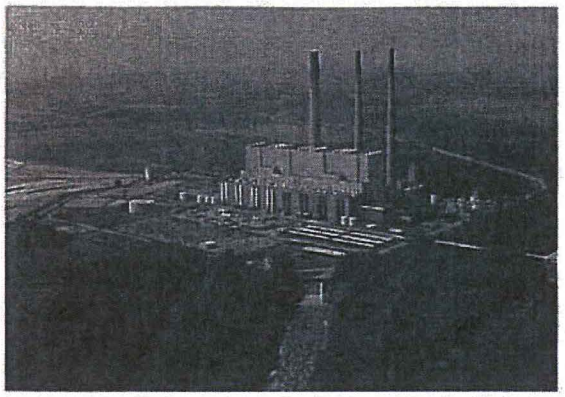
Ex A

FACTS ABOUT THE LABADIE PLANT



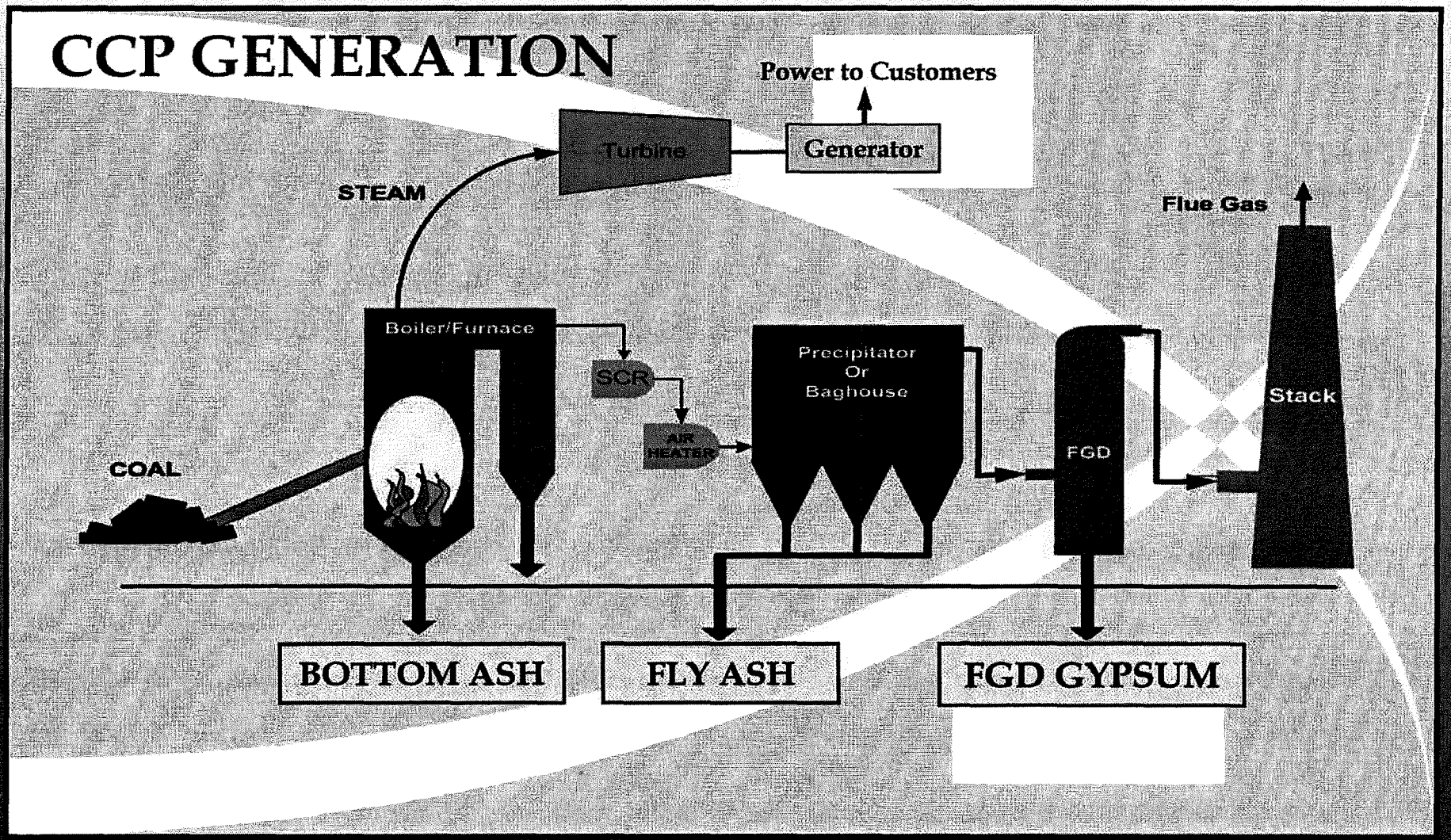
- Construction 1967 to 1970
- Production Began - 1970
- Generating Capacity - 2405 MW
- Typical Annual Generation -18,000,000 to 19,000,000 MWHR
- Fuel - Powder River Basin Sub-Bituminous Coal
- Annual Fuel Burn – over 10 million tons
- Coal Pile Size - 2 million tons (about 65 days)
- Average Number of Daily Unit Trains (142 Cars) – 2
- Current Annual CCP Production – over 500,000 tons
- Projected Annual CCP Production – over 650,000 tons
- Plant Floor – Elev. 491
- Height of Stacks - 700 ft, Elev. 1190
- Height of Power Building - 250 ft, Elev. 745
- Height of Coal Pile – 50 ft, Elev. 541
- Number of Full Time Employees - 300

