



Soil and Materials Engineers, Inc.

# REBUILDING A PARK ON AN UNCONTROLLED DUMP

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consultants in the environment, geosciences and materials

# OVERVIEW

- **Site Description and History**
- **Discovery of Contamination**
- **Investigations and Results**
- **Remedy**
- **Construction**
- **Park Completion**
- **Post Construction Obligations**
- **Costs and Funding**

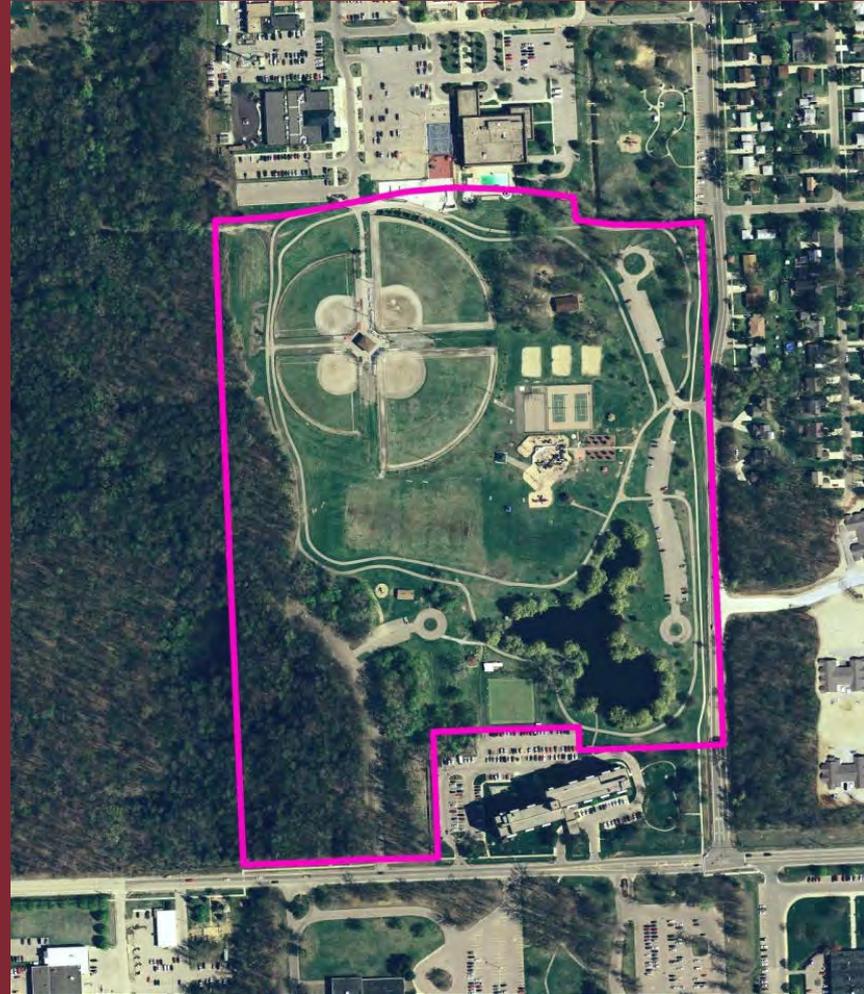


# SITE DESCRIPTION



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- Owned by County
- Leased by City and developed as a public park in 1978:
  - Open areas and play fields and courts
  - Playscape
  - Open-air pavilions and comfort stations
  - Walking paths and pond



