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New Jersey Agricultural Experiment Station
Office of Continuing Professional Education

Rutgers, in cooperation with the Economic Development Association of New Jersey, presents:
Emerging Issues in Brownfields: Drivers and Challenges

Implementing Stormwater Management at Brownfield Sites

N.J.A.C. 7:8

STORMWATER MANAGEMENT

Statutory Authority: N.J.S.A. 12:5-3, 13:1D-1 et seq., 13:9A-1 et seq., 13:19-1 et seq., 40:55D-93 to 99, 58:4-1 et seq., 58:10A-1 et seq., 58:11A-1 et seq. and 58:16A-50 et seq.

Date last amended: June 20, 2016

For regulatory history and effective dates see the New Jersey Administrative Code

Specifically, the Stormwater Management Rules require that a proposed major land development comply with one of the following two groundwater recharge requirements:

Requirement 1: That 100 percent of the site's average annual pre-developed groundwater recharge volume be maintained after development; or

Requirement 2: That 100 percent of the difference between the site's pre- and post-development 2-Year runoff volumes be infiltrated.

Managing Stormwater on Contaminated Sites is Nothing New!

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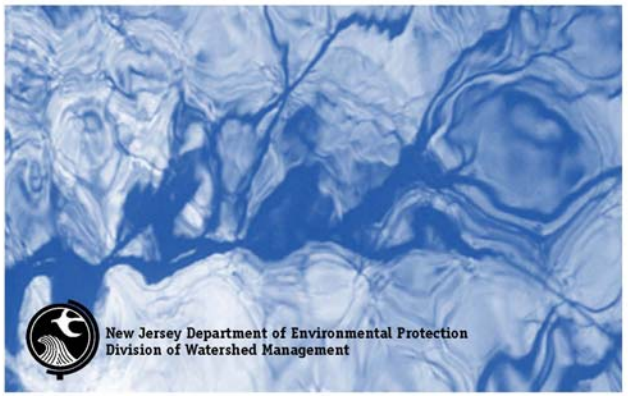
New Jersey
Stormwater
Best Management Practices Manual



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What is Green Infrastructure?

Green Infrastructure refers to methods of stormwater management that reduce wet weather/stormwater volume, flow, or changes the characteristics of the flow into combined or separate sanitary or storm sewers, or surface waters, by allowing the stormwater to infiltrate, to be treated by vegetation or by soils; or to be stored for reuse.

Green Infrastructure (GI) methods are management practices that address stormwater runoff through soils, or reuse. GI practices include, but are not limited to, pervious paving, bioretention basins, vegetated swales, and cisterns. The use of green infrastructure encourages the idea that stormwater is a resource that can be reused, instead of being treated as a nuisance that needs to be removed as quickly as possible. More Information

As NJ continues to recover from Superstorm Sandy, strong efforts are being made to implement several resiliency practices to help handle the effects of similar future events. Green infrastructure is one of these key practices, and it is essential that these methods be utilized as frequently as possible to promote sound stormwater management going forward.

- PERVIOUS PAVEMENT
- RAIN GARDENS
- BIORETENTION BASINS
- GREEN ROOFS
- GRASS SWALES
- CONSTRUCTED WETLANDS

Managing the Water where it Falls!

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Standard BMPs!

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GROUND WATER RECHARGE?
NOT ON BROWNFIELDS!!

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N.J.A.C. 7:8 STORMWATER MANAGEMENT
Date last amended: June 20, 2016

7:8-5.4 Erosion control, groundwater recharge and runoff quantity standards

ii. This groundwater recharge requirement does not apply to projects within the "urban redevelopment area," or to projects subject to (a)2iii below.

iii. The following types of stormwater shall not be recharged:

(1) Stormwater from areas of high pollutant loading. High pollutant loading areas are areas in industrial and commercial developments where solvents and/or petroleum products are loaded/unloaded, stored, or applied, areas where pesticides are loaded/unloaded or stored; areas where hazardous materials are expected to be present in greater than 'reportable quantities' as defined by the United States Environmental Protection Agency (EPA) at 40 CFR 302.4; areas where recharge would be inconsistent with a remedial action work plan approved pursuant to the Administrative Requirements for the Remediation of Contaminated Sites rules, N.J.A.C. 7:26C, or a Department approved landfill closure plan; and areas with high risks for spills of toxic materials, such as gas stations and vehicle maintenance facilities; and

(2) Industrial stormwater exposed to "source material." "Source material" means any material(s) or machinery, located at an industrial facility, that is directly or indirectly related to process, manufacturing or other industrial activities, which could be a source of pollutants in any industrial stormwater discharge to groundwater. Source materials include, but are not limited to, raw materials; intermediate products; final products; waste materials; by-products; industrial machinery and fuels, and lubricants, solvents, and detergents that are related to process, manufacturing, or other industrial activities that are exposed to stormwater.

