Presentation Outline

• Overview
• Landfill Background/History
• Pollutants of Concern
• Methane Detection Activities Conducted
• Landfill Gas Remediation Strategy
• Design and Construction Schedule
• Questions
Overview

- WSSU and the City have partnered to conduct an environmental study (City partnering for up to $100,000).

- The environmental study will examine groundwater, soil vapor and other environmental parameters on the 92 acre site surrounding Bowman Gray Stadium.

- The NCDENR Brownfields group is the regulatory oversight agency for the state.
Overview

- The site contains two closed landfills that were operated on the property in the past, and three other primarily construction debris waste areas.

- The southwest parking lot was the location for a Municipal Solid Waste (MSW) landfill in the 1950’s and 1960’s (unpermitted).

- The east lot was the location for a permitted construction and demolition debris landfill in the 1980’s.
Pollutants of Concern

Methane Gas:

- Methane is a Flammable Gas.
- Methane can be explosive at levels between 5 percent and 15 percent.
- Although it is non-toxic, methane is a "simple asphyxiant" because it can displace oxygen. Oxygen levels below 16 percent can be dangerous and levels below 10 percent can be deadly.
- From a Landfill Source, Methane Smells Like Trash (Methane only colorless and odorless when pure).

Hydrogen Sulfide:

- Also occurs with Landfill Gas.
- Has Rotten Egg odor.
- It is Toxic.
Pollutants of Concern

How can methane effect me in my home?

- Methane Can Move Underground Both in the Soil and in Utility Conduits.
- Methane Can Enter Structures Through Foundation Cracks or Utility Openings (Plumbing Lines, Electrical Conduits, Etc.)
- Methane Can Accumulate in Low Areas

Source: www.hicap.com
Subsurface Soil Gas

- Soil Gas Probes around Southwest Parking Lot and East Parking Lot Have Greater than 5% Methane
- Soil Gas Probes in Right of Way on Gholson Avenue and Fitch Street Have Greater than 5% Methane.
- Need to Perform Soil Gas Probes in Yards of Neighboring Properties for Additional Data.
Subsurface Soil Gas Testing
Methane Detection Activities

Soil Vapor Detection Efforts.
Methane Detection Activities

Surface Emission Testing For Methane
Methane Surface Emission Testing

• Surface Emission Testing of Bowman Gray Stadium and Surrounding ~94 Acres.
• One Surface Crack in Southwest Parking Lot Found with 5% Methane Emissions.
• Remainder of Area and All Buildings At Bowman Gray Had No Methane.
• Homes That Have Been Scanned Were Found to Be Free From Methane.
Ongoing Activities
Treatment of Crack Releasing Methane
Ongoing Activities
Additional Investigation Locations

Source: Duncklee and Dunham
Methane Gas Remediation

- LFG Collection System
- Landfill
- Standby Flare
- LFG Extraction Blowers
- LFG Piping
- Moisture Separator

Diagram showing a system for methane gas remediation and a photograph of methane being flared.
Remediation System Components
(Interception Trench)
Remediation System Components
(Flare)
Southwest Lot Remediation

Bowman Gray Stadium
Southwest Parking Lot

Legend:
- Landfill Gas Trench
- Sanitary Sewer Line
- Stormwater Pipes
- Parcels
- Approximate Landfill Outline

Location of Gas Flare
East Lot Remediation
Acknowledgments

- Smith Gardner Inc. Raleigh N.C.
- www.hicaps.com (Vapor Intrusion Diagram)
- Duncklee and Dunham Cary N.C.
- Griffith Enterprises Inc. (Onsite images courtesy of Alan Griffith)

This presentation will be posted to:
http://www.cityofws.org/Departments/Stormwater-Erosion-Control