



# Hospital Beneficial Use of LFG – Rockingham County VA Case Study

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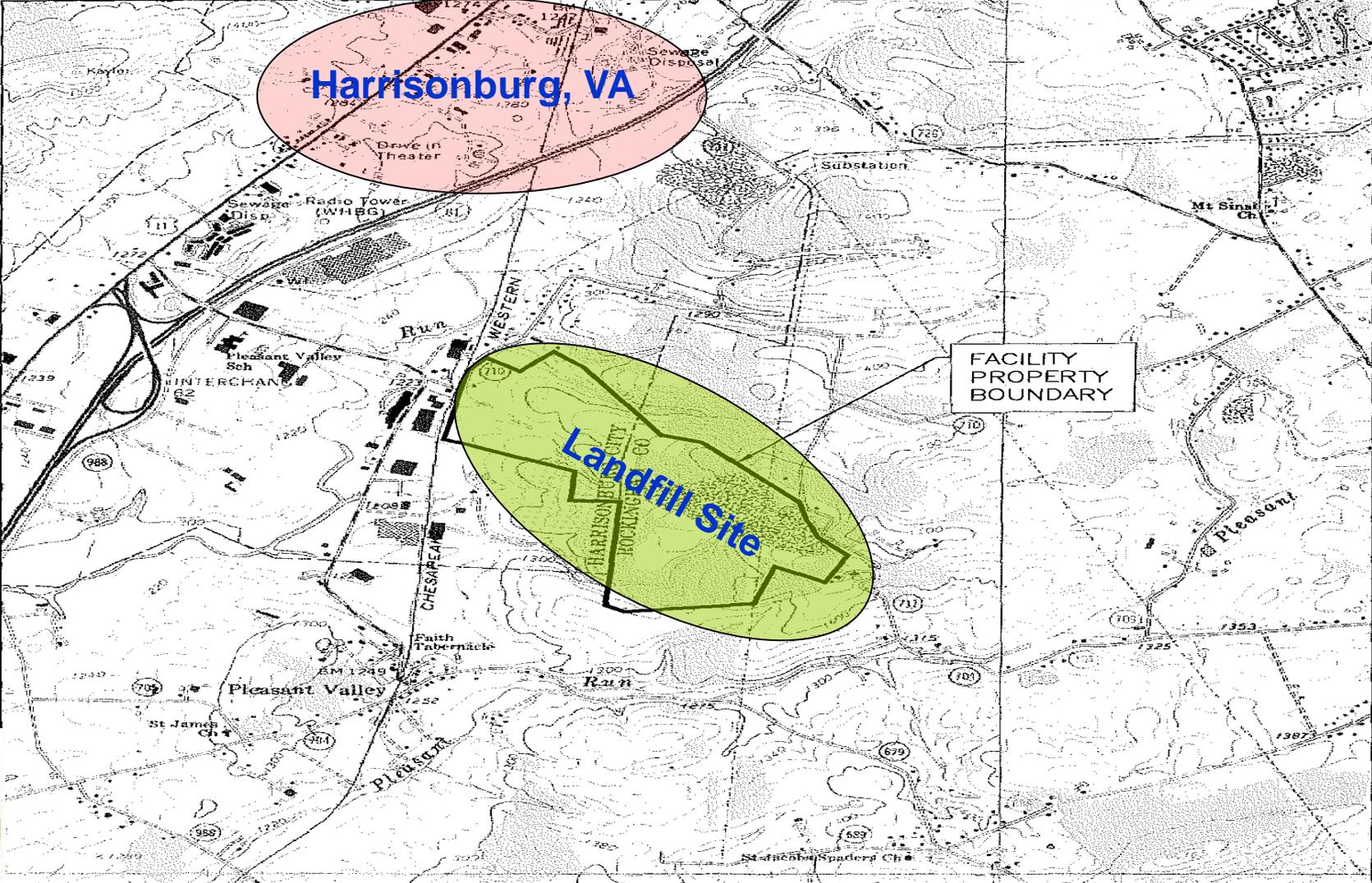
15<sup>th</sup> Annual LMOP Conference

January 2012

# Outline

- Site background
- Feasibility study
- Design/build
- O&M findings
- Other LFG activities