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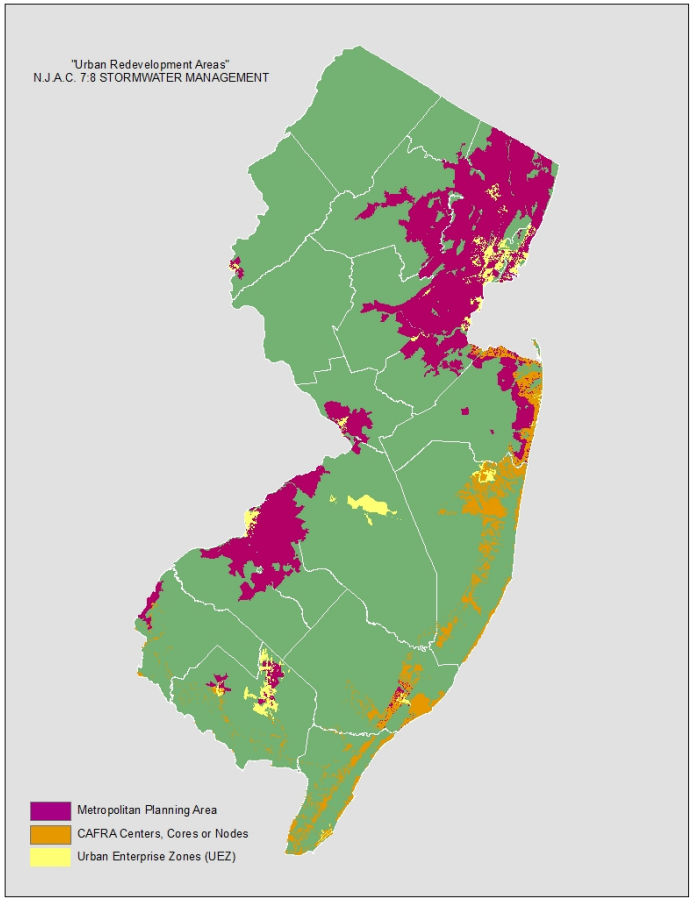
"Urban Redevelopment Area" is defined as previously developed portions of areas:

1. Delineated on the State Plan Policy Map (SPPM) as the Metropolitan Planning Area (PA1), Designated Centers, Cores or Nodes;
2. Designated as CAFRA Centers, Cores or Nodes;
3. Designated as Urban Enterprise Zones; and
4. Designated as Urban Coordinating Council Empowerment Neighborhoods.



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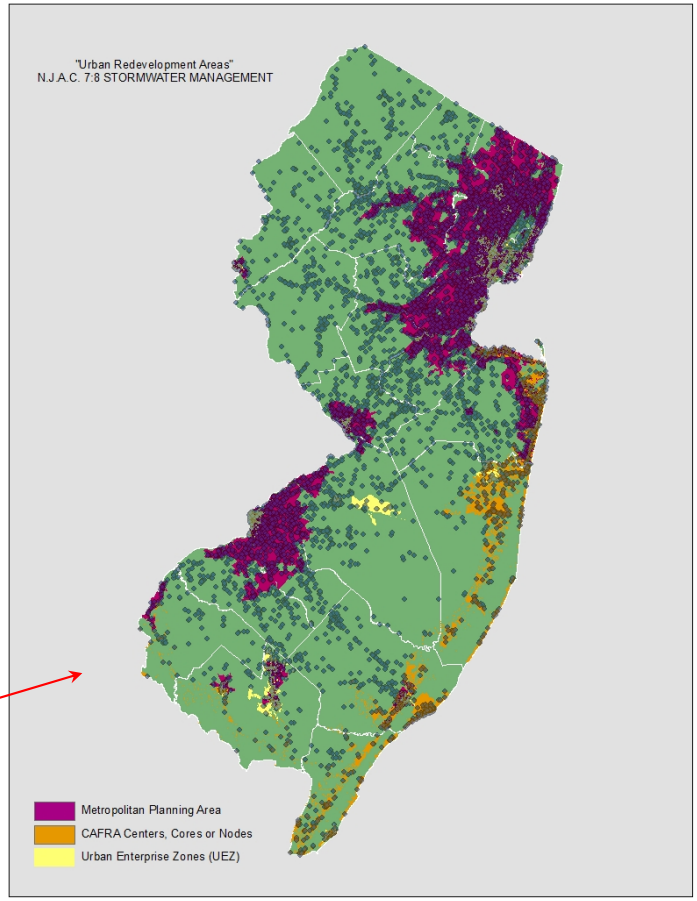
WITH KCSL OVERLAY



