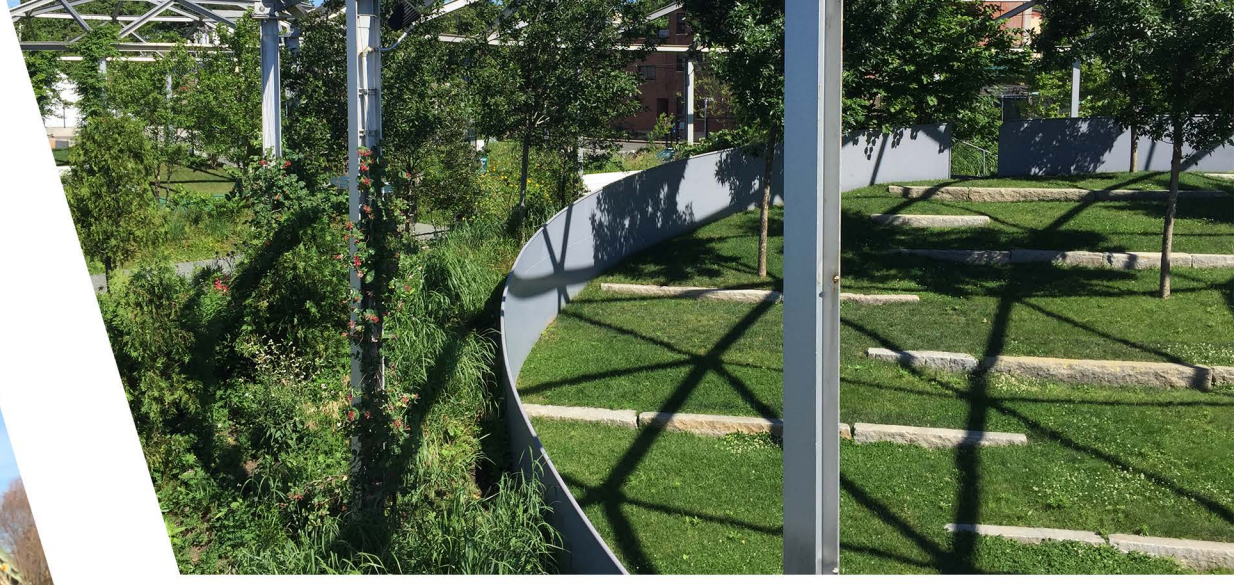

2017 – 2024
Chelsea, Massachusetts

Chelsea Open Space & Recreation Plan Update

Prepared for:
City of Chelsea Department of Planning & Development
Chelsea, Massachusetts

Prepared by:
Metropolitan Area Planning Council
Boston, Massachusetts
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Plan Summary

Chelsea is a densely populated, urban community located just north of Boston. Once including the territory that now makes up Revere, Winthrop, and a portion of Saugus, and once being part of Boston, today's 2.2 square mile city comprises the smallest community in the Commonwealth.

Since 1995, City government has operated under a manager/council form of government. A strong city manager maintains all hiring and firing authority and is responsible for the day-to-day operations of a twenty-first century municipality. The 11-member City Council that selects a City Manager is also responsible for budget adoption, general policy development and approval and oversight of the municipal administration. The two-year Council is comprised of three members elected at-large and eight elected in individual districts.

In 2000, with the appointment of the current City Manager, the philosophical tenet of City government was identified and subsequently advanced by a core set of principles, dubbed the "Fundamentals." Those six guiding principles continue to steer the administration of the City on matters relating to finance, economic development, public safety, neighborhood enhancement, community development, and general government philosophy. As a result of an adherence to the Fundamentals, as well as responsible municipal leadership from the City's elected and appointed leaders and significant contributions from the City's other stakeholders, today's Chelsea enjoys a growing reputation for operation and revitalization.

As the Fundamentals relate to open space, finance ensures funds exist to create and maintain open space. Economic development helps to support the expansion of the tax base to finance open space and also creates opportunities for open space development as part of an overall development project. Public safety is obviously critical to the safe enjoyment of open space. Neighborhood enhancement especially promotes the creation and maintenance of open space supporting the City's neighborhoods. Community development counts among its goals the need to have municipal facilities, including open space, support the needs of the City's residents, especially its youth. General government philosophy supports the concept that stakeholders, including open space advocates, need to and should be heard on

important issues impacting them and their community, with that input then translating into action.

Just as open space is supported by all the Fundamentals, the City's open space and recreation initiatives can play a pivotal role in achieving the Fundamentals. Open space promotes economic growth and opportunity that supports finance, economic development, neighborhood enhancement, and community development. This is especially true of neighborhood enhancement, where the upgrade or establishment of a new park can be a major determining factor in the revitalization of that neighborhood. Public safety is advanced as parks and other recreational opportunities provide kids with places to get off of the streets and help reduce the stress of living in a densely populated community. Even when it comes to general government philosophy, stakeholders react more favorably to the City's overall agenda when they see their needs and desires being addressed through open space emphasis. The participation in planning meetings and neighborhood cleanups helps to build community, a substantial goal of that Fundamental.

In August 2010, and with the goal of promoting and enhancing the livability and vitality of the community, the City published its last Open Space and Recreation Plan. Since that time Chelsea has made significant progress towards the goals of that plan and subsequent updates. A series of parks and open spaces were rehabbed, schools and adjacent open space were rebuilt, new parks have been built, and community groups have become active in developing improved access to the Chelsea waterfront. This plan seeks to continue the efforts outlined in the 2010 Plan and provide the facilities and environments that are most needed by Chelsea's dense urban population.

2

Introduction

Statement of Purpose

The purpose of this Plan is to provide both a targeted framework and strategy for future management of Chelsea's open space and recreation resources. It comes at a time when the demand for parks and recreation facilities has grown dramatically given the dense population and lack of open spaces in Chelsea. This updated plan will assist Chelsea in making intelligent decisions about its future policies, particularly with respect to maintenance and enhancement of existing facilities, given the lack of space for significant expansion. The purpose of this plan is to make those decisions clear and prioritize them relative to the City's needs.

The last Chelsea Open Space and Recreation Plan was completed in 2010. This plan reviews progress since then, elaborates on some of the goals and objectives, and identifies actions to direct open space improvements for the next seven years.

The primary goals of the plan are:

- Provide recreational and fitness opportunities suited to Chelsea's diverse population;
- Take advantage of Chelsea's environmental, historic, and scenic resources;
- Integrate the open space into the city fabric.

Planning Process and Public Participation

The goals, objectives and actions outlined in this plan were developed from the following sources:

- Chelsea Department of Planning and Development and other City staff;
- Two Public Meetings;
- An inventory of the conditions of City-owned parks and facilities;
- Consultation with state and local stakeholders;

- Consultation with relevant City boards and commissions;
- Consultation with the Chelsea Housing Authority;
- Consultation with the Chelsea School Department; and
- Review of information in the 2010 Open Space and Recreation Plan and other city planning documents

A key step in the planning process was site visits to significant open space and recreation parcels in Chelsea in April 2017. The tour was guided by staff from the Department of Planning and Development and provided a means of gaining insight into the condition, type, and quality of Chelsea's open space and recreation resources. Additionally, as discussed in Chapter 5 (Inventory of Lands of Conservation and Recreation Interest), the City has conducted detailed assessments of each park to determine its condition and need for enhancements during this seven-year planning horizon.

Two public forums were held in the process of updating the Plan. The first forum was held at City Hall in June 2017. The forum served to inform the public on open space and recreation planning in general, the progress of the Plan, as well as to seek input on how to shape the new Plan. It provided valuable insight into what the citizens of Chelsea felt the most important areas of the Plan should be and how to successfully fulfill them. Two key exercises were performed at the first public forum to reach these conclusions:

- A Strengths, Weaknesses, Opportunities, Threats (SWOT) exercise
- A voting exercise designed to validate and update the goals and objectives from the 2010 Open Space and Recreation Plan

The results of the SWOT exercise are discussed in Appendix B.

Additionally, the City has undertaken a number of planning efforts that involve stakeholders with an interest in open space and recreation. In 2016, the City conducted a planning study for the Chelsea Creek waterfront. The Metropolitan Area Planning Council (MAPC) provided technical assistance to the City of Chelsea in Massachusetts to analyze how to: (a) improve and expand community access of the Chelsea Creek and Mill Creek waterfront areas within the study area; (b) make existing State and Federal regulations pertaining to the working industrial port more understandable to property owners and residents alike; and (c) determine how different stakeholder interests can be balanced in order to propose a new physical layout of uses and areas that will allow working port businesses to operate safely while accommodating areas for community access. The City also has plans to develop a Municipal Harbor Plan which would allow for greater flexibility in meeting various objectives related to its working industrial port and community access.

That same year, the City completed a plan for its Gerrish-Bellingham neighborhood that, among other issues, identified a need for open space. This plan was followed

by a cooperative planning effort between the City and The Neighborhood Developers (TND), a local non-profit, that identified specific open space initiatives in that neighborhood.

In 2009, the City was designated a Gateway Community and was awarded a Gateway Communities Plus grant to complete a planning study for the Addison-Orange neighborhood. That study identified a number of constraints that affect the neighborhood, including the lack of open space, and developed an action plan to address the neighborhood's needs.

Enhanced Outreach and Public Participation

MassGIS has identified the City as having Environmental Justice populations throughout the entire City. See *Map 2, Environmental Justice Populations*. The largest of these populations are the Spanish speaking groups from Central America and Puerto Rico. For specialized planning efforts, the City traditionally issues its meeting notices in English and Spanish, posts the meeting notices with the City Clerk and on the City Hall bulletin board, provides copies of the notices to the City Councilors, and places the notice in the local paper. In the case of the Open Space and Recreation Plan hearing, the City not only did all of this, but also posted the notice in the Chelsea Library, on the City's web site and the cable television channel, and in the offices of the nonprofit community development corporations with which we work. The Department of Planning and Development solicited the assistance of GreenRoots and other civic organizations to undertake extra outreach. GreenRoots is adept at working within its community network to solicit the input of residents in the open space and recreation planning effort and reaching out to the bilingual community in Chelsea. They have worked cooperatively with the City to provide needed outreach to the City's Spanish-speaking populations.

In addition, the City involved the Youth Commission, Council on Elder Affairs, School Department, Cultural Council, Department of Public Works, Planning Board and the Conservation Commission in its open space and recreation effort by providing them with briefings. These briefings, which included updates on the progress of the planning effort and opportunity for input, were provided at open public meetings. The Planning Board was also provided with a copy of the draft plan for review and comment.

Finally, as part of the Lower Mystic River Corridor Strategy, the City worked with MAPC and the other participating cities of Boston, Everett, Malden, Medford and Somerville to integrate environmental justice into all of the strategy elements. This planning effort is discussed in more detail in Section 3 of this Plan. As implementation goes forward, MAPC and the six cities will seek to work in partnership with established local organizations such as La Comunidad Inc., Roca, Alternatives for Community and Environment, Inc., and Neighborhood of Affordable Housing to gain a better understanding of the concerns and needs of

residents regarding public health/environmental concerns, open space, recreation, and land use. The mission of each of these organizations is to reach out to local environmental justice populations and to engage them in civic activities in ways that can improve their quality of life.

See Section 6 for more details on the public participation process.

Progress Since the 2010 Plan

Chelsea has made considerable progress since the 2010 plan, which builds upon the many upgrades that have occurred since 2000. Streetscape improvements have been made in many neighborhoods, additional new schools and associated play spaces were completed, and a series of parks were improved. This list below outlines some of the improvements achieved since 2010:

- Adopting Community Preservation Act in 2016
- Creating Kaboom! Park in 2011 and its renovation in 2016
- Expanding Chelsea's community garden program in concert with Chelsea GreenRoots
- Completing Creekside Common
- Developing a walking routes map with the assistance of WalkBoston
- Working to develop the Mystic River Overlook Park that includes trails up the hillside under the Tobin Bridge
- Working with the Stanton Foundation to develop the City's first dog park
- Developing a bike and pedestrian path to the waterfront in conjunction with downtown traffic and parking improvements ($6 million in funding in FY18)
- Working on the construction of a berm along Island End Park
- Receiving Our Common Backyard grant to improve Quigley Park
- Establishing PORT Park (owned by Eastern Minerals but managed and programmed by City)
- Using PARC grant to improve Highland Park in FY18
- Renovating Chelsea High School field, Mary C. Burke field, and Carter Park field and playground in 2017
- Initiating construction of Silver Line greenway
- Completing Washington Park renovations in 2013 with a PARC grant (won a Boston Society of Landscape Architects award)
- Renovating Voke Park in 2015
- Developing new pocket park at Highland and Library Sts.
- Applying for PARC grant to improve O'Neil Park
- Renovating Bellingham Hill Park in 2016
- Renovating Bosson Playground in 2015
- Developing John "The Quietman" Ruiz Park, a playground built in 2014

Image 1: Boys and Girls Club, built in 2001

3

Community Setting

Regional Context

Chelsea is located just north of Boston and shares borders with Revere on the north and east, Everett on the west, and Boston across the harbor and Chelsea Creek. As a diverse, working class community that contains a high level of industrial activity, Chelsea has many similarities to its surroundings. Revere, Everett and the portions of Boston adjacent to Chelsea are similarly working class residential and industrial areas. Chelsea is only 2.2 square miles in area, with an estimated population of 35,177; the city is very densely settled, surpassing its neighbors with almost 15,990 people per square mile. Chelsea is the 44th highest populated city or town of the 351 in Massachusetts.

Chelsea has four and one-half miles of waterfront made up of four bordering waterways. These are the Island End River, the Mystic River, Chelsea Creek, and Mill Creek, Three bridges provide vehicular access from Chelsea to Boston. The Tobin Bridge (Route 1) connects to Charlestown, and the Meridian Street and Chelsea Street Bridges connect to East Boston.

