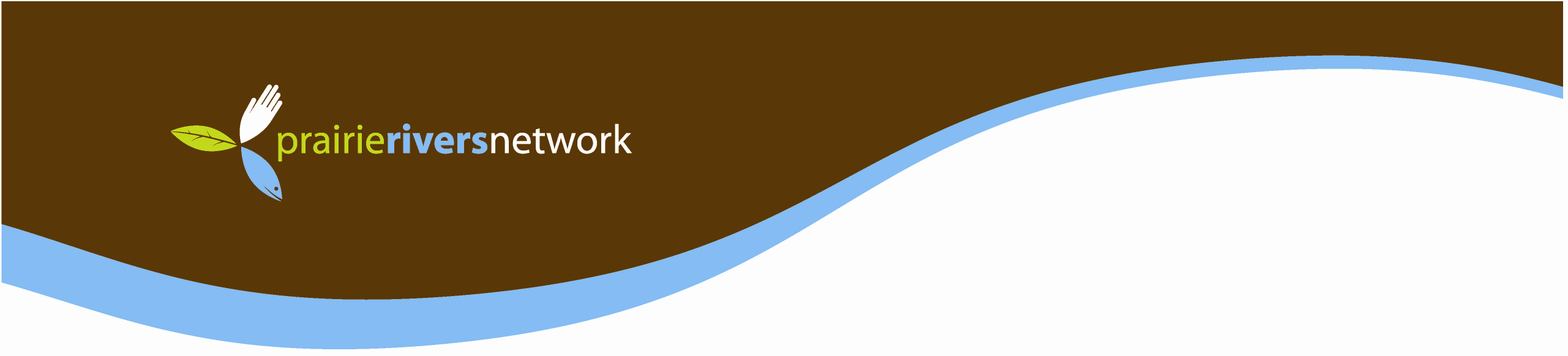
September 10, 2012

Bill Buscher



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Hydrogeology Unit Manager

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Re: Dynegy Midwest Generation’s Vermilion Power Station

Proposed Corrective Action Plan

Dear Mr. Buscher,

These comments are submitted on behalf of Prairie Rivers Network regarding the proposed Corrective Action Plan for the Vermilion Power Station, submitted for approval by Dynegy Midwest Generation to Illinois Environmental Protection Agency. Prairie Rivers Network (PRN) is the state affiliate of the National Wildlife Federation, a non-profit organization that strives to protect the rivers, streams and lakes of Illinois and to promote the lasting health and beauty of watershed communities. Several of our members live and recreate in the Vermilion River watershed and continue to be at risk due to pollutants leaching from the onsite ash pits. Specifically, the following interests of our members and additional stakeholders may be adversely affected: 1) use of the Middle Fork of the Vermilion River for recreational fishing, 2) use of the Middle Fork of the Vermilion River for recreational paddling and swimming, 3) use of the Middle Fork of the Vermilion River for wildlife that is enjoyed for hunting and aesthetic purposes, 4) impact contaminated groundwater and surface waters may have on property values, 5) use of groundwater for watering of gardens and/or pets, and 6) use of groundwater for potable drinking water supply. Members of Prairie Rivers Network are also Illinois state taxpayers, who have an interest in seeing that the Agency protects the quality and quantity of the state’s water, wildlife and other natural resources.

Additional stakeholders with concerns for upholding the quality of the Middle Fork of the Vermilion River system include:

* National Park Service (National Scenic River designation for the Middle Fork);
* Illinois Department of Natural Resources (Kickapoo State Park borders the Vermilion Power Station on the east and south (downstream) and the Middle Fork State Fish and Wildlife Area forms the northern border);
* Kickapoo State Park outfitters and users including paddlers, anglers, campers, hikers, etc.;
* Middle Fork State Fish and Wildlife Area users including paddlers, anglers, campers, hikers, horse trailing groups, etc.;
* Members of the Illinois Chapter of the Sierra Club;
* Members of Faith in Place;
* Members of Illinois Smallmouth Bass Alliance;
* hunters and anglers using adjacent lands and water for food and sport;
* adjacent landowners and residents that rely on well water.

We submit the following comments in order to 1) characterize the existing uses of the Middle Fork of the Vermilion River system that must be protected per environmental regulations, 2) explain why coal ash pollution threatens these existing uses, 3) share our concerns about the shortcomings of Dynegy’s proposed Corrective Action Plan and 4) present an alternative that minimizes pollution and impact on the Middle Fork of the Vermilion River that is both technically feasible and economically reasonable.

**I. Existing uses of the Middle Fork of the Vermilion River system are afforded protections from deterioration pursuant to National Park Service guidelines, the Endangered Species Act and under the Clean Water Act per 35 IAC 302.105,**

**and multiple environmental statutes place the responsibility for clean-up on the polluting party.**

The Dynegy Vermilion Power Station is located along a 17-mile reach of the Middle Fork of the Vermilion River that was designated Illinois’ first State Scenic River in 1986 and Illinois’ only National Scenic River in 1989, pursuant to the National Wild and Scenic Rivers Act (NWSRA) of 1968. It is protected by State and federal law because of its outstanding scenic, recreational, ecological, and historical characteristics. The federal protection followed enactment by the Illinois legislature of PL 84-1257 in 1986, which designated the Middle Fork “a permanently protected river of the State of Illinois.” The river corridor is administered by Illinois Department of Natural Resources (IDNR) pursuant to National Park Service guidelines that require protection and enhancement of the following values: 1) scenic; 2) geologic; 3) aquatic habitat; 4) fish and wildlife; 5) terrestrial ecology; 6) natural areas; 7) threatened and endangered species; 8) archaeological and historic; and 9) recreational.