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"Vacant or under-utilized parcels may appear to be promising places to locate stormwater infiltration practices. However, it is important to reconcile the goal of sustainably managing stormwater with brownfield site considerations. Infiltrating stormwater at sites where there are contaminants present may mobilize the contaminants and increase the potential for groundwater contamination. "

"Successful implementation of stormwater management and infiltration practices at brownfield sites requires careful planning; stormwater management planning and implementation should be integrated with site investigations, state approvals, the selection of clean-up approaches and techniques, and the design and engineering of site improvements. "

IN OTHER WORDS… EXPENSIVE $$$$

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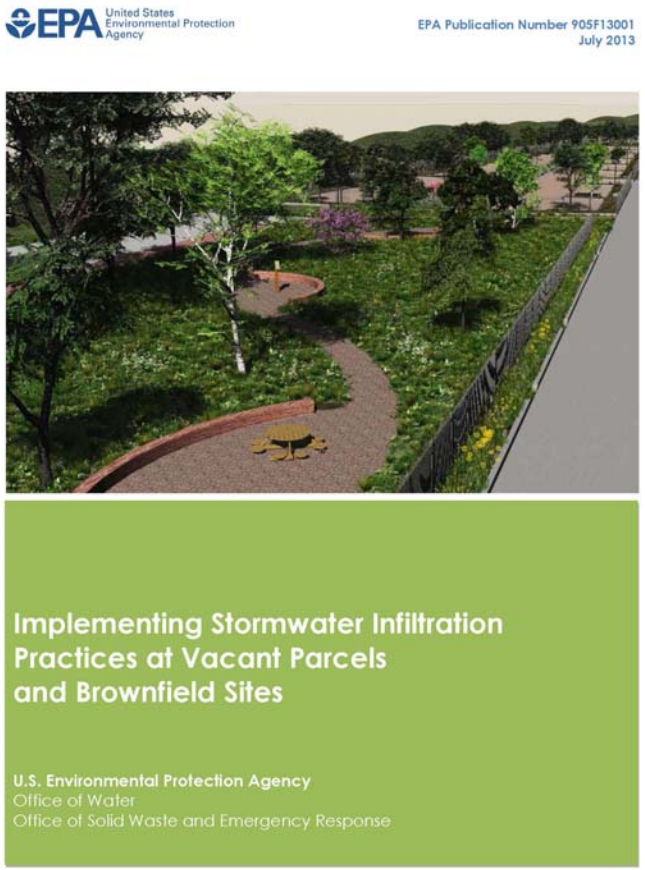

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THE TECHNICAL AND FINANCIAL ISSUES WITH MANAGING STORMWATER AT BROWNFIELDS IS NOTHING NEW…

SO WHAT'S CHANGED TO MAKE THIS AN *EMERGING* ISSUE?

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THE INCENTIVES HAVE CHANGED.

THE WAY WE THINK ABOUT GREEN INFRASTRUCTURE AND ITS VALUE TO BROWNFIELD REDEVELOPMENT HAS CHANGED.

