

Habitat Enhancement Master Plan

Chatham Borough River Road Site

Chatham Borough, Morris County, NJ



Amy S. Greene Environmental Consultants, Inc.

4 Walter E. Foran Boulevard

Flemington, NJ 08822

(908)788-9676 Fax (908)788-6788

River Road Site

- 12.6 acre parcel
- Upper Passaic Watershed
- Bordered by the
 - Passaic River
 - River Road & Commercial & residential properties



Legend

 Site Location



Figure 2 Aerial Photograph

River Road Open Space
Block 137; Lot 1, Block 138; Lot 1,
Block 138; Lot 1, and Block 140; Lot 1
Chatham Borough
Morris County, New Jersey

ASGECI Project # 3149



250

Feet

ANY S. COZING
ENVIRONMENTAL
CONSULTANTS

Source:
New Jersey 2007/2008 High Resolution Orthophotography - JPR02008K T100, State of New Jersey - Office of
Information Technology (SJOIT), Office of Geographic Information Systems (OGIS), Trenton, NJ, October 2008.
This (as published report) was developed using New Jersey Department of Environmental Protection Geographic
Information System digital data, but this secondary product has not been verified by NJDEP and is not State-submitted.

Southern Section:

mostly
undeveloped,
forested uplands
and forested
wetlands



Northern Section:

- JCP&L Utility easement
- deteriorated asphalt parking lot



Debris Piles



- Empty 250 gal. tank
- Tarps, bubble wrap, tires, old concrete culvert, asphalt tailings, electronic parts

Early & Late Successional Field

■ Invasive Species

- Mugwort
- Japanese knotweed
- Common Reed
- Curled dock
- Field bindweed
- Common mullein
- Purple Loosestrife
- Queen Anne's lace
- Orchard grass
- Wineberry
- Multiflora rose
- Tatarian honeysuckle
- Chinese privet
- Autumn olive
- Tree-of-heaven

(Utility Easement)



• Native Species

- Daisy fleabane
- Bush clover
- Wild bergamot
- Pokeweed
- Goldenrod spp.
- Switchgrass
- Hickory
- Northern red oak

Hardwood Forest

(Between Utility Easement & River)

Invasive Species

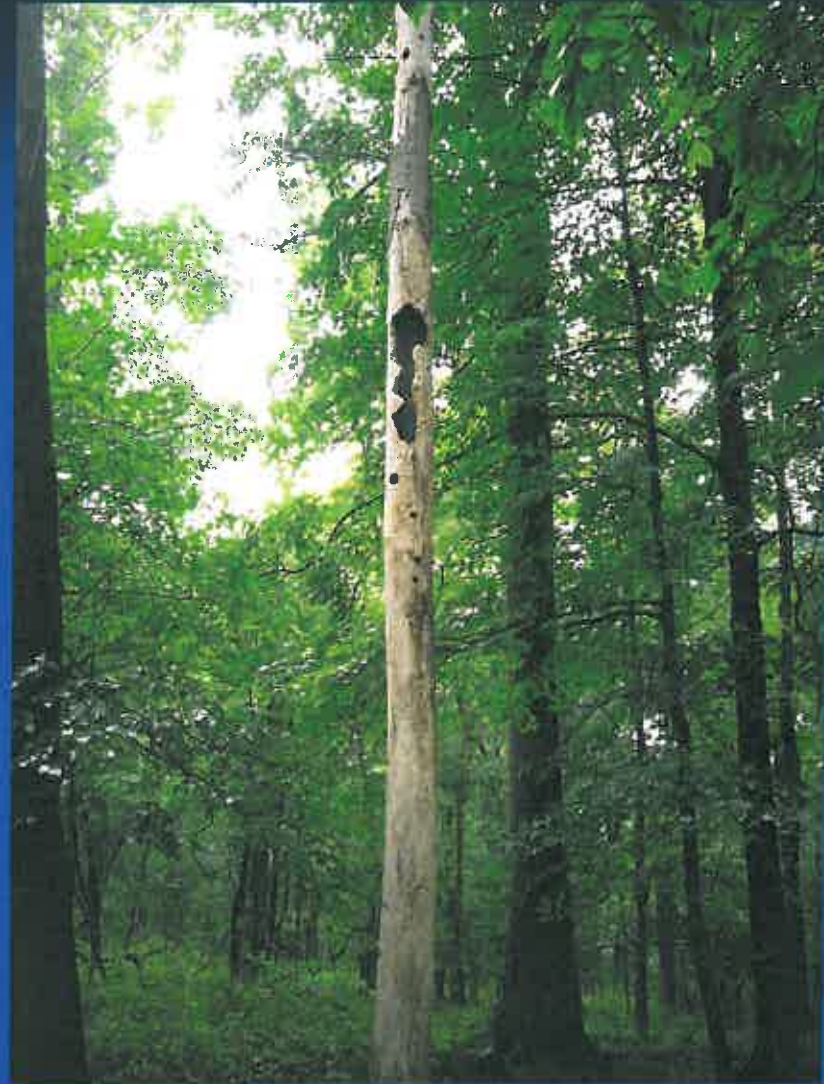
- Tree-of-heaven
- Norway maple
- Multiflora rose
- Tatarian honeysuckle
- Japanese barberry
- Wineberry
- Japanese honeysuckle
- Stiltgrass
- Garlic mustard
- Curled Dock
- Reed canary grass