Section 10a of the NWSRA states a nondegradation and enhancement policy for all designated river areas.  The Corridor Management Plan goal is to preserve and enhance the values that support its designation as a component of the National Wild and Scenic Rivers System.  Specifically, to:

* Ensure the use of best land management and restoration practices consistent with the protection and enhancement of the corridor.   Restoration of the protected corridor and buffer will center on the restoration of pre-settlement vegetation and maintaining aesthetics and natural stability of the riparian corridor.
* Minimize the evidence of man’s activity within the protected corridor;
* Enhance wildlife habitat and prevent degradation of native fish and wildlife habitat;
* Protect and enhance all rare, threatened or endangered species in the corridor and their habitats;
* Provide a variety of compatible recreational opportunities, placing highest priority on those requiring quiet and a high-quality natural ecosystem.

Additionally, the National Wild and Scenic Rivers Act provides for the National Park Service to ensure that “no Federal department or agency shall assist by loan, grant, license , or otherwise in the construction of any water resources project that would have a direct and adverse effect on the values for which such river was established”. Further, the National Park Service guidelines require the State to “work toward abatement of activities within the river area which are degrading water quality.”

Also, the Dynegy property is subject to an easement granted to IDNR by the company in support of federal designation. The protected corridor extends 500 feet from the river centerline on public land, and 200 feet on the private land. Several prairie sites are present and most of the area along the river is forested. Middle Fork Woods is the most significant forested natural area on the Middle Fork River. Located along the west bank of the river a few miles downstream of Dynegy’s ash dumps, its 83 acres include seep springs, ephemeral ponds and ravines showing notable exposures of glacial till and bedrock. It is the only known site in Illinois of the state endangered silvery salamander. In the Middle Fork River corridor, game birds, raptors and songbirds are common; game mammals, small mammals and furbearers are numerous and widespread, and reptile and amphibian populations are diverse.  Aquatic life is also prolific, and includes many uncommon fish and aquatic insects.  This river corridor is known for its species diversity.  It is this diversity that is to be protected from degradation. In fact, three areas support plants and animals so rare that they are protected as State Nature Preserves.

The river system is also inhabited by 24 species officially identified as state and federal threatened and endangered species. Among the 57 fish species collected at sample sites in the river corridor during the 1980’s are the state endangered blue breast darter and many other species that are rare or uncommon in Illinois, or that are indicator species of high water quality. Mussel populations include the federally-endangered Northern Slippershell, the state-endangered Creek Heelsplitter and six state-threatened species.  Habitat enhancement activities conducted by the State pursuant to the National Scenic Rivers Act have enabled the return and re-establishment of species once native to the area, including the American bald eagle, river otter, wild turkey and bobcat.

The Middle Fork of the Vermilion River and its inhabitants are also protected by the Endangered Species Act (ESA) with its stated purpose to protect species and also "the ecosystems upon which they depend." For freshwater systems, the ESA is administered by the [United States Fish and Wildlife Service](http://en.wikipedia.org/wiki/United_States_Fish_and_Wildlife_Service) (FWS). Section 4 of the ESA establishes that critical habitat is a regulatory link between habitat protection and recovery goals for listed species such as those found in the Middle Fork. It requires the identification and protection of all lands, water and air necessary to recover endangered species and includes consideration of water quality, food and lack of disturbance among other things. In fact, all federal agencies are prohibited from authorizing, funding or carrying out actions that "destroy or adversely modify" critical habitats (Section 7(a) (2)).

In the Middle Fork of the Vermilion River, there are miles of scenic river with high bluffs and sand bars, surrounded by trees harboring many animals. The river system is used by wildlife enthusiasts on trail, by boat and along shoreline for wildlife viewing, photography, hunting, angling, hiking, and paddling. Kickapoo State Park alone contains over 2,800 acres with several small lakes and ponds for fishing, boating, canoeing, scuba diving and ice fishing and ice skating in the wintertime. Within the park, two canoe river access areas are present and boat rental and livery service are available. Kickapoo State Park is one of Illinois’ most popular state parks with nearly 1,500,000 people visiting each year according to the Illinois Department of Natural Resources and the Illinois Office of Tourism.

The 2,700 acres protected as the Middle Fork State Fish and Wildlife Area is a popular destination mostly used for hunting and horseback riding but also includes two canoe access points and footpaths to the river for fishing access. The Middle Fork is one of the most popular water trails in the state and enjoys visitors Spring through Fall for canoeing, kayaking, rowboating and tubing. Kickapoo Landing alone puts approximately 9,000-10,000 people on the Middle Fork River in canoes, kayaks and tubes in one year.  On the busiest days upward of 400 people may be using their equipment on the river.

All of these designated and existing uses (and any others present or in existence since November 28, 1975) are protected under the Clean Water Act and our Illinois Environmental Protection Act. In February 2002, Illinois adopted a comprehensive set of regulations establishing its antidegradation policy (35 IAC Section 302.105). Specifically, the purpose of Illinois’ antidegradation policy is to protect existing uses of all waters and maintain the quality of waters with higher quality than the minimum water quality standards. This policy properly implemented should 1) protect all existing uses, and 2) minimize new or increased discharges, particularly to high quality waters. Ultimately, full implementation of the antidegradation policy should ensure that high quality streams - those with excellent water quality, habitat, and thriving aquatic communities, such as the Middle Fork, stay that way.

Further, the Illinois Environmental Protection Act imposes responsibility for cleanups on the polluting party (415 ILCS 5/22.2(f)). Our federal legislation, Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and Resource Conservation and Recovery Act (RCRA) also have provisions that place responsibility of cleanup of waste disposal sites on the polluting party. In 1984 Congress enacted the "Hazardous and Solid Waste Amendments" (HSWA) to make owners or operators of treatment, storage and disposal (TSD) facilities responsible for investigating, and, as necessary, cleaning up releases at or from their facilities, regardless of when the release occurred. EPA refers to the cleanup of TSD facilities under these statutory authorities as "RCRA Corrective Action." In addition to other provisions in the Act pertaining to the liability of the polluting party, the Illinois EPA's website describes the following Bureau of Land program: "The main objective of the State Response Action Program is to clean up hazardous substances at sites that present an imminent and substantial threat to human health and the environment, but which may not be addressed by other federal or state cleanup programs. The Program provides financial and administrative resources for timely and effective responses to releases or threatened releases. Provisions for cost recovery of state-incurred expenditures and for punitive damages compel responsible party participation in cleanups and to conserve state funds. The sites handled by the State Response Action Program include abandoned landfills, old manufacturing plants, former waste oil recycling operations, contaminated agrichemical facilities and other areas where surface water, groundwater, soil and air may be contaminated with hazardous substances."