Most of Chelsea's major land use patterns have been influenced by its context. As a result of its proximity to Boston, Chelsea has become the site of distribution centers such as the New England Produce Market. The relationship to Logan Airport has made Chelsea an attractive location for airport-related commercial and industrial activity, including freight forwarding and employee parking. Chelsea's waterfront provides access to Boston Harbor, the majority of which is restricted to industrial and maritime uses under the state's Designated Port Area (DPA) regulations. As a result of this, a number of petroleum storage facilities and a salt pile are located here.

MAPC and MetroFuture

Chelsea is a member of the Inner Core Committee (ICC), which is one of eight subregions of the Metropolitan Area Planning Council (MAPC). The ICC is a group of 20 cities and towns[1] that meet regularly to discuss issues of common interest, thereby creating an excellent forum for discussing regional issues, including open space and recreation planning and opportunities.

Adopted in June 2009, *MetroFuture*[2] is the official regional smart growth plan for the Greater Boston area. The plan includes goals and objectives, along with thirteen detailed implementation strategies for accomplishing these goals. Several examples of how this Plan is consistent with *MetroFuture* include:

- Implement Coordinated Plans – The City is committed to working with communities within the Mystic River Watershed, including the Mystic River Watershed Association, Cambridge, and Boston, to chart a course towards ecological and societal resilience. An example of such a coordinated effort, relating to open space and natural resources, is the Metro Mayors Coalition, tasked with regionally planning for the impacts of climate change.
- Protect Natural Landscapes – As demonstrated in this Plan, the recommendations provide support for the enhancement and preservation of natural landscapes such as those along the waterfront. While recognizing that Chelsea is predominantly an urban environment, efforts have been made to protect existing natural resources such as the Mystic River.
- Expand Coordinated Transportation – The Chelsea OSRP advocates for increased bicycle, pedestrian, and transit accessibility. The expansion of the Silver Line to Chelsea and the associated greenway will significantly enhance those efforts. Additionally, the City recently completed a Transit Oriented Development study that was prepared by MAPC.
- Conserve Natural Resources – The City will continue to seek ways to better manage water, stormwater, and energy resources throughout the City's operations. The City will be examining options to incorporate green infrastructure features at some parks. See Appendix D for more details.

Additionally, this Plan includes discussion of regional resources, which is consistent with *MetroFuture*'s goal of encouraging regional efforts to protect open space and natural resources – particularly ones that cross municipal borders.

[1] The ICC is comprised of representatives from twenty of the metropolitan area's innermost communities: Arlington, Belmont, Boston, Brookline, Cambridge, Chelsea, Everett, Lynn, Malden, Medford, Melrose, Milton, Newton, Quincy, Revere, Saugus, Somerville, Waltham, Watertown and Winthrop.

[2] http://www.metrofuture.org

History of the Community

The Pawtucket Indians, a division of the Algonkian Tribe, had a settlement called Winnisimmet on the site of present-day Chelsea. In 1624, a 22-year-old Englishman named Samuel Maverick saw the lucrative potential in establishing permanent trade with Winnisimmet. With a small band of followers, he set up a permanent homestead there, the first one in Boston Harbor, and began a profitable career trading with the Pawtuckets.

Ten years later, Maverick sold his homestead to Governor Richard Bellingham. The Governor divided the land into four farms named after the tenant farmers who leased them; Williams, Carter, Shurtleff and Cary, for whom city streets are named. The area became known as Chelsea and developed a role as an agricultural community and beach resort.

An act of the legislature, passed January 10, 1739 established Chelsea as an independent town, separate from Boston, The extent of Chelsea at this time included all of present day Chelsea, Winthrop, Revere, and part of Saugus. In 1841, the area of Chelsea known as the panhandle was set off to the town of Saugus. On March 19, 1846, North Chelsea (present day Revere and Winthrop) became a separate town. In 1857, Chelsea was granted a charter as a city.

Historically, Chelsea's development was the result of water-related transportation facilities, including bridges, ferries, and Naval installations. As early as 1631, there was a ferry service between Chelsea and Boston, which operated in some form for 250 years. In 1775, at the Battle of Chelsea Creek, Colonial forces captured a British schooner in the first naval battle of the American Revolution. In 1803, the first Chelsea-Charlestown bridge was built. However, Chelsea remained largely uninhabited until a new Steam Ferry was provided in 1831.

Along with greater access to the city came greater population. In 1820, Chelsea's population was only 642. When chartered as a city in 1857, its population skyrocketed to in excess of 12,000 people. In 1925, Chelsea's population peaked at 47,247.

In the early 1800s, the U.S. Navy established one of the first naval hospitals in the nation on Admiral's Hill in Chelsea. Munitions for the USS Constitution were stored in a building that still stands on this site.

The Mystic River Bridge, now known as the Tobin Bridge, was opened in 1950. The construction of this bridge and the elevated Route 1 caused 55 houses and 462 families to be relocated, and effectively cut the physical fabric of the community in half. This impact of the bridge's presence in the city persists to this day.

Another major factor in the development of Chelsea has been fire. On the morning of Palm Sunday, April 12, 1908, a devastating fire swept across the center of the city. School buildings, churches, public buildings and seventeen miles of city streets were completely destroyed and 16,000 people were left homeless. Over 2,800 buildings

covering 280 acres in the heart of the city were burned to the ground, resulting in a reduction in the city's valuation of about 20%. In 1973, another major fire occurred that devastated 18 city blocks west of Route 1, formerly known as the Murray Industrial Park area and its surrounding residential neighborhoods. The conflagration, devouring an array of scrap metal yards, rag shops, and industrial factories, resulted in widespread environmental implications that the City has contemporaneously remediated, with private sector assistance, as part of the Everett Avenue Urban Renewal Area.

The damage caused by these fires was repaired through a reconstruction effort that occurred over a relatively short period of time rather than through incremental development with gradual replacement, rehabilitation, or modification of older buildings. This process has created a marked contrast in building type, scale, and urban character between newer and older parts of the city. In particular, the area destroyed by the 1973 fire has been rebuilt with large-scale buildings serving commercial and industrial uses. Dotting the modern landscape are Chelsea High School, hotels, restaurants, and light industrial and commercial uses, such as the Boston headquarters of the FBI and Massachusetts General Hospital, Chelsea.

Despite fiscal and political hardships tarnishing the City throughout the 1990s and leading to state receivership, the City's contemporary structure is one of a Council-Manager form of government. Due to prudent financial stewardship, and professionalized management, and catalyzed by regional market forces, the City has diligently invested in capital infrastructure, housing, environmental remediation, and open space and recreational facilities. Today, Chelsea is a proud immigrant community that values its parks, playgrounds, and public spaces. It has a diversely robust populace that actively participates in City government and policy formation.

Demographic Characteristics

■

Overall Population Trends

Chelsea is a densely developed, working class community with a diverse population. After 1920, the population of Chelsea steadily declined, reaching its lowest point in 60 years with a population of 25,431 in 1980. In the last thirty years, there has been a steady recovery (an increase of 38%), and MAPC's projection for 2030 is 40,224 people. This can be attributed to in-migration, including significant influxes of a number of minority populations, as well as better counting in "hard-to-count" communities such as Chelsea.

Table 1: Population Trend 1970 - 2030

Year	Population	% Change Since Previous Census
1970	30,500	

Year	Population	% Change Since Previous Census
1980	25,431	-16.6%
1990	28,710	12.9%
2000	35,080	22.2%
2010	35,177	0.3%
2020 projected	37,641	7%
2030 projected	40,224	6.9%

Source: U.S. Census Bureau, MAPC Analysis

Density

Chelsea is a very densely populated community. There are pockets (census blocks) in the Shurtleff-Bellingham, Downtown, and Addison-Orange neighborhoods where population density is above 200 people per acre. The least dense residential portions of the city are Prattville and the Mill Hill area. High density in Chelsea results from a combination of a housing stock that includes many apartments and the tendency for recent immigrant groups to share apartments with extended family members and friends. Twelve census blocks within the city have mean housing unit densities above 50 units per acre.

Ethnic Composition

According to the Census Bureau, the total number of minority residents now stands at approximately 75 percent of the total population (see Table 2). Thus, Chelsea is a highly diverse community, with many cultures added to the mix.

Table 2: Race and Ethnicity

Chelsea Race and Ethnicity		
	2000	**2010**
Hispanic or Latino	48.42%	62.1%
Non-Hispanic White alone	38.27%	25.3%
Non-Hispanic Black or African American alone	5.62%	6.7%
Non-Hispanic Asian/Pacific Islander	4.64%	3.0%
Non-Hispanic Other	3.07%	3.0%

Source: U.S. Census Bureau

- 62.1 percent of the city's population is of Hispanic or Latino origin; this identity overlaps with various racial identities
- 25.3 percent identified themselves as White

- 6.7 percent identified themselves as Black or African-American
- 3.0 percent are Asian
- 3.0 percent identified themselves as some other race (Non-Hispanic)

Language

A majority of the City's population speak Spanish (58.94 percent) and 30.14 percent speak English, as shown in Table 3.

Table 3: Language Spoken at Home by Ability to Speak English

Language Spoken at Home by Ability to Speak English	
Chelsea	%
% English Speaking Population	30.14
% People speaking another language and do not speak English well	*16.08*
% People speaking another language and do not speak English at all	*12.12*
% People speaking Spanish	58.94
% People speaking Spanish and do not speak English well	*23.99*
% People speaking Spanish and do not speak English at all	*19.63*
% People speaking European languages	6.91
% People speaking European languages and do not speak English well	*15.77*
% People speaking European languages and do not speak English at all	*5.61*
% People speaking Asian languages	1.85
% People speaking Asian languages and do not speak English well	*32.59*
% People speaking Asian languages and do not speak English at all	*4.77*
% People speaking other languages	0.65
% People speaking other languages and do not speak English well	*11.38*
% People speaking other languages and do not speak English at all	*3.66*

Source: ACS 2011-2015

Age and Gender Distribution

According to the Census Bureau, 8.7 percent of Chelsea's 2010 population is under five years of age, 19.6 percent of the population is between five and nineteen years, and 8.7 percent of the population is over age sixty-five. Altogether, these younger and older age groups constitute 37 percent of Chelsea's population. These age groups represent the least independent segment of the population in terms of transportation access, and therefore the most in need of nearby open space and recreational facilities. People in these age groups will also demand a variety of age-appropriate

recreational opportunities, so programming for these activities should be planned accordingly.

Interestingly, the population of those over 65 years of age has decreased significantly since the last census although it is expected to increase considerably by 2030. The number of children under five years of age will continue to be grow through 2030, while those between five and 19 years of age will go down in 2020 and then increase in 2030.

Table 4: 2010 Population Distribution by Age

Chelsea Age Distribution					
	2000	2010	% Change 2000 - 2010	2020 Projection	2030 Projection
under 5	2,829	3,073	7.9%	3,242	3,267
5 - 19	7,671	6,882	-11.5%	6,775	7,095
20 - 34	9,459	9,727	2.8%	9,900	9,438
35 - 64	11,188	12,420	9.9%	14,394	16,215
65+	3,933	3,075	-27.9%	3,329	4,209

Source: U.S. Census Bureau, MAPC Analysis

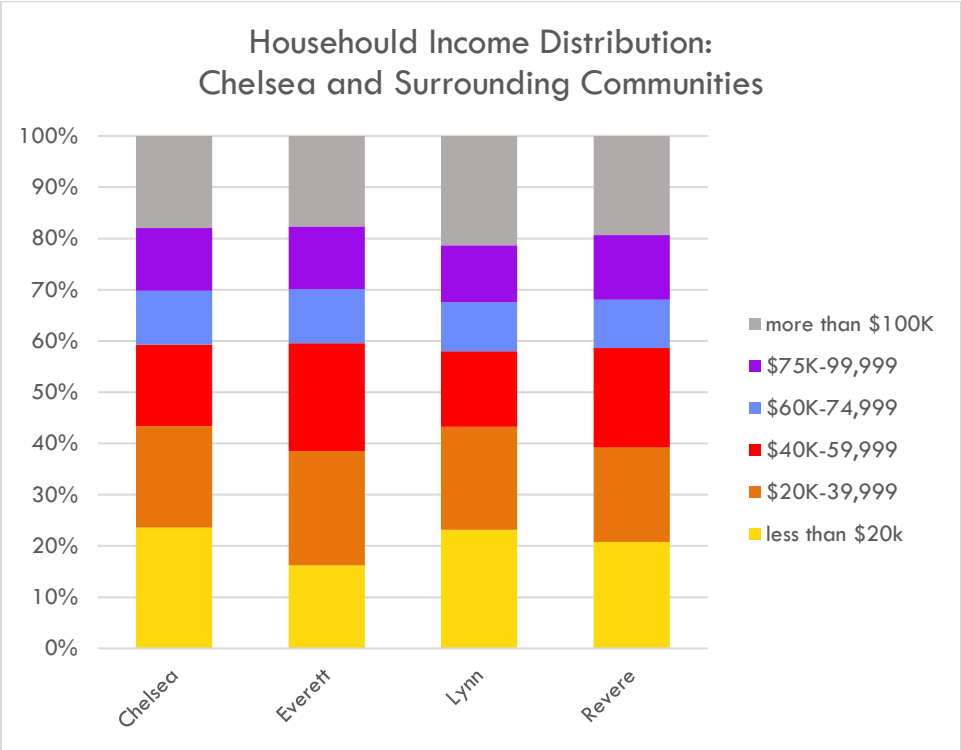
The male population represented 50.9 percent and the female population is 49.1 percent of the total.