# SITE HISTORY



## **SITE HISTORY – BEFORE PARK**

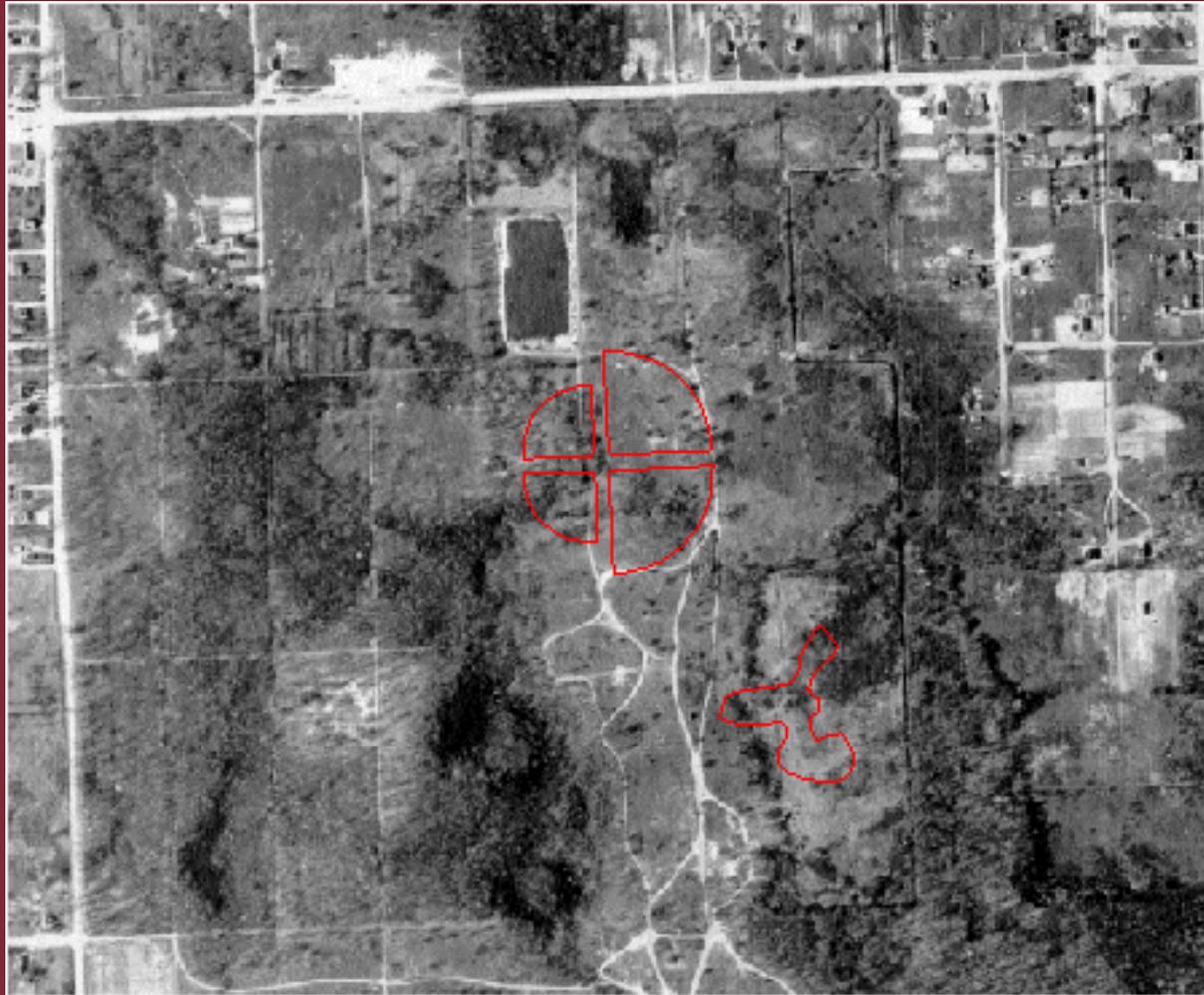
- **Site undeveloped until mid-1940's**
- **Sand mining from mid-1940's to early 1970's**
- **Disposal of storm sewer catch basin sediments and street sweepings during same time period**
- **Landfilling of municipal solid waste in the 1950s and 1960s**



# 2006 AERIAL PHOTOGRAPH



# 1949 AERIAL PHOTOGRAPH



# 1960 AERIAL PHOTOGRAPH



# 1967 AERIAL PHOTOGRAPH



# 1972 AERIAL PHOTOGRAPH



# 1985 AERIAL PHOTOGRAPH



# DISCOVERY OF CONTAMINATION



# DISCOVERY OF CONTAMINATION

- Investigations began in 1999
- Elevated levels of lead measured in surface soil in 2001
- First Remedial Action Plan 2002
- Second Remedial Action Plan 2006
- SME came on board
- Then.....



**DOCUMENTS  
SHOW TOWNSHIP  
USED PARK SITE  
AS DUMP**

**PARK USERS  
ANGRY THEY  
WEREN'T TOLD  
ABOUT LEAD**

# DISCOVERY OF CONTAMINATION

**KIDS PLAYED  
AMONG POISONS**

**TESTS IN KIDS  
PARK FIND MORE  
POISON**

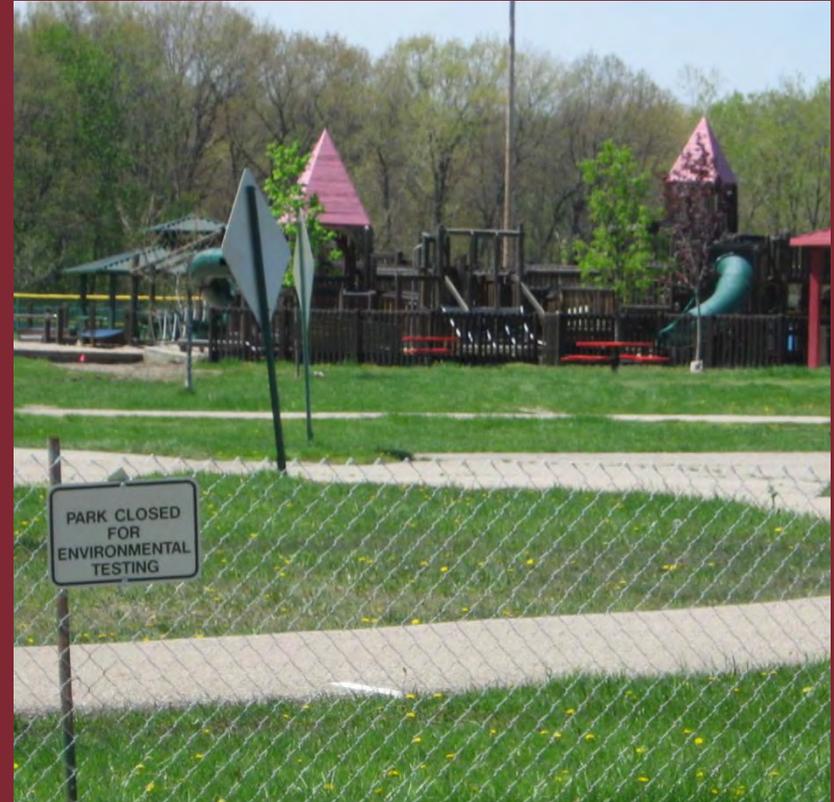
# PHOTOGRAPH FROM LATE 1970s



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# DISCOVERY OF CONTAMINATION

