

Carondelet Coke: Accelerating Brownfield Transformation Through Pre-Emptive VI Mitigation

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Land Science®

a division of REGENESIS®



Corporate Headquarters
• San Clemente, CA



State-of-the-Art Manufacturing Facility
• Nashville, TN

Industry Leading Provider of Vapor Intrusion Barrier Technologies



A global leader in advanced technologies for contaminated site remediation



We work with federal, state and local regulatory agencies on developing VI guidance



We provide technologies that mitigate the evolving issues and risks associated with these sites.

Land Science offers:



**Full Suite of
VI Technologies**



**Design
Assistance**



**QA/QC
Process**



**Certified
Applicators**



**Onsite
Support**



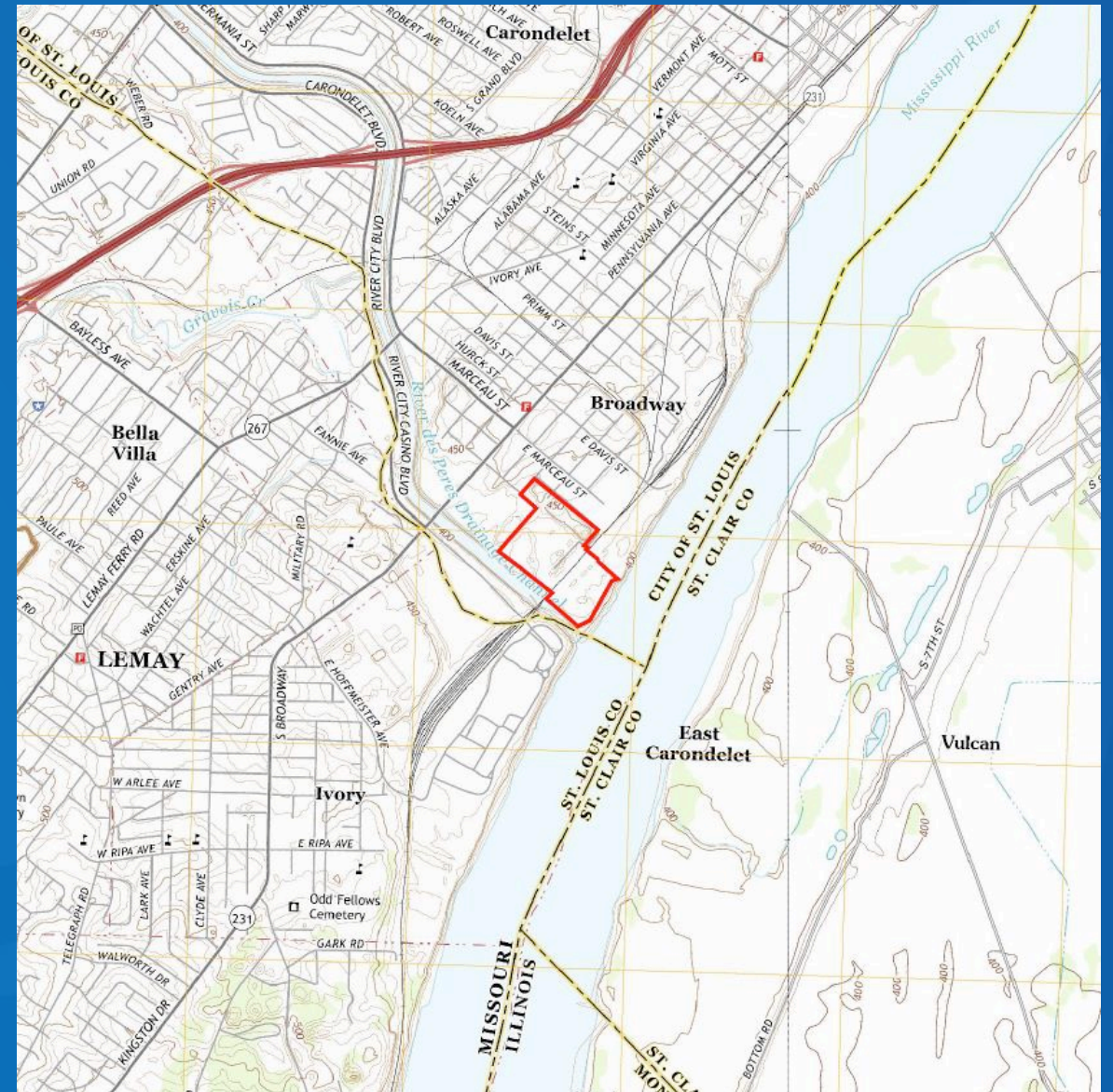
GREEN STREET
REAL ESTATE VENTURES



ATON

Site & history

- St Louis Ore and Steel Company
 - 1870-1896
- Site remained idle
 - 1896-1913
- Laclede Gas Company
 - 1918-1950
- Great Lakes Carbon Corporation
 - 1950-1980
- Carondelet Coke
 - 1980-1987



Carondelet Coke (1980-1987)

- ~40-acre complex of buildings along the Mississippi.
- Manufacturing of gas from coal, then coke production.
- Ongoing investigation, environmental activities spanning >20 years.





GREEN STREET
REAL ESTATE VENTURES



ATON

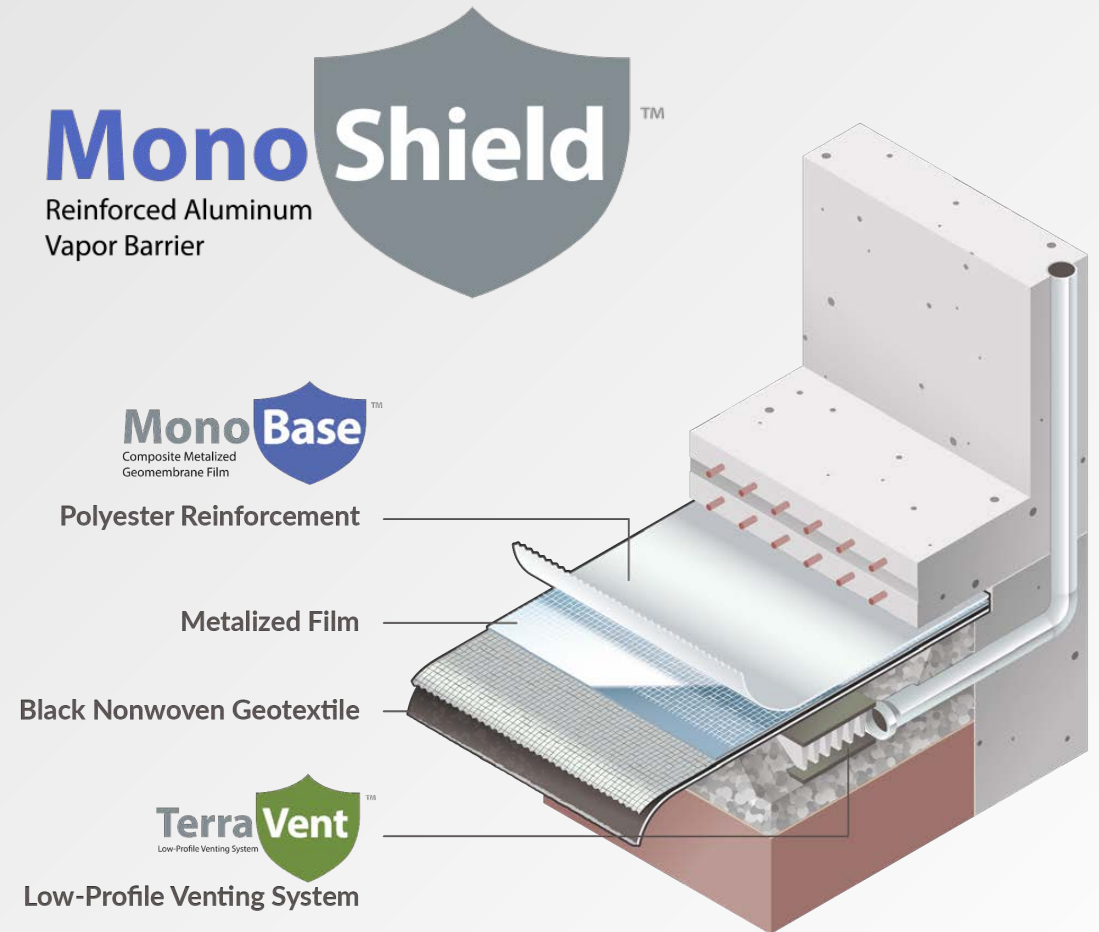


River City Business Park



Partnership with Land Science

- Analysis of site data
- Design assistance
- Preliminary cost estimates
 - System layout
 - Materials
 - Installation
 - QA/QC
 - Warranty