Jobs and Income

Chelsea's population has one of the lowest median incomes in the state. The median household income according to the 2011-2015 American Community Survey was $47,733, which is lower than any of the communities surrounding the City. A comparison of Chelsea with area communities can be seen in Figure 3-1 below. The percentage of Chelsea residents living below the poverty level was 20 percent in 2008, which is significantly higher than the statewide average.

According to the Massachusetts Executive Office of Labor and Workforce Development Department of Unemployment Assistance, the unemployment rate in Chelsea was 3.9 percent, compared to a state average of 4.1 percent.

Chart 1: Household Income Distribution - Chelsea and Surrounding Communities



Industry

Average Employment

The sector of industry with the largest average employment in Chelsea is Public Administration. According to the 2008 figures from the Commonwealth's Executive Office of Labor and Workforce Development, 1,727 people are employed in this sector, see Table 3-3. It is interesting to note that while this sector employs the most people in Chelsea it has one of the lowest establishment totals—16, as seen in Chart 3-1. The industries with the next highest level of average employment are respectively: Health Care & Social Assistance and Retail Trade. The Health Care & Social Assistance sector employs 1,696 while the Retail Trade sector employs 1,427. [3]

Total Wages

Public Administration also accounts for the largest sum of total wages in Chelsea by more than 18 percent over the second place industry of Wholesale Trade. The Transportation and Warehousing sector represents the next highest contributor to

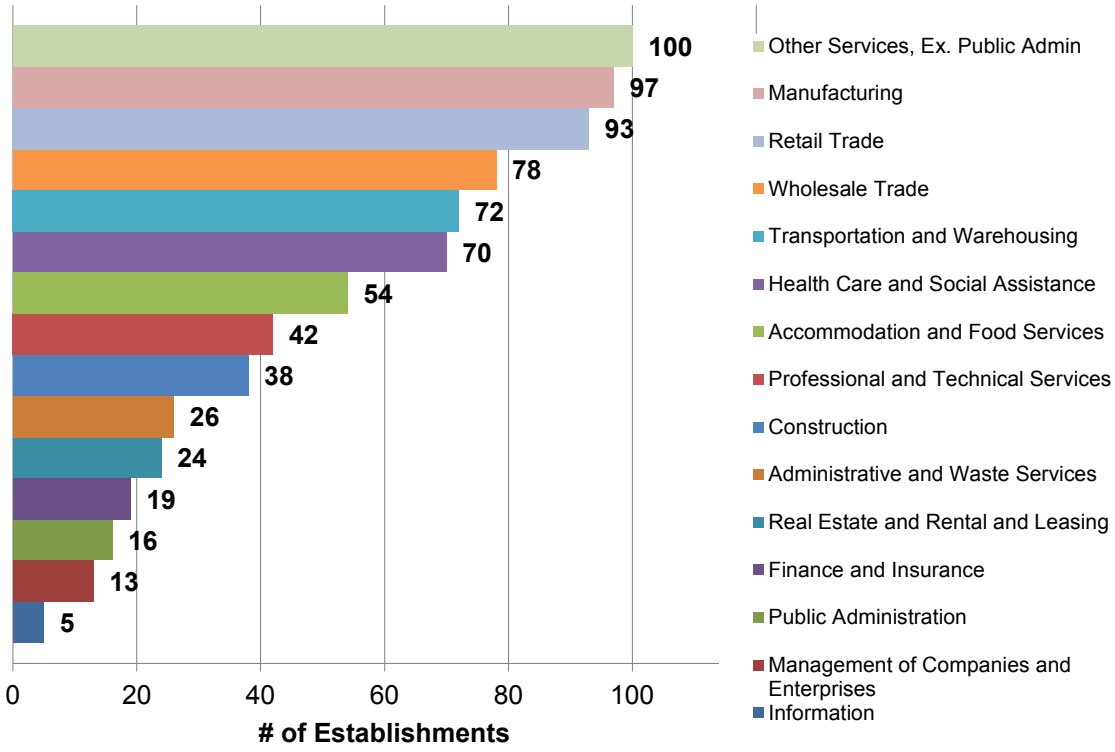
[3] Executive Office of Labor and Workforce Development, http://lmi2.detma.org/lmi/lmi_town.asp?Area=000141

total wages in the City. The combination of the large amount of total employees in the Wholesale Trade and Public Administration sectors, along with the relatively high average weekly wages contribute to the higher ranking for these two industries.[4]

Average Weekly Wage

The industry with the highest average weekly wage is Wholesale Trade with an average of $1,265 per employee. This is followed by Construction and then Professional & Technical Services. The lowest average weekly wage in Chelsea is $332 in the Accommodation and Food Services sector. The average weekly wage for all industries in Chelsea is $846 per employee.[5]

Chart 2: 2008 Industry Establishment Totals in Chelsea



Source: Commonwealth of MA, Executive Office of Labor and Workforce Development—http://lmi2.detma.org/lmi/Townbox.asp

[4] Ibid.

[5] Ibid.

Table 5: 2008 Average Employment and Wages by Industry in Chelsea

Industry	Establishments	Total Wages	Average Employment	Average Weekly Wage
Construction	38	$21,399,635	340	$1,210
Manufacturing	97	$61,697, 448	1,391	$853
Wholesale Trade	78	$85,415,705	1,299	$1,265
Retail Trade	93	$42,791,947	1,427	$577
Transportation and Warehousing	72	$68,310,906	1,421	$924
Information	5	$741, 475	25	$570
Finance and Insurance	19	$4,501,044	123	$704
Real Estate and Rental and Leasing	24	$4,759,834	116	$789
Professional and Technical Services	42	$16,788,423	272	$1,187
Management of Companies and Enterprises	13	$16,525,677	296	$1,074
Administrative and Waste Services	26	$27,743,359	1,045	$511
Health Care and Social Assistance	70	$60,785,633	1,696	$689
Accommodation and Food Services	54	$11,942,809	691	$332
Other Services, Ex. Public Admin	100	$11,641,520	362	$618
Public Administration	16	$104,149,198	1,727	$1,160
Total	**699**	**$586,087,992**	**13,328**	**$846**

Source: Commonwealth of MA, Executive Office of Labor and Workforce Development—http://lmi2.detma.org/lmi/Townbox.asp

Environmental Justice Population(s) Characteristics

The entire City of Chelsea is occupied with environmental justice (EJ) populations. Specifically, there are twenty-seven EJ census block groups within the City, as identified by MassGIS. These EJ populations are defined as minority or foreign born populations exceeding 25 percent of the total block group or a household earning 65 percent or less of the statewide median household income according to the most recent US Census data. The areas have been assigned a number and are examined in detail in the table below—see *Map 2, Environmental Justice Populations,* for correlation and location.

The primary ethnic group in Chelsea is Hispanic and therefore the language most frequently spoken aside from English is Spanish. Asian populations are also

significant, which can encompass a variety of languages. Of the 27 census block groups, only five fall below the 75% threshold for English proficiency.

Table 6: Environmental Justice Populations

Area Number[6]	*Total Population*	*Percent Foreign Born*	*Median Household Income*	*Percent Minority*	*Percent Proficient in English*
1	1,861	48	$25,324	83	82
2	1,391	45	$32,083	75	73
3	1,684	23	$32,067	61	90
4	1,051	28	$41,563	74	87
5	1,554	47	$33,269	86	89
6	1,269	51	$28,906	83	68
7	1,156	51	$21,750	90	64
8	1,495	42	$29,375	71	80
9	677	17	$41,544	30	91
10	1,567	20	$34,402	26	90
11	938	52	$29,766	71	64
12	1,833	58	$22,829	83	67
13	1,383	13	$30,972	40	85
14	1,374	31	$25,321	54	90
15	1,665	39	$26,163	61	74
16	1,293	39	$48,839	66	75
17	759	21	$9,752	63	79
18	1,006	56	$24,743	85	73
19	1,927	50	$32,379	73	73
20	849	34	$26,976	76	79
21	794	19	$29,053	24	97
22	778	17	$28,088	57	90
23	1,572	24	$30,250	53	87
24	2,266	34	$43,125	50	82
25	1,226	28	$35,739	50	86
26	765	17	$29,688	25	97
27	947	23	$27,198	16	90

Source: MassGIS, note: EJ population shapes are based from Census 2000 block groups

Chelsea is a compact community with its open space and recreation resources spread evenly throughout the City. As such, all of the environmental justice populations are well served by Chelsea's open space and recreation network, although many of these

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[6] The demographic data described in this table is shown on Map 2 for its corresponding location in Chelsea.

parks are smaller playgrounds and pocket parks. See *Map 2, Environmental Justice Populations.* The north of the City is served by facilities such as Voke Park, Washington Park, and Scrivano Park. Towards the center of the City, Carter Park, Malone Park, and the Mary C. Burke Elementary School Complex are available to meet citizen's needs. Finally, in the southern portion of the City, residents can easily access Kayem Park, Mary O'Malley Waterfront Park, Polonia Park, Highland Park, and Quigley Park. As described elsewhere in the Plan, the City has added several new parks that have been well-received by city residents.

Growth and Development Patterns

Chelsea is a fully urbanized community in which there is little vacant land. New development occurs largely through a process of redeveloping existing land. Given its proximity to the airport, Boston Harbor, and significant roadways, the City plays an important role in providing access to a number of industries, especially along the working waterfront. The current pattern of land use is indicative of past trends and long-term future development patterns. Since the recession in 2009, the City has experienced an influx of development activity. Regional development trends are indicative of the local activity in Chelsea. Mixed use, residential, and commercial development has occurred throughout Chelsea. Anchored by the construction of Silver Line Gateway, neighborhood redevelopment has focused on the rehabilitation of preexisting three family homes, as well as new construction of 10-20 unit residential buildings. Apart from neighborhood dwellings, extensive development has transpired in the Everett Ave. Urban Renewal Area, where the terminus station of the Silver Line Gateway is situated. Here, development includes hotels, which respond to regional demand driven by Logan Airport and Wynn Boston Harbor, as well as mixed-use residential and commercial. Development in the urban renewal district is of a greater magnitude and scale, requiring substantive public infrastructure improvements to accompany private investment.

Neighborhoods

North of the railroad and east of Route 1 lie the Mill Hill, Soldiers Home (or Powderhorn Hill), and Addison-Orange neighborhoods. Prattville lies west of Route 1. Washington Avenue runs through Prattville and connects it with the Addison-Orange and Soldiers Home neighborhoods and Downtown.

South of the railroad lies the Downtown/Lower Broadway neighborhood, which includes residential, downtown business, institutional and government uses. East of downtown is the large Shurtleff-Bellingham neighborhood. The Admirals Hill residential development occupies a drumlin at the south end of Chelsea.

Two major shopping centers serve Chelsea and adjacent cities. They are the Mystic Mall on Everett Avenue at Spruce Street, and Chelsea Commons at the north end of the city adjacent to Revere Beach Parkway and Mill Creek.

The Chelsea Creek waterfront is occupied by petroleum tank farms, a bulk salt storage area, airport-related trucking services, and parking for airport employees. A parking garage near Chelsea Creek serving employees at Logan Airport and several private parking lots for airline and car rental companies are located at the waterfront along Eastern Avenue and Marginal Street. Forbes Industrial Park comprises a group of older industrial buildings at the mouth of Mill Creek, which are currently under redevelopment for residential use.

The triangle that separates the Shurtleff-Bellingham and Mill Hill neighborhoods is formed by the existing MBTA commuter rail line on the north and Silver Line Gateway bus rapid transit line, constructed upon the former CSX freight right-of-way, which was quiescent since abandonment. Four stations will serve this new transit line and the City has concertedly focused on enhancing pedestrian and bicycle linkages between the surrounding neighborhoods and future stations. Parallel to this transit line will be a multi-use greenway. This area is zoned for and occupied by industrial uses, primarily airport-related trucking. In 2001, a ten acre parcel was redeveloped for the MWRA office building and north shore maintenance facility.

Adjacent to this area is the new Box District neighborhood. An extensive brownfields remediation and redevelopment effort spearheaded by the City, in partnership with the state and local developers, this neighborhood is the City's first M.G.L. Ch. 40R Smart Growth District, enabling greater density and a minimum share of 25% of all residential units designated at affordable housing. Box District Park, the Highland Green Corridor, and future Silver Line Shared Use Pathway offer open space amenities to this neighborhood.

■

Patterns and Trends

When Chelsea was established as an independent Town from Boston in 1739 its extents included all of present day Chelsea, Winthrop, Revere, and part of Saugus. In 1841, the area of Chelsea known as the panhandle was set off to the Town of Saugus. On March 19, 1846, North Chelsea (present day Revere and Winthrop) became a separate town. In 1857, Chelsea was granted a charter as a city.

Chelsea's development has been the result of water-related transportation facilities, including bridges, ferries, and Naval installations. As early as 1631, there was ferry service between Chelsea and Boston, which operated in some form for 250 years. In 1775, at the Battle of Chelsea Creek, Colonial forces captured a British schooner in the first naval battle of the American Revolution. In 1803, the first Chelsea-Charlestown bridge was built. However, Chelsea remained largely uninhabited until a new Steam Ferry was provided in 1831.

Along with greater access to the city came greater population. In 1820, Chelsea's population was only 642. When chartered as a city in 1857, its population skyrocketed

to in excess of 12,000 people. In 1925, Chelsea's population peaked at 47,247 and it currently stands at 34,356.