RESILIENCY – CLEAN WATER – QUALITY OF LIFE

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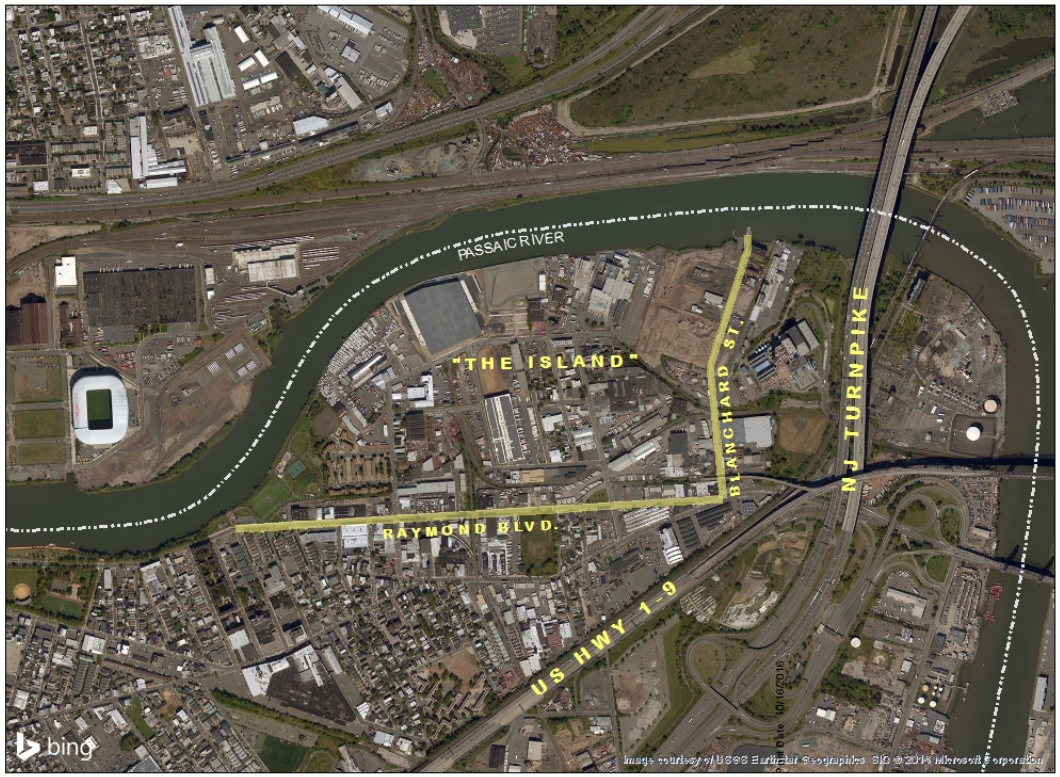
1. Resiliency – "The Island" – Lister Ave. Stormwater Management Project

150 acres of densely developed urban watershed, includes intermixed residential areas, commercial and industrial properties, and vital City infrastructure

"In addition to the persistent and repeated flooding from stormwater flows, the area is also subject to tidal flooding from the Passaic River, and was devastated by Superstorm Sandy with flood waters that reached a height of up to 8-feet in some areas."



Lister Ave. Stormwater Management Study

CITY OF NEWARK INCORPORATED 1836

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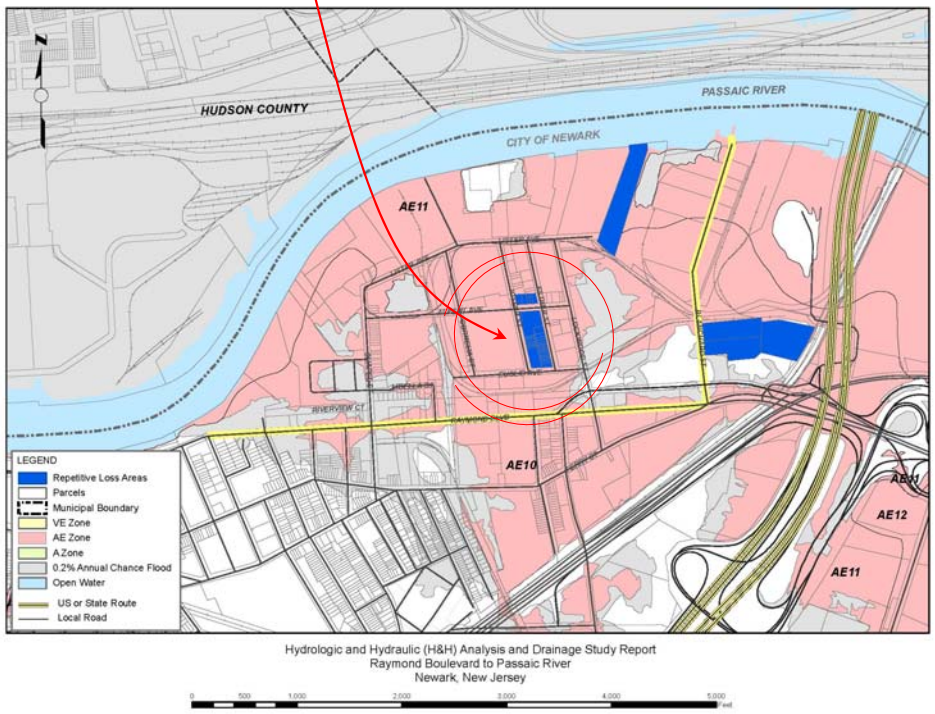
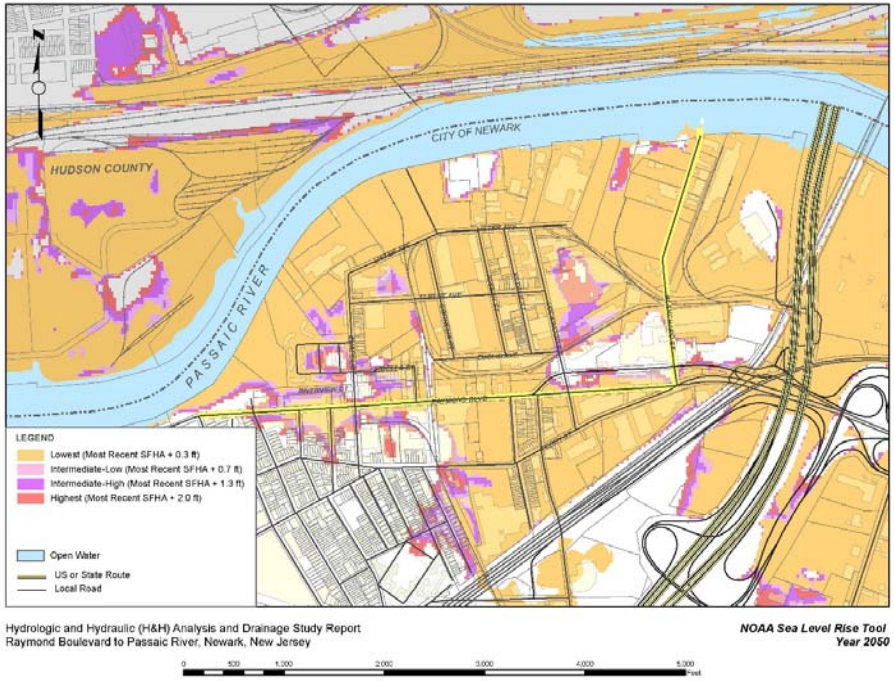
Repetitive Loss Areas



