

STORMWATER MANAGEMENT THROUGH TEMPORARY VACANT LAND CONVERSION

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Two Problems

Stormwater

- **Municipal Sewer and Storm Sewers are old and out of date**
- **Green Infrastructure is effective but still relatively expensive**
- **Green Infrastructure requires increased maintenance budgets and local expertise**
- **Extremely complex systems requiring extensive consulting assistance and subsurface exploration**
- **Shifting climate patterns**

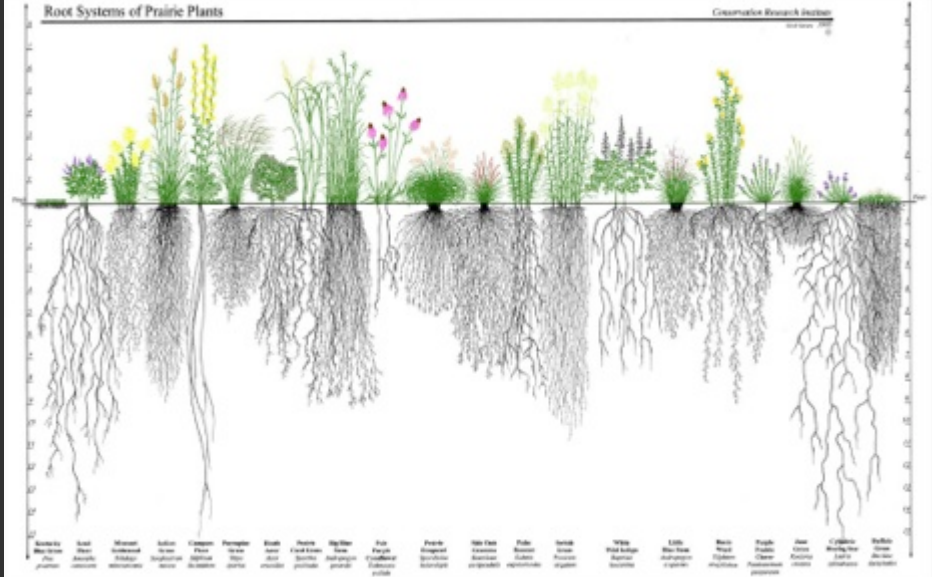
Vacant Land

- **Real estate speculation creates fallow properties**
- **Industrial legacy and its contamination**
- **Overwhelming levels of vacant properties in many urban areas (Beacon ~20%, Newburgh ~12%, Brooklyn ~4%)**
- **Regulatory constraints (disturbed ground, traffic counts, waste, etc...)**
- **Self-continuing due to urban blight, tax rates, decaying amenities**

One Solution (of many)

Ecological Infrastructure™

Low-cost technologies for low-performance spaces that do not require reliance on existing infrastructure, can be temporarily installed, are easy to install, require little maintenance, do not trigger any major regulatory hurdles, and are resilient to shifting climate patterns.



Slope :	< 2%	2-6%	> 6%	< 2%	2-6%	> 6%
Forest	0.08	0.11	0.14	0.10	0.14	0.18
Meadow	0.14	0.22	0.30	0.20	0.28	0.37
Pasture	0.15	0.25	0.37	0.23	0.34	0.45
Farmland	0.14	0.18	0.22	0.16	0.21	0.28
Res. 1 acre	0.22	0.26	0.29	0.24	0.28	0.34
Res. 1/2 acre	0.25	0.29	0.32	0.28	0.32	0.36
Res. 1/3 acre	0.28	0.32	0.35	0.30	0.35	0.39
Res. 1/4 acre	0.30	0.34	0.37	0.33	0.37	0.42
Res. 1/8 acre	0.33	0.37	0.40	0.35	0.39	0.44
Industrial	0.85	0.85	0.86	0.85	0.86	0.86
Commercial	0.88	0.88	0.89	0.89	0.89	0.89
Streets: ROW	0.76	0.77	0.79	0.80	0.82	0.84
Parking	0.95	0.96	0.97	0.95	0.96	0.97
Disturbed Area	0.65	0.67	0.69	0.66	0.68	0.70

Rational Method Runoff Coefficients - Part I

Testing



Botanical Inventories

Building on the research of others and our own plant inventories within urban areas, we developed a working list of over 100 beneficial **NATIVE and **VOLUNTEER** plant species found thriving in different vacant lot conditions.**



Prototyping

ECOLOGICAL INFRASTRUCTURE

Transforming
Vacant Lots
into
Performance Landscapes

THE VACANT LOT

Urban vacant lots represent transition periods between (human) uses for a site. One Nature sees these moments of transition as low cost opportunities to improve ecosystem services in urban areas. When undeveloped, vacant lots provide limited ecosystem services to the nearby community. The ecological, aesthetic, and social services of vacant lots can be significantly increased with One Nature's low impact development.