Intervenor Exhibit No. 302
Date 03-31-2014 Reporter Stewart
File No. EA-2012-0281

PLANT ECONOMIC BENEFITS

- Current number of plant employees - 300
- Estimated jobs required to construct Utility Waste Management Facility (2 Years) – 30 to 40
- Estimated new jobs required to operate facility – 3 to 4
- Current annual property and other taxes paid by the plant – about $1.5 million
- Increase in assessed valuation for Utility Waste Management Facility as "Commercial" vs. "Agricultural" property – 20% increase

Where are Coal Combustion Products?



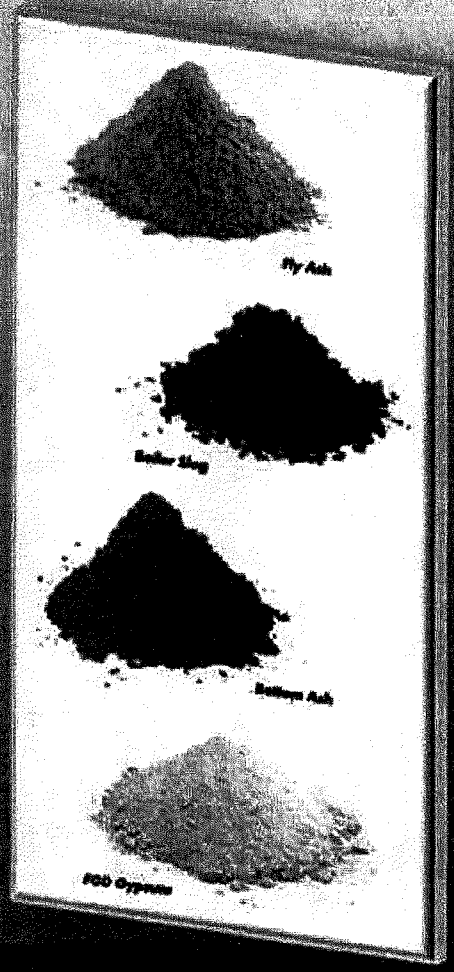
AmerenEnergy Fuels & Services

Where are Coal Combustion Products?

Coal Combustion Products (CCP)

CCPs are residuals from the combustion of coal and emission control systems:

- Fly ash
- Bottom ash and boiler slag
- FGD (synthetic) gypsum

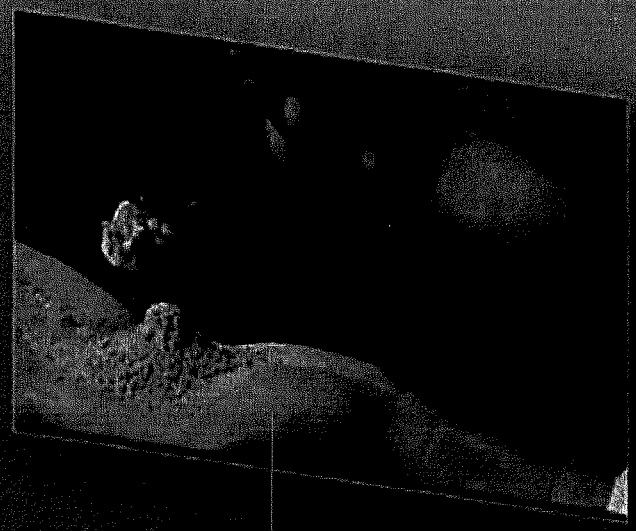


AmerenEnergy Fuels & Services

Where are Coal Combustion Products?