Native Species

- Red maple
- Silver maple
- Sugar maple
- Box elder
- Pin oak
- Northern red oak
- White ash
- Sassafras
- Tulip poplar
- Black walnut
- Shagbark hickory
- Black haw viburnum
- Blackberry
- American bladdernut
- Poison ivy
- Virginia creeper
- Ferns
- Jack-in-the-pulpit
- sedges

- Snags (dead/dying trees)
- Important habitat for bats & birds



Forest Understory

- Heavy deer browse
 - Feeding pressure on native plants
 - Reduces plant diversity
 - Many of the understory plants are non-native, invasive species (i.e. stiltgrass)



Forested Riparian Floodplain

- River birch
- American sycamore
- Silver maple
- Red maple
- Green ash
- American elm
- Persimmon
- Box elder
- Northern red oak
- American Bladdernut
- Black Haw viburnum
- Skunk cabbage
- Blue flag iris
- Arrowhead
- Trout lily
- Sedges
- Stout wood reed



Forested Wetlands

- Riparian floodplain of the Passaic River
- Temporary (vernal) pools
- Sparsely vegetated
- Habitat for amphibians



Emergent Wetlands

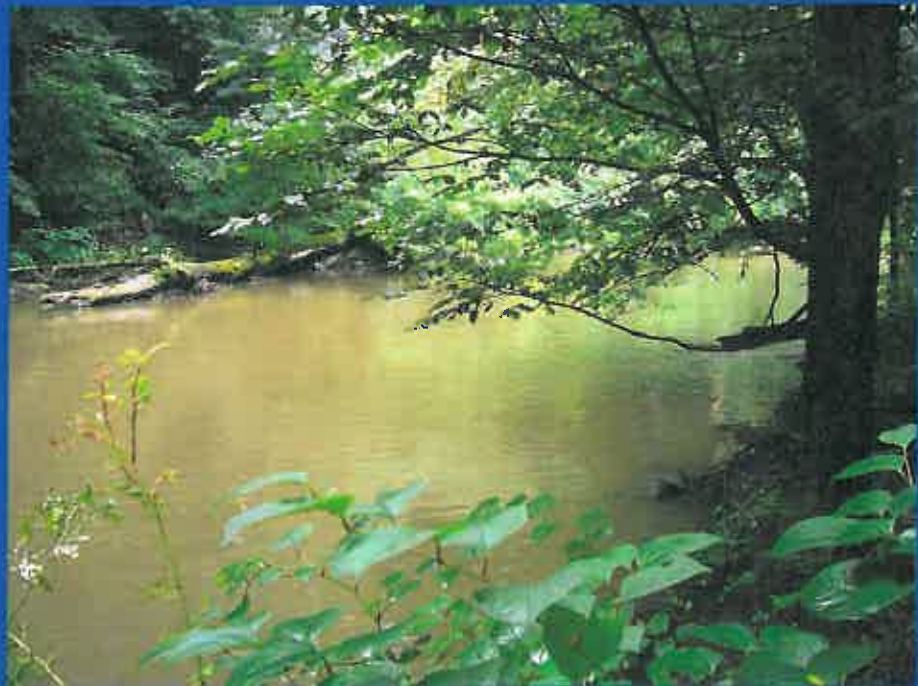
(Utility Easement Area)