Hydrologic and Hydraulic (H&H) Analysis and Drainage Study Report
Raymond Boulevard to Passaic River
Newark, New Jersey



Hydrologic and Hydraulic (H&H) Analysis and Drainage Study Report
Raymond Boulevard to Passaic River, Newark, New Jersey

NOAA Sea Level Rise Tool
Year 2050

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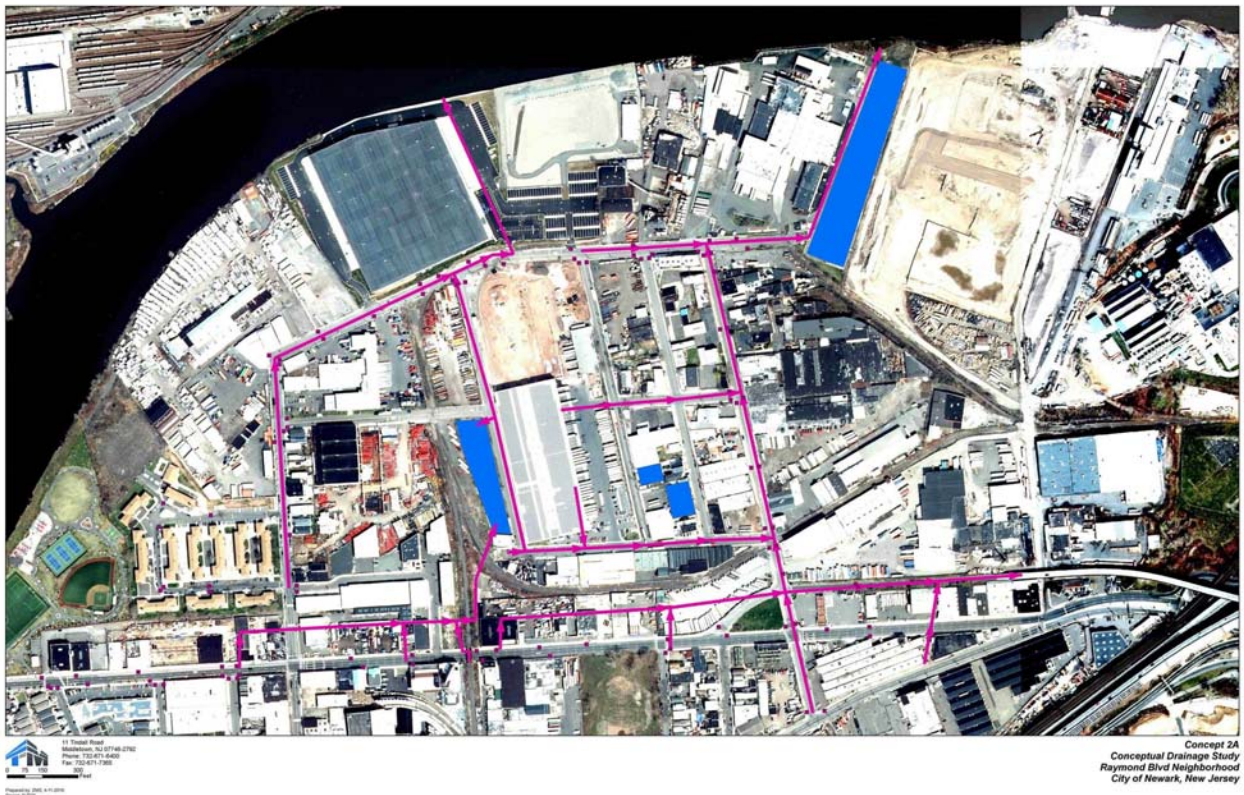
"28 acre feet of storage."