APPROACH

One Nature's vacant lot revitalization program uses natural processes to provide and enhance multiple ecosystem services and community benefits. Site-specific surface treatments and seed mixtures populate vacant lots with beneficial vegetation, creating vibrant landscapes that fit community needs while lessening the burdens of local pollution.

OneNature

ecological services, planning + design
Brooklyn, NY | Westport, CT
www.onenaturellc.com

Air Pollution Removal

Carbon Sequestration

Storm Water Diversion

Nutrient Retention

Aesthetics

Temperature Reduction

Surrounding Land Value

Food Production

Ecological Habitat

Analysis

- Assessments of current site conditions and ecosystem services
- Soil analysis of organic and inorganic substances
- Geo-spatial Analysis (GIS)

Stewardship

- Community Accessible
- Self-Sustaining System Components
- Low Maintenance Costs and Needs

ECOSYSTEM SERVICES

Ecosystem Services are the benefits humans derive from Earth's natural processes. Among the many services provided by ecosystem function are air and water purification, nutrient cycling, pollination, food production, and climate regulation.

Simple & Low-Cost Design & Construction

- Creation of site-specific construction and management plans
- Multiple surface treatments and native seed mixtures
- Flexible elements to fit any site

Lawn Lot						
Item	number	cost per (low)	cost per (high)	total-low	total-high	notes
Bobcat	8	0	60 \$	- \$	480 hourly	
Compost	906.25	0	35 \$	- \$	31,719 Cubic Yards	
Fence	834	0	20 \$	- \$	16,680 Linear feet	
Labor	80	0	15 \$	- \$	1,200 hourly	
Sandy fill	906.25	0	20 \$	- \$	18,125	
Seed	1	500	1000 \$	500 \$	1,000 Lump Sum	
Site Clearing	1	0	500 \$	- \$	500 per acre	
Straw Bales	278	2	6 \$	556 \$	1,668	
SUB-TOTAL				\$ 1,056	\$ 71,372	
Mobilization	0.05 \$	1,056 \$	71,372 \$	52.80 \$	3,568.59	
Design/Oversight \$	71,372	5%	10%	3,568.59	7,137.18	
TOTAL				\$ 4,677.39	\$ 82,077.51	

Asphalt Lot						
Item	number	cost per (low)	cost per (high)	total-low	total-high	notes
Bobcat	8	0	60 \$	- \$	480 hourly	
Compost	906.25	0	35 \$	- \$	31,719 Cubic Yards	
Fence	834	0	20 \$	- \$	16,680 Linear feet	
Labor	80	0	15 \$	- \$	1,200 hourly	
Sandy fill	906.25	0	20 \$	- \$	18,125	
Seed	1	500	1000 \$	500 \$	1,000 Lump Sum	
Site Clearing	1	500	2000 \$	500 \$	2,000 per acre	
Straw Bales	278	2	6 \$	556 \$	1,668	
SUB-TOTAL				\$ 1,556	\$ 72,872	
Mobilization	0.05 \$	1,556 \$	72,872 \$	77.80 \$	3,643.59	
Design/Oversight \$	72,872	5%	10%	3,643.59	7,287.18	
TOTAL				\$ 5,277.39	\$ 83,802.51	

