

Illinois EPA's Ash Impoundment Strategy Progress Report August 2011

Introduction

In regard to coal combustion residues (CCR) at surface impoundments and coal fired electric generating plants; the Illinois EPA's Bureau of Water (BOW) has been implementing a program **very similar to the proposed "D prime" option** proposed by U.S. EPA.

Illinois EPA's Strategy

In response to the massive coal ash spill at a Tennessee Valley Authority facility in Kingston, Tennessee, Illinois EPA developed an aggressive strategy to assess ash impoundments at coal fired power plants. Since the early 1990s, new ash ponds (surface impoundments) have been required to be lined and groundwater monitoring wells have been installed at many of these new ash impoundments. There are also older ash ponds at many of these facilities.

An inventory of power plants with surface impoundments permitted by the Illinois EPA under the National Pollutant Discharge Elimination System permit program has been created. There are 24 power plants in Illinois with a total of 83 ash impoundments. Table 1 below indicates the number of impoundments that are active, those that have low permeability liners, and those that have groundwater monitoring.

Total Impoundments	Active Impoundments	Inactive Impoundments	Lined Impoundments	Impoundments with Groundwater Monitoring
83	68	15	31	28

Table 1. Number of Impoundments that are Active, have Low Permeability Liners, and Groundwater Monitoring Systems

The geologic vulnerability of groundwater at the 24 power plants was assessed using the Illinois' "Potential for Aquifer Recharge" map which classifies the potential for precipitation to infiltrate the surface and reach the water table. This map can also be used to determine the potential for groundwater contamination on a regional scale. Figure 1 shows the location of each power plant and the potential for aquifer recharge at each plant. This information, along with the presence of potable wells identified near the plants, was used to determine the potential contamination threat to those wells. The contamination potential ranges from "very high" to "low."

The aforementioned criteria were used to develop assessment priorities for these facilities under an action-oriented strategic plan. The plan was finalized and implementation began on February 26, 2009.

Potential for Aquifer Recharge at Illinois Power Plants with Ash Ponds

MAP_ID	NPDES	Facility	City
1	IL0004120	AMEREN ENERGY-HUTSONVILLE	HUTSONVILLE
2	IL0005620	AMEREN ENERGY-DUCK CREEK	CANTON
3	IL0000108	AMEREN ENERGY-COFFEEN	COFFEEN
4	IL0001571	DYNEGY MIDWEST GEN-HAVANA	HAVANA
5	IL0001554	DYNEGY MIDWEST GEN-HENNEPIN	HENNEPIN
6	IL0004057	DYNEGY MIDWEST GEN-VERMILION	OAKWOOD
7	IL0000701	DYNEGY MIDWEST GEN-WOOD RIVER	ALTON
8	IL0002216	MIDWEST GENERATION,LLC-JOLIET9	JOLIET
9	IL0004316	SOUTHERN ILLINOIS POWER-MARION	MARION
10	IL0000124	AMEREN ENERGY-GRAND TOWER	GRAND TOWER
11	IL0000116	AMEREN ENERGY-MERODOSIA	MERODOSIA
12	IL0049191	AMEREN ENERGY-NEWTON	NEWTON
13	IL0001970	AMEREN ENERGY-EDWARDS	BARTONVILLE
14	IL0000175	AMEREN ENERGY-VENICE	VENICE
15	IL0000043	DYNEGY MIDWEST GEN-BALDWIN	BALDWIN
16	IL0004171	ELECTRIC ENERGY INC.-JOPPA	JOPPA
17	IL0002241	KINCAID GENERATION, L.L.C.	KINCAID
18	IL0002186	MIDWEST GENERATION, LLC - CRAWFORD	CHICAGO
19	IL0002259	MIDWEST GENERATION, LLC - WAUKEGAN	WAUKEGAN
20	IL0064254	MIDWEST GENERATION,LLC-JOLIET29	JOLIET
21	IL0002208	MIDWEST GENERATION,LLC-WILL CO	ROMEDEVILLE
22	IL0002232	MIDWEST GENERATION-POWERTON	PEKIN
23	IL0036765	SOYLAND POWER COOPERATIVE INC	PEARL
24	IL0024767	SPRINGFIELD CWLP	SPRINGFIELD

Legend

Potential for Aquifer Recharge	 Moderate to Moderately Low
 Very High	 Moderately Low to Low
 Very High to High	 Low
 High to Moderately High	 Disturbed Lands
 Moderately High to Moderate	 Water
	 Power Plants

