



May 10, 2012

Carol Collier, Executive Director
Commissioners
P.O. Box 7360
West Trenton, NJ 08628

Re: Fate of natural gas development waste in the Delaware River Basin

Dear Director Collier and Members of the Commission,

Delaware Riverkeeper Network requests that action be taken by the Delaware River Basin Commission ("DRBC") to guard against the discharge and placement of gas drilling wastes in the Delaware River Watershed without the required approvals from DRBC. DRN is concerned about facilities in the Delaware River Watershed that may be taking or considering taking gas drilling and hydraulic fracturing wastes, including waste fluids, drill cuttings, drilling muds, and other residual and solid waste produced by natural gas drilling and hydraulic fracturing ("fracking"). We also request that further inquiry be conducted by the DRBC regarding natural gas drilling wastewater that was accepted by facilities in Hatfield Township and other facilities in 2009-2010. We are concerned about the ultimate fate of that waste and the impact on receiving waterways or lands.

According to a memo in the DRBC's PSC Industrial Services ("PSC") files, PSC - a centralized treatment facility located in Hatfield Township, PA - "treated and sent" "frac water" waste produced by natural gas drilling and hydraulic fracturing. 1,375,060 gallons went to Hatfield Township Municipal Authority Wastewater Treatment Plant ("HTMA"); 1,386,595 gallons went to DuPont; and approximately 100,000 gallons "went elsewhere".¹ We know from other documents obtained by DRN that the wastewater was produced by Cabot Oil and Gas Corporation in Susquehanna County, PA. It came to DRBC's attention on May 3, 2010 that HTMA had accepted for treatment and discharge hydraulic fracturing wastewater from PSC over a one year period in 2010. Action was taken by DRBC to stop these discharges since this was not approved by DRBC. HTMA confirmed in writing to DRBC in June 2010 that HTMA suspended its acceptance of pre-treated hydraulic fracturing wastewater from PSC promptly upon receipt of telephone notice by DRBC on

¹ Email communication from Skip Garner [<mailto:sgarner@cps-2comply.com>] to Walsh, Steve with cc to 'Smith, Matt (PSC)'; 'Fink, Greg (PSC)'; Mlogan@cps-2comply.com, Wednesday, September 07, 2011 10:40 AM

May 4, 2010. It is our understanding that DRBC believes that there has been no acceptance of gas drilling and fracking wastewater after that date.

PSC has operated in the Hatfield area for decades as a treater of industrial waste from sources inside and outside the basin. Before May of 2010, PSC had not come to the DRBC's attention, likely because it has no water withdrawal or discharge directly from or to basin waters. Approximately 20 percent of wastewater collected at PSC is treated and discharged via the Hatfield Township municipal sewer collection system or by truck to the wastewater treatment plant owned and operated by HTMA. The other 80 percent, some portion of which is treated and some not treated, is transferred by truck to other centralized waste treaters, landfills, or cement kilns, including within the basin: Du Pont Chambers Works, GROWS Landfill, and Keystone Cement. PSC is required by HTMA to comply with pretreatment standards established by the federal Clean Water Act.

DuPont confirms by phone that in 2009-2010 DuPont accepted from PSC and treated and discharged from the Chambers Works IWTP approximately 1.3 million gallons of treated hydraulic fracturing wastewater. An email from the Deputy Executive Director of the DRBC indicates that this waste-stream was to facilitate an experimental treatability study being conducted by DuPont. DuPont later submitted to DRBC a statement that "The wastewater shipped by PSC to Chambers Works was pretreated and commingled with other waste streams. All waste streams received by Chambers Works conformed to preapproved wastewater profiles on file at Chambers Works."²

It is unclear from the materials provided by the DRBC whether the list of facilities that received waste-streams from PSC is exhaustive or not, particularly because approximately 100,000 gallons were reported to have "gone elsewhere". Furthermore, DuPont's response begs the question: if DuPont was accepting frac wastewater for an experimental treatability study, why was it commingled with other waste streams? Additionally, despite the waste being pretreated, how was DuPont not in violation of DRBC regulations requiring it to have a permit in order to discharge gas drilling and fracking waste fluids? Did its "preapproved wastewater profiles" include the right to treat and discharge gas drilling and fracking waste fluids? What, if any, enforcement actions have been initiated by the DRBC against DuPont?