The City is a highly urbanized, densely populated community with a significant industrial component. It is essentially built out with very little open land remaining. On the west side of Chelsea, in a sector of the city that was razed by the fire of 1973, large commercial and light industrial developments are occurring, leading to higher use of the land. In recent years much of this area has been redeveloping as a result of city efforts and the 1998 Everett Avenue Urban Revitalization and Development Plan. A new hotel opened on Everett Ave, at the corner of Maple Street in 2000, and other parcels have been recently redeveloped. The Massachusetts Information Technology Center (MITC, a state data processing facility) was built in this area in the early 1990s, the Chelsea Produce Market and related businesses serve a regional market. A new office building at Harbour Point Office park was recently completed in this same area. The fate of the Mystic Mall, set on a large parcel to the west of Everett Ave, remains to be seen. The 39 acre mall site was purchased by the Market Basket grocery chain and is in the process of redevelopment. In 2009, Market Basket opened a new 140,000 square foot store, the flagship outlet of the chain, and the chain is in the process of working with the City to redevelop the site for a mixed-use transit-oriented development.

The Silver Line Gateway bus rapid transit line terminates at the Mystic Mall at Chelsea Station. Accompanying this station will be a new commuter rail station, scheduled to be relocated from Sixth St. and Arlington St. in 2019 as part of Silver Line Gateway Phase 2.

New development includes the Homewood Suites hotel, the Residence Inn by Marriott hotel, Boston headquarters of the Federal Bureau of Investigation, One North of Boston, a two-phase residential apartment project with 452 housing units, and Fairfield Residential' s Chelsea Lofts project, totaling 692 apartment units with 8,500 sq. ft. of ancillary retail space.

■ Infrastructure

Transportation

Major highways and active rail lines traverse the City; commuter bus and train services are readily available, too. Thus, there is direct access to Boston by using multiple modes of transportation. Logan Airport is only a few minutes away and is accessed via a variety of local roadways. Chelsea's major transportation routes include Route 1 / Tobin Bridge (with several on and off ramps in Chelsea), and the MBTA North Shore Commuter Railroad, which divides the city into quadrants. The major streets are as follows; Broadway which acts as a north–south spine through the City, Revere Beach Parkway (Route 16) which parallels Route 1, Marginal Street and

Eastern Avenue which are truck routes running along the waterfront to the south and west, and Everett Avenue to the west of Broadway. Access to East Boston is via the Meridian Street and Chelsea Street Bridges, which connect to Marginal Street in Chelsea.

The first stop of the Newburyport/Rockport Commuter Rail out of Boston is in Chelsea (Arlington and 6th Streets). There are no subway stops in Chelsea, although there are several Blue Line stations in nearby Revere and East Boston. Some of the bus routes connecting at these stations run into Chelsea, as well as connecting to Red and Orange Line stations that bring passengers into downtown Boston. With its dense population, it is important for Chelsea residents to have access to public transportation.

Another important component is the port facilities along the waterfront, particularly along Chelsea Creek and the Island End River. The freight traffic consists mainly of road salt, petroleum, and petroleum products, and the New England Produce Center is located nearby as well.

In 2015, the Massachusetts Department of Transportation commenced construction of Silver Line Gateway, a bus rapid transit line operating on a dedicated right of way, formerly inhabited by CSX's Grand Junction Branch, through Chelsea. Originating at South Station, this line will run from the Seaport District to Chelsea, via Logan Airport. Four station stops will be situated in Chelsea; Eastern Ave. Station, Box District Station, Bellingham Sq. Station, and Chelsea Station at the Mystic Mall. Parallel to this line will be a multi-use greenway, referred to as the Shared Use Path. The Shared Use Path trails beside the busway from Eastern Ave. to Chestnut St., where it transitions into an on-road network, detailed below.

Phase 1 will include build-out of the dedicated right of way, three stations, the shared use path, and signalization at all grade crossings with bus preemption. Phase 2 entails the demolition of the existing commuter rail station at Sixth St. and Arlington St. This station will be relocated to the Mystic Mall and the Bellingham Sq. bus rapid transit station will replace it. Phase 1 is scheduled for completion in March of 2018 and will be operationally active soon thereafter. Phase 2 will commence in early 2019. Offering an unrivaled one-seat ride to South Station and downtown Boston's employment centers, colleges and universities, and cultural institutions, Chelsea will become the sole community accessible by public transit from both North Station and South Station once this project effectually culminates.

The City will also undertake Silver Line Gateway Phase 3, a program of gateway entrance and landscaping enhancements, as well as the introduction of an On-Road Greenway, during spring of 2018. The Executive Office of Energy and Environmental Affairs' Gateway City Parks Program fund both of these projects gratuitously. Originating at Chestnut St., the On-Road Greenway will provide bicycle lanes, reconstructed sidewalks, compliant crossings, and wayfinding signage along Chestnut St., Sixth St., Fifth St., Walnut St., Arlington St., Fourth St., and Everett Ave., truncating at the Mystic Mall Station. The City intends to expand and integrate

these improvements into the greater multi-modal transportation network following completion.

A hallmark of Chelsea City Council and City Manager Thomas G. Ambrosino's administration, neighborhood infrastructure investment, through the City's Capital Improvement Plan. Specifically, targeted reconstruction of sidewalks, crossings, roadways, parks, playgrounds, and public spaces are extensively underway. An example of such an investment is the downtown infrastructure effort entitled Re-imagining Broadway. This effort will concentrate multi-modal and open space infrastructure improvements throughout the downtown central business district. Conceived through a 2017 planning study, the design process will be undertaken throughout 2019, with construction projected to commence in 2020. Under the auspices Chelsea City Council, the Capital Improvement Plan has designated $500,000 for design and engineering, as well as $5.5 million appropriated for construction. Construction is slated to begin in 2019. Paired with these infrastructure improvements, Chelsea City Council has also allocated funding for a downtown initiative entitled Chelsea Prospers. These funds will be used to hire a downtown coordinator, provide small business and retailer technical assistance, dedicate funds for public art and placemaking, and create a storefront and signage improvement grant program.

Throughout the Everett Ave. Urban Renewal District, the City has undertaken in excess of $20 million of public infrastructure improvements since 2010. Funded through the MassWorks Infrastructure Program and supplemented by local funds, a myriad of roadways, sidewalks, utilities, and intersections have been reconstructed and overhauled.

Water Supply

Chelsea receives its water from the Massachusetts Water Resources Authority (MWRA) system. Most development in Chelsea is serviced by a public sanitary sewer system and a public water distribution system. All of Chelsea has sanitary services available. However, older sanitary sewers, storm sewers, and water lines without modern seals are subject to infiltration/outflow problems.

Sewer Service

Chelsea is fully sewered. Approximately 70 percent of Chelsea's sewer system is a combined system—both wastewater and stormwater are carried through the same conduit. During periods of dry weather Chelsea's wastewater is conveyed to the MWRA and onto Deer Island for treatment. During periods of heavy rain the combined wastewater and stormwater is discharged untreated via four Combined Sewer Overflows (CSOs). This action prevents backups of flows into area homes and

businesses. The four CSOs are as follows[7]: (1) CHE002 Located on Broadway and discharges to Boston Inner Harbor, (2) CHE003 Located on Winnisimmet Street and discharges to Chelsea River, (3) CHE004 Located on Pearl Street and discharges to Chelsea River, and (4) CHE008 Located on Eastern Avenue and discharges to Chelsea River.

Separation of combined sewers is something the City is in the process of accomplishing. This will both increase service efficiency and decrease environmental contamination via untreated discharges. Additionally, the upgrade of water mains is an ongoing concern in the City.

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Long-term Development Patterns

Chelsea's zoning map closely reflects current land use and development efforts. A Waterfront District was established to promote water-oriented industrial uses at Forbes Industrial Park and the lower Chelsea Creek waterfront. Most of the waterfront from the Tobin Bridge to the mouth of Mill Creek is a Designated Port Area (DPA). As such, development in this area must be reviewed for consistency with water-related and port uses by the Massachusetts Department of Environmental Protection and the Coastal Zone Management Program (see discussion of the DPA in Section 4). However, waterfront park access is compatible with appropriate port uses in many instances as recommended in the Chelsea Creek Waterfront Plan (see recommendations of that plan in Section 9). Therefore the Action Plan that follows proposes several places where waterfront access can be improved.

Given the built-out nature of the City, any future development will be the redevelopment of vacant or underutilized parcels. An important element of any redevelopment is the continuing effort to enhance the City's neighborhoods with road and sidewalk projects, working with local non-profits such as The Neighborhood Developers on development projects, housing affordability, and the creation of new parks when the opportunity presents itself. The current challenge brought about by the spate of foreclosures is being addressed through local and state neighborhood revitalization programs. Additionally, the City is working to reduce the residential and industrial conflicts that have existed for a number of years.

Among the more recent developments of significance are:

- Market Basket located at 160 Everett Ave., which replaced a run-down underperforming store;

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[7] http://www.ci.chelsea.ma.us/Public_Documents/ChelseaMA_DPW/cso.htm

- John M. Corcoran Management residential project – 260 apartments (adjacent to Creekside Commons Park);
- Affordable housing project for developmentally delayed individuals in downtown's Till Building;
- Parkway Plaza, a 222,000 square foot retail development anchored by Home Depot, located at 1100 Revere Beach Parkway;
- The smart growth redevelopment of the Box District, a former industrial property, into affordable and market rate housing along with newly constructed streets;
- JPI development of 160 market-rate units on Admiral's Hill; and
- Chelsea Jewish Nursing Home, a 100-bed "green" nursing home.
- One North of Boston, a two phase residential apartment development with 452 units, comprised of studios, one bedrooms, and two bedrooms
- The French Club redevelopment, by the Neighborhood Developers, resulting in 34 deed restricted affordable units on Spencer Ave.
- Federal Bureau of Investigation's Boston headquarters, a Class A office building comprised of 220,000 sq. ft. and located on Maple St., within the Everett Ave. Urban Renewal District
- Chelsea Station Restaurant, housed within the renovated fire station, and Fusion Restaurant, both located on Everett Ave.
- Establishment of an Inclusionary Zoning Ordinance and Affordable Housing Trust Fund Board
- Chelsea Lofts, a two-phase, mixed-use development by Fairfield Residential encompassing 692 apartment units and 8,500 sq. ft. of retail space on Everett Ave. and Vale St.

Image 2: Quigley Park

Surrounding Communities

Chelsea residents use regional recreational facilities in surrounding communities that are accessible via MBTA bus service, such as Revere Beach and the Downtown Boston waterfront. The Department of Conservation and Recreation (DCR) owns land (Mary O'Malley Memorial Park – the City's largest park) and operates an ice skating rink on the Revere side of Mill Creek and the Vietnam Veterans Memorial Pool. The Northeast Petroleum site in Chelsea overlooks a waterfront open space on Condor Street in East Boston. Open spaces and recreation facilities in Everett do not serve large numbers of Chelsea residents nor have major potential to do so. Although there may be some limited use of Chelsea's parks and open space by residents of other communities, the extent of this use is organized sports involving inter-community leagues, particularly soccer. The DCR's Mary O'Malley Park is a regional passive open space that may receive wider use, but is separated from Everett's residential neighborhoods by extensive industrial land areas in both cities.

Coordination with surrounding cities is an appropriate way to increase open space opportunities and potential, given the relatively small amounts of available open space in the City. This is particularly true with regard to the improvement of the Condor Street Wilds in East Boston, and potential bicycle connections to East Boston and Revere. These opportunities are discussed in the Action Plan section of this report. Additionally, as discussed above, Chelsea is a participating community in the Metro Mayors Coalition for climate preparedness and adaptation.

4

Environmental Inventory & Analysis

Geology, Soils, and Topography

The topography of Chelsea consists primarily of coastal lowlands, punctuated by four drumlins formed during the last Ice Age. These drumlins are located in the southwest (Admirals Hill), southeast (Mount Bellingham), northeast (Powderhorn Hill) and northwest (Mount Washington). A smaller drumlin (Mill Hill) is located on the east side of Chelsea, adjacent to Mill Creek. Soils in the city are primarily urban fill, and there is very little undeveloped land. The U.S. Soil Conservation Service identified four other major soil classifications. Woodbridge-Urban complex, Newport-Urban Complex, and Canton-Urban Complex comprise most of the city's land area not designated as urban. The Udorthents classification of wet substratum is found along portions of the city's waterfront. Chelsea has no undeveloped areas designated as prime agricultural land.

The topography of the area provides a number of amenities for recreational development, both on the hills that provide lovely views over the city to the Harbor and Boston, and along the waterfront. Currently however, these opportunities have not been fully developed. Most of the waterfront is used for industrial purposes and much of the hilltop areas are covered with residential development.

Landscape Character, Scenic Resources, and Unique Environments

Chelsea is bordered on three sides by water, giving the city a unique character and a potentially high degree of access to waterfront areas. The Mystic River borders Chelsea on the southwest, the Chelsea Creek and Mill Creek on the east, and the Island End River on the west. Mill Creek is bordered by marshy wetlands between the developed portions of the city and the creek itself. Chelsea Creek has a more abrupt shoreline, with filled areas dropping off quickly into the creek and industrial

uses obscuring much of the access to the shore. The city's accessible frontage on the Mystic River is mostly in the Admiral's Hill area, which has banks gradually sloping down to the water on recreation land,

Chelsea's character is not only related to its adjacent rivers, but also to the character of its landscape. The land in Chelsea is occupied by the five glacial drumlins described above, rising 150'-200' above sea level. This sloped and hilly landscape helps to divide the city into discernible neighborhoods, each with its own character, thereby giving the city a manageable sense of scale and orientation (see Map 4). From the tops of these drumlins, there are dramatic views of Boston, Revere, and other surrounding areas. Despite the fact that in most of the city the natural landscape has been completely covered by development, Chelsea's topography created by the drumlins and proximity to water remain dominant features.