- Swamp milkweed
- Wool grass
- Soft rush
- Broad-leaved cattail
- Jewelweed
- Sensitive fern
- Sedges
- Common reed
- Purple loosestrife



Open Water – Passaic River

- Approx. 50' wide along project area
- Wildlife observed:
 - Great blue heron
 - Kingfisher
 - Warm water fish



Sensitive Species Known to Occur within the Project Vicinity

■ Wood Turtle

- NJ threatened
- Inhabits streams with deep pools and banks with overhanging roots and logs
- Riparian areas in project area provide potential habitat



Indiana Bat



- Federally & State Endangered in NJ
- Known from Great Swamp NWR
- Occupies large trees with peeling bark & dead trees
- Forages in riparian and forested floodplains

Red Shouldered Hawk



- Breeding population is NJ State Endangered; winter/migratory population is NJ State Threatened
- Prefers secluded mature forested wetlands & riparian forests

Barred Owl

- NJ State Threatened
- Large tracts of undisturbed forest, mature old growth & high canopy cover in wetlands with cavity trees
- Unlikely to use the project site for breeding, it would be expected to forage within the riparian zones of the Passaic River



Enhancement Considerations & Recommendations

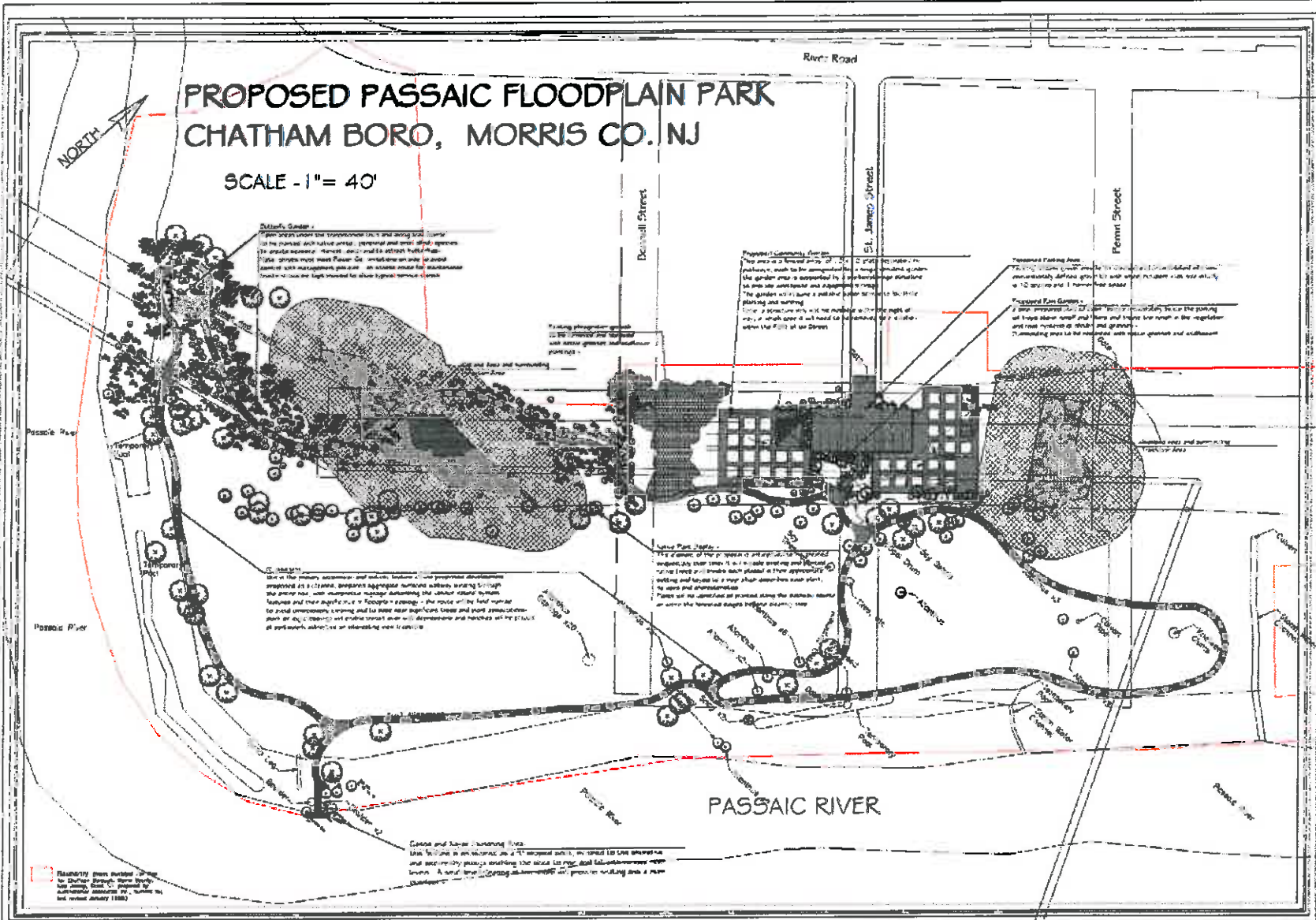
- Remove deteriorated asphalt & install small gravel parking area
- Construct walking trail through forest & early successional field
- Develop kayak/canoe launch
- Develop gardens
 - Community Vegetable
 - Butterfly
 - Native Plant Display
 - Rain Garden





PROPOSED PASSAIC FLOODPLAIN PARK CHATHAM BORO, MORRIS CO. NJ

