

Illinois EPA's Ash Impoundment Strategy Progress Report October 2010

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.**

In response to last year's 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 | IL0055620 | 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 | Red | Moderately Low to Low |
| Very High to High | Light Red | Low |
| High to Moderately High | Dark Purple | Disturbed Lands |
| Moderately High to Moderate | Yellow | Water |
| | Blue | Power Plants |
| | Yellow Circle | |

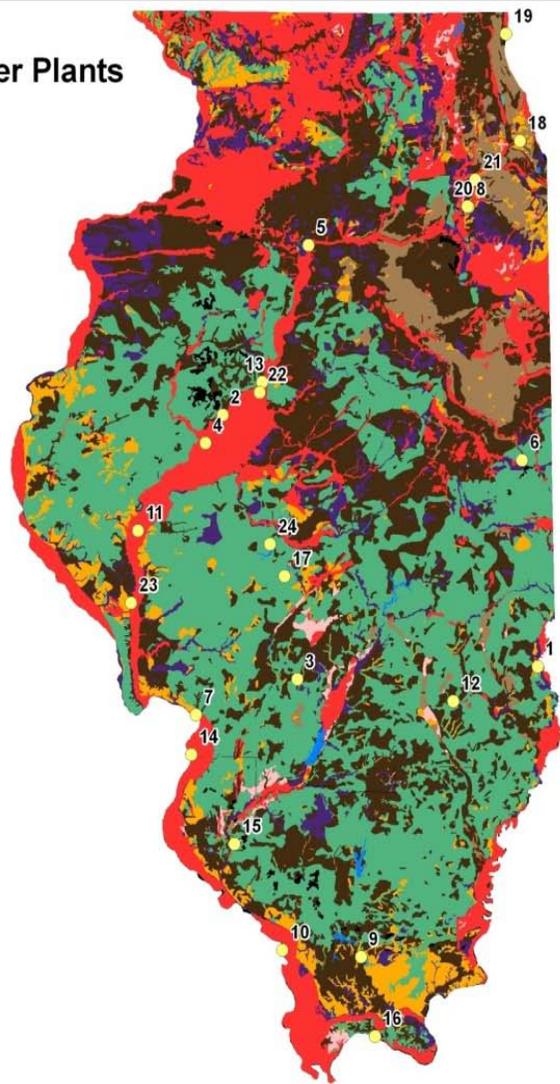


Figure 1. Illinois Power Plants with CCR Surface Impoundments

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

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

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

Priority 1

- Ameren Facilities - Hydrogeologic assessments plans for Edwards Station, Meredosia Station, and Grand Tower have been approved and are being implemented. Groundwater results are scheduled to be submitted by December 31, 2010. A hydrogeologic assessment has been completed and a proposed corrective action plan to address impacted groundwater at Venice Station is under review. The corrective action plan has been posted on the Illinois EPA website and comments on the plan are being accepted by the Illinois EPA. The 45 day comment period ends on October 10, 2010.
- Dynegy Midwest, Baldwin Energy Center - A hydrogeologic assessment plan has been submitted and approved. Groundwater results are scheduled to be submitted by December 31, 2010.
- Electric Energy Facility – A hydrogeologic assessment plan for this facility has been submitted and approved. Groundwater results are scheduled to be submitted by October 31, 2010

- 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.
- 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 results are scheduled to be submitted by December 31, 2010.
- City Water Light and Power – A hydrogeologic assessment for City Water Light and Power has been received and is currently under review.
- Kincaid Generation - A review of the hydrogeologic assessment plan for Kincaid Generation has been completed. Illinois EPA has requested further study of the site including the construction of monitor wells.

In addition to the priorities described above, Illinois EPA concurrently continues to work with the nine facilities listed in Table 3 below to assess and remediate groundwater impacts (corrective action).

| Facility | Status |
|--|--------------------------------------|
| Ameren -Coffeen Station, IL0000108 | Further Assessment Underway |
| Ameren -Duck Creek Station, IL0055620 | Remedial Action Under Development |
| Ameren -Hutsonville Station, IL0004120 | Site Specific Rule Making |
| Dynegy Midwest - Havana Station, IL 0001571 | Approved Groundwater Management Zone |
| Dynegy Midwest - Hennepin Station, IL0001554 | Approved Groundwater Management Zone |
| Dynegy Midwest - Vermillion Station, IL0004057 | Remedial Action Under Development |
| Dynegy Midwest - Wood River Station, IL0000701 | Approved Groundwater Management Zone |
| Midwest Generation EME - Joliet 9, IL0002216 | Remedial Action Under Development |
| Southern Illinois Power, IL0004316 | Further Assessment Underway |

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

Corrective action plans have been implemented at three of these facilities. 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

One of these facilities has returned to compliance with Illinois' numerical groundwater quality standards. One facility continues to exceed the standard for Boron, Sulfate, Manganese, and pH. The other facility exceeds the numerical standard for Boron, Manganese, pH and TDS.