Nature-Based Solutions for Climate Resilient Design
Moakley Park Preliminary Resilience Design
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IMAGE COURTESY OF: Stoss Landscape Urbanism
MOAKLEY PARK IS:
ONE OF BOSTON’S LARGEST PARKS
PART OF THE MISSING LINK IN THE EMERALD NECKLACE

IMAGE COURTESY OF: Stoss Landscape Urbanism
HISTORICALLY, MOAKLEY WAS A SALT MARSH & MUD FLAT (1775)
HISTORICALLY, MOAKLEY WAS...

- a salt marsh & mud flat (1775)
- a dump (1909)
- a playground (1909)
- filled with clay (1919)
- capped with soil for ball fields (1919)
- capped with sand for the beach (1919)
EVALUATING CLIMATE RISKS AT MOAKLEY PARK
CLIMATE HAZARDS OVERVIEW

Primary

- Sea Level Rise & Storm Surge
- Extreme Precipitation
- Extreme Temperatures

Secondary

- Coastal Flooding
- Inland Flooding
- Landslide
- Ice Storm
- Drought
- Fire
- Wind
SEA LEVEL RISE AND STORM SURGE

2030 SLR = 9 inches

2050 SLR = 21 inches

2070 SLR = 40 inches

SOURCE: Massachusetts Coastal Flood Risk Model
STORM EVENT MODELLED | SOURCE
---|---
Water Quality Storm | BSWC, BPDA
Current 100-yr, 24-hr Storm | NOAA Atlas 14
2070 100-yr, 24-hr Storm | City of Cambridge

RAINFALL FROM STORMS WILL INCREASE

EXISTING BWSC AND MWRA INFRASTRUCTURE

IMAGE COURTESY OF: Nitsch Engineering

IMAGE COURTESY OF: Climate Ready Boston
PRELIMINARY SUBSURFACE EXPLORATION DATA

SUBSURFACE EXPLORATION PROGRESS
As of September 26, 2019

BORINGS/MW: 18/18*
PROBES: 3/3*
TEST PITS: 12/12

GENERALIZED OBSERVATIONS - NOT FOR DESIGN

DRAFT DIAGRAM NOT TO BE USED FOR DESIGN.

SUBSURFACE LAYERS SHOWN ARE BASED ON CONDITIONS OBSERVED IN BORINGS B2, B13, AND B20. CONDITIONS MAY VARY BETWEEN BOREHOLE LOCATIONS. ALL THICKNESSES AND STRATA ARE APPROXIMATE. DIAGRAMS ARE NOT TO SCALE.
NATURE-BASED SOLUTIONS AT MOAKLEY PARK
ENVIRONMENTAL, SOCIAL, & ECONOMIC BENEFITS OF NATURE-BASED SOLUTIONS

- Restored coastal habitats—increased biodiversity, habitat growth, and human-wildlife interactions
- Improved resilience against storm events—reducing damages to surroundings
- Reduced shoreline erosion
- Improved air and water quality—carbon sequestration, pollutant removal, nutrient storing

- Improved public health and wellbeing through exercise and community interaction
- Increased access to greenspace for environmental justice populations
- Increased quality of life & public realm benefits

- Reduced long-term maintenance costs in comparison with hard/gray infrastructure
- Decreased energy demands and consumption
- Reduced public health costs

SOURCE: Naturally Resilient Communities
COASTAL WETLANDS + LANDSCAPES

- Retain and filter stormwater
- Manage future frequent seawater inundation
- Reduce erosion from increased sea-level rise/storm surge
- Reduce flood damages and resulting recovery costs
- Reduce wave heights from storm surge
- Sequester carbon & increase biomass production

London Wetland
Courtesy Of: Berkeley Homes

Qunli Park by Turenscape in Harbin

TOP IMAGE COURTESY OF: Berkeley Homes
RIGHT IMAGE COURTESY OF: Landscape Architecture Platform
SOURCE: Naturally Resilient Communities
STORMWATER MEADOWS AND SWALES

- Reduce stormwater runoff with increased vegetation
- Improve stormwater quality and reduce quantity entering existing infrastructure
- Restore wildlife habitat and improve biodiversity
- Stabilize soil and soil nutrients, dispersing the force of rainwater and wave splash

TOP IMAGE COURTESY OF: AmericanRivers.org
RIGHT IMAGE COURTESY OF: Nitsch Engineering
SOURCE: Low Impact Development Center & Naturally Resilient Communities
• Slow and reduce stormwater runoff
• Reduce urban heat island effect
• Stabilize soil and surrounding wildlife habitats
• Reduced cooling expenses for nearby properties
• Store and sequester carbon
• Increase air quality
• Improve soil + water quality
• Increase public health
ADDITIONAL BENEFITS OF NATURE-BASED SOLUTIONS

- Improved public realm & open space
- Educational opportunities
- Transferability for other sites
- Reduced costs of gray infrastructure improvements
- Reduced long-term maintenance costs

Images Courtesy Of: Stoss Landscape Urbanism
NEXT STEPS – MOVING FORWARD

- MAY 27: Harbor Use Forum
- JUNE 4: Moakley Park + Fort Point Tour
- JUNE 30: Finalize Refined Concept
- DESIGN REVIEW
- LATE AUGUST: Stakeholder Engagement
- EARLY SEPTEMBER: Open House
- PHASE 1 DESIGN

Image Courtesy Of: Stoss Landscape Urbanism
questions?
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thank you
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