# Landfill Location

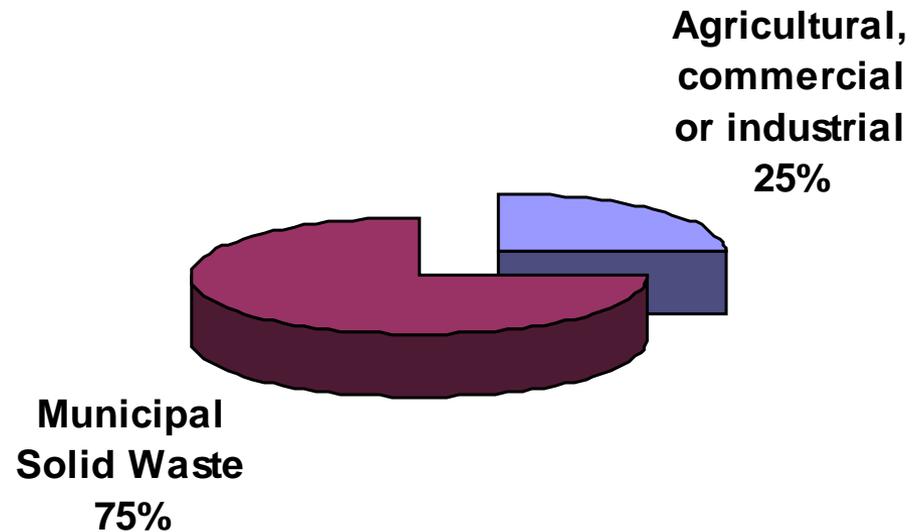


# Landfill Profile

- Total site is 215 acres
- 51 acres permitted for disposal
- Opened in 1972
- Over 2,500,000 tons of waste in place today
- ~250 tpd