SCALE - 1" = 40'



KINEX
U.S. ASSOCIATES
PARK AND RECREATION CONSULTANTS

DATE	SEPT 11, 1985
BY	J. J. KINEX
CHECKED	J. J. KINEX
APPROVED	L. J. KINEX
PROJECT	PROPOSED PASSAIC FLOODPLAIN PARK
LOCATION	CHATHAM BORO, MORRIS CO., NJ

PROPOSED PASSAIC FLOODPLAIN PARK
CHATHAM BORO, MORRIS CO., NJ
LOCATION

Raingardens

A rain garden is a landscaped, shallow depression that allows rain and snowmelt to be collected and seep naturally into the ground.

What are the benefits of a Rain Garden?

- Increases groundwater recharge
- Reduces surface water runoff
- Aesthetically pleasing landscape amenity
- Benefits to wildlife
- Reduces flooding and stream bank erosion



Habitat Enhancement & Maintenance

- Eradicate invasive species in field and forest habitats
- Install native plantings
- Girdle trees to create snags
- Create brush piles
- Install deer exclosures
- Install bird & bat boxes



Invasive Plant Species – What are they?

A species that become established in a new ecosystem in which it has not “co-evolved”

- Produce large numbers of new plants each season
- Tolerate many soil types and weather conditions
- Spread easily usually by wind, water, or animals
- Grow rapidly, displace slower growing plants
- Negatively impact native wildlife by reducing habitat variability

Why are Native Plants Important?

- Plants form the first trophic level – converting sunlight into stored energy
- Native insects do not (or rarely) eat non native plants
- Most of our native animals rely on insects for part of or all of their diet



Why are Insects Important?