In May of 2011 DRBC approved docket No. D-1988-085-3, renewing and modifying DRBC approval for the DuPont Chambers Works IWTP. Docket condition "v" *prohibits* DuPont from accepting, treating or discharging hydraulic fracturing wastewater without first applying for and obtaining the Commission's approval. DRN spoke at the DRBC public meeting in support of this provision in DuPont's docket. But questions remain regarding the inconsistencies of DuPont's recounting of how they handled the wastewater they received from PSC. Did they test it before "co-mingling"? What did these tests show in terms of treatability and did their permit cover the constituents in the waste that they discharged? We request DRBC to further inquire about these issues. The ultimate fate of this waste could have had and may still be causing harmful impacts to the Delaware River.

² Letter from F. Marc Holman, Plant Manager, DuPont Chambers Works to William J. Muszynski, Water Resources Engineer, DRBC, March 3, 2012.

DRN filed an Open Public Records Act request with NJ Department of Environmental Protection (“NJDEP”) for files regarding DuPont’s acceptance of or interest in applying to accept gas drilling wastewater and the results on February 22, 2012 were “NJDEP claims to have no responsive records re DuPont Chambers Works Facility accepting wastewater”. This sheds little light on the acceptance by DuPont of 1,386,595 gallons of “frac water” from PSC. Apparently, DuPont has not applied or inquired about applying to NJDEP to accept these wastes in the future either.

Considering the large amounts of drilling and fracking wastewater being produced by Marcellus Shale development next door to the Delaware River Basin in Pennsylvania, DRN is concerned that discharges of these wastes in the Delaware River Watershed are an ever-present threat that needs close monitoring and vigilant follow up and enforcement by DRBC. According to Pennsylvania Department of Environmental Protection (“PADEP”), 31,093,611.51 barrels, or 1,339,951,662 gallons of wastewater were produced by shale gas wells in 2011, according to operator reports.³

The amount of flowback that initially erupts to the surface in Pennsylvania shale gas wells varies but is estimated to be about 10% of the volume injected; on average, approximately 5 million gallons of water is used to hydraulically fracture the well. This results in about a half million gallons of wastewater on average per well. Considering the large number of wells involved (PADEP issued 5,728 drilling permits for oil and gas wells in 2011; 2,907 new oil and gas wells were spudded in 2011)⁴, the volume of wastewater produced in Pennsylvania has increased exponentially over the past 5 years and the number of permitted facilities where the waste can be shipped is still inadequate.

The recent moratorium of Youngstown Ohio area injection disposal wells has cut off a frequently used disposal option for Marcellus Shale waste, making it more likely that waste could be shipped to the Delaware River Basin, which is not as far as some other disposal endpoints currently being used by drillers operating in Pennsylvania. Similar to the 2010 PSC-Hatfield and DuPont incidents, DRBC may not even know about ongoing illegal shipments and discharges.

On June 1 2010, the DRBC sent written notices to HTMA, PSC and Cabot respectively, advising them that DRBC docket approval is needed before wastewater may be diverted into the basin and that DRBC approval also is required for the treatment and discharge to basin waters of hydraulic fracturing wastewater. DRBC’s letter further advises HTMA that regardless of whether HTMA seeks approval to treat and discharge hydraulic fracturing wastewater, its docket must be updated. Have all treatment and discharge facilities in the Delaware River Basin been notified by DRBC of the need to obtain DRBC approval before accepting gas drilling and fracking wastes? DRN asks that DRBC immediately notify all waste facilities in the Delaware River Basin of the need for DRBC approval.