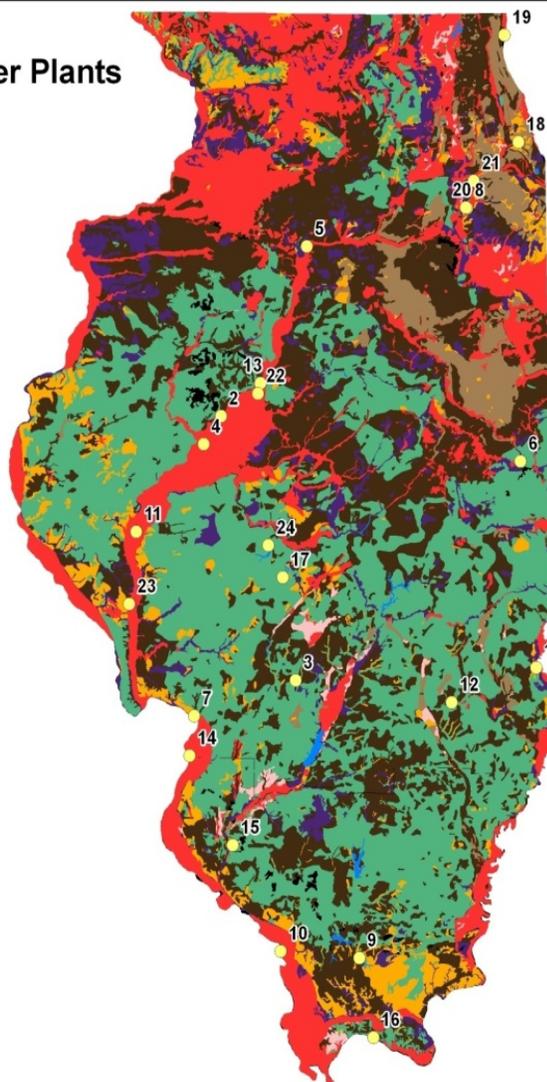


Figure 1. Illinois Power Plants with CCR Surface Impoundments

Priority 1 facilities (i.e., high potential for aquifer recharge, and existing or future potable uses) were requested, under a modified BOW permit, to install a groundwater monitoring well system, implement a monitoring program, and submit electronic compliance reports to the Illinois EPA. This information was requested at these 10 facilities, identified in Table 2, because they did not have groundwater monitoring systems. Additionally, the five facilities classified as Priority 2 because of the low potential for aquifer recharge and existing or future potable uses in the area, were requested to assess the potential for contaminant migration at their respective sites.

Priority 1	Priority 2
Ameren - Edwards Station, IL0001970	City Water Light and Power, IL0024767
Ameren - Grand Tower Station, IL0000124	Kincaid Generation, IL0002241
Ameren - Meredosia Station, IL0000116	Ameren - Newton Station, IL0049191
Ameren - Venice Station, IL0000175	Midwest Generation EME - Crawford Station, IL0002186
Dynegy Midwest - Baldwin Energy Center, IL0000043	Midwest Generation EME - Waukegan Station, IL0002259
Electric Energy Inc., IL0004171	
Midwest Generation EME - Powerton, IL0002232	
Midwest Generation EME - Joliet 29, IL0064254	
Midwest Generation EME - Will County Station, IL0002208	
Prairie Power Inc., IL0036765	

Table 2. Priority 1 and 2 under Illinois EPA’s CCR Impoundment Strategy

Progress

The following provides a summary of the progress for each of the Priority 1 and 2 facilities:

Priority 1

- Ameren Facilities - Hydrogeologic assessment plans for Edwards Station, Meredosia Station, and Grand Tower have been approved and are being implemented. Initial groundwater monitoring results have been reviewed, and Illinois EPA is waiting on the next round of quarterly samples to further assess conditions at the site.

A hydrogeologic assessment has been completed and a groundwater management zone (GMZ) to address impacted groundwater at Venice Station has been approved.

- Dynegy Midwest, Baldwin Energy Center - A hydrogeologic assessment plan has been submitted and approved. Initial groundwater monitoring results have been reviewed, and Illinois EPA is waiting on the next round of quarterly samples to further assess conditions at the site.

- Electric Energy Facility (EEF) – A hydrogeologic assessment plan for this facility has been submitted and approved. Groundwater monitoring results are under review.. A meeting with EEF has been requested to discuss results.
- Midwest Generation Facilities – Hydrogeologic assessments plans which include groundwater monitoring for Waukegan Station, Will County Station, Powerton Station, Crawford and Joliet 29 Station have been approved. Initial groundwater monitoring results have been reviewed, and Illinois EPA is waiting on the next round of quarterly samples to further assess conditions at the site..
- Prairie Power - A hydrogeologic assessment plan has been submitted and approved. Preliminary groundwater sampling results have been received indicating potential groundwater impacts. Additional sampling data is being collected to establish background water quality at the site.

Priority 2

- Ameren Facility - Hydrogeologic assessments plans for Newton Station have been submitted and approved. Groundwater monitoring results have been received and are under review.
- City Water Light and Power (CWLP) – A hydrogeologic assessment for City Water Light and Power has been received and is currently under review. A meeting with CWLP has been requested to discuss results.
- Kincaid Generation – An assessment plan which includes the construction of monitor wells has been received and has been approved. Agency is awaiting monitoring data.

In addition to the priorities described above, Illinois EPA concurrently continues to work with the eight facilities listed in Table 3 below to assess and remediate groundwater impacts (corrective action). A site specific rule has been adopted by the Illinois Pollution Control Board for the Ameren-Hutsonville site. This rule specifies the steps which are required to be taken to close out the inactive ash impoundment. Ameren is in the process of fulfilling its obligations required under the site specific rule.

Dynegy Midwest - Havana Station had an approved GMZ, however groundwater at this site has returned to compliance with the numerical groundwater standards.

Facility	Status
Ameren -Coffeen Station, IL0000108	Further Assessment Underway
Ameren -Duck Creek Station, IL0055620	Remedial Action Under Development
Ameren -Hutsonville Station, IL0004120	Work is proceeding on the Site Specific Rule Adopted by the Board
Dynegy Midwest - Hennepin Station, IL0001554	Approved GMZ
Dynegy Midwest - Vermillion Station, IL0004057	Remedial Action Plan Under Development
Dynegy Midwest - Wood River Station, IL0000701	Approved GMZ
Midwest Generation EME - Joliet 9, Landfill IL0002216 Lincoln Stone Quarry	Two Approved GMZs.
Southern Illinois Power (SIP), IL0004316	Further assessment is underway, and a meeting with a meeting has been requested to discuss results.

Table 3. Facilities with On-going Groundwater Assessment and Remediation Activities

Groundwater samples were analyzed for the full spectrum of inorganic parameters at these sites. The constituents listed in Table 4 were identified as contaminants of concern at one or more these facilities.

Boron
Sulfate
Chloride
Iron
Manganese
Total Dissolved Solids (TDS)

Table 4. Contaminants of Concern