“Insects are exceedingly effective at converting plant tissue into insect tissue. A large percentage of the worlds fauna depends on insects to access the energy stored in plants” (E.O. Wilson, 1987)

“A land without insects is a land without most forms of higher life” (E.O. Wilson, 1987)

Animals rely on the insects that feed on plants for survival

- Approximately 96% of North America's terrestrial birds rely on insects to feed their young (Dickinson 1999)
- Pound for pound, insects contain more energy than beef
- The diversity of animals in a habitat is closely linked to the diversity of the plant community in that habitat (Rosenzweig , 1995)

Many species of plants = many species of animals!

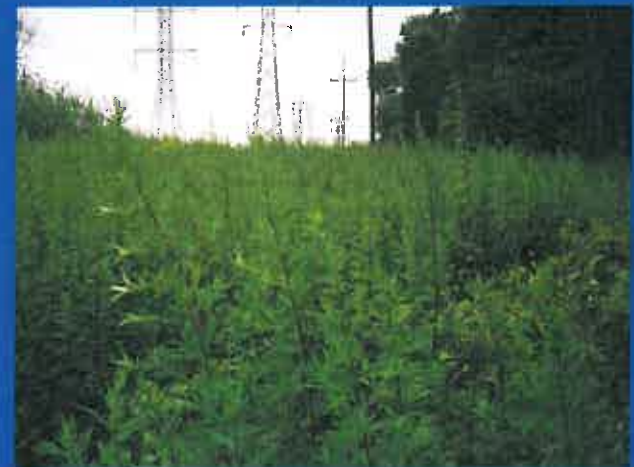
- The tropics support very high animal diversity.
- One hectare (2.47 ac) of tropical rainforest has as many as 473 tree species (Valencia, Balslev and Paz y Mino 1994)
- All of Pennsylvania supports only 134 species of trees (Rhoades and Block 2005)

Mugwort

(*Artemisia vulgaris*)

Field/Utility Easement

- Open sunny habitat
- Grows from underground root network
- Forms dense stands that restrict growth of natives, reduces plant diversity
- The most effective control is repeated application of Glyphosate (Roundup™) or Clopyralid



Japanese knotweed (*Polygonum cuspidatum*)

Field/Utility Easement

- Prefers sunny, riparian areas
- Extremely persistent
- Grows to about 10' high
- Spreads via stout underground rhizomes which can extend 45-60'
- Cutting & spraying the re-sprouts with Roundup™ in late summer/early fall provides effective control



Common reed (*Phragmites australis*)

Field/Utility Easement



- Colonizes wetlands, marshes, floodplains and ditches
- Can grow 15' high
- Forms dense monocultures that eliminate plant diversity
- Aggressive rhizomes grow overland 30' or more in 1 season
- Spraying with Glyphosate (Roundup™) Sept15-Oct 15 controls common reed
- Cutting twice annually will reduce vigor – cut material should be removed since cut stock will readily root especially in the Spring
- Burning will reduce the abundant and persistent litter and open up the ground level to additional wildlife

Japanese barberry (*Berberis thunbergii*)

Forest



- Forms dense stands in closed canopy forests, meadows, pastures and wetlands
- Branches have sharp spines, not browsed by deer
- Spreads by seeds eaten by birds
- Individual plants can be cut or pulled out with a weed wrench.
- Pull plants when the soil is moist which allow roots to be removed more efficiently. Make certain to wear heavy gloves due to the sharp spines.
- Treatment with the herbicides Glyphosate (Roundup™) and triclopyr (Garlon™) are effective.

Japanese honeysuckle

(*Lonicera japonica*)

Forest



- Perennial climbing vine will girdle shrubs and trees
- Spreads by seeds, underground rhizomes & above ground runners which can grow 30' in 1 year
- Can form dense thickets of vines & outcompete most plants
- Individual plants can be pulled when soil is moist, some root fragments may remain behind & resprout.
- The plant can be treated with the herbicide Glyphosate (Roundup™) relatively late in the season when the leaves are still green but other plants have senesced.