DRN is concerned about the impacts of the discharge from HTMA of the treated “frac water” from PSC. Has DRBC investigated or required HTMA or PSC to investigate the impacts that the illegal discharge of effluent by HTMA could have had and may still be having on the Neshaminy Creek?

³<https://www.paoilandgasreporting.state.pa.us/publicreports/Modules/DataExports/DataExports.aspx>

⁴ PADEP website, 1.24.12

Has enforcement action been taken against these facilities? Did the monitoring and testing of the waste stream by HTMA in 2010 include parameters for the constituents in gas drilling and fracking wastewater? How do we, as drinking water customers, know that the many toxic elements in shale gas wastewater did not end up in the creek and, eventually, in our drinking water? Are harmful materials from the toxins contained in gas drilling wastewater present in the bottom sediments of the Creek? DRN is aware of concerns of the public whose drinking water is withdrawn downstream of the HTMA facility. DRN's office is in Bristol, PA and we get our water from the Neshaminy Creek, downstream of the discharge.

According to the General Accounting Office, most produced water from shale gas development is "minimally treated".⁵ The Department of Energy says that contaminants "...can include, but are not limited to: salts (chlorides, bromides, and sulfides of calcium, magnesium, and sodium); metals (including barium, manganese, iron, and strontium); oil, grease, and dissolved organics (including benzene and toluene); naturally occurring radioactive materials; and production chemicals from hydraulic fracturing...Exposure to these contaminants at high levels may pose risks to human health and the environment".⁶ Further, New York tested flowback from Marcellus Shale gas extraction operations in Pennsylvania and West Virginia and found that the wastewater contained 154 parameters.⁷ Many of the parameters are chemical hazards, many are known to effect human health and the environment.

Among the worst are radionuclides because radioactivity poses significant human health risks. New York State detected radiological parameters in Marcellus Shale flowback, including Radium-226⁸, the longest lived isotope of radium with a half-life of 1600 years. Gross Alpha, Gross Beta, Total Alpha Radium and Radium-228 were also found.⁹ Arsenic, mercury, benzene, bromides, and barium are also highlighted by GAO¹⁰ and the Department of Energy as among the toxic components in shale gas waste that pose substantial human health and wildlife impacts. These constituents may not have been removed by the processes employed at PSC, HTMA, DuPont or "other facilities" that have discharged into the Delaware River's waters. Further investigation by DRBC is needed to get to the bottom of what happened to these wastes and whether or not they still pose pollution problems. DRBC should conduct a thorough investigation into these issues and make its results public at the earliest possible date to assure the public that the DRBC is forcefully and vigilantly fulfilling its responsibilities to protect the waters of the Delaware River Basin.

Thank you for your attention to this matter.

⁵ US General Accountability Office, *Information on the Quantity, Quality, and Management of Water produced during Oil and Gas Production*, GAO-12-56, January 2012.

⁶ U.S. Dept. of Energy, Argonne National Laboratory, "A White Paper Describing Produced Water from Production of Crude Oil, Natural Gas, and Coal Bed Methane", January 2004.

⁷ New York State Department of Environmental Conservation, *Revised Draft Supplemental Generic Environmental Impact Statement on the Oil, Gas, and Solution Mining Regulatory Program, Well Permit Issuance for Horizontal Drilling and High-Volume Hydraulic Fracturing to Develop the Marcellus Shale and other Low-Permeability Gas Reservoirs*, September 2011, Table 5.9.

⁸ Ibid. Table 5.24.

⁹ Ibid.

¹⁰ US General Accountability Office, *Information on the Quantity, Quality, and Management of Water Produced During Oil and Gas Production*, GAO-12-56, January 2012.

Sincerely,

Maya van Rossum
the Delaware Riverkeeper

Tracy Carluccio
Deputy Director