at C&H. Please include the responding/coordinating agencies, timeline for emergency response/remediation, costs for such an emergency and the entity that pays for the investigation and remediation.