NEW BENEFICIAL USE OF LFG – ANIMAL INCINERATION

Tom Smith, P.E. and Sadhu Sandhu, Ph.D., P.E.
Prince William County

Darrin Dillah, Ph.D., P.E., BCEE and Balwinder Panesar, Ph.D.
SCS Engineers

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OUTLINE

- Background
- Design
- Construction
- Incinerator Conversion
- Testing
- Economics
**BACKGROUND - SITE**

- **Location:** 25 miles southwest of Washington, DC
- **The Prince William County landfill has operated for 40 years.**
- **Over 8 million tons of trash is buried at the landfill.**
Background - Site Plan

Future Phase IV Expansion
- About 192 acres

Future Phase II Expansion
- About 42 acres

Old Landfill:
- About 17 acres
  - Opened in 1969
  - Closed in 1971

Phase II Expansion:
- About 40 acres
  - Opened in 2011
  - Active

Enclosed Flare and Power Plant

Phase I Expansion:
- About 40 acres
  - Opened in 1990
  - Closed in 2011

Utility Flare
BACKGROUND - ENCLOSED FLARE

- LFG Specialties Enclosed Flare
- Installed in 1998
- About 2,000 scfm LFG destruction capacity
**BACKGROUND - UTILITY FLARE**

- LFG Specialties
  - “Candlestick” Flare
- Installed in 2007
- About 1,350 scfm LFG destruction capacity
Background - Landfill and GCCS Operational Dynamics

- County owns, operates, and maintains the landfill
- December 1996 agreement with developer:
  - Provides gas rights to developer
  - Developer performs O&M of wellfield and blowers/flares
  - Developer installs, maintains and operates engine generators
- County’s responsibility for wellfield and blower/flare expansions and non-routine maintenance of wellfield
- County receives royalties and a 5% share of electric revenues.
**LFG Uses**

- In 1998, a 1.9 MW power plant and flare was constructed for all LFG generated.
- Only 25% of the LFG was used by the existing plant.
- Fortistar and the County are in process of expanding the power plant.
- ~200 scfm of excess LFG will be available for County.
  - LFG utilized to heat fleet shops and to fuel the Animal Shelter incinerator.
Exhibit 5. LFG Recovery Projection
Prince William County Sanitary Landfill, Manassas, Virginia

- Recovery Potential
- Actual Recovery
- Future Power Plant
- Recovery from Existing/Planned System
- Power Plant Requirements = 664 scfm
ANIMAL INCINERATOR
- Primary Burner (1.25 MM Btu/hr)
- Secondary Burners (2.4 MM Btu/hr)

LFG Compression and Dehydration Skid

PROPANE
125 scfm

Power Plant

Flares

LFG Compression and Dehydration Skid

45 scfm

Siloxane Removal

• LFG Heaters in Fleet Building (~ 1 MM Btu/hr)
• LFG Heaters in Maintenance Building (~ 0.32 MM Btu/hr)

2,500 scfm recovered

660 scfm

remainder

170 scfm

PROPNANE

125 scfm

SCS ENGINEERS
Project Construction

- LFG Treatment Skid

ENCLOSED
Project Construction

- LFG Pipeline

![Image of trench and LFG pipeline with date 28.01.2010]
Project Construction

- LFG Heaters

New Beneficial Use of LFG: Animal Incineration; 1/18/12
Conversion

- Incinerator manufacturer concerns:
  - Corrosion
  - Flame stability
  - Gas quality: chlorine, H2S, siloxanes
  - Btu content
  - Chamber temperatures
Testing
Primary Burner Modification
RESULTS

- Test run:
  - 1 month for gas valve on LFG
  - Four hours for existing primary burner on LFG

- No issues noted

- New primary burner operational for 7+ months with no issues
Next Steps

- Around March 2012
  - Upgrade stack sections to SS
  - Convert secondary burners to dual fuel
  - Modify temperature controllers
ECONOMICS

- Landfill pays $1/MM Btu for LFG
- Construction $1,088,130
- Landfill sells processed LFG for $14/MM Btu
- Pay back period about 8-10 years
WIN-WIN

Fleet Building and Animal Shelter

- Reduction of fuel costs
  - $14 vs ~$20-$23/MM Btu
- Savings of $25,000-$35,000/year
QUESTIONS

THOMAS SMITH, P.E.
SOLID WASTE DIVISION
CHIEF
PRINCE WILLIAM COUNTY
5 COUNTY COMPLEX COURT
PRINCE WILLIAM, VA 22192
TEL: (703)-296-6252
EMAIL:
TSMITH@PWCGOV.ORG

DARRIN D. DILLAH, PH.D, P.E., BCEE
VICE PRESIDENT
SCS ENGINEERS
11260 ROGER BACON DRIVE
RESTON, VA 20190
TEL: (703)-471-6150
DDILLAH@SCSENGINEERS.COM