Forested Lot						
Item	number	cost per (low)	cost per (high)	total-low	total-high	notes
Wood chipper	36	0	40 \$	- \$	640 hourly	
Leaf mulch	906.25	0	35 \$	- \$	31,719 Cubic Yards	
Fence	834	0	20 \$	- \$	16,680 Linear feet	
Labor	80	0	15 \$	- \$	1,200 hourly	
Tree Trimming	100	0	20 \$	- \$	2,000 hourly	
Seed	1	500	1000 \$	500 \$	1,000 Lump Sum	
Site Clearing	1	500	6000 \$	500 \$	6,000 per acre	
Straw Bales	0	2	6 \$	- \$	-	
SUB-TOTAL				\$ 1,000	\$ 99,239	
Mobilization	0.05 \$	1,000 \$	99,239 \$	50.00 \$	2,961.94	
Design/Oversight \$	99,239	5%	10%	2,961.94	5,923.88	
TOTAL				\$ 4,011.94	\$ 68,124.56	



Three Projects, Two Unifying Problems: Vacant Land and Stormwater Runoff



Brooklyn

A half mile strip of land along
the Carrol Gardens Waterfront



Newburgh

A small asphalt vacant lot on
Lander Street



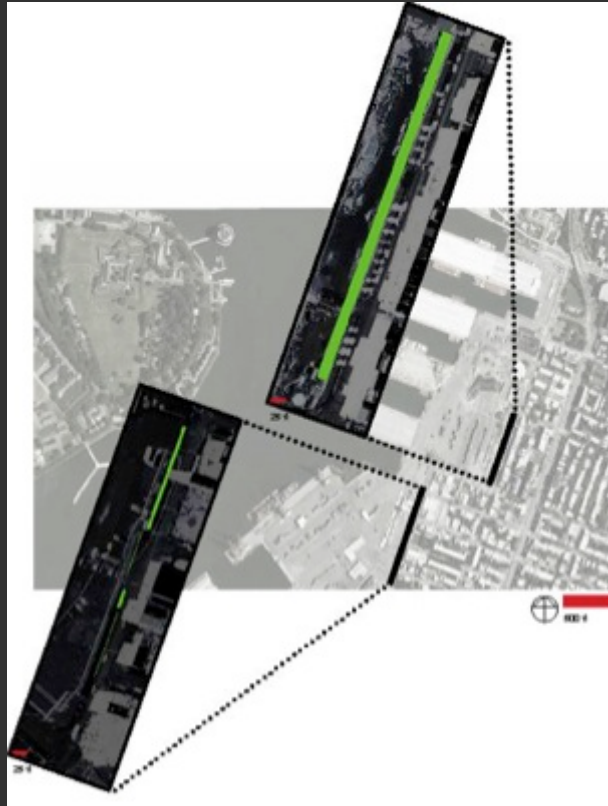
Beacon

Small corner lot on the corner
of Cross and Main

Project #1: Brooklyn Greenway



Van Brunt Street



Columbia Street

*Open Space Site Design and
Maintenance Plan:
Van Brunt Street and Columbia Street*

A row of five bicycles parked side-by-side, facing right. They are dark-colored and appear to be standard road or hybrid bikes. The background is a light, textured surface.

Van Brunt Street



Project #1: Brooklyn Greenway



Project #1: Brooklyn Greenway

After 2 Months



Project #1: Brooklyn Greenway

After 4 Months



Project #1: Brooklyn Greenway

2015



AUG 19, 2015 | FORWARD | VISIT OUR WEBSITE

BROOKLYN BOROUGH PRESIDENT ALLOCATES 500K FOR PROPOSED COLUMBIA WATERFRONT PARK



BGI's Columbia Waterfront Park has received \$500,000 in funding from Borough President Eric Adams, out of nearly \$12 million allocated to parks across Brooklyn.