**II. Coal ash pollution threatens existing uses of the**

**Middle Fork of the Vermilion River system**

BACKGROUND

The Vermilion Power Station began operation in 1955. Bottom ash, together with blowdown from the wet cooling towers, was flushed down into the floodplain where it was retained in unlined ponds known as the North and Old East ash impoundments. Gravity overflow was discharged into the Middle Fork of the Vermilion River. In 1973, electrostatic precipitators were installed at the plant, adding fly ash to the facilities.

Ash dumping continued through the entire 60+ year lifetime of the plant. As a proposed reservoir project was debated in the late 1960’s and early 70’s, the owner refused to sell the land to the State amid disputes over water rights and the toxicity of the ash. The two dams that form the ash impoundments pre-date state and federal dam safety regulations, so they remain unregulated. In 1978 after the reservoir proposal was defeated, and with the river meandering closer to the North and Old East ash impoundments, the company proposed a channelization project to relocate the river channel far away from the ash dumps. That idea was subsequently abandoned.

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| \\ad.uillinois.edu\engr\users\bullard\Documents\Environmental\MF\Ash dam erosion\Old ash dam location 4\seep photo May 07.JPG |
| Shredded geo-fabric and orange leachate, 2007 |

Instead, the ash impoundment dams were simply raised and moved closer to the river bank, where gabions were installed in 1981 to protect the toe of the dam. For years before and after the gabions were installed, banks were saturated and stained orange by the leachate oozing from the unlined ash dump. Within 20 years, the leachate had dissolved the wire cages, allowing gabions to begin collapsing into the river and contents swept downstream. Shredded ‘geotextile’ fabric, once intended to prevent leaching, now hangs from many places along the banks where gabions used to be.

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| Failing gabions; trees dying as roots penetrate to ash, 2012 |

The “New East” ash impoundment was built in 1989, and raised in 2005. Unlike the other two dams, this one is subject to dam safety laws. Leaching of coal ash pollutants has not yet been detected in adjacent groundwater, possibly due to its compacted clay liner. However the impoundment was knowingly built over two known coal mine shafts, enlarged in 2005 to encroach as close to the river as legally allowed by the State’s easement. A few years later, in 2008 the owner reported that the river was meandering closer, urgently requesting issuance of a permit from the Corps of Engineers for construction of gabions. The permit application failed to meet regulatory requirements and was withdrawn in 2010 with the intent to re-submit a different design. Also withdrawn was another application for a permit to armor the banks near the New East ash dam’s outlet structure.

All three ash pond systems are located on the floodplain of the Middle Fork, which is bordered to the east and west by steep bluffs. Areas beneath and to the south have been extensively mined, both on the surface and underground for coal. From the “Hydrogeology and Water Quality” reports for both the North and Old East Ash Pond systems, they read “The Danville (No. 7) coal has been mined extensively in the region both as surface (strip) mines and underground mines. The vicinity of the Vermilion Power Plant experienced extensive coal-mining activity from 1893 to 1970. Two coal mines, called the Crawford Mine (ISGS Mine Index No. 3889) and Fletcher’s Middlefork Mine (ISGS Mine Index No. 3888) are located beneath the New East Ash Pond and extend to within 120 feet of the southmost edge of the Old East Ash Pond system.” The New East Ash Pond was constructed in 1992 and the mapping and research for the report on the area’s hydrogeology was completed in 2003. According to p.viii-ix of the Executive Summary of *Regional and Local Hydrogeology and Geochemistry, Vermilion Power Plant, Volume 1 (November 30, 2003)*: “The coal mines in the vicinity of the East Ash Pond System have been shown to have significant collapse features where the overlying shale has collapsed or partially collapsed downward into the void or mined coal seam. The collapse of the shale into the void translates upward through the shale, resulting in fracturing and in some cases surface subsidence.”  In 2006, Dynegy actually enlarged the pond, in spite of their awareness of the existence of collapsing mine shafts underneath.

CURRENT THREATS

All three ash impoundments present serious medium and long term risks due to their close proximity to a wild, meandering river. A more immediate concern is the failing infrastructure of the Old East Ash Pond and the North Ash Pond and their ongoing impact on groundwater and the adjacent and downstream river segments. Floodwaters and high water tables continue to wear at their foundations and structural integrity and there is evidence that groundwater typically flows from west of and under the ash impoundments towards the river. Further, as the water table rises during river flood conditions, the shallow groundwater is in direct contact with the interior of the ash impoundments, picking up coal ash pollutants and carrying them via subsurface flow into the Middle Fork of the Vermilion River when floodwaters recede.

Coal ash contains potentially toxic heavy metals such as arsenic, cadmium, hexavalent chromium, lead and mercury. The public health and environmental hazards from unsafe coal ash dumping have been known for many years, including increased risk of cancer, learning disabilities, neurological disorders, birth defects, reproductive failure, asthma and other sicknesses. Monitoring data and research by the National Academies of Science, EPA, and academic institutions have documented that coal ash will readily contaminate water supplies and harm human health when it is disposed without meeting basic safeguards. [[1]](#endnote-1) [[2]](#endnote-2) [[3]](#endnote-3) In 2007, EPA documented that eight coal ash dumps, six of which were ash impoundments had contaminated underlying groundwater in Illinois, some for more than a decade.

