Nuts and Bolts of a Remediation Site

Innovative and Budget-Saving Site
Remediation of a very messy manufacturing site
Patricia Bryan is President and Principal Geologist at Bryan Environmental Consultants, Inc. (Bryan) in Homewood, IL, a 100% Women-Owned Business. After decades working with small, mid-sized, and large engineering consulting firms, Ms. Bryan started Bryan in 2014. Clients include private industry, municipalities, local and state government agencies, including Illinois Tollway and IDOT, construction companies, and other consulting firms.

Ms. Bryan received a B.S. in Geology from Binghamton University (SUNY Binghamton) and enrolled in the Masters program at the University of Houston in Geology and at Boston College, where she focused on Groundwater Hydrology and Groundwater Modeling.

Ms. Bryan is a licensed professional geologist in Illinois, Kentucky and Wyoming. She serves on the IL Board of Professional Geologists and is Past President and Executive Director of the AEG Foundation and Past President of AEG North Central Section (now Chicago Chapter).
Experience

Rush University Medical Center Transformation Program

Project Description
The $1 billion Rush Transformation Project is the most comprehensive construction and facilities renovation program in Rush’s more than 174-year history. The new hospital is the centerpiece and represents a new era of hospital design, shaped by user input to improve quality and optimize the patient experience while creating an environmentally sustainable facility with the most advanced technology available. It is the first full-service “green” hospital in Chicago. Key Transformation projects included:

- Hospital Tower
- Orthopedic Building at Rush
- Rush University Cancer Center
- Atrium Building Renovations
- Staff/student parking garage
- Central energy plant/underground loading dock

Bryan staff acted as the owner’s environmental engineer responsible for environmental assessment through remediation. The team secured NFRs under the Illinois Site Remediation Program (SRP).

The scope of work included environmental assessment, development of remediation plans/specifications, and remediation oversight for Transformation projects.

Chicago Housing Authority Rockwell Gardens Redevelopment

Project Description
The CHA Plan for Transformation is the most ambitious redevelopment plan for public housing in the United States, involving the redevelopment of 25,000 units and homes to more than 50,000 families. Now in its 14th year, the plan calls for high rise to low rise development.

The Project Site, Rockwell Gardens is a 2.5-acre Site consisting of 22 non-contiguous parcels that will be developed as rental properties.

The scope of work included development and revision of remediation plans, soil management plans and remediation oversight. We conducted the following tasks:

- Evaluated recent changes to the Illinois Site Remediation Program (SRP)
- Conducted volume calculations to estimate volume of soil remediation
- Conducted Remedial Oversight activities
- Prepared the RACRs
- Prepared a Soil Management Plan
- Provided general consulting such as coordination with HUD, development team members, Illinois EPA

We conducted management and oversight for:
- Soil excavated for building foundations
- Soil transported as special waste to CID
- Soil reused where possible under a Soil Management Plan
- “Engineered Barriers” placed on contaminated sites

Location
Chicago, Illinois

Services
Remediation Oversight – Special Waste Monitoring
Cut & Fill Calculations
Regulatory Compliance Support
No Further Remediation Letter
Green Remediation

Client/Reference
Diane Martin
Environmental Program Manager
Chicago Housing Authority
dmartin@chapha.org
312.915-7013

Total Project Value/Cost
$437,000

Project Duration
Feb 2010 – Nov 2012

Project Team
Patricia Bryan Rosann
Park Jones
Kim Rentz
Experience

McCormick Place West Expansion

Location
West Chicago, IL.

Services
- Planning/Design of Environmental Investigations
- Environmental Sampling and Reporting
- Public Relations
- Regulatory Compliance Support
- Regulatory Negotiations
- Remediation Plans
- Remediation Oversight
- Asbestos and Lead-Based Paint sampling and abatement

Client/Reference
Ms. Laura Tagler
MPEA
301 East Cermak Road
Chicago, Illinois 60616
Tel: 312.791.6289
Fax: 312.791.6156

Project Value/Cost
$535,000

Project Labor Hours
4006

Project Duration
2002 – Present

Project Team
- Patricia Bryan
- Kim Rentz

Project Description
Currently, the largest public project in Illinois, the McCormick Place West Expansion area comprises approximately six city blocks in Chicago, Illinois, bounded by Cermak Avenue to the north, South Martin Luther King Drive to the east, I-55 to the south, and South Indiana Avenue to the west.