Remediation & Redevelopment



DEVELOPMENT PLAN KEY:

**BUILDING 2 - 9.03 ACRES
160,000 S.F.**

**BUILDING 3 - 10.04 ACRES
200,000 S.F.**

**BUILDING 4 - 11.42 ACRES
100,000 S.F.**

EXISTING
BUILDING

**BUILDING 4
100,000 S.F. +/-
11.42 ACRES**

**BUILDING 3
200,000 S.F. +/-
10.04 ACRES**

**BUILDING 2
160,000 S.F. +/-
9.03 ACRES**

**FUTURE
DEVELOPMENT
SITE WITH RIVER
ACCESS
11.636 ACRES**

VULCAN
STREET

CATALAN STREET

RAILROAD STREET

UNION PACIFIC RAILROAD

REILLY STREET

RIVER CITY INDUSTRIAL PARK

130'-0"

130'-0"

MonoShield™

Reinforced Aluminum Vapor Barrier

MonoBase™

Composite Metalized Geomembrane Film

Polyester Reinforcement

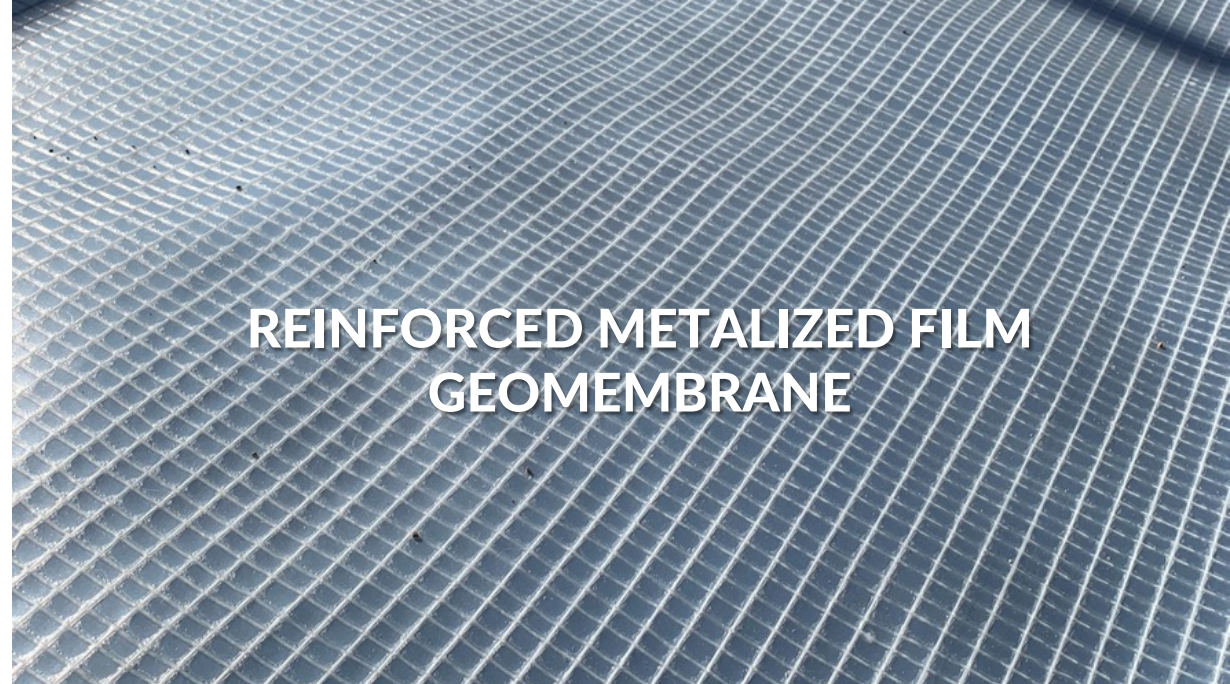
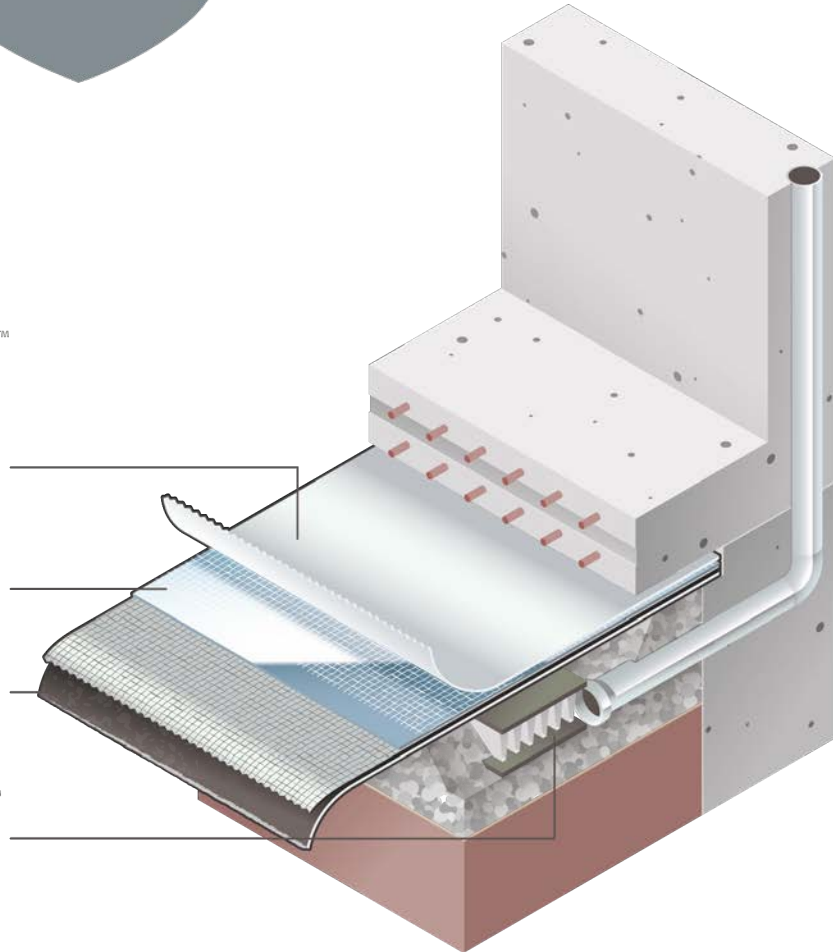
Metalized Film