As IEPA personnel are aware, in February of 2009, then Lieutenant Governor Pat Quinn requested an assessment of the threat posed by coal ash impoundments from IEPA’s Director Doug Scott. The evaluation was limited only to the coal ash impoundments, or wet storage sites at power plants. After two years of investigation, IEPA’s evaluation of Illinois’ eighty-three ash impoundments on the basis of structural integrity and potential for leakage to groundwater and drinking water wells found the following:.

1. Two-thirds of the impoundments do not have liners to contain waste and prevent

contamination of groundwater.

1. Groundwater monitoring was not required at most of the impoundments.
2. Dams holding the impoundments at most sites are unpermitted and have not been inspected for safety or stability by the Illinois Department of Natural Resources –Office of Water Resources, and
3. Groundwater data collected at 22 of 24 power plant ash impoundments examined found contamination at all 22 sites evaluated with results showing exceedances of at least one and usually more health standards such as drinking water standards (Maximum Contaminant Levels or MCLs) or health advisories set under the federal Safe Drinking Water Act in the groundwater underneath all disposal sites.

Further, it has long been established that polluted water discharged from coal ash ponds can damage healthy fisheries. Over the past three decades, our knowledge of the environmental risks and ecological impacts of wet coal ash disposal practices has greatly increased with improved contaminant characterization and transfer modeling, as well as new studies that document elevated levels of coal ash pollution building up in game fish and birds. The fundamental problem is that coal ash runoff contains small amounts of harmful metals like selenium that can slowly build up in aquatic food chains.  Selenium is of special concern. Selenium has a high bioaccumulation factor. As a result, impacts to fish and wildlife can result from selenium concentrations in the water as low as 2 ug/L.[[4]](#endnote-4) The exact bioaccumulation factor of selenium can vary due to site specific factors. Sublethal impacts to fish and wildlife populations as a result of selenium contamination may be difficult to detect. Reproductive failure and lower survival rates will occur at selenium tissue concentrations much lower than those necessary to impact adults and lower food chain organisms.[[5]](#endnote-5) As a result, adult predatory fish and birds may continue to feed and migrate in and out of the area even while the selenium contamination causes a drop in population due to reproductive failure. Therefore, some form of biological monitoring should have been done by Dynegy in order to determine the actual threat posed by water reaching the river through both outfall discharges and groundwater inputs. Lemly [[6]](#endnote-6) provides a simple procedure for conducting an aquatic hazard assessment for selenium. The procedure would require sampling for selenium concentrations in the water, sediment, invertebrate tissues, fish eggs, and waterfowl eggs. If fish and waterfowl egg samples are difficult to obtain, the method does describe an alternative method for calculating risk based on tissue samples. The assessment can also be conducted with 4 of the 5 factors using an adjusted scale [[7]](#endnote-7)

Even water discharged from coal ash ponds that have low levels of these pollutants can lead to the buildup of heavy metals in aquatic ecosystems, threatening the health of fish and birds, and thus the health of humans who consume animals from this ecosystem, for decades. The Middle Fork of the Vermilion River is a favorite fishing destination for casual to serious anglers alike, and human consumption of game fish is common. Equally disheartening is new information that clearly demonstrates that legally permitted discharges of water from coal ash ponds have permanently destroyed productive sport fisheries. The economic toll of this ecological devastation is estimated to have cost $2.3 billion.[[8]](#endnote-8)

Coal ash pollutants also threaten groundwater supplies and domestic uses including drinking, gardening, watering of pets and livestock and recreational uses. In their 2007 draft risk assessment, EPA found disturbingly high risks of cancer and other diseases from exposure to the pollutants in coal ash. The overall cancer risk was 900 cases for every 100,000 exposures, far higher than EPA’s goal of 1 case per 100,000.[[9]](#endnote-9)

Given the extensive knowledge researchers and regulators alike now have on the suite of harmful pollutants present in coal combustion residuals that are readily transported through runoff and leaching from poorly controlled and/or improperly sited disposal sites, the stated goal of Dynegy to meet boron water quality standards without addressing increasing loads of persistent, bioaccumulative pollutants such as mercury and selenium is unacceptable. The closure plan does not address potential impacts to fish and wildlife from the direct discharges from the ash ponds and through contaminated ground water.

**III. Shortcomings of Dynegy’s site-specific closure proposal per 35 IAC 840: Site-Specific Closures of Coal Combustion Waste Surface Impoundments**

While Dynegy Midwest Generation is preparing for site closure and the possible sale or transfer of property, groundwater contamination and surface water impacts remain. According to the “Hydrogeology and Water Quality Report”, groundwater flow maps prepared for the two primary water-bearing units at the site, the Middle Groundwater Unit and the Lower Groundwater Unit, demonstrate that groundwater flow within each of the units moves from the western side of the river valley, beneath the ash ponds, towards and discharging into the Middle Fork. In fact, during the majority of a typical year, the Middle Fork to the east and downstream of the Dynegy facility is “a gaining stream with groundwater entering the river via baseflow from the alluvial, glacial and bedrock deposits”. The reports states “the primary indicator parameters for coal combustion residuals (CCR) impacts to groundwater at the site are boron and sulfate, both of which have elevated concetrations above Class I groundwater standards in downgradient monitoring wells within the Middle Groundwater Unit”. Other parameters that were found to exceed Class I groundwater standards or that are present at highly elevated concentrations due to CCR impacts to groundwater include iron, manganese, and total dissolved solids within the Middle Groundwater Unit.

The fill unit in the Old East Ash Pond contains a layer of CCRs up to 44 feet thick. Depending on the location within the fill unit and the season, between 6 -11 feet of ash is often found below the water table and therefore saturated. Considering the connection between the fill unit, the Middle Groundwater Unit and the river, the water that is saturating the fill unit is picking up dissolved pollutants and suspended solids with additionally bound pollutants, which then travel to the river where they are released.