- **Park closed**
- **Community Outreach**
  - Public meetings
  - 140 people tested for lead by Health Department
  - Community study group established
  - Agency Information Bulletins
  - City website established



# INVESTIGATIONS



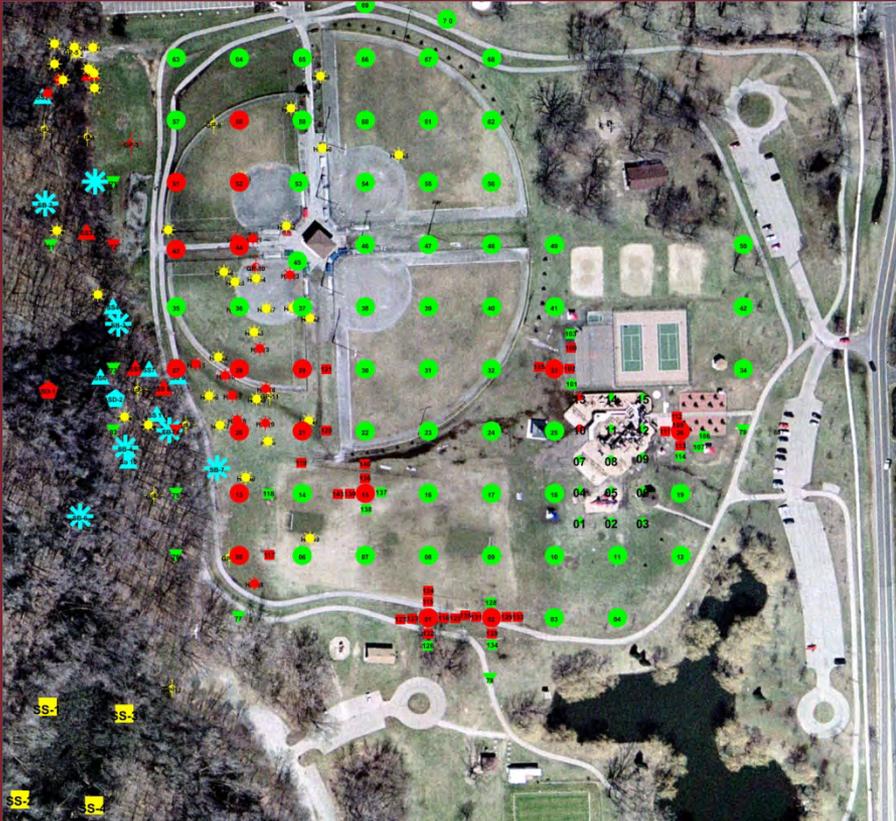
# INVESTIGATIONS

- **Soil and groundwater investigations conducted from 1999 – 2007**
- **Broad initial suite of parameters**
  - Metals, cyanide, organic constituents, PCBs
  - Eventually narrowed down to lead
- **Methane**
  - Became an issue in 2007
- **Geophysical Survey**