Fly Ash

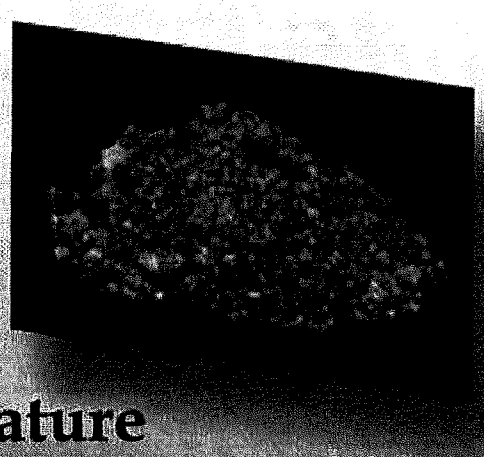
- **Fine particles like flour or talc**
- **Exhibits "pozzolanic" and "Cementitous" characteristics**
  - Siliceous or siliceous and aluminous materials, when in the presence of water, react with calcium hydroxide to produce cementitous properties
- **Besides natural ash, there are two types**
  - Class F from bituminous coal
  - Class C from sub-bituminous coal



Ameren UE

Where are Coal Combustion Products?

Bottom Ash



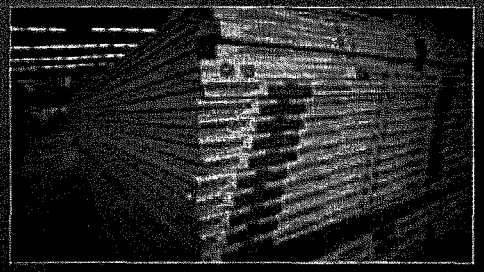
- Heavier than fly ash and granular in nature
- Used as raw feed for cement production
- Use in soil applications to improve drainage and blended with other materials for composting
- Used in masonry blocks and concrete products
- Can be used in road base and mineral fillers in asphalt
- A component of artificial aggregates

Ameren UE

Where are Coal Combustion Products?

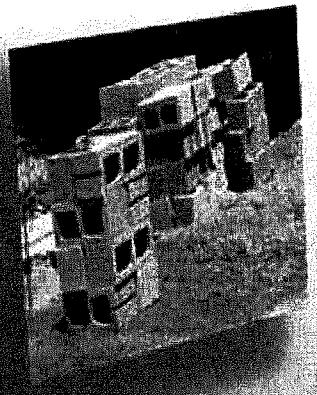
FGD Gypsum

- FGD (synthetic) gypsum is generated when SO2 is removed from the flue gas and is composed mostly of calcium sulfate
- Approximately 27% of the wallboard produced annually uses synthetic gypsum
- Volume will increase significantly in next decade as new clean air rules take affect. The increased quantities of FGD gypsum will challenge existing markets



Where are Some Beneficial Uses of CCP?

CCP Beneficial Use



- **Markets**
  - Ready Mix Concrete/PCC Paving/Products
  - Cement Kiln Raw Feedstock
  - Structural Fill
  - Abrasive Grit/Roofing Granules
  - Soil Stabilization/Modification
  - Traction Control (Snow and Ice)
  - Flowable Fill
  - Mine Reclamation/Waste Solidification

Where are Some Beneficial Uses of CCP?

CCP Beneficial Use

Other

- Asphalt Mineral Filler
- Non-fired Bricks
- Ceramic Tile
- Manufactured Lumber
- Wallboard
- Autoclave Cellular Blocks
- Soil Amending

Ameren UE

Where are Some Beneficial Uses of CCP?

Leading Uses for Fly Ash

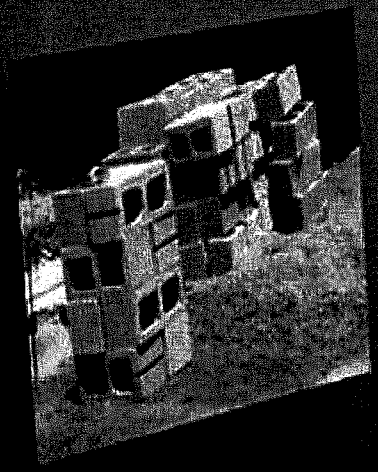
- **Additive to concrete as a replacement for portland cement**
  - Enhances durability
  - Reduces permeability
  - Improves workability
- **When used in concrete it can reduce greenhouse gases while conserving natural resources**
- **Makes good concrete better**

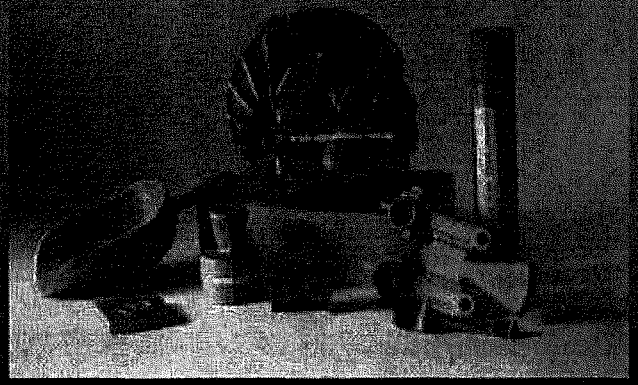
AmerenEnergy Fuels & Services

Where are Some Beneficial Uses of CCP?