In order to address these ongoing pollution impacts, Dynegy Midwest Generation proposed Corrective Action Plans (CAPs) to the Illinois EPA for both the Old East and North Ash Pond systems in February 2012. Our understanding is that Illinois EPA will review, and subsequently approve or deny the plans, after which Dynegy will submit additional information to supplement the proposed Corrective Action Plans. Considering the near term threats to and from the New East Ash Pond including shoreline erosion and underlying failing mineshafts, we stress the need for Dynegy and Illinois EPA to also develop closure and corrective action plans for this continuing threat to the area’s natural resources.

840.110 Hydrogeologic Site Investigation

A Hydrogeologic Investigation report was completed in 2012 to satisfy the requirements of 35 IAC 840.110. We are concerned by several of the assumptions that were used to develop the groundwater fate and transport model used to assess the groundwater impacts associated with the closure of the ash ponds and ultimately inform the proposed CAP.

1) The model incorrectly assumes the groundwater flow will be steady state. The hydrogeological investigation conducted in 2012 verified that there is a connection between the groundwater units underlying the ash ponds and the Middle Fork of the Vermilion River. In times of high water tables due to flooding within the river basin, water can be pushed up and away from the river into the groundwater units. Alternatively, when the floodwaters recede, the groundwater to surface water flow returns to move from west to east, from groundwater underlying the ash impoundments to the river. This does not represent steady state conditions for groundwater flow as assumed in the model.

2) The model incorrectly assumes the river stage does not affect groundwater flow and transport. See previous paragraph.

3) The model incorrectly assumes groundwater concentration trends do not exist. A transient analysis is needed to correctly characterize the residence times and pollutant concentrations in the leachate.

4) The model incorrectly assumes constant leachate flow rates over time. The actual rates will depend on the head pressures resulting from the flashiness of the river and the porosity of the ash, among other factors.

5) The model incorrectly assumes the source concentrations are constant over time. The inventory of soluble pollutants will depend on the frequency at which they are saturated, in addition to other physical and chemical changes occurring over longer time scales

6) The model incorrectly assumes cap construction will have an instantaneous effect on

recharge and percolation through the ash fill deposit. It appears that the analysis has also neglected the effects of pressure fluctuations that might be induced (under an air-tight cap) by the flashiness of the river.

7) The model uses water quality data for boron, sulfates, chlorides, total and dissolved

manganese and total and dissolved iron and pH. The model did not include data for the following parameters that are commonly found in CCRs and may, in fact, be threatening and/or degrading underlying groundwater and adjacent sections of the Middle Fork: antimony, beryllium, cadmium, chromium, cobalt, copper, cyanide, lead, mercury, nickel, silver, thallium and zinc.

8) It is not clear what characterization of the contents of the ash impoundments were used to inform the model. The model should account for the heterogeneity of the ash composition from a) periods of run-of-mine coal and washed coal, b) coal burned from different basins/seams of coal including Illinois Basin/Herrin and Springfield and Powder River Basin, c) coal combustion residues including fly and bottom ash both pre- and post- mercury controls.

9) The model does not address the geologic instability and ongoing subsidence due to the presence of shafts to an underground mine sited just beneath the New East Ash Pond System and just south of the Old East Ash Pond.

840.130 Contents of Closure Plan

840.130 (b) (1) requires a through description of the materials managed. The model is not based on an adequate characterization of the in situ coal combustion residuals. The ash in situ has not been adequately characterized because the composition of the coal and the history of ash dumping are not well documented. Ash discharged prior to the installation of electrostatic precipitators (ESP) in 1973 was bottom ash, presumably from run-of-mine coal since mine-mouth washing was not common at the time. If any of the run-of-mine coal was washed on-site and the debris routed to the ash ponds, the dumps may contain significant amounts of carbon that may significantly influence the chemistry, and might even be recoverable. From 1973 to 2008, ESP fly ash was deposited, some from Illinois coal and some from Powder River Basin coal. NOx control began in 2001, possibly changing the physical and chemical content of the fly ash. In 2008, a baghouse and sorbent injection system was added pursuant to a consent decree to control mercury emissions. This undoubtedly increased the mercury concentrations of the captured fly ash, along with the concentration of any other metals and compounds that condensed on the surface of the finer particulate matter retained in the bag filters. Without knowledge of ash composition, it is not possible to model the chemical reactions occurring in the impoundments, nor to estimate the costs and benefits of processing the ash to recover carbon, mercury or other potentially valuable materials as is being done at other coal waste disposal sites in Illinois such as Green Energy Holdings operations at Burning Star 4 in Perry County and Old Ben 25 near West Frankfort, Illinois.

840.130 (b) (3) requires an analysis of structural integrity. The CAP states “Structural integrity engineering analysis will be performed for and reported in the Closure Plan” A dam safety assessment report regarding the New East Ash Dam was prepared for USEPA in 2010. Findings of interest include:

* Sec 4.1.3: The North Ash Pond System embankment underwent repairs for erosion in 1988 (appendix A-Doc 19).
* Sec 7 Additional analyses to support conclusion that dam is “safe” seem warranted given the stability analyses in response to seismic threat.

840.130 (d) requires a description and results from the Hydrogeologic Site Investigation. See concerns stated previously regarding groundwater fate and transport model.

840.130 (e) requires a description of the Groundwater Trend Analysis Methods. See concerns stated previously regarding groundwater fate and transport model.

840.130 (o) requires a description of actions proposed to mitigate statistically significant increasing trends. We are concerned with the limited review of potential mitigation actions and closure alternatives at the Dynegy site. We understand the objective of the Dynegy’s analysis was to identify, describe and provide screening-level costs of several different alternatives for controlling direct contact and groundwater exposure pathways at this facility. We maintain that the resulting CAP overemphasized costs to Dynegy and an underemphasized the benefits of proper cleanup to and costs of not doing enough that would be borne instead by neighbors, downstream users and Illinois taxpayers. Further, given the threat from existing loading of pollutants to both groundwater and adjacent surface water, we feel that both increasing and continuing trends must be addressed and mitigated.