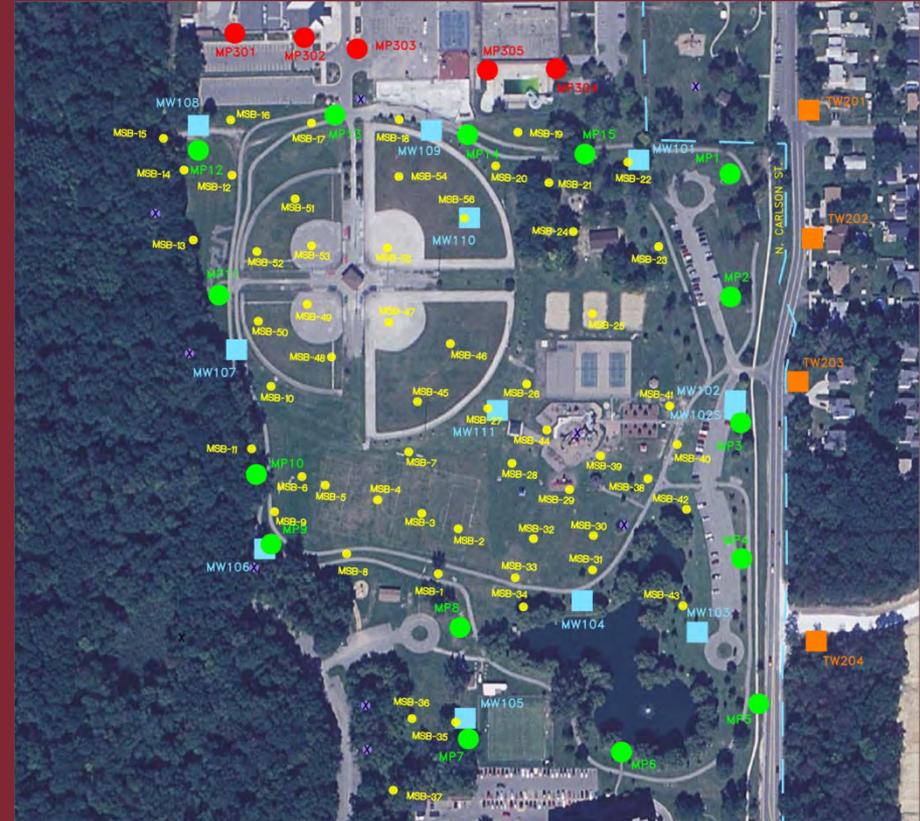


# INVESTIGATIONS

## PRE-2006 SAMPLING



## POST-2006 SAMPLING

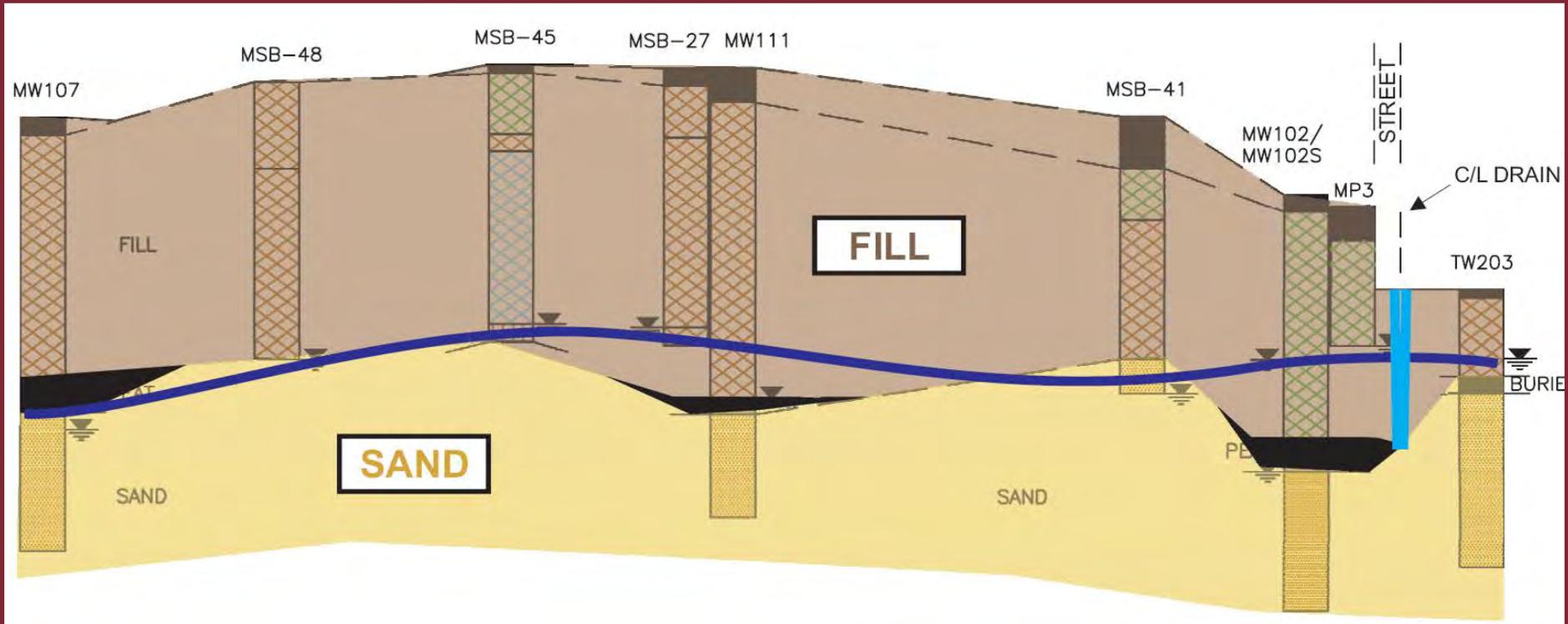


# RESULTS



# RESULTS

## CROSS SECTION



# RESULTS

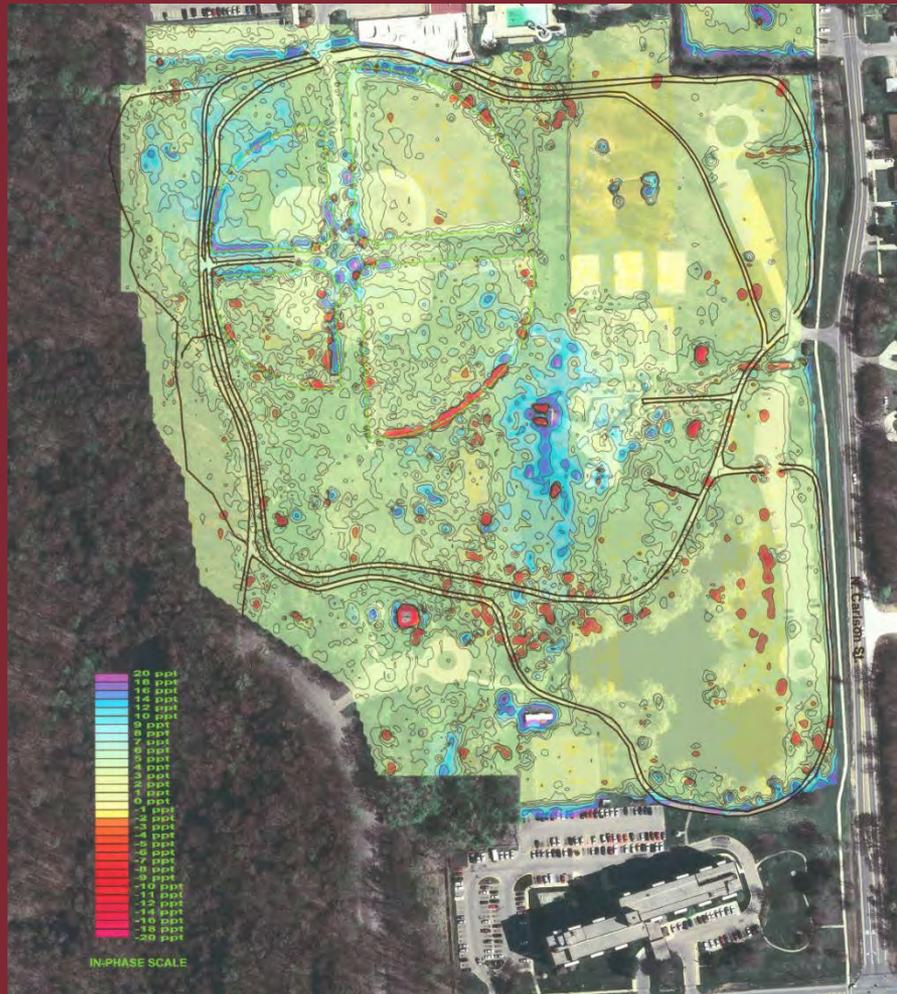
## ■ Surface Water Runoff

- Follows site topography
- West to adjacent wooded area
- South and southeast to pond
- East and northeast to local Drain