Japanese stiltgrass (*Microstegium vimineum*)

Forest

- Grows in full sun or dense shade
- Readily colonizes disturbed sites & outcompetes native plants
- Spreads vegetatively by rooting at stems & from seed. One plant can produce 100 - 1000 seeds which remain viable up to 5 yrs.
- It is not browsed by deer
- Seeds are dispersed by surface water runoff & on feet of animals & humans.
- The plant has shallow roots and small infestations can be hand pulled, weed whacked or mowed.
- Perform removal prior to seed set: mid to late Sept in our area.
- Treat with the herbicide Glyphosate (Roundup™) for a number of years in order to exhaust the seed bank.



Purple loosestrife (*Lythrum salicaria*)

Field/Utility Easement

- Adapts readily to natural and disturbed wetlands
- Rapidly displaces native plants and creates monocultures
- Results in reduced plant diversity and with little wildlife benefit
- One plant can produce 2-3 million seeds. Also spreads by rhizomes
- Manual weeding of small number of plants
- Herbicide (Glyphosate = Roundup™ = Rodeo) will control purple loosestrife – apply in mid to late summer



Tree-of-heaven (*Ailanthus altissima*)

Forest

- Native to China
- Grows up to 80' high
- Single female tree can produce up to 300,000 winged seeds
- Compounds from roots prevents the growth of nearby plants
- Overtakes sites, replaces native plants
- Herbicides (Roundup™, Garlon) applied to the leaves, green stems, sprouts and suckers is effective
- Cutting & girdling trees & spraying sprouts & stems with herbicide is effective



Norway maple (*Acer platinoides*) Forest

- Most common shade tree in US
- Produce copious quantities of winged seed
- Casts heavy shade and has dense shallow root system
- Tolerates urban soils and pollution
- Norway maple forests result in very limited plant diversity
- Small trees can be hand pulled or a weed wrench can be used.
- The use of an herbicide (Roundup™, Rodeo, Garlon) applied to the leaves, green stems, sprouts and suckers.
- Cutting & girdling trees & spraying stumps, sprouts & stems with herbicide is effective
- Wood has been used for Stradivarius violins!



Multiflora Rose (*Rosa multiflora*)

Forest & Field

- Grows aggressively, birds disperse fruits
- A single plant can produce up to a million seeds that will survive in the soil seed bank for 20 years.
- Dense thickets of shrubs exclude most other plants
- Provide nest sites for birds
- Glyphosate (Roundup™) is extremely effective if it is applied to the foliage after the plant flowers in the early Spring
- Individual plants can be cut or pulled out with a weed wrench.
- The plant base should be grubbed out or treated with an herbicide.



Weed Wrench



Costs

PRELIMINARY COST ESTIMATE CONSTRUCTION OF SITEWORK AT RIVER ROAD SITE BOROUGH OF CHATHAM MORRIS COUNTY, NEW JERSEY				
INITIAL PLANNING	Units	Quantity	Unit Cost	Item Cost
Survey of Site	Lump Sum		\$10,000.00	\$10,000.00
Environmental Permitting				
Wetland Delineation	Lump Sum		\$4,000.00	\$4,000.00
Path/Trail Construction and Wetland Restoration	Lump Sum		\$7,000.00	\$7,000.00
Wetland Restoration	Lump Sum		\$4,000.00	\$4,000.00
Boat Launch Construction	Lump Sum		\$7,000.00	\$7,000.00
			SUBTOTAL	\$32,000.00
SITE PREPARATION	Units	Quantity	Unit Cost	Item Cost
Security barriers, signage and construction fencing	Lump Sum		\$1,500.00	\$1,500.00
Construction Layout by Surveyor	Lump Sum		\$3,000.00	\$3,000.00
Soil erosion and sedimentation controls	Lump Sum		\$2,100.00	\$2,100.00
Wheel cleaning blanket				
Silt fence	LF	300	\$4.00	\$1,200.00
Tree Protection	LF	230	\$6.00	\$1,380.00
			SUBTOTAL	\$9,180.00
EARTHWORK	Units	Quantity	Unit Cost	Item Cost
Tree clearing	Lump Sum		\$8,500.00	\$8,500.00
Topsoil stripping and stockpiling	CY	200	\$5.00	\$1,000.00
Bulk excavation	CY	600	\$5.00	\$3,000.00
Surface grading	CY	250	\$6.00	\$1,500.00
Earth removal (stone contaminated)	CY	300	\$6.00	\$1,800.00
Topsoiling and finished grading	CY	650	\$6.00	\$3,900.00
Debris removal	Lump Sum	20	\$2,000.00	\$2,000.00
			SUBTOTAL	\$21,700.00
SITE ACCESS	Units	Quantity	Unit Cost	Item Cost
Driveway pavements	SY	560	\$45.00	\$25,200.00
Driveway curbs	LF	120	\$25.00	\$3,000.00
Fencing and entry gate	LF	260	\$40.00	\$10,400.00
Roadway repair (St. James Street)	Lump Sum		\$2,000.00	\$2,000.00
			SUBTOTAL	\$40,600.00