Kelron Environmental, Inc. was hired to develop the proposed CAP for Dynegy Midwest Generation. Several closure alternatives were considered including varying engineered caps, groundwater interceptor trenches, ash consolidation, etc. Ultimately, the closure alternatives that were chosen for final cost comparison and evaluation included 1) a geosynthetic final cover (a multi-layered cap including 4 inches of a bedding layer, 40ml PVC geomembrane layer, 250ml geocomposite layer, a layer of30 inches of rooting soil and 6 inches top soil with vegetative cover.), or 2) a geosynthetic final cover with groundwater extraction with vertical wells.

While installing an engineered cap may be an appropriate closure solution at other ash impoundment sites, this site has unique features that require a more thorough and comprehensive closure solution. An engineered cap addresses the need to stop water from infiltrating through the ash impoundment and further contributing pollutants to underlying groundwater and running off towards adjacent surface waters. A more comprehensive engineered design is needed when subsurface agents of nature are working to erode, connect and transport pollutants, such as at this particular site. Further, it is clear from the failing gabions on site that the river’s powerful flow is a critical agent that will continue to degrade engineered controls on the surface and edges of the ash impoundments.

Specifically, when groundwater control alternatives were evaluated, two troubling institutional control assumptions were used including:

1) “The critical assumption for this alternative is that all parties are agreeable to implementing these controls. DMG believes the IDNR would not be agreeable to such controls on their property.” It is not clear why DMG thinks IDNR would oppose implementation of groundwater control measures.

2) “There are no capital costs or engineering estimates associated with this alternative.” It is not clear which alternative is devoid of capital costs or engineering estimates- the do-nothing alternative?

Exclusively due to cost, Dynegy dismissed at face value the option of ash removal to land disposal. This is extremely short-sighted. Resolving problems caused by 60+ years of mismanaged industrial waste *is* going to be expensive and should be approached with sincerity and a willingness to ensure protection and remediation of underlying, adjacent and downstream natural resources.

In the end, and not surprisingly, the closure alternative consisting of just a geosynthetic cover was chosen as it “provides the best balance of capital and O&M expenditures, performance and effectiveness”. The applicant failed to provide sufficient evidence to support this finding based on measures of compliance with environmental regulations, technical feasibility and economic reasonability.

Ultimately, the river will continue to meander as rivers naturally do. The State of Illinois holds a 200 ft. scenic easement, measured from the centerline of the river. As long as any of the three ash impoundments and their contents remain in the floodplain, the owner and the State will remain at risk. The bottom line is that someday, sooner or later after some owner walks away from it after bankruptcy, taxpayers will be left to deal with the mess. The responsibility for cleanup should be placed on the current owner, not future ones. Dynegy is currently in Chapter 11 bankruptcy proceedings. Its stock has fallen from $46.00 in 2008 to $0.42 in August 2012. The company that retired the power plant- not some unknown future owner - is responsible for retiring the ash dumps in a socially acceptable manner.

National Scenic River designation is permanent, so bank armoring of any kind will require perpetual maintenance. Experiences with the 1978 gabion project provide strong evidence of the ineffectiveness and lack of durability of such structures. It does not appear that Dynegy has submitted evidence that long term maintenance costs have been properly accounted for, and reserves are sufficient to cover remediation costs in the event of failure.

The ash dumps pose serious risks, not only to water quality and the other values which warranted state and federal protection of the river corridor, but also to Kickapoo State Park which borders the Dynegy property on the south. Within the park a few miles downstream lays the state-protected Middle Fork Woods a Nature Preserve, which is administered by the IDNR. According to the legal description of the nature preserve, the preserve lies west of the west low water mark of the Middle Fork. The Preserve and its steep ravine is therefore threatened directly by materials eroded from the ash dumps, whether continuously or by a catastrophic ash dam failures that are most likely to occur at times when floodwaters extend far into the Nature Preserve.

The proposed closure plan falls far short of meeting the goals of state and federal legislation. It does not protect the public from future consequences of past negligent actions by the owner. Illinois Power and Dynegy have built and expanded ash impoundments recklessly close to river since the 1950’s, even as recently 2005, while knowingly disregarding obvious threats posed by unlined dumps, abandoned mine shafts, and natural fluvial processes. Air pollutants were willfully converted to water pollutants, violating state water quality standards for two decades after passage of the Clean Water Act. The threats were obvious because in all three cases (North, Old East and New East) ash impoundments were built on the outside bends of a meandering river. Multiple “unforeseen” maintenance interventions have been needed during the 55-year operating life of the plant, and similar interventions can be expected in the future. Even if the pollutants had been stored safely in solid form during the operating life of the plant, there is no excuse for abandoning long-lived toxins to the forces of nature in a manner that imposes certain risks on future generations.

**IV. Alternative to proposed Corrective Action Plans**

Prairie Rivers Network solicited help from an engineer to develop an alternative to Dynegy’s proposal to leave the coal ash in place and at risk in the floodplain as part of their proposed Corrective Action Plans. The resulting alternative course of action was designed to meet the following criteria:

1. All coal ash from the Old East Ash Pond, North Ash Pond and New East Ash Pond systems must be removed from the floodplain.

2. Final disposal site must include enough storage capacity for the removed coal ash to be placed in a “high and dry” lined landfill cell.

3. Site must not require additional land acquisition, i.e. must be within Dynegy property boundaries.

4. Alternative plan should not require demolition of the power plant or major land clearing.

5. All steps in the alternative plan must be technically feasible including development of the new disposal site, removal, transportation and final disposal of the coal ash and the operation and management plan.