# What's Received at the Landfill by Sector

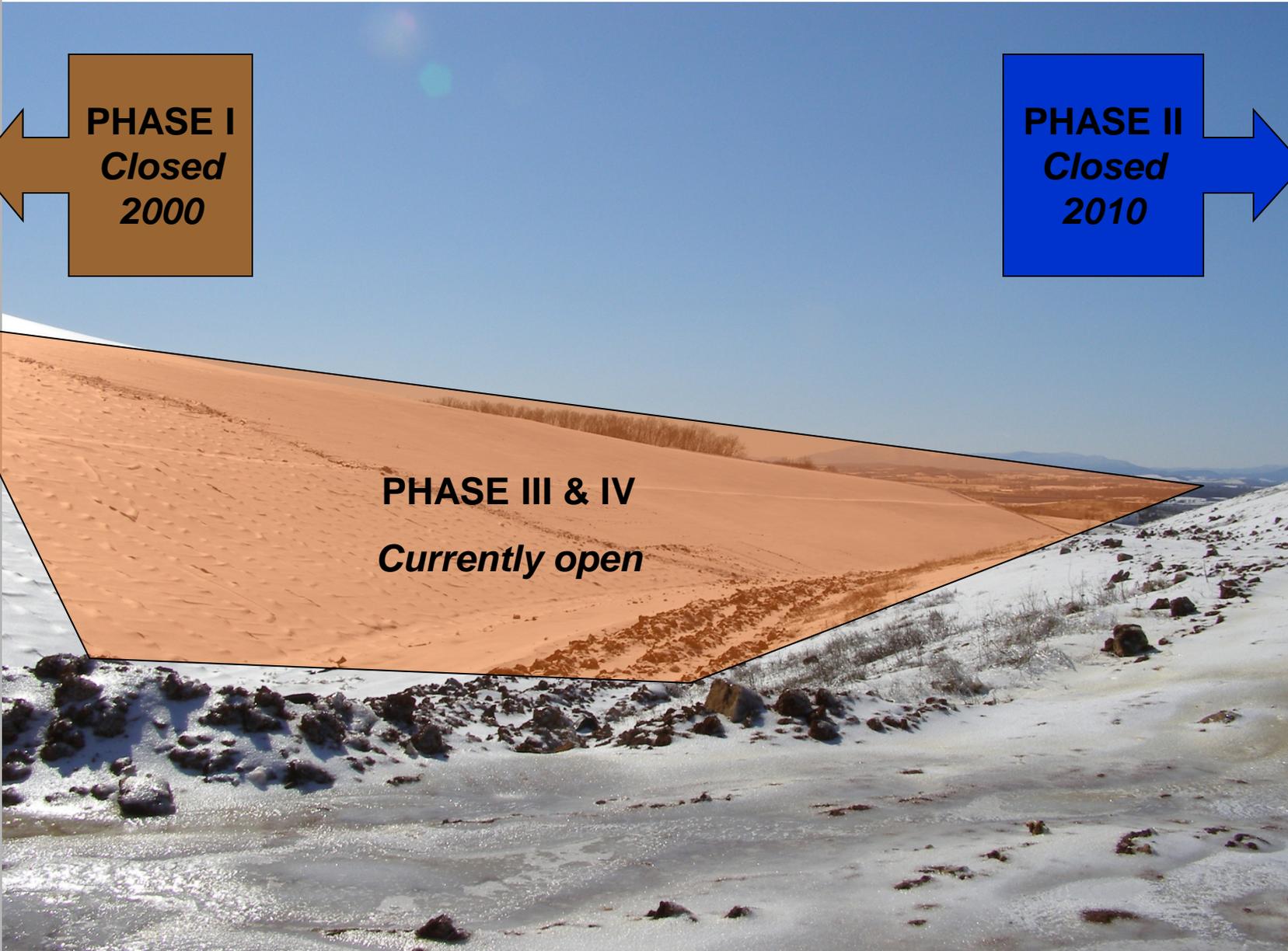


# Phase III & IV – “Filling the Valley”

**PHASE I**  
*Closed*  
*2000*

**PHASE II**  
*Closed*  
*2010*

**PHASE III & IV**  
*Currently open*



# Prior LFG Management

- Active collection from Phases I & II