Black Nonwoven Geotextile

TerraVent™

Low-Profile Venting System

Low-Profile Venting System



REINFORCED METALIZED FILM GEOMEMBRANE

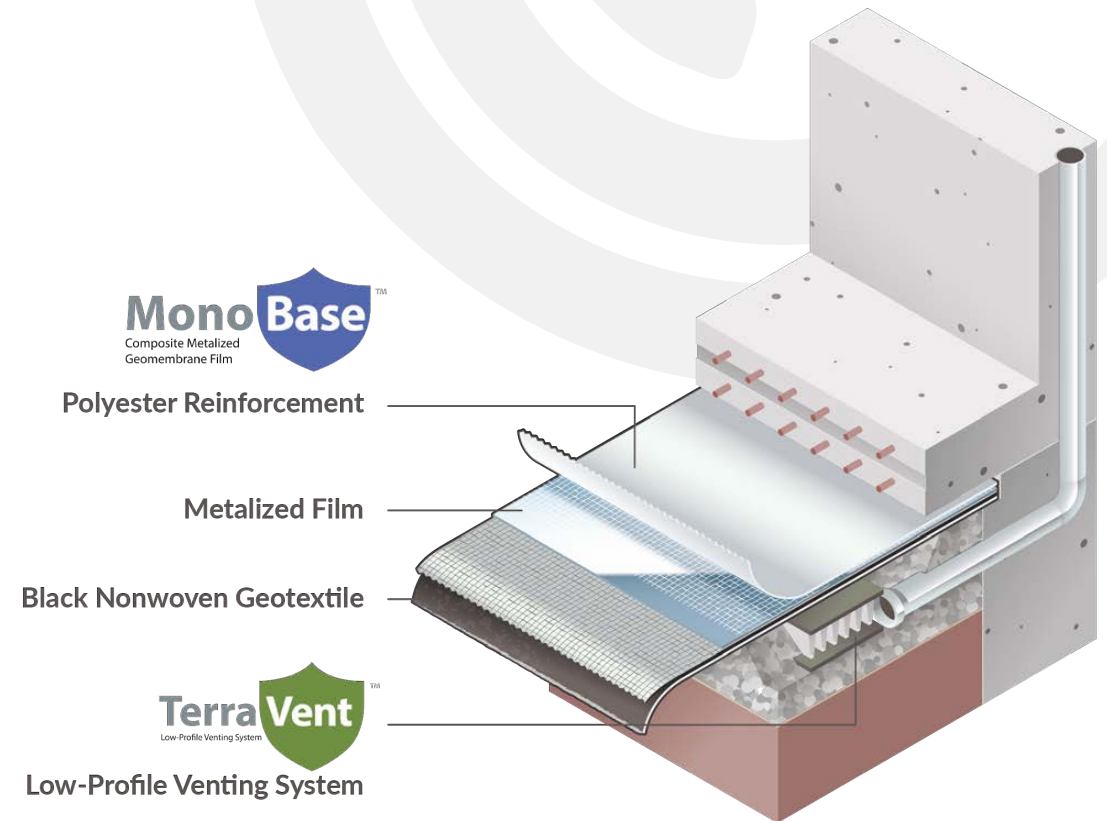


NITRILE-ADVANCED SPRAY APPLIED SEAMS & PENETRATIONS

METALIZED FILM TECHNOLOGY

100X GREATER CHEMICAL RESISTANCE

- Improved the chemical resistance of barrier sheets by 100x
- Developed specific film technology using metallized film: 100x more protective than HDPE
- Encapsulation of film eliminates risk of oxidation or corrosion



Nitrile-modified Asphalt

- Nitrile-Advanced Asphalt Latex Spray
 - First ever Nitrile-Asphalt Spray Membrane
- Significantly more protective
 - Up to 10x more resistant to contaminant diffusion vs. SBR-asphalt sprays
- Cleanup with soap and water
 - (no diesel fuel flushing or VOCs)



Impacts of enhanced higher chemically resistant barrier & spray-applied component

- Base Layers of Spray-Applied membranes are the first line of defense in eliminating the VI pathway through the building
 - Only line of defense if using a single layer system
- The most critical pathways and entry points of a membrane system:
 - Utility conduits
 - Plumbing penetrations
 - Seams
 - Foundation Perimeters





HIGH CONSTRUCTABILITY

30-mil reinforced geomembrane

Metalized film encapsulated in layers of polyethylene

Underside geotextile

Ripstop grid

Meets USEPA recommendations



EFFICIENT APPLICATION

20,000 SF up to 50,000 SF production rates

Spray-applied seams

Lowest installed cost

Superior resistivity to VOCs

CERTIFIED INSTALLATION



Certified Applicator Network



Inspector Training and
Certification



Smoke Testing



Warranty Options





TERRAVENT INSTALLED



MONOSHIELD INSTALLED



MonoShield Vapor Barrier System



**SEAM
DURABILITY**



**SEAM
DURABILITY**



**GEOTEXTILE FABRIC & PROTECTION
LAYER INSTALLED**



Approved for Truck Traffic



River City Business Park Building #2





S&H Waterproofing and Construction, LLC
SUPERIOR SOLUTIONS



S&H Waterproofing and Construction, LLC
SUPERIOR SOLUTIONS



Land Science
a division of REGEN



Impacts



Thank you!

- **Green Street Development Ventures**
 - *Kevin Morrell, Principal*
 - *Phil Hulse*
- **ATON, LLC**
 - *Ron Carrol, CHNN, CIH*
 - *Mark Underwood, PhD, PG*
- **Missouri Department of Natural Resources**
 - *Jennifer Surber, VCP Project Manager*



Land Science[®]

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MonoShield[®]

Reinforced Metalized
Contaminant Vapor Barrier