6. Environmental impacts during the process of removal, transfer and final disposal of the coal ash must be minimized.

7. Buffer of 400 feet must be maintained for onsite and adjacent Illinois Natural Heritage Landmarks.

8. Cost saving measures should be included as much as possible in the development of the alternative plan.

We have enclosed a diagram of what we would like to offer as a viable alternative for a more responsible disposal site for the coal ash currently contained in the Old East Ash Pond and North Ash Pond systems. The 28.5 acre site could contain over 3 million cubic yards and could be built with an engineered liner, isolating the waste from both surface and groundwater. Also enclosed are three spreadsheets detailing the technical specifications. While we understand this alternative proposal would be far more expensive than those offered by Dynegy, there are several considerations that must be taken into account:

1) Dynegy’s proposal did not take into consideration that any in-place remedies should remediate the mine shafts underlying and adjacent to the New East and Old East ash ponds. In fact, as part of the hydrogeological investigation of this site, Dynegy should be required to thoroughly determine the extent of underlying mine voids. The known voids, and others that might be discovered if the area were properly investigated, pose subsidence risks extending over a large area and present risks of ongoing and future deterioration of the engineered controls put in place to remediate the site. Future subsidence could raise the cost of the “cap in place” option by untold millions of dollars.

2) The footprint offered in our alternative solution is conservative in the sense that it does not require demolition of the power plant or major land clearing to make room for the lined landfill cell.

3) The proposed alternative plan recognizes that the Middle Fork of the Vermilion River will continue to move in its floodplain and will continue to degrade the existing ash impoundments into the future.

4) As mentioned previously, while installing an engineered cap may be an appropriate closure solution at other ash impoundment sites, this site has unique features that require a more thorough and comprehensive closure solution. An engineered cap addresses the need to stop water from infiltrating through the ash impoundment and further contributing pollutants to underlying groundwater and running off towards adjacent surface waters. A more comprehensive engineered design is needed when subsurface agents of nature are working to erode, connect and transport pollutants, such as at this particular site.

5) Cost is, of course, an important factor in deciding how to proceed. The cost of our proposed solution is more than the cost of the inadequate action that Dynegy is proposing, but the cost of a real, durable remedy is small compared to (a) the $1 billion that the Tennessee Valley Authority is paying to cleanup damages caused by coal ash impoundments in Kingston, Tennessee; (b) the value of electricity Dynegy produced at this plant over its 60+ years of operations (Consider $41M/ (1000 GWh/y) = $41/MWh/y. At 4 cents/kWh, spread over 60 years of ash production, this amounts to only 0.067 cents/kWh, or about 1.5% of the cost of producing a kWh (today’s dollars).

); and (c) the value of the natural habitat and public health benefits from protecting the Middle Fork River. Moreover, the proposed remedy involves the same removal-to-landfill actions that South Carolina Electric & Gas Co. agreed to last month to address the threats of its coal ash impoundments to the Wateree River.

6) Finally, the proposed alternative is what will likely be required of future owners of ash disposal sites in order to protect drinking water supplies, aquatic communities, and as part of the preventive and precautionary responsibility required of longer term institutional care.

**V. Relevant court decisions with supporting findings**

It is important for the Illinois Environmental Protection Agency and Dynegy Midwest Generation to recognize that there is legal support for a more complete and thorough clean-up to be conducted at the Vermilion Power Station. Several ongoing cases and recent decisions that are relevant are summarized below.

First, on August 17, 2012, a federal district court in South Carolina entered a settlement agreement and release in litigation alleging contamination of a river by water from a utility's ash pond. Catawba Riverkeeper Foundation v. South Carolina Electric & Gas Co. (D.S.C. Case No.

3:12-CV-00124-JFA Aug. 17, 2012).

http://www.southernenvironment.org/uploads/fck/08%2020%202012%20Riverkeeper-SCEG%20Settlement%20signed%20by%20JML.pdf

The agreement requires complete removal of ash and at least two feet of underlying soil from an unlined pond near the banks of the Wateree River; the replacement storage must use a synthetic liner. (Slip opinion at 3-4) At least 240,000 tons of coal ash must be removed from the wet storage facility in the first three years. Southern Environmental Law Center, "SCE&G and Riverkeeper Reach Agreement on Coal Ash Storage" (Aug. 20, 2012)

http://www.southernenvironment.org/newsroom/press\_releases/sceg\_and\_riverkeeper\_reach\_agreemnet\_on\_coal\_ash\_storage/

Another pending case in South Carolina, filed in June 2012, seeks to stop arsenic pollution of the Waccamaw River from utility coal ash ponds. The plaintiffs request that 650,000 tons of coal ash be removed from unlined ponds on the banks of the river, and moved to a lined landfill away from the river and wetlands. The suit seeks to protect a national wildlife refuge as well as intakes for public drinking water. Southern Environmental Law Center, "Case Filed to Protect Waccamaw River from Coal Waste's Arsenic Contamination" (June 7, 2012) http://www.southernenvironment.org/newsroom/press\_releases/coal\_ash\_waccamaw\_river\_6-6-12/

Next, on August 23, 2012, a federal district court held that the Tennessee Valley Authority is liable for the 2008 coal ash spill in Kingston based on the utility's negligent implementation of decisions to design, locate and construct a wet coal ash facility as well as the utility's negligent coal ash management practices. Tennessee Valley Authority Ash Spill Litigation (E.D. TN Aug. 23, 2012) http://www.tned.uscourts.gov/docs/tva\_ash\_spill\_ruling.pdf

The court concluded that the failure of North Dike "was caused by TVA's placement of North Dike over the Swan Pond slack water embayment, TVA's design of North Dike, TVA's decision to continue operating the KIF plant as wet coal ash storage and disposal facility, and TVA's decision to continue building up its wet coal ash stack. The Court concludes that but for the confluence of these physical and geological factors and the movement of the slimes layer which triggered the dike failure sequence, the coal ash spill that is the subject of this litigation would not have occurred." (Slip opinion at 8) Additionally, the Court found that the TVA inspectors two months before the spill "were negligent in noting, recording, and addressing conditions and surface maintenance deficiencies which should have been investigated and potentially remedied." (Slip opinion at 89) Furthermore, the court allowed the plaintiffs to try to prove that the utility is liable under theories of private nuisance and trespass, including that the coal ash rendered their properties unusable as staging areas for fishing and other recreational activities, and caused their properties to lose some usable value. (Slip opinion at 122-23, 129) The cleanup is expected to cost the utility about $1 billion, far greater than the cost of the remedy proposed for Dynegy’s site. http://charlottesierraclub.org/2012/08/23/court-finds-tva-responsible-for-largest-coal-ash-spill-in-us-history/

Third, several Illinois court decisions against hazardous waste disposals are relevant here due to presence of a public nuisance.