- LFG flared

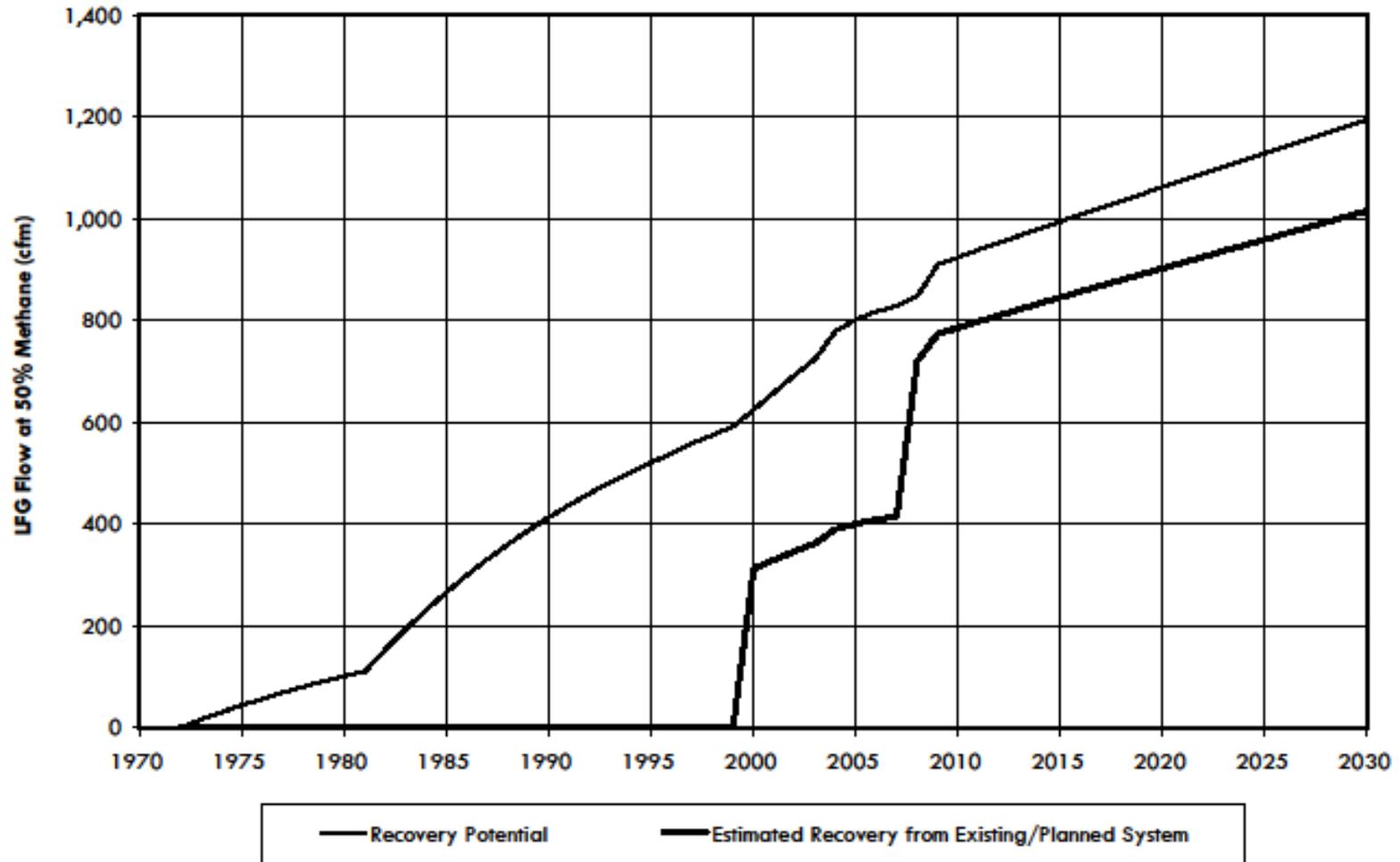


# Project Interests

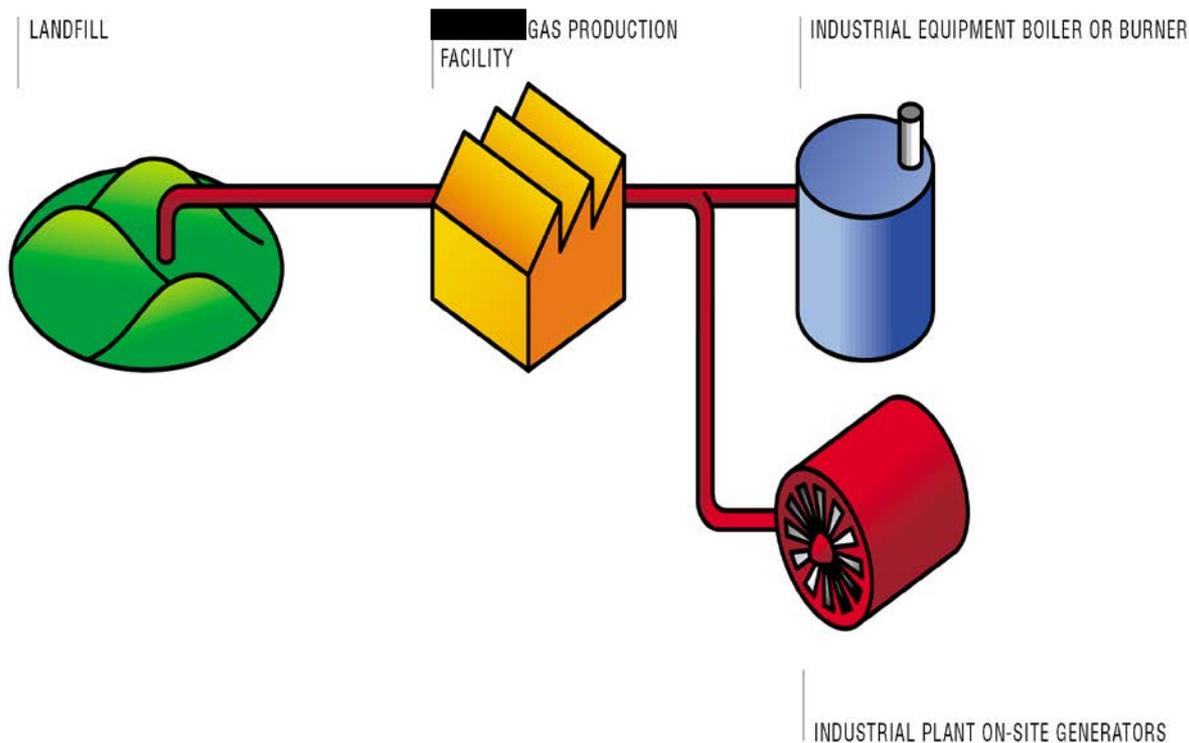
- Rockingham County attends the LMOP conference in January of 2006
- The Rockingham County landfill is featured as a prospective gas utilization project candidate