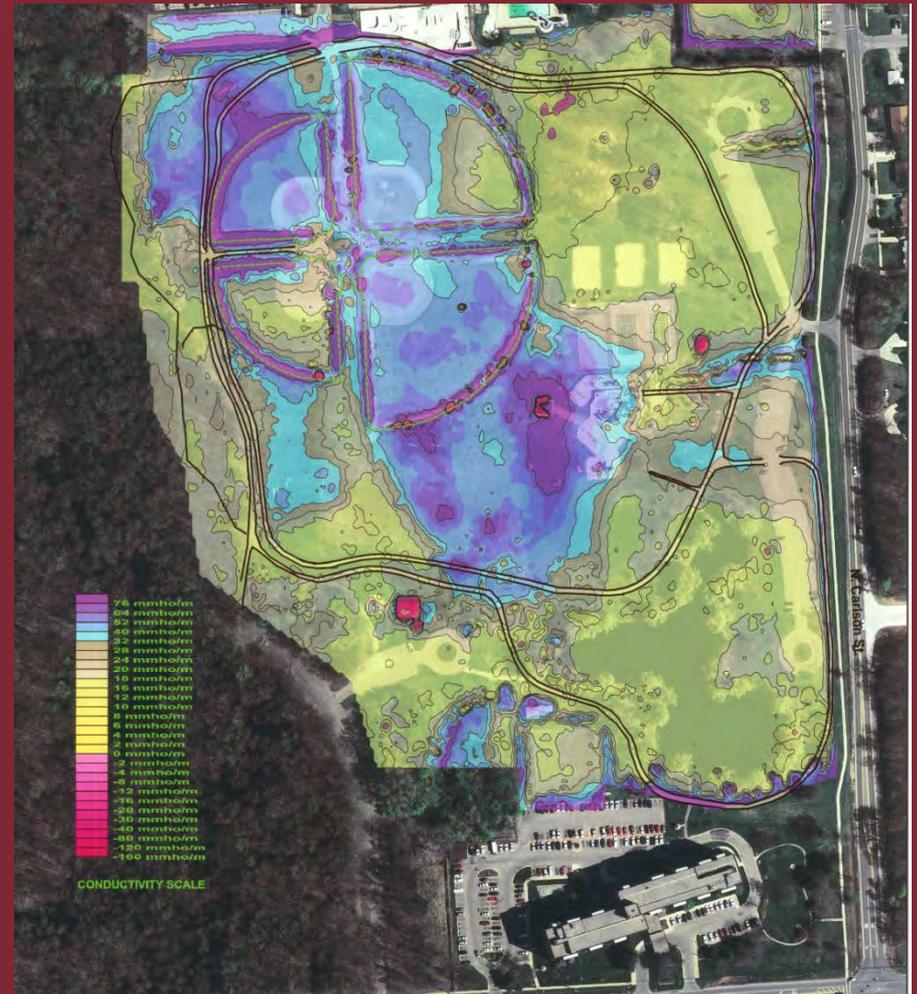


# GEOPHYSICAL SURVEYS

## METAL DETECTION



## CONDUCTIVITY



# METHANE



- **Human Exposure Pathways (Lead)**
  - Direct Contact
  - Particulate Soil Inhalation
- **Acute Hazards (Methane)**
  - Fire and explosion
- **Groundwater**
  - Groundwater not used for drinking (municipal source)
  - Did not need to address for park redevelopment