COMMUNITY GARDENS	Units	Quantity	Unit Cost	Item Cost
Garden concrete entry	SF	560	\$15.00	\$8,400.00
Garden curbing	LF	1,900	\$12.00	\$22,800.00
Garden shelter	Lump Sum		\$18,000.00	\$18,000.00
Shelter slab	SF	650	\$10.00	\$6,500.00
			SUBTOTAL	\$55,700.00
PEDESTRIAN TRAIL	Units	Quantity	Unit Cost	Item Cost
Pathway construction	SY	2,500	\$15.00	\$37,500.00
			SUBTOTAL	\$37,500.00
BOAT LAUNCH	Units	Quantity	Unit Cost	Item Cost
Boat launch structure	Lump Sum		\$4,500.00	\$4,500.00
Miscellaneous	Lump Sum		\$2,000.00	\$2,000.00
			SUBTOTAL	\$6,500.00
UTILITY SYSTEMS	Units	Quantity	Unit Cost	Item Cost
Electric service entry	Lump Sum		\$3,000.00	\$3,000.00
Site lighting	Location	3	\$3,500.00	\$10,500.00
Potable Water Service and Wet Tap	Lump Sum		\$2,500.00	\$2,500.00
Meter pit and valving	Lump Sum		\$13,500.00	\$13,500.00
Supply main	LF	100	\$40.00	\$4,000.00
			SUBTOTAL	\$33,500.00
LANDSCAPING	Units	Quantity	Unit Cost	Item Cost
Landscape plantings				
Native Plants for exclusion area	Lump Sum		\$4,500.00	\$4,500.00
Deer resistant trees, shrubs, plugs	Lump Sum		\$2,600.00	\$2,600.00
Warm season grass seedling	Per Acre	1	\$4,500.00	\$4,500.00
Rain garden	Lump Sum		\$4,500.00	\$4,500.00
Garden construction - butterfly garden	Lump Sum		\$4,500.00	\$4,500.00
Herbicide applications	Per Day			\$3,000.00
Additional invasive species control (manual removal)	Lump Sum		\$2,000.00	\$2,000.00
Nest boxes	Lump Sum		\$1,000.00	\$1,000.00
Snag creation (marking & implement)	Lump Sum		\$2,000.00	\$2,000.00
Site furnishing (benches, tables)	Lump Sum		\$6,000.00	\$6,000.00
Environmental signage	Lump Sum		\$3,200.00	\$3,200.00
Exclusion fence with installation	Lump Sum 1 roll (330 ft)		\$2,000.00	\$2,000.00
Miscellaneous	Lump Sum		\$5,000.00	\$5,000.00
Lawn area marginal finishing	SY	2,600	\$2.00	\$5,200.00
			SUBTOTAL	\$50,000.00
ESTIMATED GRAND TOTAL				\$286,370.00