Bio-Retention Constructed Wetlands

"Constructed Wetlands provide significant benefits by adding open space to the neighborhood maintain and improve the water quality of streams, rivers, lakes, and estuaries. As runoff and surface water pass through, wetlands remove or transform pollutants through physical, chemical, and biological processes. Wetlands help in removal of pollutants from storm water runoff, they are rated to provide 80 to 90 sediment removal, 70 to 90% removal of nutrients such a phosphates and nitrates and 100% of Biological Oxygen Demand, resulting improved quality of waters in downstream rivers."



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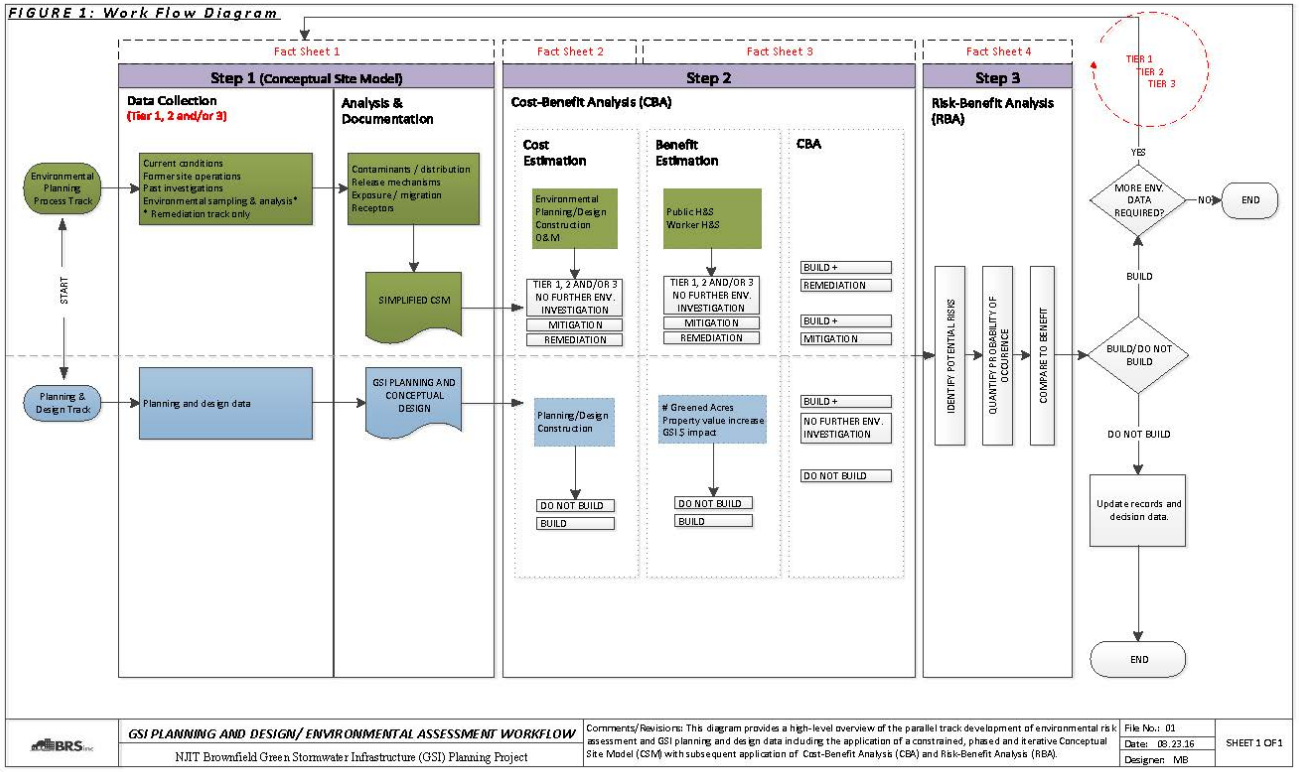
2. Clean Water – Permit Requirements – Innovative Solutions to address CSO's.