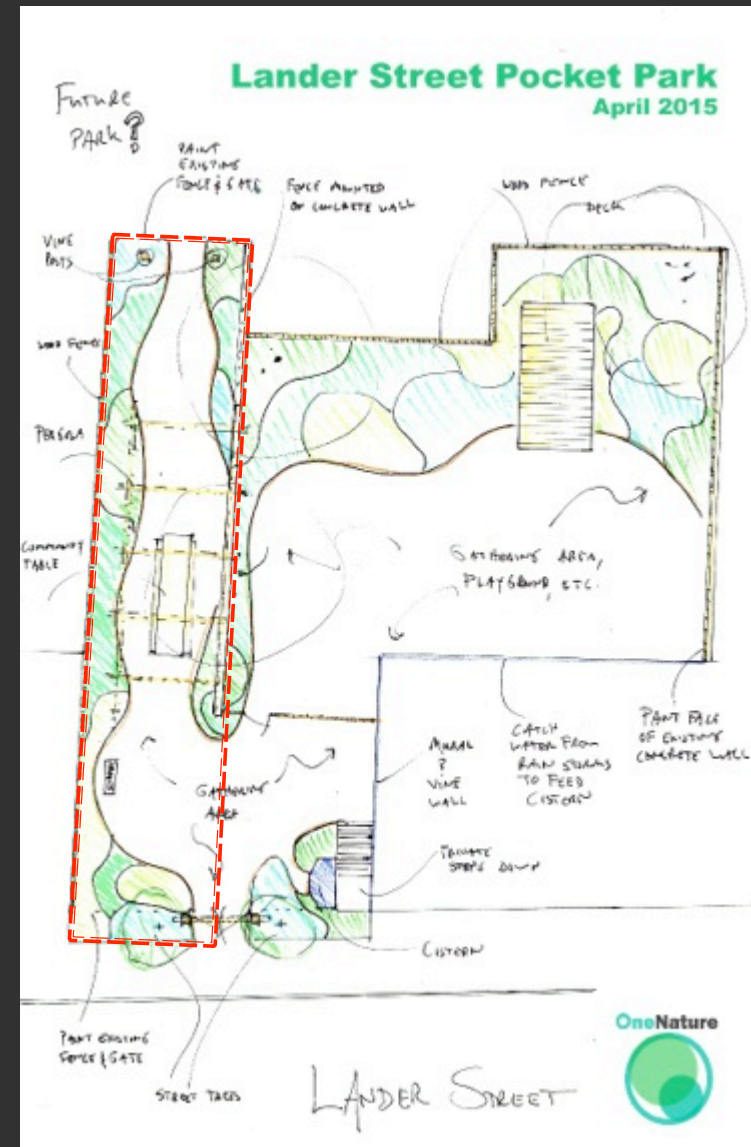
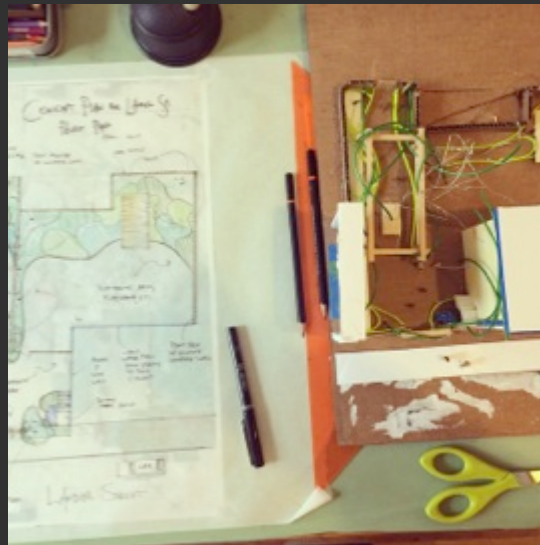
Project #2: Newburgh Vacant Lot