Other Fly Ash Uses

- For stabilization of soils
- To produce road base material
- In specialized applications such as metal castings, plastic fillers and in paints
- Waste stabilization and odor control





AmerenEnergy Fuels & Services

Where are Some Beneficial Uses of CCP?

Coal Combustion Products partnership – C2P2

- **In 2002, the U.S. Environmental Protection Agency (EPA) recognized CCPs could further national environmental goals:**
  - Reduce green house gases
  - Conserve natural resources
  - Reduce landfill space
- **Formally established in 2003**
- **Currently more than 145 members**

C2P2 COAL COMBUSTION PRODUCTS PARTNERSHIP

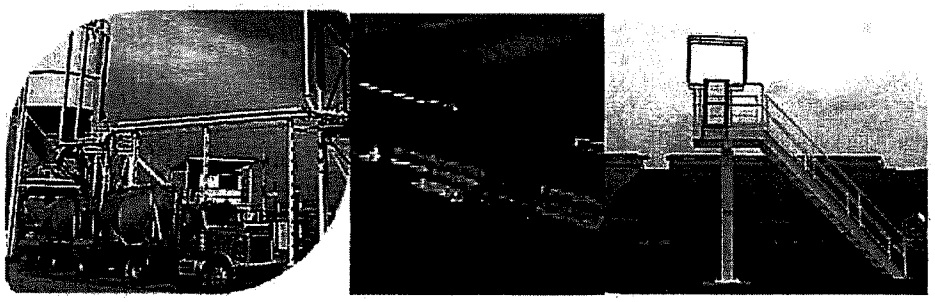
HOW WILL CCPs BE TRANSPORTED TO THE SITE?

- As necessary, ash and scrubber material will be transported to the Labadie facility using the same transport methods currently in use today.

- All modes of transporting ash and scrubber material are currently under review:

  - Barge
  - Rail
  - Truck

- Some additional truck or rail traffic is currently anticipated.