Philadelphia Water Department

Green City Clean Waters
The City of Philadelphia's Program for Combined Sewer Overflow Control



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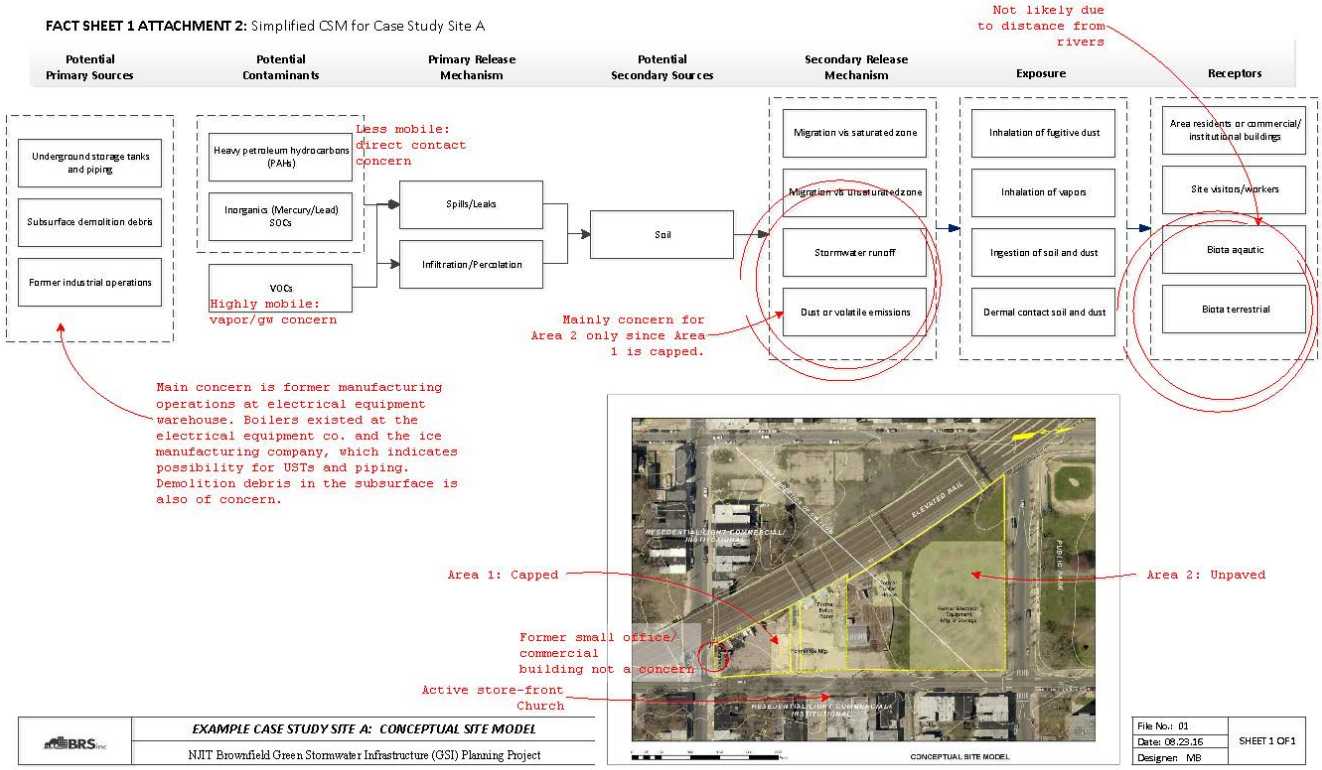