Chelsea has no areas listed on the Massachusetts Department of Conservation and Recreation's Areas of Critical Environmental Concern or Scenic Landscape Inventory.

Neighborhood Character

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Admirals Hill

Admirals Hill sits atop a point of land between the Mystic River and Island End River. The slopes of the hill are covered by residential development enjoying expansive views. On the south slope of the hill is the site of the historic Naval Hospital, with several brick and granite structures that have been converted to other uses. Between the Naval Hospital and the shoreline is the DCR's Mary O'Malley Park. This park is a major resource for the City, and is composed of broad sweeping expanses of grassy areas with picnic facilities, parking areas, a pier, and a pedestrian and bicycle path.

■

Lower Broadway

The Lower Broadway neighborhood is a small area nestled at the foot of the Tobin Bridge as it completes its span of the Mystic River and merges once again with the land. This area is characterized by low and flat land, and contains mostly attached three and four-story residential brick row houses. The streets are narrow and shady with very short blocks. The views looking across to Boston from Ferry Street are among the best in Chelsea. Three small open spaces serve this neighborhood: Polonia and Ciepiella Parks and O'Neil Tot-Lot.

Downtown Area

The Downtown area is an intact commercial district that also contains many of the city's municipal buildings, such as the City Hail, the Library and the Police Station. Urban redevelopment projects have occurred in past years that have provided the funding to implement streetscape improvements, including those called for in the 1994 Open Space Plan. As a result, many of the sidewalks and crosswalks are paved with brick and relatively new bollards, street trees, and street furniture have been installed, although some are in disrepair. Surrounding the Downtown area are residential neighborhoods of three and four-story apartment buildings and attached row houses, primarily of constructed of brick. Two public squares serve the neighborhood – Bellingham Square and Chelsea Square. Also proximate is the Williams School, the site of the Chelsea Community Schools, and Kayem Park, a small park that was recently constructed with State funds.

Marginal Street

Although Marginal Street runs along much of the city's frontage on Chelsea Creek, its potential to provide attractive views is currently limited. While Marginal Street gives access to the many industrial uses that are located along the waterfront, these views do not open up to the harbor as do those from the waterfront areas to the west, The views across Chelsea Creek to the East Boston shore include waterfront industrial sites and storage tanks, sites planned for open space and residential neighborhoods on Eagle Hill above the waterfront.

Shurtleff-Bellingham Neighborhood

The land in this neighborhood slopes upward to the top of Mount Bellingham from the flats of Marginal Street. The houses in this neighborhood are primarily detached wood-frame three and four-story buildings along streets that are often treeless. The tight arrangement of these buildings and the high population in the area result in a relatively high density neighborhood. The main landscape features in this neighborhood are the Garden Cemetery, a cool but inaccessible burial ground in the middle of a residential grid of streets, and the peak of the hill at the intersection of Highland and Bellingham Streets, on which the new Bellingham Hill Park provides dramatic views, albeit somewhat limited by the residential and institutional development which encircle it. Bosson and Quigley Playgrounds and Highland Park also are located in this neighborhood. The Chelsea Early Learning Center is located in the old Shurtleff School, and the Jordan Boys and Girls Club is located on Willow Street.

■

Mill Hill

The residential area that surrounds Merritt Park and the new Burke Elementary School has many pleasant characteristics. This area is largely composed of two- and three-story wood frame detached buildings. Covering the smallest of the city's drumlins, the Mill Hill neighborhood sits on a small neck of land bounded by Chelsea Creek and Mill Creek. The creeks merge and widen at this point, which provides pleasant views looking both toward the East Boston shore and back toward the city. The Revere shore across Mill Creek is lined with marshes that provide a buffer to the developed areas behind it. An old, wood-frame industrial structure on the Revere side was converted into a museum and provides an interesting visual focal point to the marshes that is unobtrusive despite being a built object in an otherwise natural environment. Dever Park is located in this neighborhood.

■

Addison-Orange Neighborhood

Adjacent to the north side of downtown is the Addison-Orange neighborhood. Smaller lot sizes and a relatively flat terrain result in a residential urban density that relates to the Downtown area. Where Route 1 sweeps along the western edge of the neighborhood, residential density decreases. Use and scale at this point change from a tight arrangement of relatively small-scale residential buildings to a series of vacant parcels, which were cleared and await high-density residential development as part of the Everett Avenue Urban Renewal Area project. Limited views from within the approximately 20 square block neighborhood provide brief glimpses of the Tobin Bridge and Route 1 to the west and north. This neighborhood is located next to the new High School and Carter Park, but has only one public open space within it, Eden Street Park.

In 2009, a Revitalization Plan was prepared for this neighborhood to address housing, real estate development, and infrastructure issues in the area. Specifically, the plan focused on the following issues:

- Housing foreclosures, overcrowding and illegal rooming houses
- Infrastructure and open space needs
- Redevelopment of the urban renewal district[8]

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[8] Vine Associates, Addison-Orange Neighborhood Revitalization Plan, August 2009

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Broadway

Broadway's commercial district runs like a spine through Chelsea, with the Tobin Bridge looming over the western end and views into Revere at the eastern end. This road is a major source of orientation within the city, giving visitors a clear picture of their location in relation to Chelsea's major landmarks.

■

Chelsea Commons (formerly Parkway Plaza)

Chelsea Commons sits on a low flat area near the end of Mill Creek. The plaza is comprised of big-box retail, fast-food restaurants, and large apartment building. Behind the plaza, however, the Mill Creek winds its way back to its termination at the highway. It is bordered by a strip of wetlands on both sides that are a valuable remnant of the natural landscape in this heavily developed area. A pedestrian bicycle path follows the Chelsea side of the Mill Creek. The new Chelsea Commons Park was just completed adjacent to this site.

■

Soldiers Home Neighborhood

The Soldiers Home neighborhood covers the steep slopes and the peak of Powderhorn Hill. This residential area contains some examples of Queen Anne style architecture. Soldiers Home is one of the least dense neighborhoods in the city and benefits from the presence of Malone Park, a flat open space which lies just to the west of the peak of the hill. At the peak sits the Soldiers Home, a large structure that dominates much of this area. However, there are some smaller brick structures associated with the home that are of a visually more manageable scale and command glorious views across Chelsea and East Boston to the marshes around the airport and the ocean beyond, as well as views of downtown Boston. This property is owned by the State but maintained by the City.

■

Carter Park Area

The neighborhood around Carter Park is a small enclave of mostly single-family Queen Anne style homes surrounded by heavy commercial and highly trafficked areas. The highway looms above the southeastern edge, and Revere Beach Parkway winds along the northern edge. Limited access is provided from the parkway into the

tree-lined neighborhood. Although Carter Park is a sloped area, the neighborhood is not at one of the high elevations in Chelsea. The slope gives way and flattens out into Carter Park, which lies bounded by the neighborhood, the Chelsea Stadium, Chelsea High School, and the highway above. Residents of the neighborhood have both visual and physical access to the park and new high school, and the commercial area beyond. A DCR pool (Vietnam Veterans Memorial Swimming Pool), was closed several years ago, and was recently reconstructed and has since reopened.

■

Prattville Neighborhood

The Prattville neighborhood climbs up a drumlin from Washington Park, spreading north and east toward the boundaries of Everett and Revere. Covering the top of the drumlin, this area is characterized by narrow, steep, tree-lined streets. Sporadic glimpses of the Boston skyline and Everett in the distance, as well as views of Powderhorn Hill and Washington Park can be attained at the higher elevations of the neighborhood. The lower areas rest closer to the commercial zone and have more limited views to such features as Powderhorn Hill and the highway.

Washington Park sits on the south-facing slope of one of the city's drumlins and is effectively a "town green" for the neighborhood. A relatively small commercial area on one side of the park is dominated by the three residential edges. The park is clearly identifiable, with a low stonewall and many canopy trees, and provides a well-used connection and transition from a small commercial area to the Prattville residential area beyond. Views of Powderhorn Hill can be seen from the north side of the park.

Voke Park is a multi-use sports facility that sits on the base of the north side of the Prattville drumlin (very close to Everett and Revere). Streets are wider here than in other sections of the neighborhood and a mixture of building types provides a heterogeneous character that is different from the other side of the drumlin. Adjacent to the north corner of the park is a small commercial zone where public access to the park is most available. Views are limited to the residential hills of Revere.

Historic and Cultural Resources

Chelsea is the site of four districts that are included in the National Register of Historic Places (see Map 5). It also contains four independent properties that are on the National Register. In 2000, the Chelsea Historic Commission, with funding from the State, completed an extensive survey of historic residences, as well as a survey of historic industrial properties in the City. Chelsea's location on the fringes of Boston as an early settlement site, and its current appeal to many of the new residents of Boston, make it a city that continues to have an evolving historical and cultural significance. A description of the National Register Districts and properties follows.

National Register Districts

Bellingham Square District: Broadway, Chester, Chestnut, City Hall Ave., 4th, 5th, Grove, Hawthorne, Marlboro, Shawmut, Shurtleff and Washington Streets. Comprising over 150 structures, this district became the center of commerce and government after the 1908 fire. The cohesiveness of design is the result of community planning after the fire. The district includes City Hall, modeled after Old Independence Hall in Philadelphia, and the Public Library (opened in 1910).

Chelsea Square Historic District: Broadway, Medford, Tremont, Winnisimmet, Cross, Park and Beacon Streets. Notable for containing the finest and most intact grouping of mid-19th and early 20th century commercial architecture in the city, this district also includes a waterfront district (South Broadway neighborhood) with brick row houses dating to the mid to late 19th century.

Downtown Chelsea Residential District: Roughly bounded by Shurtleff, Marginal and Division Streets, and Bellingham Square. This district incorporates the Shurtleff School (now the Early Learning Center) and period structures around the school. The area had been completely devastated in the 1908 fire and had previously contained City Hall and a number of other community buildings. The 1909 construction of the school, which takes up an entire city block, spurred residential development in the area.

Naval Hospital District: (Now Admirals Hill residential neighborhood and Mary O'Malley Park). The U.S. Naval Hospital, established in the early 1800s, was one of the first in the nation. The area contains several historic properties including a hospital building designed by the 19th century architect Charles Bulfinch. Munitions for the USS Constitution were stored in a building still standing on this site. The site is currently a residential community, with some limited commercial uses and Mary O'Malley Park.

National Register Buildings Outside Districts

Governor Bellingham-Cary House: 34 Parker Street. Governor Bellingham built this house in 1659, primarily for use as a hunting lodge. It was rebuilt and enlarged in 1791 by Samuel Cary, and is maintained as a museum.

Congregation Agudath Shalom: 145 Walnut Street. This synagogue, built in 1908-1909, is the largest Orthodox Jewish synagogue of its era in continuous use in New England. It was the first synagogue constructed after the 1908 fire and for many years the only synagogue of the eventual 14 in the city. It was designed by Harry Dustin Joll, one of the three primary architects involved in the rebuilding of Chelsea after the fire.

The C. Henry Kimball House: 295 Washington Street, Built in 1896, the house is one of the finest examples of the Queen Anne style in Chelsea. It was built by Charles Henry Kimball, a prominent businessman active in community affairs.

Chelsea Garden Cemetery: Located on Shawmut Street, the cemetery was added to the National Historic Register in 2001. It is historically significant because it represents a change in graveyard and landscape design dating back to the 1830's, which has been maintained as such since that time. It is also a located in a densely populated urban area and within a short distance of the historic districts described above. It is the only surviving remnant of the Shurtleff-Bellingham neighborhood.

Public Art and Cultural Identity

Chelsea's parks, plazas, and playgrounds have long served an important purpose as sites for public art and as places that honor Chelsea's diversity of cultural identities through sculpture, naming, and landscape design elements. Today, Chelsea's parks and open spaces display traces of the City's contemporary and historic populations and are the backdrop for creative activities. Recent park design efforts have embedded art and storytelling into the physical design and landscape elements to heighten the role of parks and open spaces as places to experience art as part of passive recreation.

Chelsea Square: Nestled within the Chelsea Square Historic District, Chelsea Square (Winnisimmit Park) features a collection of permanent public art dating from 1897 to 1978. These artistic elements embody Chelsea's layers of cultural history and provide a fitting backdrop to the Chelsea Art Walk's container gallery. The Square's proximity to the Apollinaire Theatre, the Pearl Street Gallery, and the Chelsea Community Garden makes it an important civic open space resource for Chelsea's burgeoning arts community. Permanent public art located in the square includes:

- The **Stebbins Fountain**, dedicated in 1897, was financed through a gift from the estate of Isaac Stebbins, a wealthy financier and former mayor of the City. In the early 1980s the fountain was restored to working order as part of revitalization efforts in the City at that time.
- The **Casimir Pulaski Memorial Statue**, created by the artist O. Mazzei, was dedicated in 1931 by Chelsea's Polish community to honor the contributions of their fellow countryman to the cause of the American Revolution.
- Across Second Street from the Pulaski Memorial sits **Chelsea's Christopher Columbus Statue**, which was created by an unknown artist and dedicated in 1938 by organizations representing Chelsea's Italian community. The monument's sponsors included the Knights of Columbus and the Sons of Italy, among others. Its position relative to the Polish monument highlights the cultural diversity and ethnic pride of the surrounding neighborhood.