Original Conditions



Project #2: Newburgh Vacant Lot

Design



Project #2: Newburgh Vacant Lot



Project #2: Newburgh Vacant Lot

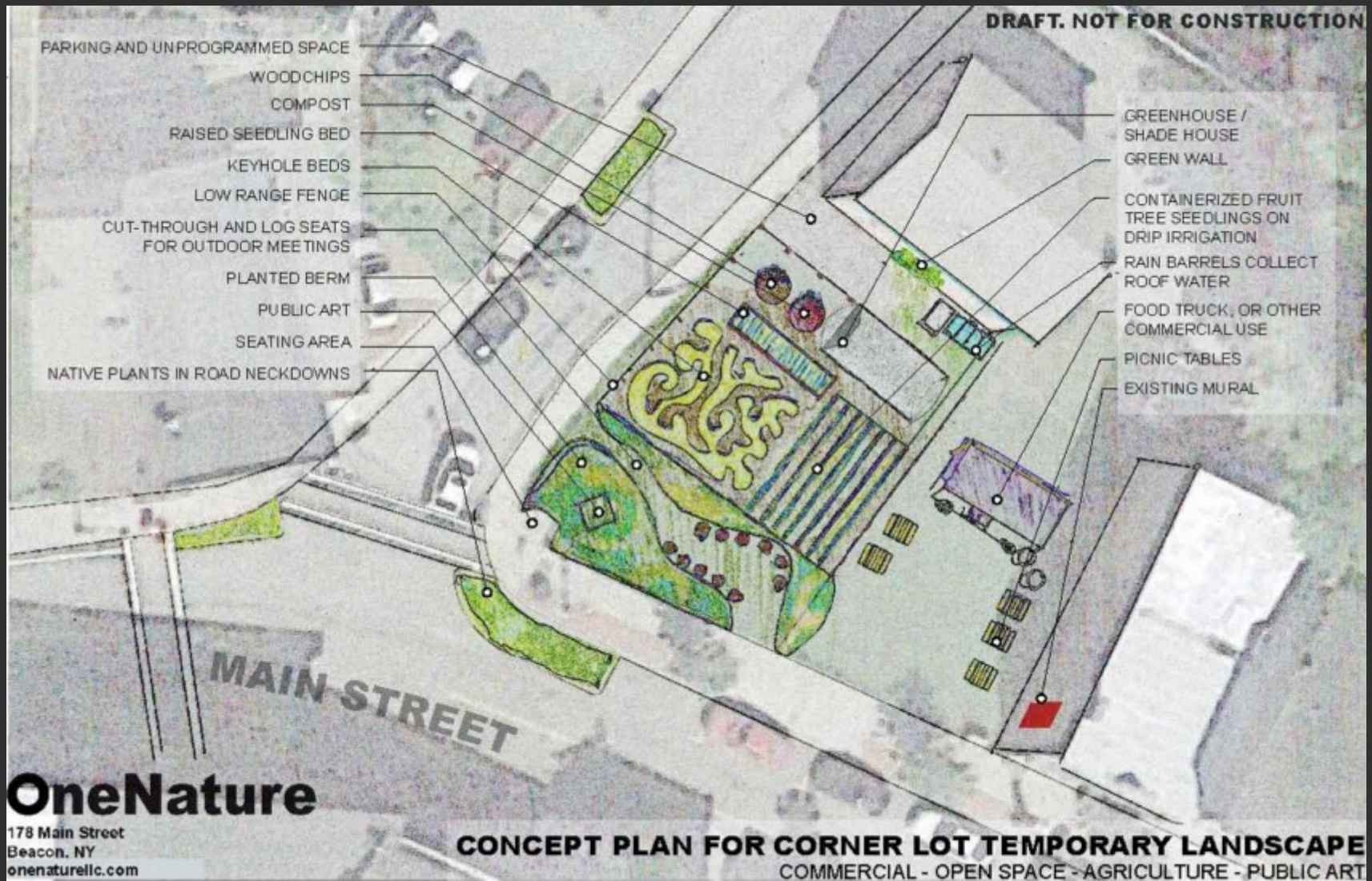


Project #3: Main Street Pop-up Park

Existing



Project #3: Main Street Pop-up Park



Project #3: Main Street Pop-up Park



Project #3: Main Street Pop-up Park



Project #3: Main Street Pop-up Park



Project #3: Main Street Pop-up Park



Project #3: Main Street Pop-up Park



Impact per Dollar Comparison

Technology	\$/SF	G/Sf	\$/G/SF
Bioswales	\$30	0.7	\$42.86
Green Roofs	\$30	0.85	\$35.71
Perm. Pavers	\$20	0.70	\$28.57
Eco-Infra	\$1	0.98	\$1.02

**Runoff Reduction Rates (RRR) provided by USEPA, Design storm = NYS DEC defined regionally adjusted water storm (1.4"), Eco-Infra RRR independently calculated.*

Hypothetical Application for Ecological Infrastructure™

Area	Vacant Acres	WQV Storm Reductions	Cost
Newburgh	350	16M gallons	\$15M
Brooklyn	596	27M Gallons	\$25M
Beacon	47	2M Gallons	\$1.9M

Don't get me wrong! We love and promote these technologies in our company's own work. But is important to seek less expensive options for land managers who cannot afford these types of investments.



Safe Harbors City Park



Private Construction



Stamford LID Demonstration

THANK YOU!

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