# REMEDY

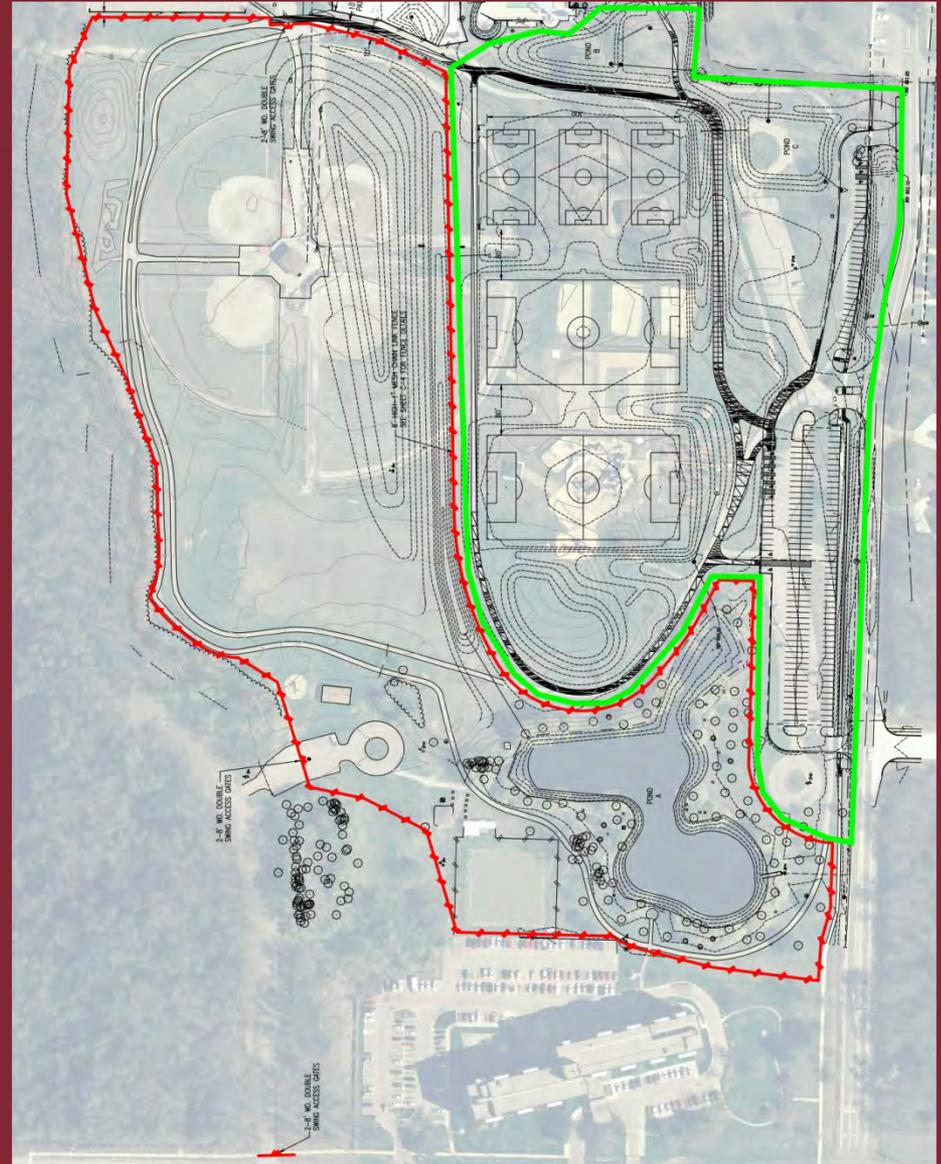


## ■ Remediation Goals

- Address human direct contact with soil contaminated with lead
- Fire/explosion hazards posed by methane