- **Chelsea Conversation**, a 1978 sculpture by the artist Penelope Jencks complements the fountain and two memorial monuments by depicting local residents representing diverse ages, races, and religions in casual conversation within the square. From the MACRIS inventory sheet: "The older man is Roman Pucko, a retired Chelsea High School physics teacher and leader of the Polish community in the city. The young man represents Robert Goss, a Black Chelsea High School athlete and Olympic hopeful who attended the University of Texas on a track scholarship. The little girl gazing up at the two men is the daughter of the sculptor and is of Jewish background." Written by Carol Silverman, Mayor's Office of Community Development, 1982. The statue continues to function as interactive art in the park as visitors literally enter the conversation by positioning their bodies among the sculptures.
- The **Crab Bricks** designed by David Phillips and installed in 1977, are square bronze reliefs of crabs attached to sidewalk paving bricks on the corner of Second Street and Broadway, near the Stebbins Fountain. They are meant to serve as a reminder of the seafood market that once occupied the Chelsea Square location.

Bellingham Square and City Hall: This square features Chelsea's Soldiers and Sailors Monument dedicated in 1869 to those who fought for the Union in the Civil War. The monument was designed by Franklin Simmons and faces City Hall. Bellingham Square is also home to a Mags Harries sculpture of a pocketbook with a pair of gloves from 1978-1979. In front of City Hall is another monument to Chelsea's fallen soldiers. The Hiker was first created by Theo Alice Ruggles Kitson for the University of Minnesota in 1906. In 1934 a copy of the statue was erected in front of Chelsea's City Hall and dedicated to those who served in the Spanish-American War from 1898-1902. A time capsule is sealed in its base.

Mary O'Malley Memorial Park (formerly the Chelsea Naval Hospital Park) features Chelsea's first kinetic sculpture, commissioned from Cambridge artist William Wainwright (1924-2012) in 1984. The "School of Alewife" sculpture evokes the historic importance of the alewife to the local economy while also highlighting the increasing growth of engineering and design as a driver of economic growth in the region. The aesthetic of kinetic sculpture is referenced in more recently acquired public art in the City's parks and open spaces.

Island End Park: This park beside the Admiral's Marina features a set of ten kinetic sculptures designed by artist Lyman Whitaker installed in 2012.

Creekside Commons: Creekside Commons represents an art-embedded landscape, designed by ICON parks design and completed in 2009. In addition to the Star Dancer kinetic sculpture by Lyman Whitaker, the park features an etched granite map of Chelsea and has memories of local residents inscribed into the paving and engraved into boulders within planting beds.

John Ruiz Park: Another art-embedded landscape, John Ruiz Park honors local boxing champion John Ruiz and was designed by CBA Landscape Architects in 2014.The design of the park is meant to evoke a boxing ring and a life-size steel portrait of Ruiz himself stands at its edge. A bilingual panel details Ruiz's career and accomplishments in Spanish and English.

Quigley Park and **Bossun Playground**: Both of these parks feature murals that enliven the retaining walls along the parks' edges. These murals have begun to fade and would benefit from maintenance efforts.

Chelsea's parks and open spaces are an important canvas for creative expression and cultural representation. Recent efforts to design parks as art-embedded landscapes continue this tradition and can be enhanced with provision of electrical and water infrastructure to support cultural events and performing arts activities as well as visual art elements.

Water Resources

Chelsea is surrounded by water on three sides, with Mill Creek to the northeast, Chelsea Creek to the south and east, Mystic River to the south, and Island End River to the southwest. From the Lower Mystic Lake, the Mystic River flows through Arlington, Somerville, Medford, Everett, Chelsea, Charlestown, and East Boston before emptying into Boston Harbor. The City drains into the Island End River and Chelsea Creek sub-basins, both of which are a part of the Mystic River Basin. The watershed line dividing these basins is shown in Map 6. The shoreline consists primarily of coastal bank, coastal beach, salt marsh, upland and rocky shore. Along Mill Creek, east of Broadway, the shoreline is a narrow band of salt marsh, continuing around the mouth of the creek and south into Chelsea Creek. Along Chelsea Creek, between the Chelsea and Meridian Street Bridges, the shoreline alternates between coastal bank and coastal beach, with small patches of rocky shore. Around Admirals Hill, at the confluence of the Mystic River and the Island End River, the shoreline transitions from tidal flats to upland to coastal beach. The northern end of Island End River transitions from coastal bank to tidal flats.

Vegetated wetlands include the area around Mill Creek in northeastern Chelsea, and a small salt marsh on Chelsea' Creek in eastern Chelsea at the point where the railroad tracks run along the edge of the creek.

Mary O'Malley Park at Admirals Hill serves as the only waterfront open space accessible to the public on a regular basis. Most of the remainder of the Chelsea Creek waterfront has been developed for industrial uses, with no public access except for the walkway at the former Northeast Petroleum site, now a temporary parking lot, and a small open area on Marginal Street. A public park now under construction at the head of the Island End River will provide some additional access. A walkway along the Mill Creek provides some access to that water body.

The Mystic River Watershed Association is very active in Chelsea and works toward the protection and restoration of the river, its tributaries, and watershed land. This includes resource management, water quality monitoring, and enhancement of access to the river.

Flood Hazard Areas

There are designated flood hazard areas in Chelsea, primarily along Chelsea Creek and along a portion of the Mystic River. This includes sections depicted on the Water Resources maps.

Aquifer Recharge Areas

Given the highly urbanized area in which the City is located and the fact that the City and its surrounding communities are served by the Massachusetts Water Resources Authority, there are no aquifer recharge area that contribute to public water supply wells.

The high percentage of impermeable surface in Chelsea, both natural and human-made, results in a high rate of precipitation runoff, which reduces the amount of water available for groundwater recharge. Groundwater recharge takes place in wetlands; such as those along Mill Creek in northeastern Chelsea, on Chelsea Creek where a small salt marsh exists along the edge, and along the confluence of the Mystic River and Island End River. Chelsea lacks any Department of Environmental Protection Approved Wellhead Protection Areas (Zone II). Please see *Map 6, Water Resources.*

Designated Port Area

Massachusetts coastal zone policy established Designated Port Areas (DPA) to accommodate water-dependent industrial uses in areas where such activity has historically occurred in an effort to minimize similar uses elsewhere along the waterfront. Several criteria must be met to obtain a DPA designation including that the waterway or waterfront area can support commercial navigation; that the adjacent land area is compatible with industrial development; and that there is an infrastructure to meet the needs of such development.

The Chelsea DPA, which extends along Chelsea Creek into Revere and East Boston, is in fact an area that has historically seen a significant amount of industrial development and commercial navigation. The industrial uses include both water dependent uses and non-water dependent uses, many of which may predate the creation of the DPA program. As a result of the industrial activity, this area is generally not accessible to the public and is not compatible with open space and recreational opportunities seen in other waterfront areas, including Island End Park.

Recently, the City has undertaken a planning effort to examine future options for the waterfront area. The City's objectives for waterfront area improvement include fostering appropriate mixed use development and spurring concentrated employment density, while identifying public point access opportunities. Although DPA restrictions can hamper traditional development, the City seeks to strike a balance of uses, yielding a healthy waterfront.[9]

Vegetation

Chelsea is a very densely developed urban area, and thus has little undeveloped open land. However, opportunities exist for reclamation of degraded salt marsh areas in both the Island End River and the Mill Creek.

Based on information in the Natural Heritage and Endangered Species (NHESP) program, updated through June 2017, there is no record of any state listed rare or endangered plant species found in Chelsea.

Urban Forestry

The City of Chelsea earned the recognition as a "Tree City USA" for the last thirteen years. In September 2016, the Davey Resource Group (paid for with grant funds), completed a comprehensive tree survey in the City. This comprehensive analysis included a multi-year tree management program, including removal, pruning, replacement and planting, that will significantly improve the City's tree inventory over time.

The survey identified five species that comprise the largest percentage of the City's urban forest include: *Acer platanoides* (Norway maple, 10%); *Gleditsia triacanthos inermis* (thornless honeylocust, 9%); *Pyrus calleryana* (callery pear, 9%); *Acer rubrum* (red maple, 8%); and *Fraxinus pennsylvanica* (green ash, 6%). The fact that *Acer* species

[9] Heacock, Erin, The Complex Waterfront: A Study of the Chelsea Creek Designated Port Area in Chelsea, Massachusetts, February 2009, pp. 31-34.

(maple) was found in abundance (23%), was identified as a concern for the City's biodiversity.[10]

The Massachusetts Greening the Gateway Cities Program (GGCP)[11] is an environmental and energy efficiency program designed to reduce household heating and cooling energy use by increasing tree canopy cover in urban residential areas in the state's Gateway Cities, such as Chelsea. GGCP is a partnership between the Executive Office of Energy and Environmental Affairs (EEA), the Department of Conservation and Recreation (DCR) Urban & Community Forestry Program, the Department of Energy Resources (DOER) and the Department of Housing and Community Development (DHCD), along with local grassroots organizations such as Chelsea GreenRoots and the Chelsea Collaborative. The program plants trees (ranging from 6 to 10 feet tall) with a goal of covering 5% of the target neighborhoods in new tree canopy cover. Trees are planted by DCR Bureau of Forestry, Urban & Community Forestry crews hired from local communities.

Current research show that tree canopy brings the greatest benefits when established over an entire neighborhood area, by lowering wind speeds and reducing summertime air temperature, in addition to the benefits of direct shading. It is estimated that every 1% increase in tree canopy above a minimum 10% canopy cover brings a 1.9% reduction in energy needs for cooling and up to a 1.1% reduction in energy for heating. All households in a neighborhood benefit, not just the ones with trees directly adjacent.

This program targets areas that have lower tree canopy, older housing stock, higher wind speeds, and a larger renter population. In addition, plantings are concentrated in Environmental Justice neighborhoods, to benefit those most in need. Within planted areas temperature, energy use, and other information is tracked to document the energy savings new trees provide residents over time. Pilot cities in which this monitoring is taking place includes Chelsea.

The Chelsea Tree Board has been reconstituted and identified the following tasks:


Image 3: Mill Creek

1. Develop effective communication mechanisms through social media and the City's website.

2. Develop and engage activities around trees, such as adopt-a-tree programs, with an eye toward implementing such programs in schools, neighborhoods, businesses and social organizations.

3. Expand social activities with schools to encourage education and engagement around trees, such as annual field trips to Arnold Arboretum.

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[10] Tree Management Plan, City of Chelsea, Massachusetts, Davey Resource Group, September 2016
[11] https://www.mass.gov/files/documents/2018/04/25/GGCP%20DCR%20Fact%20Sheet%202018_0.pdf

4. Identify ways to support existing efforts to "green" Chelsea: in particular supporting community and youth street-tree planting programs.

5. Begin building relationships with other city departments, e.g. the DPW and the Zoning Board.[12]

Fisheries & Wildlife

Although the City of Chelsea's dense development patterns have left little room for unbroken wildlife corridors, several of its open space and recreation areas provide sufficient habitat to attract and support wildlife populations. Mary O'Malley Park, located on the shore of the confluence of the Island End River and the Mystic River, attracts aquatic birds including, egrets, ducks, and cormorants, and birds of prey, such as red-tail hawks. Mill Creek and Chelsea Creek each act as the spawning ground and nursery for smelt, American eel, Atlantic butterfish, Atlantic cod, Atlantic mackerel, Atlantic sea herring, Pollock, red hake, and at least four types of flounder. The hatchlings of these species in turn attract birds which prey upon them, such as swans, egrets, herons, and cormorants. Other species well adapted to urban environments - such as raccoons, skunks, and opossums – also make their home in the city, although they are more a nuisance than a natural asset.

According to Massachusetts' Natural Heritage & Endangered Species Program (NHESP) inventory, two MESA-listed species have been observed in the City of Chelsea.

Town	Taxonomic Group	Scientific Name	Common Name	MESA Status	Most Recent Observation
CHELSEA	Bird	Falco peregrinus	Peregrine Falcon	T	2014
CHELSEA	Bird	Sterna hirundo	Common Tern	SC	2015

The Peregrine Falcon, last observed in Chelsea in 2014, is listed as Threatened, which signifies the species is "likely to become endangered within the foreseeable future throughout all or a significant portion of its range." The Common Tern, last observed in 2015, is listed as a species of Special Concern, which indicates the species is vulnerable to becoming Threatened, based on observed population decline or reliance on specialized habitat requirements.

[12] https://www.chelseama.gov/tree-board

Environmental Challenges

Long-term industrial use of the waterfront, with large tank farms, indicates that much of the waterfront may be contaminated with hazardous materials. The Chelsea Creek DPA is estimated to have approximately 50 acres of contaminated land, according to the 2004 Chelsea Community Development Plan. Similarly, the freight railroad corridor running east/west through the city may be contaminated as is typical of such railroad rights of way. Contamination of some industrial sites has been confirmed, and it is suspected at others. Other industrial areas, such as those in the Everett Avenue Urban Renewal Area, have been assessed and in most cases, determined to be suitable for redevelopment.

Since 1986, the Massachusetts Department of Environmental Protection has identified 337 sites on its Reportable Release database. Although they appear to be well distributed across the City, a number of them are located along the Chelsea waterfront as a result of the petroleum storage and distribution facilities allocated along Chelsea Creek. Many of them involve a release of oil and have been resolved, although there are a number of sites undergoing remediation efforts.

The City of Chelsea's demographic and development characteristics both challenge and support the goal of advancing environmental equity, defined in this instance by the geographic distribution of open space across a community and its accessibility to Environmental Justice populations. Based on the definition of Environmental Justice populations used by the Commonwealth, every census block group in the City of Chelsea qualifies as an EJ population center, either by income, ethnicity, language, or some combination of the qualifying criteria. Therefore, a lack of open space in any section of the city has EJ ramifications. However, while the overall acreage of existing open space is relatively small, neither is the city itself especially expansive. As described in Section 5, 98% of city residents live within a 10-minute walk of a park, playground, or open space. Of course, a full measure of accessibility needs to account for more than simple proximity, but a high level overview indicates that open space resources are reasonably well distributed across the city.