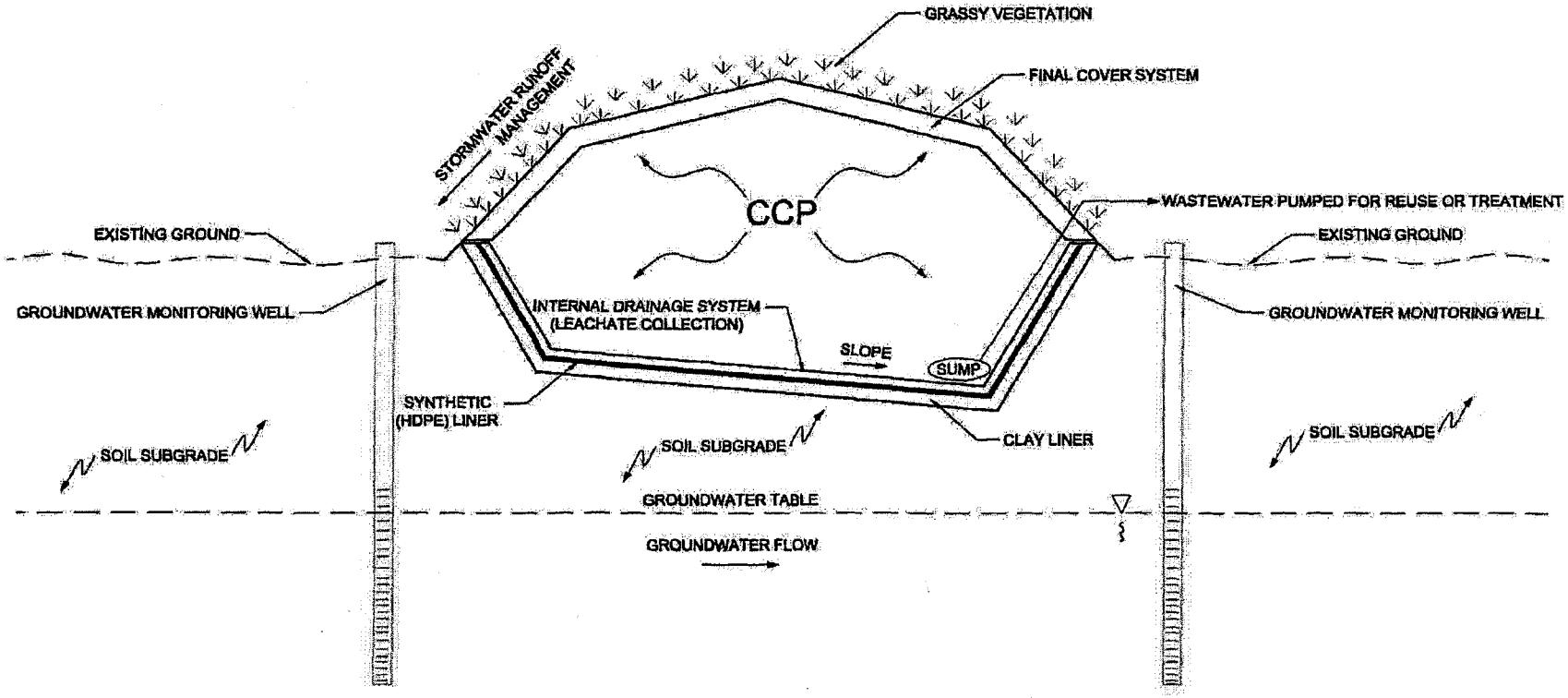


Ameren UE

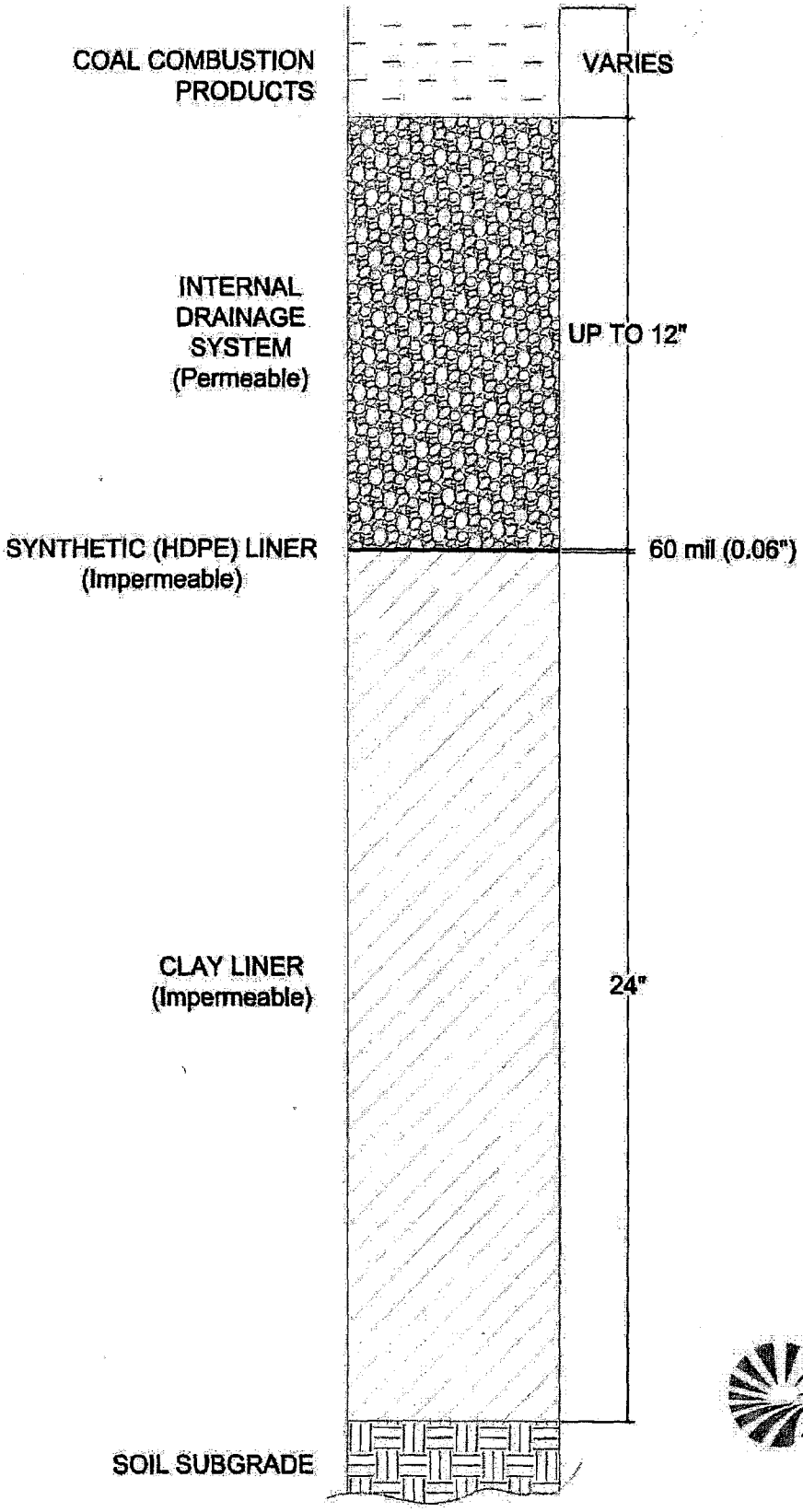
WHAT IS A UTILITY WASTE LANDFILL?