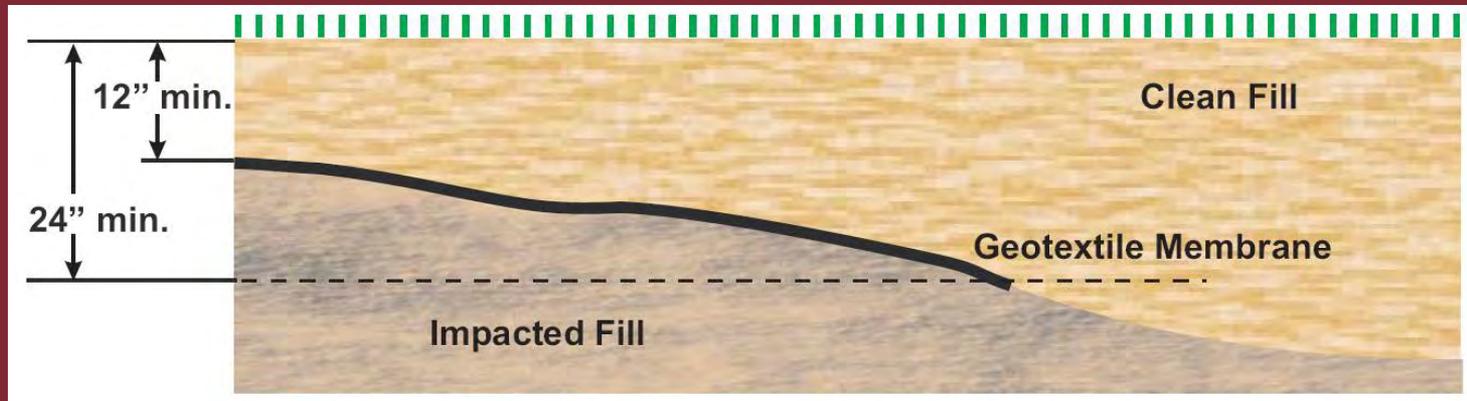
# REMEDY

- **Divide Park into two areas**
  - Recreation Area on eastern portion of site to develop with:
    - » Park use
  - Restricted Access Area encompassing southern and western portions of site
    - » Remain undeveloped



# REMEDY

- **Recreation area remedy for direct contact**
  - Install engineered exposure barrier



- Rely on Impervious Surfaces (asphalt or concrete walkways and parking areas, concrete building foundations/floors)
- Implement O&M program to maintain exposure barriers or impervious surfaces

- **Restricted access area remedy for direct contact**
  - Fence and gate
  - Vegetate disturbed areas and maintain by cutting grass
  - Leave undeveloped
  - Controlled employee access
  - Maintain fence and gates

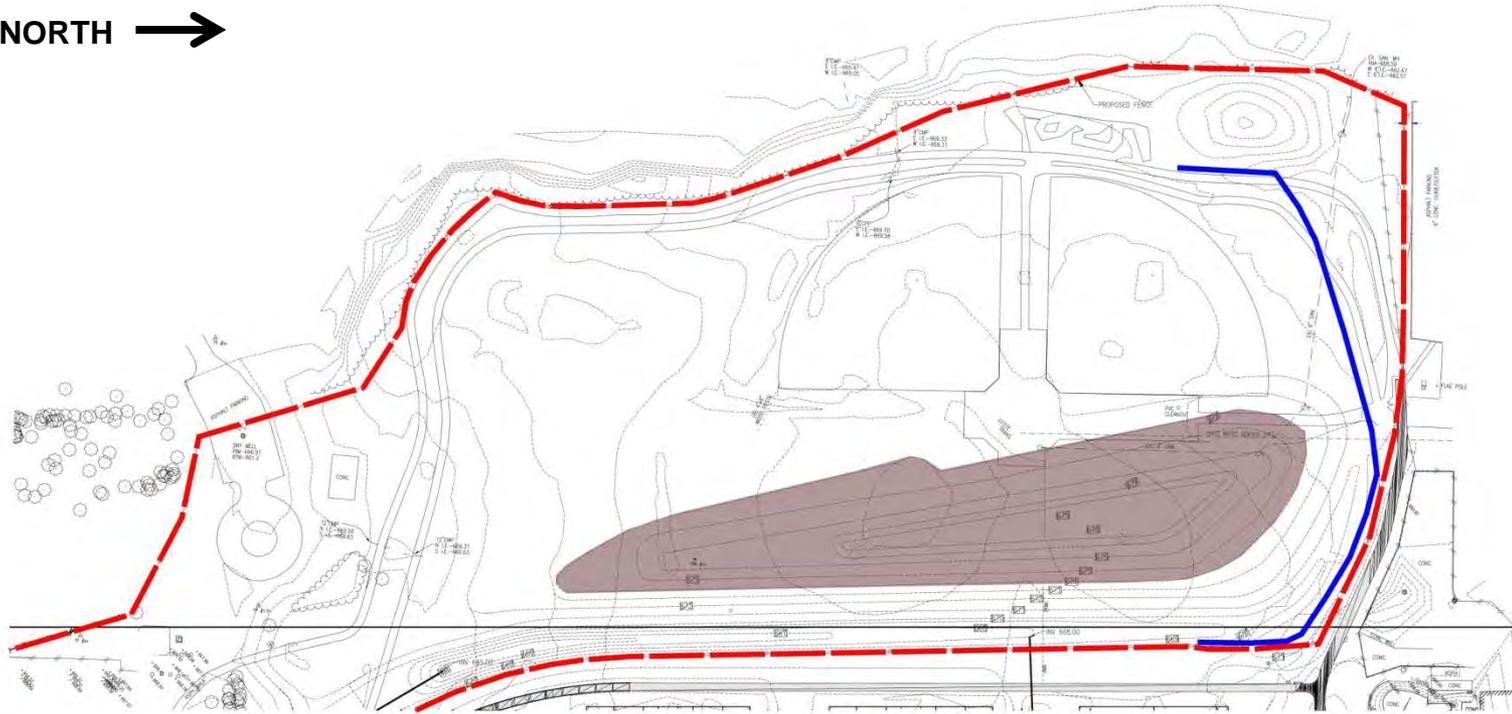
## ■ Methane remedy

- Passive Ventilation Trench along Northwestern Site Boundary with monitoring
- Sub-slab vapor barrier and passive ventilation system installed under concession/comfort building and other future buildings with monitoring
- Monitor methane concentrations at:
  - » Eastern portion of northern Park boundary
  - » Eastern Park boundary
  - » Eastern portion of southern Park boundary
- O&M