**LFG Recovery Projection**  
**Rockingham County Landfill, Harrisonburg, Virginia**



# Direct Use Option



- Direct use involves burning the LFG directly in a boiler to produce steam
- This is the lowest capital cost option
- Boilers require less gas treatment
- Energy conversion is relatively efficient



# Final Comparison: CHP versus Direct Use

<b>Financial Parameter</b>	<b>CHP</b>	<b>Direct Use Option</b>
<b>Total Capital Costs</b>	<b>\$4,222,482</b>	<b>\$2,496,800</b>
<b>Net Present Value</b>	<b>\$1,758,543</b>	<b>\$3,557,772</b>
<b>NPV Payback Period</b>	<b>10 years</b>	<b>6 years</b>
<b>Internal Rate of Return</b>	<b>12%</b>	<b>18%</b>



# Meanwhile.....

- Rockingham Memorial Hospital (RMH) is building a new hospital
- Seeks to construct an environmentally friendly energy efficient facility



SCS ENGINEERS



# Industrial Boilers Proposed at Hospital

- Used to produce steam or hot water
- 3 boilers planned
- Each uses 680 scfm of LFG



# Pipeline Route











INDUSTRIAL PIPE CO. S.A. 100% POLYPROPYLENE 1000 5000

























04/08/2010



04/08/2010



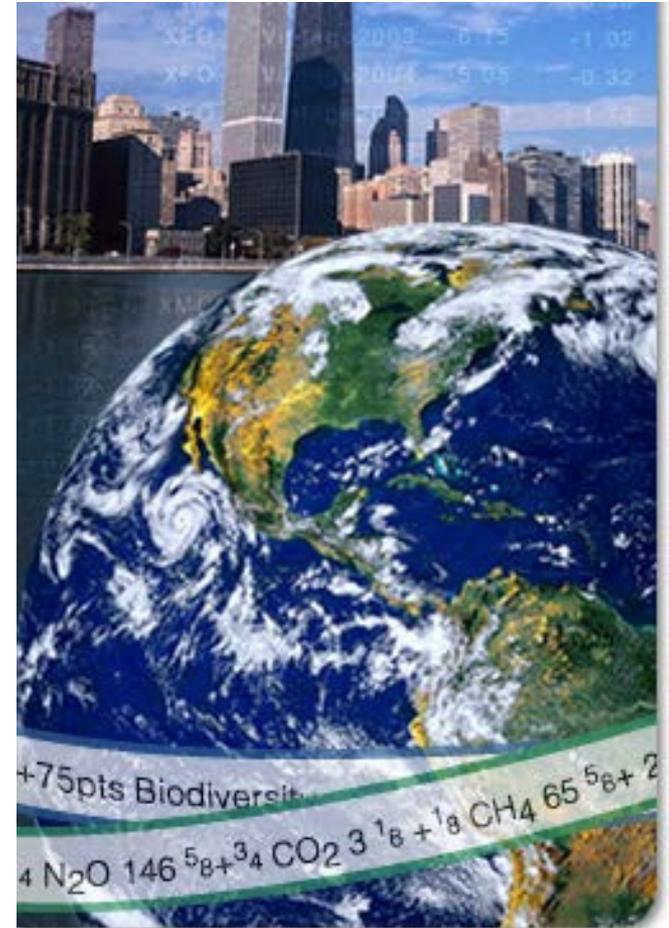
04/09/2010

# Operations

- Project operational Spring 2010-only one boiler
- Oct. 2010 inspected LFG boiler
  - Siloxanes
- Boiler loads lower than anticipated
- Siloxane buildup less in winter months
- Flare instability during winter operation

# Other LFG Activities

- Grant in 2010 to modify remaining two boilers
- SCS/Blue Source monetize carbon credits
- Hospital considering utilizing LFG – directed-fired absorption chillers



# Questions?

**Thank You  
&  
Please Contact us with Questions**

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