- A regulated, engineered facility for dry storage and disposal of Coal Combustion Products (CCP)
- Approximately 15% water added to dry CCPs to control dust and aide in compaction
- Will not accept Municipal Solid Waste. Will not create odors, produce methane gas, or attract vectors
- Designed to control stormwater falling within the landfill footprint to maintain less than 1 foot of water on the impermeable bottom liner
- Stability analysis (including during earthquakes) is required
- Includes final cover system at closure to limit stormwater from seeping into CCPs. Cover will be maintained in grass
- Semi annual ground water monitoring required for entire operating life plus 30 years after closure
- Protected from 1993+ height flood by perimeter berms
- Constructed in stages (cells), each with approximate 5 year life, to maximum height of 100 feet

Typical Dry Utility Waste Landfill Section



TYPICAL LANDFILL BOTTOM LINER SECTION



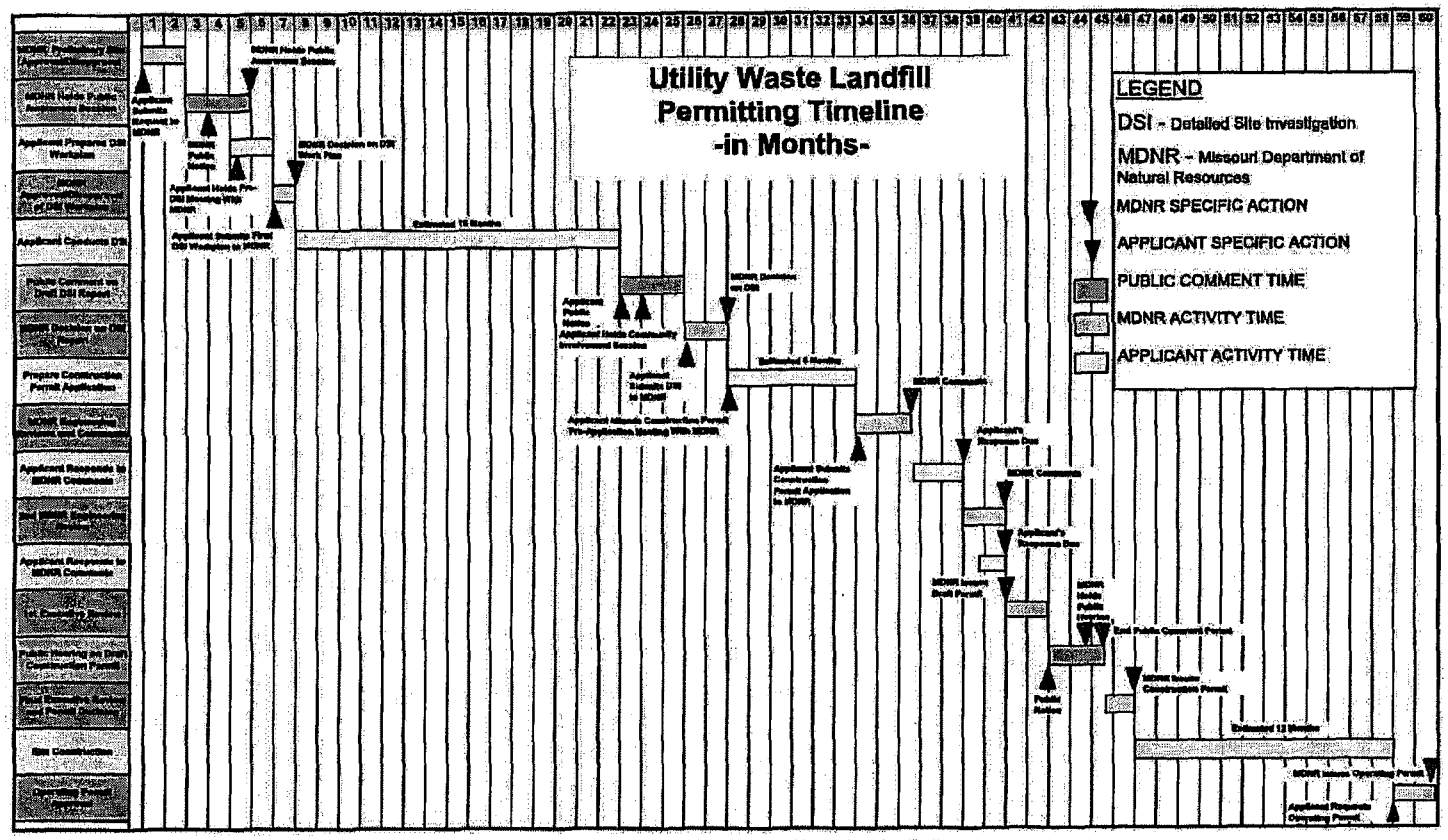
Ameren UE

DEMONSTRATION OF THE CEMENT-LIKE PROPERTIES OF LABADIE FLYASH

THIS CYLINDER WAS MADE BY MIXING DRY FLYASH FROM LABADIE WITH WATER AND LETTING IT HARDEN WITHOUT ANY DENSIFICATION EFFORT.

MOISTURE - 15% by weight

Typical MDNR Permitting Timeline



NOTE: THIS PERMITTING TIMELINE BASED ON MDNR PERMIT PROCESS EXAMPLE FOUND AT http://www.dnr.mo.gov/env/swmp/images/Timeline1.jpg

WHY IS THE LANDFILL NECESSARY?

- Contingency as part of Coal Combustion Product management plan
- If CCPs cannot be beneficially used, they must be put in a dry storage landfill
- To minimize costs and impacts, CCPs should be managed where they are produced
- Landfill is being sized for future contingencies including changes in regulations and additional environmental controls (eg. Scrubbers)
- Landfill cells will be built only as needed to meet projected 5-year needs

AmerenUE

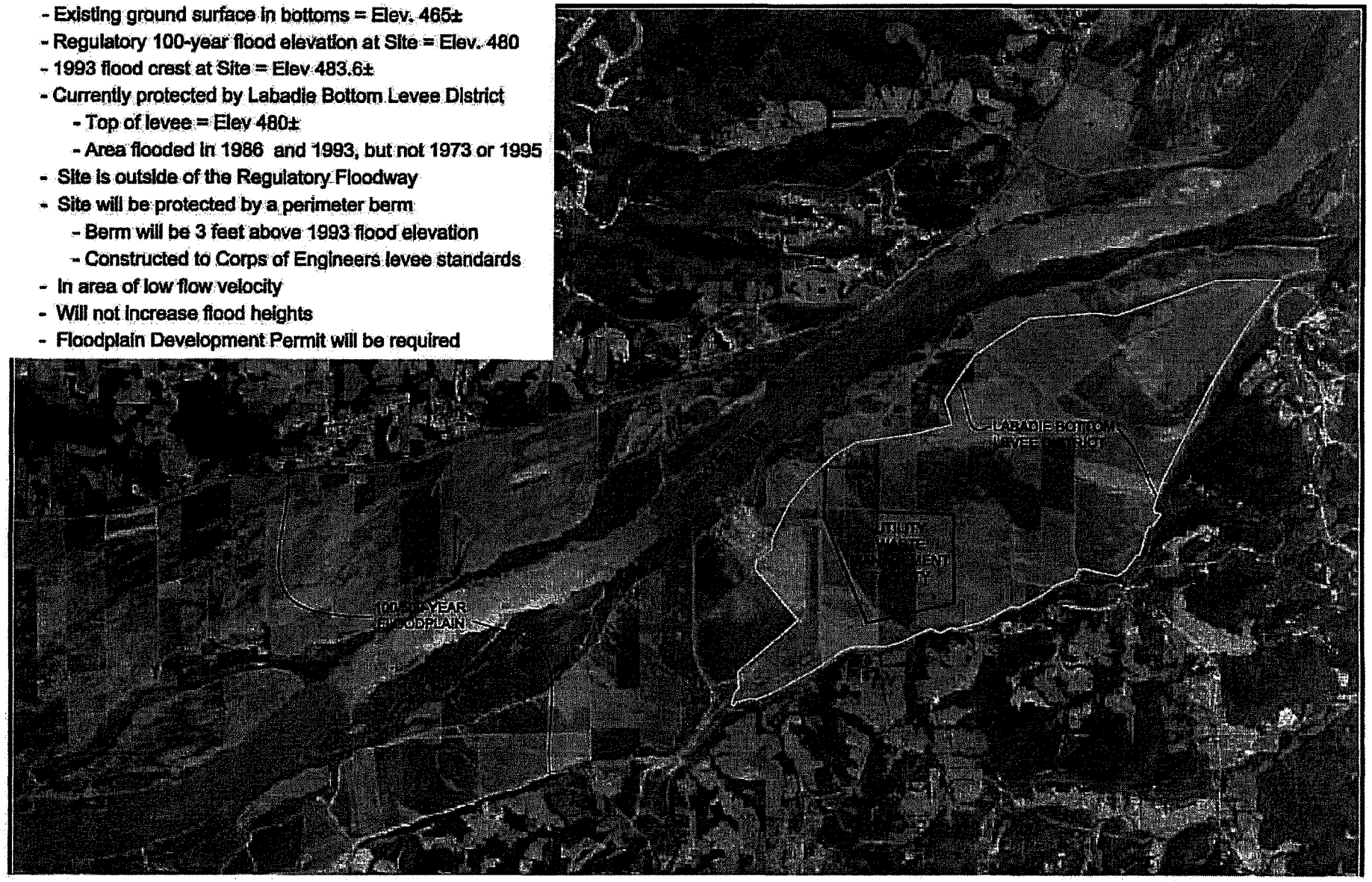
WHY AT LABADIE?