# REMEDY

NORTH →



- Remedial Action Plans Submitted to Agency February and November 2009
- Agency approved February 2010

# CONSTRUCTION PLANS AND SPECIFICATIONS

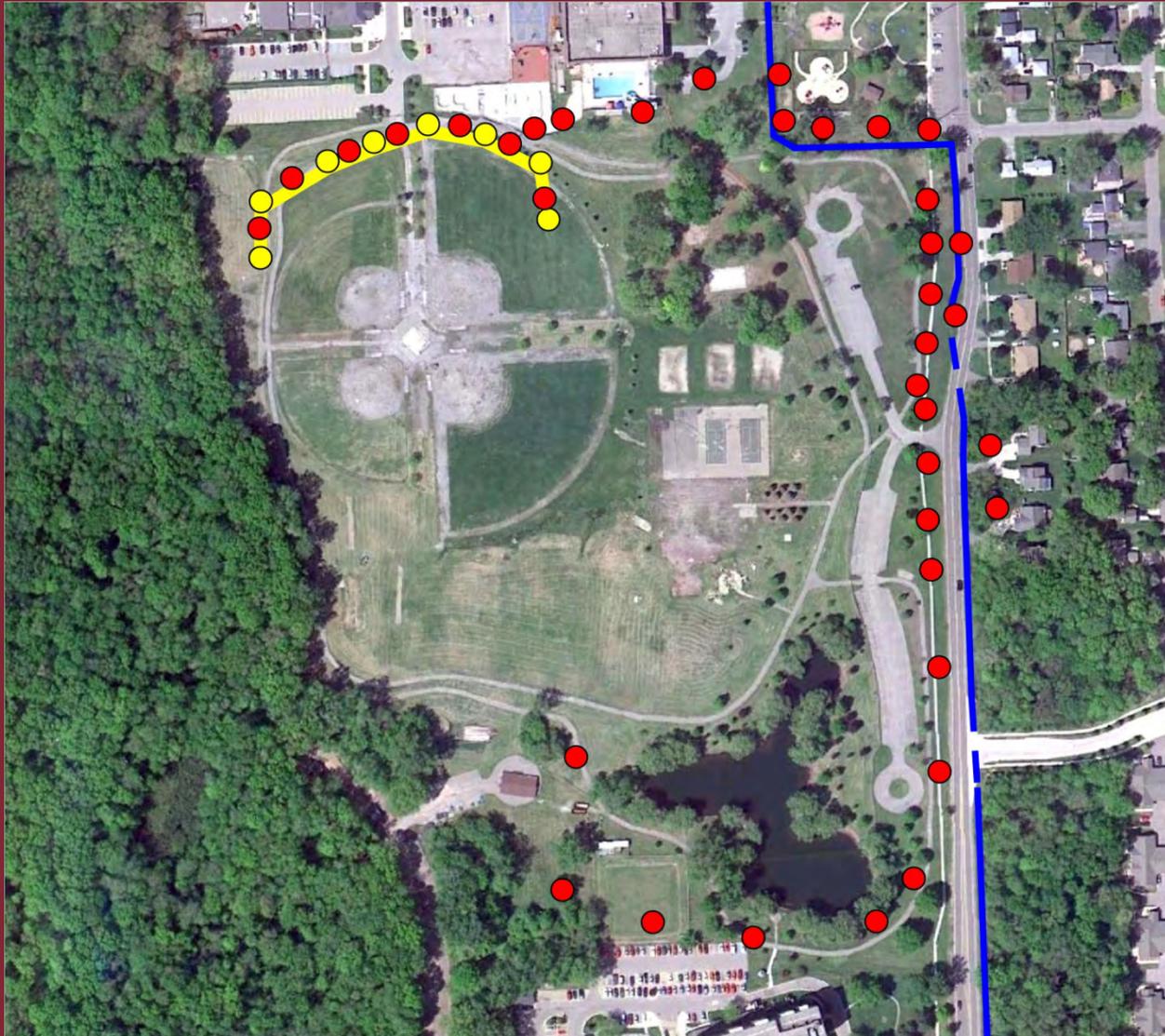








# METHANE MONITORING



# CONSTRUCTION



# IMPLEMENTATION

- **Contractor Bidding and Selection in Late Summer/Early Fall 2010**
- **Groundbreaking in October 2010**
- **Construction in Fall 2010, Summer and Fall 2011, and completion in Spring 2012**



# GRADING



# CHALLENGES

**BURIED STUMPS** →



← **SPRING RAINS**

# GEOTEXTILE AND FILL PLACEMENT



# PAVING



# PVT CONSTRUCTION



# PARK COMPLETION



# PARK RENDERINGS



# PARK RENDERINGS



# POST CONSTRUCTION OBLIGATIONS



# POST CONSTRUCTION OBLIGATIONS

- **Implement Due Care Plan**
- **Continue Methane Monitoring**
- **Operation and Maintenance**
- **Restrictive Covenant**



# COSTS AND FUNDING



# COSTS AND FUNDING

- **Total budget - \$2.3M**
  - Construction - \$1.9M
  - Engineering - \$350K
  - Contingency - balance
  
- **Source of funds**
  - County EPA Brownfield funds - \$1M
  - County park funds - \$500K
  - City HUD funds - \$765K





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