The Site consists of 23 separate parcels and includes parking lots, buildings, and vacant lots that were previously occupied by buildings or parcel areas. The redevelopment of these properties will provide over 3,000,000 gross square feet for the McCormick Place Convention Center. The new facilities will include an approximately 500,000 square foot ballroom and 200,000 square feet of meeting rooms.

We served as the owner's environmental engineer responsible for environmental assessment through remediation of the 23 parcels. The scope of work includes assessment, development of remediation plans and specifications, remediation oversight and entering the site in the Illinois SRP and obtaining an NFR letter.

City of West Chicago Redevelopment

Location
West Chicago, IL.

Services
- Oversight of Removal of Thorium-Containing Soils, TACO and SRP, Public Meetings, EPA Brownfield Assessment & Cleanup Grant Writing, ATSDR Grant Writing

Client & Reference
Mr. John Said, AICP
Director of Community Development
475 Main Street
West Chicago, IL 60185
Phone 630.293.2200 ext 140
jsaid@westchicago.org

Project Cost and/or Fee
$350,000

Project Duration
2011-2016 (5 years)

Project Team
- Patricia M. Bryan, PG
- Rosann Park-Jones, PG
- Kimberly Rentz, PE

WEST WASHINGTON STREET REDEVELOPMENT PROJECT
With an economically-languishing downtown, the need for redevelopment was great. A 14-acre brownfield site was assembled in the heart of the City of West Chicago's downtown for a new municipal campus. The problem: the 14-acre site, previously used by a scrap metal business, was contaminated with radiological waste by a previous industry and needed environmental investigation and remediation.

Bryan personnel conducted a Phase I ESA of the 16 parcels of land. RECs were identified, based on the historic use of the property as a rail yard with adjoining factories, a scrap iron and steel salvage yard, and a gasoline station. Previous Phase I and II ESAs conducted at the former scrap yard indicated contaminants were present. Radiological contaminants were removed from the Site during the 1990s by the US EPA as part of the cleanup of the Residential Areas Superfund Site. The source of the radiological contaminants was probably the former Rare Earths Facility, which gave thorium mill tailings for free to West Chicago businesses and residents from the 1930s to the 1950s.

Bryan personnel conducted a Phase II ESA that included a radiological survey, geophysical survey, drilling of borings, installation of monitoring wells, sampling of soils and groundwaters. Contaminants identified included heavy metals, semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs) and radiological contaminants (radium and thorium). Bryan personnel assisted the client in enrolling the Site in the Illinois EPA’s Site Remediation Program (SRP), and prepared a Comprehensive Site Investigation Report/Remediation Objectives Report/Remedial Action Plan (CSR/RO/RAP). On behalf of the client, Bryan wrote EPA brownfield assessment and cleanup grants and Agency for Toxic Substances and Disease Registry (ATSDR) grants.
PRESENTATION
OVERVIEW

A SMALL SITE WITH BIG PROBLEMS
- ABOUT THE SITE
- PROJECT OBJECTIVES
- PROJECT STRATEGY
- TIMELINE
- OUTCOME
Before Project Began

- 1940s Machinery
- 1940s Technology
- 1940s Safety Protocols
- 1940s Materials Handling
Manufacturing Floor

• Fork-lift traffic, heavy machinery and constant vibration caused the concrete floor to fail

• What did this company make?

• How long did it operate at this location ~ 40 years
Manufacturing Floor

- 10 Bolt Making Machines
- Machine Oil
- Cutting Oil
- Chlorinated Solvents
- Petroleum Distillates
Oil everywhere!
Standing oil in East Loading Dock

First stack remove oil so loading dock can be used
Previous Investigations
GEOLOGY
Bedrock Topography
625 feet above mean sea level
Lithostratigraphy of Will County and environs (Caron and Curry, 2016). The Batestown Member and the Tiskilwa Formation have not been identified in the Mokena 7.5’ Quadrangle.

Stratigraphy of the Mokena Quadrangle

- The **Wadsworth Formation** is the uppermost diamicton in the area.
- Extensive surficial clay-rich stratigraphic unit in northeastern Illinois.
- Interstratified clayey till and lacustrine sediment.
- More than 125 feet thick.