- Labadie is the largest plant in the AmerenUE system producing the largest quantity of CCPs
- Site was chosen after 5 year internal evaluation of other options and locations
- Landfill at plant will minimize environmental impacts and operating costs due to transportation
- Landfill will help assure long term viability of the Labadie plant

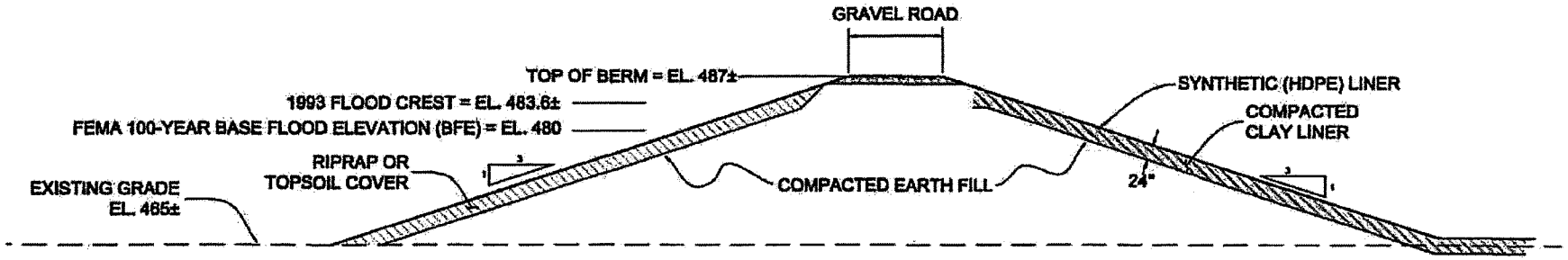

LADDIE BOTTOM ROAD

MISSOURI RIVER FLOODPLAIN

- Existing ground surface in bottoms = Elev. 465±
- Regulatory 100-year flood elevation at Site = Elev. 480
- 1993 flood crest at Site = Elev 483.6±
- Currently protected by Labadie Bottom Levee District
  - Top of levee = Elev 480±
  - Area flooded in 1986 and 1993, but not 1973 or 1995
- Site is outside of the Regulatory Floodway
- Site will be protected by a perimeter berm
  - Berm will be 3 feet above 1993 flood elevation
  - Constructed to Corps of Engineers levee standards
- In area of low flow velocity
- Will not increase flood heights
- Floodplain Development Permit will be required



PERIMETER FLOOD PROTECTION DIKE



WHAT IS THE PROCESS?

- **Missouri Department of Natural Resources Solid Waste Management Program:**
  - **Preliminary Site Investigation** – Spring 2009
  - **Detail Site Investigation** – under way, anticipated late 2010 completion
  - **Construction Permit** – anticipated mid 2012 completion
  - **Operating Permit** – anticipated late 2013 completion

- **Franklin County:**
  - **Land Use Permit** – anticipated late 2010 completion
  - **Floodplain Development Permit** – anticipated late 2010 completion
  - **Land Disturbance Permit** – anticipated late 2011 completion
  - **Operating Permit** – anticipated late 2013 completion

- **US Army Corps of Engineers:**
  - **404 (Wetlands) Permit** – anticipated late 2010 completion

- **Missouri Department of Natural Resources:**
  - **Additional Air, Water, and Land Disturbance Permits** – completed throughout project

THE GOAL IS TO HAVE THE FIRST CELL OF THE WASTE DISPOSAL FACILITY OPERATIONAL IN 2014