Due to the density of existing development patterns, the development which occurs in Chelsea is redevelopment which poses little threat to established open spaces. Redevelopment projects have replaced vacant or underutilized structures with new ones that have either created new economic development opportunities or new housing choices, including a number of affordable units. Moreover, in several cases, new parks have been created as a result of new development that set aside previously developed land for parks (i.e. Creekside Commons, Jefferson at Admirals Hill, Box District Park), or land or money has been donated to build new parks (i.e. Kayem Park). Purposefully integrating park creation with the construction of affordable housing offers a prime opportunity to increase environmental equity. The City will continue to redevelop city-owned land and look for opportunities to work with developers to expand its open space and park inventory. Additionally the City

of Chelsea is working with both public and private entities to increase its urban forest canopy in open spaces, sites under redevelopment and along roadways.

Another environmental challenge is the need to ensure that stormwater management is adequately addressed through the development review process. The City has adopted a new stormwater ordinance as of October 2009 to address this issue. Development submissions are now referring to DEP standards for stormwater management even when they are not required to (i.e. not within a wetland resource area or buffer zone to a wetland resource area). A related issue is potential erosion and sedimentation that may temporarily become a problem as a result of construction, but again since there is little undeveloped land, and since the City has established a development review process that includes review for erosion and sedimentation, this has not been a major problem. However, sedimentation has been a problem is Island End River at the Admirals Hill Marina where there is an outfall that has sediment built up in front of it and also in many of our drainage conduit. Good housekeeping activities involving more frequent sweeping of parking lots as well as additional structural controls should help to control this.

According to the Metro Boston Regional Multi-Hazard Mitigation Plan, flooding and winter storms remain the highest hazards for Chelsea, both in frequency and severity. The majority of flooding in the City is caused by deficiencies in the drainage system rather than location within the flood plain. In addition, portions of the City lie within hurricane storm surge zones.

There are two inactive municipal solid waste landfills in Chelsea. One is in the south of the City on Marginal Street, which is not believed to be capped. The other is in the northeast section of the City on Webster Street. Its status with respect to capping is listed as "unknown" according to DEP records. Also, Wood Waste of Boston is an active waste handling/transfer station located on the Everett/Chelsea line.

The intensity of land use development across the City of Chelsea has left relatively few trees, contributing to a heat island effect. Although the City has made progress on tree plantings, tree mortality has approached 30%, with some of the die off attributable to leaks from aging subterranean natural gas pipes.
As a coastal community, the effects of climate change pose a hazard to the City of Chelsea. Erosion resulting from increased storm water flow and flooding threaten infrastructure throughout the city, including its rail lines and roadways. In order to lessen the negative effects of development, the City's bylaws include a provision requiring that all construction projects submit a sedimentation and erosion control plan to the Department of Public Works for review. The issuance of building permits is contingent on the approval of the sediment and erosion control plan.

Finally, there are a number of brownfield sites throughout the City, although many of the hazardous waste site issues in Chelsea are from oil releases from gas stations or similar land uses.

5

Inventory of Lands of Conservation and Recreation Interest

Introduction

This section details information about open space and recreational lands in the City of Chelsea. According to the Massachusetts' Executive Office of Energy and Environmental Affairs, open space is:

> *"conservation land, recreation land, agricultural land, corridor parks and amenities such as small parks, green buffers along roadways or any open area that is owned by an agency or organization dedicated to conservation."*

The importance of open space and recreation resources to a community cannot be understated. The protection and stewardship of these assets via past, future, and current Open Space and Recreation Plans is a crucial piece in shaping an environment where people want to live. Citizens need not only adequate services from the City day to day but also a hospitable environment—one which presents opportunities for the average citizen to relax, play, and explore. Open space and recreation resources provide all of these opportunities and are integral to life in the City of Chelsea.

For the most part, Chelsea's 53.47 acres of such open space is comprised of small pocket parks and playgrounds, mostly owned by the City. DCR owns and manages three facilities. There are a few private parcels, but no Chapter 61, 61A or 61B land.

Over the last few years, City staff performed detailed surveys of all 40 parcels of land dedicated to open space and recreational activities in Chelsea. The survey forms guided the process and ensured that each park was reviewed at the same level of detail. Surveyors recorded facilities, facility condition (including pavement, equipment, walls

and curbs, trees and, lawn/vegetation), and ADA compliance. Facilities were inventoried as well. In general, the parks and playgrounds in Chelsea are well-maintained and have high recreational potential. During the summer of 2010, the City's park and recreation facilities were reassessed for ADA compliance and the self-assessment forms are included in Appendix A of this Plan.

Types of Open Space and Recreation Land Protection

Determining where the open space and recreation land is located in Chelsea is the beginning stage of fully understanding what resources the City has and how best to manage them. Once this land has been identified, it is important to ensure its protection and maintenance into the future to help guarantee that many more generations of residents can enjoy them. Land within a community is protected in perpetuity by Article 97 of the Amendments to the Massachusetts Constitution if it is owned by the local Conservation Commission, by Executive Office of Energy and Environmental Affairs (EOEEA) agencies, or if the land is municipally owned and dedicated to conservation or recreation uses. Land owned by nonprofit conservation land trusts are also considered permanently protected. Typically, land owned by City agencies and the local school system but not developed for recreation or preserved for conservation should not be presumed to be permanently protected.

During the update process for this Plan, a GIS analysis was conducted to determine the amount of Chelsea's open space that is protected in perpetuity. The data for this analysis was provided by the Commonwealth of Massachusetts via the Office of Geographic and Environmental Information (MassGIS). The analysis results show that approximately 83 percent (44.56 acres) of the total acreage in Chelsea is protected in perpetuity as open space.

Inventory of Open Space and Recreation Resources

The Chelsea *Inventory of Public and Private Open Spac*e includes public land used for parks and recreational facilities. The inventory shows a total of 40 parcels covering 52.6 acres of conservation and recreation land owned and managed either by the City or DCR. The inventory, with details about each park, can be found in Appendix C.

All properties identified in the inventory are depicted in *Map 7, Open Space Inventory.*

The Open Space Matrix column headings are defined below

- **Name/Location** - Names the open space site and its street address, and identifies the map and lot numbers on the City assessor's maps.
- **Public Access** - Indicates if the public can access the site.

- **Acres -** Gives the site's acreage or an approximation in cases where specific information was not attainable. One acre is 43,560 square feet or 1/640 of a square mile.
- **Ownership/Management** - Indicates the owner of the property and the agency or department responsible for managing and maintaining the parcel. Usually the two are the same.
- **Protection Status/Deed Restrictions** - Indicates if the site, either by virtue of its zoning, ownership, existence of deed restrictions, or by the fact that it has received state or federal funding, is protected against conversion to some other use (see below).
- **Recreation Potential** - For land not used for recreational purposes, potential for recreational activities is identified. Conservation land is generally deemed to have limited recreation potential except for passive recreation such as hiking and walking. Cemeteries and other similar lands are presumed to have no recreational potential.
- **Current Use** - Details the main uses for the site.
- **Zoning** - Identifies the zoning district in which the parcel is located.
- **Grant Received** - Where applicable, identifies the source of funding for the acquisition of the parcel, including public grants, private donations, deed restrictions, etc.
- **ADA Accessible** - Indicates if people with disabilities can access the site or its amenities.
- **Condition** - Identifies the site condition (excellent, good, fair or poor). *City-owned open spaces and parks were surveyed to obtain a general sense of the condition of the property and any facilities located on it (parking, fields, playground equipment, etc.).*

Park and Open Space Equity

Map 2 depicts the Environmental Justice (EJ) populations found in Chelsea based upon Mass GIS data. The map also shows the proximity of the City's open space and recreational resources. The EJ populations cover the entire City. The map depicts census block groups and which EJ criteria each one meets. These criteria include a foreign born or minority population that exceeds 25% of the total; a population of people in which less than 75% have proficiency in English; and where the population falls below 65% of the statewide median household income. Four block groups meet the minority population criteria and three meet only the income threshold. The remaining 20 census block groups meet between two and all four of the criteria. Although the overall acreage of park and recreation facilities is relatively small, many of the City's residents have some access to a variety of open space resources.

Given the nature of Chelsea's densely developed and populated city streets, the City's best option is to try to identify vacant lots that can be easily transformed into parks or open spaces. The City has had recent success in establishing small pocket parks in several locations and while demand for such facilities will likely exceed

supply for quite some time, there has been an effort to provide recreational opportunities throughout the City to serve its diverse population.

Park equity is a critical component of building community, physical and mental well-being, neighborhood beautification, and in some cases, reduction in violence and crime. Combined with park maintenance, diversity in amenities and park programming, these benefits are achieved when residents have access to close-to-home parks. One measure of park equity is the geographic distribution of parks within a 10-minute walk of resident's homes.[13] In Chelsea, 98% of residents are located within a 10-minute walk of a park, playground, or open space. This figure is 44% higher than the national average of 54% of residents within a 10-minute walk to a park.[14]

The majority of Chelsea's residents have equitable access to parks. According to an analysis performed by The Trust for Public Land's ParkServe™, low income individuals have the greatest access to parks, as well as adults between the ages of 20-63 and Hispanic individuals. Demographics in need of park access include seniors over the age of 64, mixed race individuals, Asians, Pacific Islander/Hawaiians, and Native Americans. High income individuals have the least access to parks. See Appendix E for the full ParkServe analysis.

According to ParkServe, there are two locations in Chelsea that are in moderate need of a park, where residents in these locations are not served.[15] However, these areas are both located in commercial/industrial sites where there are little to no residents and not necessarily appropriate for new parks. The areas in moderate need can be found in a map in Appendix E and include:

(i) The area between Beecham, 2nd, and Market Streets, adjacent to the Food Distribution Center and
(ii) The auto body commercial/industrial sites between 3rd and Vale Streets north of the railroad.

Overall, Chelsea's park system is serving the majority of its residents, significantly higher than the national average, and particularly for individuals typically underserved by parks nationally. However, this analysis does include amenities and providing parks serving Chelsea's seniors may be beneficial.

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[13] National Recreation and Park Association, Trust for Public Land, Urban Land Institute. https://www.10minutewalk.org
[14] ParkServe™ https://ParkServe.tpl.org
[15] ParkServe uses ESRI Network analyst ArcGIS Extension to create a 10-minute walk service area using a nationwide walkable road network dataset provided by ESRI. It creates service areas around parks from entrance points and considers physical barriers such as highways, railroads, rivers without bridges, etc. in determining accessibility.

Important Open Space and Recreational Resources

This section provides narratives describing the most important open space and recreational resources located in Chelsea. They are presented in no particular order.

Kayem Park

Located at the corner of Chestnut and Fifth Street, a new park was constructed with a $400,000 Urban Self-Help grant and financial assistance from Kayem Foods, one of the City's largest employers. Formerly owned by Massport, the site was given to the City for the development of a park. Prior to the creation of this park, the site was undeveloped, fenced off, and isolated from the surrounding neighborhood. Since the City is built-out, opportunities for adding to the inventory of open spaces will be limited to small redeveloped infill parcels such as this one. It plays an important role in providing the surrounding neighborhood with a much needed sanctuary from the urban environment and creates a new outlet for small children to play. While small in size, it is highly valued by the immediate neighborhood.

Image 4: Kayem Park in the summer

Mary O'Malley Park

A DCR owned park on Admiral's Hill, Mary O'Malley Park fronts on both the Mystic River and the Island End Creek, it is one of the few places in Chelsea that residents have direct access to the waterfront. Until very recently, the DCR did not maintain the park very well; the riverfront was overgrown with weeds, the limited play equipment was in poor condition, and the pier was in need of serious repairs. While the pier is still in need of repairs, the brush along the water has been removed and views to Charlestown and Boston opened up. The play equipment was repaired and additional play structures for children installed. The tennis courts have also been upgraded. Much of this renewed effort to maintain the site can be attributed to pressure put on the DCR by the City and the recently established Friends of Mary O'Malley Park non-profit organization.

Highland St. Green Corridor

Highland St. Green Corridor is a multi-park open space and enhanced pedestrian streetscape, beginning at Bellingham Hill Park and terminating at the intersection of Highland St. and the Silver Line Gateway Box District Station and Shared Use Path. Serving the densely populated Shurtleff-Bellingham neighborhood, Bellingham Hill Park offers an aquatically themed playground with modern play equipment, site furniture, a spray feature and splash pad, and a serene seating area where visitors can survey Chelsea Creek and the Boston skyline. Down Highland St., at the corner of Library St., is a small, terraced passive park that is directly across the street from Box District Park, an extensive playground offering play equipment, a spray feature and splash pad area, and a public plaza for hosting community gatherings and outdoor events. The streetscape, abundant with a variety of trees and shrubs, also includes the Highland St. staircase. It is designed to encourage pedestrian activity by creating an inviting, green, and seamless walking path from the Shurtleff-Bellingham neighborhood and Box District Station.

Vietnam Veterans Memorial Swimming Pool

Also a DCR facility, the Vietnam Veterans Memorial Swimming Pool is heavily utilized by local children and adults, it was recently (2008) reopened after a multi-year closure and a reconstruction of the facility. The City is working with DCR to help staff lifeguard positions so that the pool can stay open longer hours several nights a week. It is significant since it is the only outdoors swimming facility in Chelsea.

Creekside Commons

Image 5: Creekside Commons during construction

Creekside Commons is a $1.3 million park constructed on an approximately one acre site along Mill Creek. The site was donated to the City by Corcoran Management in conjunction with the construction of a 260 unit apartment building. Opened on August 4, 2009, the facility includes: a year-round ice skating rink with artificial ice, climbing structures, whisper chairs, water play areas, a therapeutic garden, benches, walkways, musical play equipment, a parking area, and a direct connection to the walkway along Mill Creek. The park was funded with $900,000 in private donations, and $400,000 in Urban Self-Help funds.