Lithostratigraphy of Will County and environs (Caron and Curry, 2016). The Batestown Member and the Tiskilwa Formation have not been identified in the Mokena 7.5’ Quadrangle.
Glacial Drift Thickness
75 to 100 feet thick
Equality Formation (silty facies)

**Description:** Silt, silty sand and sand; mostly uniform; from 5 to 10 feet thick

**Interpretation:** Glaciolacustrine nearshore sediments; few deposits are slackwater; intertongues with alluvium of Cahokia Formation or Henry Formation
Geologic Cross Section
Project Objectives

- Owner wants to sell the site and the business
- Buyer wants "clean bill of health" in their words in order to purchase the property
- In Illinois, this means a No Further Remediation (NFR) determination from the IL EPA
- It also means entering the Site Remediation Program (SRP), a voluntary clean up program administered by IL EPA
- Objectives: Obtain an NFR for the site
Project Strategy

• Conduct the requisite investigations and reporting. In Illinois: Comprehensive Site Investigation Report (CSIR), Remediation Objectives Report (ROR), Remedial Action Plan (RAP)

• Enter the SRP
• Conduct Remediation
• Prepare Remedial Action Completion Report (RACR)
• Submit Reports to the IL EPA
• Respond to IL EPA comments
• Finalize documents, receive NFR, record NFR
• DONE!
Timeline

- 2018 – CSIR
- 2019 – Interim Remediation
  - Pump out sump pumps
  - Install injection wells for OSEII
  - Install recovery wells
  - Install recovery sumps
- 2020 – Interceptor Trenches
- 2020 – Remove Concrete Floor, remove subbase, pump additional oil, spread HTP, conduct confirmation sampling, complete RACR, enter SRP, submit reports
Site Investigation

- Install soil borings
- Install temporary monitoring wells
- Collect soil and groundwater samples
- Fingerprint oils used in operations
- Fingerprint oils found in the subsurface
- Laboratory analysis of soil and groundwater samples
- Used TRPH as indicator of oil contamination
RESULTS

cis-1,3-Dichloropropene 0.0054
trans-1,3-Dichloropropene 0.0039
Methylene Chloride 0.0048
Chromium 0.004
Selenium 0.002

Class II: 1,2-Dibromo-3-Chloropropane 0.051
Methylene Chloride 0.003

Dock Sweep (surface TPH C10-C40 B015M 22004)

Class I: trans-1,3-Dichloropropene 0.0081
Methylene Chloride 0.002

Class II: 1,2-Dibromo-3-Chloropropane 0.021
Chloroform 0.005

Class II: 1,2-Dibromo-3-Chloropropane 0.005
Chloroform 0.005

Class II: cis-1,3-Dichloropropene 0.0029
Methylene Chloride 0.002

Class II: trans-1,3-Dichloropropene 0.0039
Methylene Chloride 0.004

Class II: 1,2-Dibromo-3-Chloropropane 0.039
Methylene Chloride 0.002

Class II: trans-1,3-Dichloropropene 0.0081
Methylene Chloride 0.002

Class II: 1,2-Dibromo-3-Chloropropane 0.021
Chloroform 0.005

Class II: cis-1,3-Dichloropropene 0.0029
Methylene Chloride 0.002

Class II: trans-1,3-Dichloropropene 0.0039
Methylene Chloride 0.004
Found
Interim Remediation Strategy

Installed 6 interceptor trenches; bottom of trench was near the top of the clay layer

Pumped oil from the trenches – 3,000 gallons oil pumped to tote on first day

Trenching revealed oil beneath the entire building

Installed 33 injection points to “flush” oil to trenches

Pumped trenches again
To remove oil from beneath the slab, installed injection wells and extraction wells, used existing sumps while plant was still operating.
OSEII Injection
Change in Strategy

- New Owner, with a quicker time-frame
- Remove concrete floor and subbase
- Pump to totes any remaining free product
- Install poly sheeting over new gravel base
- Pour new concrete floor
HTP spread in areas with potential residual oil

Before new floor

Final Days - more oil along loading dock wall,
Outcome: Clean usable building
The End

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