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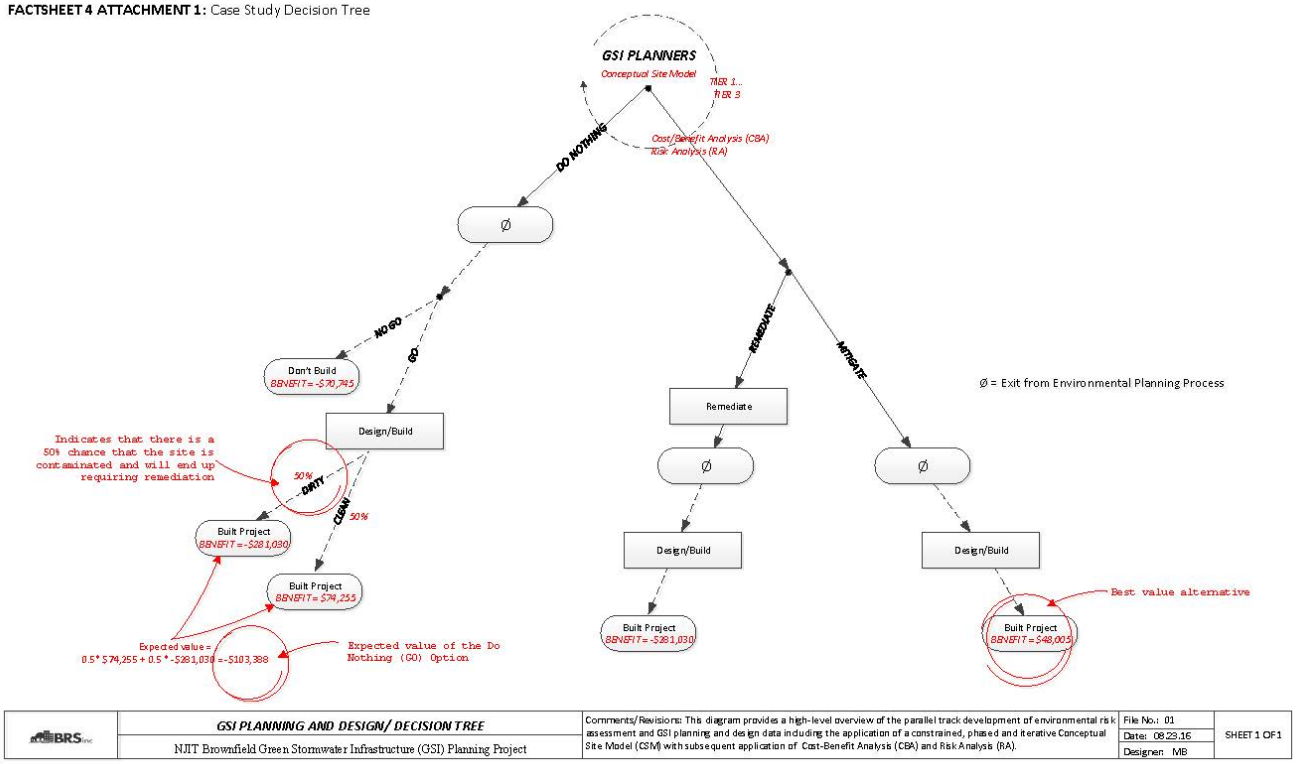
FACTSHEET 4 ATTACHMENT 1: Case Study Decision Tree



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3. Quality of Life – Social and Community Benefits

Settlement agreement between the USEPA and three private Port of Newark Terminal Operators for the implementation of green infrastructure projects in areas that are most impacted by port activities.

- Badger Ave/Clinton Ave traffic triangle.
- South Ward - Dayton St and Frelinghuysen Ave traffic triangle, recommending a stormwater planter.
- South Ward - Foster St parking lanes between Frelinghuysen Ave and Dayton St, recommending permeable asphalt along the south side of Foster Street.
- East Ward - Horatio St sidewalks between Hawkins St and Vincent St, recommending a series of bioswales.
- East Ward - Dawson St entrance to Pennington Court, recommending a redesign of small parking lot to incorporate curb bump outs.


Figure 4 - Site Evaluation and Concept Design for Horatio Street

NEWARK GREENSTREETS INITIATIVE
SITE EVALUATION
Horatio Street between Hawkins and Vincent Street

NEWARK GREENSTREETS INITIATIVE
CONCEPT DESIGN
Horatio Street between Hawkins and Vincent Street

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THANK YOU!

QUESTIONS??

Matthew Brener, P.E.
BRS, Inc. | PO Box 2293, Medford Lakes, NJ 08055
M: 267.688.7301|F: 267.775.5072
matthew@brsinc.com
www.njbrownfield.com

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