

DAIRYLAND POWER COOPERATIVE LANDFILL SITING STUDY

Three Step Process

- I Performed a Coal Combustion Byproducts, Handling and Characterization Study
 - II Performed a Solutions Identification Analysis
 - III Performed a Comprehensive Landfill Siting Study
- I Coal Combustion Byproducts, Handling and Characterization Study

Purpose:

To determine the most economical long-term solution for managing Coal combustion byproducts (CCBs) generated by Dairyland Power Cooperative (DPC) system-wide operations.

Findings:

- i. Installation of air emission control equipment over the next several years will substantially increase the amount of CCBs requiring containment in a land disposal facility until potential beneficial use alternatives can be identified and/or developed.
- ii. The amount of CCBs from the Genoa Station requiring landfill containment will increase from approximately 15,000 to 165,000 cubic-yards per year.
- iii. Containment/Disposal options analyzed included use of the DPC Alma Landfill Facility, use of public and privately owned landfills located within the region, and development of a new landfill facility near Genoa.
- iv. Estimated disposal costs, including transportation, ranged from approximately \$11.55 per ton of waste at a new Genoa Landfill Facility; to \$24.00 per ton at the DPC Alma Landfill Facility; to \$45.00, \$55.00 and \$64.31 per ton at the Seven Mile Creek Landfill in Eau Claire, Monroe County Landfill and the La Crosse County Landfill, respectively. Thus, development of a new landfill near the Genoa Generating Facility appears to be the most economically efficient alternative.

II Solutions Identification Report

Purpose:

Using the findings from the Coal Combustion Byproducts Handling and Characterization Plan evaluate specific alternatives from an economic and technical feasibility standpoint to address the long-term management of CCB's in greater detail.

Findings:

- i. Alternative "Do Nothing": Under this alternative CCB's system-wide will be disposed of at the Alma Off-Site Facility at an estimated annual cost of \$6,293,000 until the Alma Facility is full. Thereafter, CCB's will be disposed of at an alternative off-site third-party landfills at an estimated annual cost in the range of \$13,000,000 to \$19,000,000. This alternative was deemed "cost prohibitive" and "logistically impractical".
- ii. Alternative "Modify Existing Process": Under this alternative CCB's system-wide will be disposed of at the Alma Off-Site Facility at an estimated annual cost of \$6,293,000. this alternative assumes that necessary landfill expansions will be permitted and constructed at the Alma Facility to allow for continued disposal operations. This alternative was deemed "cost prohibitive" and "logistically impractical."
- iii. Alternative "Replace": Under this alternative a new landfill facility will be constructed within 10 to 15 miles of the Genoa Station. CCB's from the Genoa Station will be disposed at the new facility at an estimated annual cost of \$3 million. This option was deemed the most "cost effective" alternative for disposal of CCB's from the Genoa Station. CCB's from the Alma and JPM Stations will continue to be disposed of at the Alma Off-Site Facility.

III Landfill Siting Study

Purpose:

Develop landfill siting criteria and perform field-screening to identify four potential landfill sites in proximity to the Genoa Generating Station. For each of the four selected sites develop a conceptual design and prepare preliminary cost estimates that include assumptions for land purchase, regulatory permitting, construction, operation (including transportation costs), and closure and long-term care of the facility.

Siting Criteria

Absolute Criteria

- Facility capacity of 11.4 million cubic-yards providing a minimum landfill site life of 30 years
- Site location: Within 25-miles of the Genoa Generating Station
- Site topography: Slopes less 3:1 (horizontal to vertical); No rock outcrops.
- Location setbacks: roads, parks, public areas, wetlands, and environmentally sensitive areas.

Mitigating Criteria

- Hydrogeology (groundwater/geology)
- Location of private wells (upgradient versus downgradient)
- Wetlands and surface water
- Air/Noise impacts
- Land use/zoning
- Development and construction costs
- Archaeological resources
- Natural/Cultural resources
- Political/Public acceptance

Mitigating Criteria/Screening

- Performed initial site screening to identify candidate sites
- Used a process in which areas closest to Genoa were investigated first
- Sites were screened for fatal flaws related to absolute and mitigating criteria
- Seventy sites met criteria
- Performed an initial inspection of all 70 sites
- Performed a second inspection of top 10 sites

Screening information gathered and confirmed included:

- Presence of structures
- Location of private wells
- Active/Inactive quarries
- Wetlands and natural or man-made surface water bodies
- Natural screening available (e.g., trees, berms and adjacent hills)
- Suitable topography for slope stability and storm water management
- Type of roads from the Genoa plant to the site

Additional screening of top 10 sites yielded four candidate sites:

- Conceptual facility designs were developed
- Economic analyses were performed
- Each site must accommodate two facilities
 - One initial permit – 15-year site life
 - Expansion – additional 15-year site life
- Each property
 - Capacity beyond 30 years, depending upon coal type burned
- Four sites were narrowed to two for further evaluation