* Donaldson v. Central Illinois Public Service Company, 767 N.E.2d 314 (Ill. 2002). Parents of four children exposed to toxic chemicals brought a suit against the former owners of a gas plant, CIPS, for nuisance (among other things) based on improper site remediation. The plant operated for 20 years in the early 1900s and, during that time, stored coal tar tanks underground. When the plant was decommissioned in 1939, buildings were demolished but the tanks remained. CIPS did not notify federal or state governmental authorities of the tanks until 1985 after the current site owners, attempting to place a septic line in the ground, noticed strong odors, strange substances, and contaminated soil and residents complained of odors. CIPS worked with the Illinois Environmental Protection Agency (IEPA) to clean up the site although CIPS and IEPA did not agree on the final state to which CIPS had to return the site. The trial court found CIPS liable for negligence and public nuisance, which the appellate court affirmed. The Illinois Supreme Court commented that the plaintiffs could plead a statutory or common law nuisance claim and that IEPA supervision did not bar nuisance liability because CIPS negligently remediated the site and acted outside and in disregard of IEPA’s direction. The court then affirmed the trial court’s award of $3.2 million dollars to the plaintiffs.
* Wilsonville v. SCA Services, 426 N.E.2d 824 (Ill. 1981). The Illinois Attorney General and the village of Wilsonville filed a complaint against the owners of a chemical-waste landfill, alleging that the defendant’s operation of the site presented a public nuisance and a health hazard for residents of the village and State. The court determined that the landfill sat on top of an abandoned mine and found that, because of the soil composition, subsidence, citizen complaints of odors, spills, and dust, and improper waste disposal and containment, a prospective nuisance occurred. The court held that it had a duty to prevent damage from occurring after finding that the defendant was engaging in an “extremely hazardous undertaking at an unsuitable site,” that the condition of the nuisance was already present, and that “it was highly probable that the chemical-waste disposal site will bring a substantial injury.” Id. at 836-37, 838. After balancing the hardships caused to both parties, the appellate court affirmed the trial court’s decision ordering the defendant to remove all contaminated soil and toxic waste buried at the site and to restore and reclaim the site.

\* \* \* \* \*

In closing, we think it is important for the decision makers at the Illinois Environmental Protection Agency to understand that personnel from the Office of Realty and Environmental Planning at the Illinois Department of Natural Resources are paying close attention to the proceedings with this particular piece of property. IDNR is prepared to conduct an assessment of the value of the property as a potential addition to Kickapoo State Park, but not until the owner has fully remediated the site to eliminate future financial risks to taxpayers following closure and abandonment. This can only be achieved with removal of the coal waste and ash from the floodplain. We would like to work with the IEPA, IDNR and Dynegy Midwest Generation to ensure this happens.

Sincerely,



Traci Barkley

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James Herkert, Office of [Resource Conservation](http://dnr.state.il.us/orc/), IDNR

U.S. Army Corps of Engineers Indianapolis Regulatory Office

Tinka Hyde, Director, Office of Water, USEPA Region 5

Hector Santiago, National Park Service

Tom Melius, Regional Director, U.S. Fish and Wildlife Service

Charles Wooley, Deputy Regional Director, U.S. Fish and Wildlife Service

U.S. Senator Richard Durbin

U.S. Senator Mark Kirk

U.S. Representative Timothy Johnson, (15th District)

State Senator Michael Frerichs (52nd District)

State Senator Dale Righter (53rd District)

State Representative Chad Hays (104th District)

State Representative Naomi Jakobsson (103rd District)

1. U.S. Environmental Protection Agency, ―Coal Combustion Waste Damage Case Assessments.‖ Office of Solid

   Waste, July 9, 2007. [↑](#endnote-ref-1)
2. U.S. Environmental Protection Agency. ―Hazardous and Solid Waste Management System; Identification and

   Listing of Special Wastes; Disposal of Coal Combustion Residuals from Electric Utilities.‖ Docket EPA-HQRCRA-2009-0640 (RIN-2050-AE81),75 Fed. Reg. 35128. June 21, 2010. [↑](#endnote-ref-2)
3. National Research Council, ―Managing Coal Combustion Residues in Mines.‖ Committee on Mine Placement of

   Coal Combustion Wastes, The National Academies Press, 2006 [↑](#endnote-ref-3)
4. Lemly, A. D.: 1993, ‘Guidelines for evaluating selenium data from aquatic monitoring and assessment studies’, Environ.  Monit. Assess. 28, 83-100. [↑](#endnote-ref-4)
5. Hamilton, S. J.: 2004, ‘Review of selenium toxicity in the aquatic food chain’, Science of the Total Environment 326, 1-31. [↑](#endnote-ref-5)
6. Lemly, A. D.: 1995, ‘A Protocol for Aquatic Hazard Assessment of Selenium’, Ecotoxicology and environmental safety, 32, 280-288. [↑](#endnote-ref-6)
7. Lemly, A.D.: 2002. Selenium assessment in aquatic ecosystems. Springer, New York City, p. 161. [↑](#endnote-ref-7)
8. Lemly, Dennis, A. Wildlife and the Coal Waste Policy Debate: Proposed Rules for Coal Waste Disposal Ignore Lessons from 45 Years of Wildlife Poisoning. Environmental Science and Technology 2012. Available at <http://charlottesierraclub.files.wordpress.com/2012/08/lemly-and-skorupa-coal-waste-impacts-on-wildlife-august-9-2012-2.pdf>. [↑](#endnote-ref-8)
9. US EPA, Human and Ecological Risk Assessment of Coal Combustion Wastes (draft), August 6, 2007. [↑](#endnote-ref-9)