Highland Park

Highland Park is one of the City's most popular recreational facilities, due to the presence of Chelsea's only regulation-size soccer field with artificial turf, a spectator area, and athletic lighting. Encompassing a dual basketball court with athletic lighting, a playground, expansive seating area, and parking lot, Highland Park also hosts a concession stand. The park will undergo renovations in fall of 2017. Consequently, a new playground area with net climber, splash pad, colorful picnic area, and refurbished basketball courts will serve the neighborhood of users.

Island End Park

This city-owned site is located on an upland area of approximately 7,000 sq. ft. overlooking Island End River. The park is accessed by a boardwalk constructed by a private developer of a 160 unit rental building that runs from the Admiral's Hill Marina to the site. The park will include opportunities for passive recreation and have green features. The pathway was constructed with a pervious surface; natural vegetation will be used in landscaping; and solar powered lighting and a solar power trash compactor was installed. A gazebo provides an area for viewing down-river to Charlestown and Boston. Benches, an art piece, interpretive signage, and a bike rack were also installed. The park was funded through a $400,000 PARC Grant. It is now possible to walk along the river from Broadway to Beacham Street.

Site of Island End Park

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Community Goals

Description of Process

The goals of this plan were developed during the June 2017 public meeting during which the goals and objectives of the 2010 plan were reviewed and validated as to their relevancy to the 2017 update. In addition to reviewing the goals and objectives of the 2010 plan, new ideas, comments, concerns, goals and objectives were formulated by the community. This plan reflects the concerns outlined in the June 2017 public meeting, targeted outreach to a variety of community-based organizations and recreational league representatives, and city staff. Outreach for that June 2017 public meeting included multiple outreach notices supplied in English and Spanish. These notices were distributed throughout various sources including newspaper ads, public television ads, internet, public postings at City Hall, Chelsea Public Library, and were circulated by community-based organizations. Interpretative services were made available for the public meeting

Statement of Open Space and Recreational Goals

In the area of open space and recreation, Chelsea faces severe constraints and problems including:

- Its extraordinarily small size, high density, and relatively limited open space
- Its limited fiscal resources
- The physical barriers within the city caused by the bridge, highways, and rail beds
- A mature land use pattern – City was almost fully built out at a time when there was less emphasis and/or awareness of the value of open space
- Its historical use of the waterfront by industry and legal limitations to public use of this potential open space resource

The goal of this planning process is to work within these constraints to provide the highest quality open space possible with the resources available. The goal for the open space is to maximize the opportunities created by the city's unique resources:

- natural resources—hills and waterfront
- rich cultural heritage, diversity, and history
- community pride and civic commitment

Open space and recreational opportunities are not merely ends in themselves – they are a means to an end. The goal of this community is to implement an open space and recreation plan that meets the challenges, takes advantage of the opportunities, and thus helps the people of Chelsea make a reality of its vision of a stable, economically sound and socially healthy, and diverse city, with opportunities for all its citizens to enjoy high quality open space and recreational facilities.

Strengths, Weaknesses, Opportunities and Threats

During the June 2017 public forum, a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis was conducted.

Strengths:

- They are out throughout the city
- Walk Wednesdays
- There are many playgrounds
- Close/accessible
- Dog bag stations
- Walkable
- Contemporary playground structures

Weaknesses:

- Maintenance of trees, vegetation
- CH Authority parks are not clean
  - Often locked
- Too much fences around the park
  - Find something more creative
- Lack of signage
- Not much for adults/seniors (benches etc.)
- Parks are very small
- Perception of safety
- Drugs/needles/trash (not frequently picked up)
- Water fountains don't work

- Feel like they are designed for younger kids, not teens
- Not green, safe

Opportunities:

- Use of technology in benches (charging stations for phones)
- Better link the parks within the city
- Use the water (canoeing)
- Waterfront access
- Energy efficiency
- Water storm containers
- Graveyard
    - Take it back
    - Attention of the public
- Views of Boston
    - Hills
- Silver Line linkages
- Information about the history of the park
- Info-signs
- Host community events
- Solar powered trash
- Where we are located strategically (airport)
- Safe connector to the beach
- Block parties => organized activities => sports may draw more people
- Movie night in some of the parks
- Park by police station
    - Quiet place to hang out

Threats:

- Stormwater
- Land speculation
- Environmental
- Insects attacking vegetation
- Financial cuts by administration
- Noise airport, trucks
- Highland Park area factory smells bad

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Analysis of Needs

Summary of Resource Protection Needs

The resource protection needs of Chelsea concern the major natural resource areas of the city, such as the city's waterfront and scenic landscapes. The following resources have been identified for protection and/or enhancement:

Coastline and Major Water Bodies, Rivers and Streams: Much of this area is currently in industrial use with little public access. The City should identify opportunities to provide public access to as much of the waterfront as is consistent with the Designated Port Area, linking waterfront resources with each other as well as with other open spaces. As additional waterfront land becomes available, it should be considered for shared opportunities between open space and development uses. As uses along the waterfront change, opportunities for increased public access should be studied.

Scenic Landscapes: Because of the series of drumlins on which Chelsea is built, there are a number of open spaces with scenic views of the city, the Boston Harbor, and Downtown Boston. Areas with particularly attractive views include Bellingham/Highland, Malone Park, and Mary O'Malley Park. These views should be maintained and enhanced, and where possible, new views should be developed for public access.

Polonia Park

Summary of Community's Need

The Chelsea community has a strong need for all types of open space and recreation facilities, including tot lots, active recreation areas, passive parks in certain neighborhoods, and a system of linkages between these facilities. As described in Chapter 3, the low income level of a significant proportion of the population greatly limits their access to commercial entertainment or recreation facilities, as well as facilities at a distance that require travel. Also, the dense settlement pattern of the City results in very few private yards that can be enjoyed as private open spaces. Therefore, it is a priority for the City to provide for the community's open space and recreation needs.

The City of Chelsea is committed to providing a full range of recreational opportunities appropriate to citywide and neighborhood recreation needs and age groups. Different age groups within the city each have particularized needs, which can be accommodated through good planning and design. In community meetings, families expressed the need for separate play spaces for younger children. Sharing active recreation space between toddlers, elementary, and adolescent children can lead to interference and raises safety concerns. The continued creation of "Tot Lots" or the designation of space intended for younger children within larger parks could help meet this need. Older youth would benefit from a greater availability of organized recreational opportunities, although demand from both organized and informal play already challenges the City's field capacity. In order to best serve elderly residents and other individuals with mobility limitations, both the design of internal park layouts and the pathways residents take to access them should be evaluated and improved if necessary.

Analysis of Needs

Through input from community groups, as well as observation and anecdotal information, the City has identified the following trends regarding the use of its open space and recreational facilities.

Image 6: Garden Cemetery

- Chelsea parks and open spaces have seen high levels of use, particularly ballfields and playgrounds.
- Most people walk to the park nearest to them – relatively few take cars or public transportation. Thus it is important to enhance pedestrian access to local park facilities.
- Mary O'Malley Memorial Park (Admiral's Hill) appears to be the most popular park in the City and is consistent across age groups. Highland Park and Quigley Park are the parks used the most frequently.
- There is substantial interest in swimming and spray parks. Other highly utilized outdoor facilities in terms of need included basketball courts, and soccer and baseball fields. The need for these facilities remains high.
- There is a high level of interest among residents in helping to maintain a neighborhood park.

- The need for ongoing maintenance is a high priority for Chelsea residents.
- Police presence and oversight is still an issue that was raised at the June 28, 2017 public meeting.
- There is substantial interest in passive activities in parks, including places to sit or walk, waterfront parks, and beautification of the streetscape. Even small pocket parks with benches can provide relief from the urban environment.

Community meetings produced significant feedback about current needs. Among the most frequent comments were the following:

Image 7: Street trees in Chelsea

- There is a general need for more open space and recreation facilities.
- Chelsea needs more field/court facilities to accommodate both organized leagues and informal play. Of particular concern is the lack of soccer fields, places for skateboarding and in-line skating, tennis courts, softball/little league fields, baseball fields, and basketball courts. Soccer, in particular, is an increasingly popular sport for both children and adults, which is now accommodated mostly at Highland Park and the High School athletic field.
- People want more parks for young children to play, particularly places where older children will not interfere and compromise their safety.
- Dog parks should be provided.
- The City should establish community gathering places for fairs and other cultural and civic events.
- The City should consider acquiring vacant land and using the sites for open space.
- There is interest in bike paths along the rail rights-of-way.
- People want more access to the waterfront.
- There should be better lighting in the parks.
- There is a need for more organized recreational activities that are dedicated for young teens.
- There should be more police oversight of the parks.
- Additional community garden locations are needed.
- Plantings in passive parks should be improved.
- Speeding traffic on residential streets is an issue because children often play in the streets in dense neighborhoods.
- There is a need for more / better maintained open space at housing projects.

Management Needs, Potential Change of Use

The City has developed an Administrative Code, which provides for the internal organization and administration of the city government. The Code clearly outlines each department's authority and lines of interaction with other departments. The Code is helpful in establishing each department's responsibilities and role in specific areas.

It was indicated that one of the most pressing needs is improved access for people with disabilities. Chelsea's policy is to improve access to its parks for all of its residents, including the disabled, as the parks are rehabilitated. Additionally, all new parks are designed to meet accessibility standards.

Programming at the City's recreational facilities is addressed through the licensing functions of the City Clerk's office. The City Clerk creates, coordinates and/or implements comprehensive recreational and cultural activities and programs for all residents which enhance the quality use of leisure time.

Chelsea Community Schools (CCS) provides recreation and continuing education opportunities to those who live in Chelsea, MA. CCS collaborates with local agencies to serve the community, offering affordable classes and the use of state-of-the-art facilities to Chelsea residents. CCS was created to fulfill the need of the Chelsea community for open space by using school facilities as centers of community life for all Chelsea residents. CCS has operated in Chelsea since the fall of 1996 and is operated by the City of Chelsea under the Department of Health and Human Services.

The Community Schools Program is responsible for the establishment, coordination and/or implementation of community sports programs for youth and adults, including working with the City's youth leagues (i.e. Pop Warner); the supervision and coordination of a Community Schools Program within the new public schools buildings; the planning and coordination of cultural events and any festivals or local public events in collaboration with other City departments, along with the Cultural Council; and the establishment of continuing education programs (including art, dance, and fitness) for Chelsea residents. Community Schools is based in the Williams Middle School and the Jordan Boys and Girls Club. These programs are very popular and serve to meet the needs of an urban population, especially since there is no YMCA/YWCA or other recreation facilities in Chelsea. When space is available, programs are opened to residents in neighboring cities.

The Community Schools program is open seven days a week in the winter and six days the rest of the year. In all, it serves at least 2,000 people of all ages throughout the year. There are three registration periods (fall/winter, spring, summer) and over 150 classes are offered throughout the year. Occasionally, people are turned away when a class has reached capacity. Nominal fees are required for some classes, which

goes back into the program. Additionally, it is funded through Community Development Block Grant funds. It has a $250,000 budget for a full-time director and on-site manager, along with three part-time staff and interns. Custodial and security staff is available as well.

The facilities include one large gym, but the high school gym can sometimes be made available if there is sufficient demand for space. If more staff could be provided, the Community Schools program could also use additional space.

The Boys and Girls Club on Willow Street is a private non-profit organization offering active recreation for children, and operates out of the Jordan Club. This facility includes an art room, climbing wall, Computer Clubhouse, education room, fitness center, games room, gym, music studio, performing arts center, pool, ropes course, teen center/lounge, and weight room. This program serves over 1,900 children from ages 6 – 18, and is also over-subscribed periodically, indicating the continued need to provide such services for the school-aged children in Chelsea.

The City Clerk provides administrative support to the Licensing Commission and is responsible for the issuance of all licenses and permits granted by the Licensing Commission, as well as licenses and permits granted by the City. This includes permits for fairs, cultural events and activities, and use of fields and playground facilities. Certain fees apply to the use of fields by adult leagues. The City has established permit rules and regulations for the use of Chelsea parks and public spaces for various events.

The Department of Planning and Development serves as an advocate for open space and recreation issues in the City. The Department identifies open space and recreation concerns/needs and develops plans to address the concerns and needs. The Department oversees implementation of the Open Space and Recreation Plan through, among other actions, open space, park and streetscape design, acquisition, and construction. Through the permit review process, the Department works with land use boards to assure that construction projects meet requirements for usable open space and conform to City standards for design.

The City prepares an annual Capital Improvement Plan (CIP), which identifies major improvement projects, funding sources, and priorities. The CIP includes an open space and recreation facility element that helps insure that there is planning and funding for significant park improvements.

Continued coordination between these City departments is essential to the on-going development and maintenance of open space and recreation opportunities and facilities in Chelsea. While the City is small enough that informal channels of communication often suffice, it is important to maintain the institutionalized coordination between these parties and to continue the assignment of roles and responsibilities established through the Administrative Code. Without such formal and regular coordination of efforts there might be wasteful duplication of efforts, or

essential activities could be neglected or overlooked. Without an evident division of responsibilities, it becomes extremely difficult for the community to access park and recreation activities or to hold the various entities accountable. This latter potential problem is important to solve so that the City can continue to incorporate community participation in park planning and maintenance and thereby improve the quality of the parks and responsiveness to community needs.

The City, through its Recreation & Cultural Affairs Division, continues its partnership with non-profits, open space advocates and private recreation leagues to serve the City's residents by expanding and enhancing recreation and education opportunities. The on-going program of restoration and expansion of its parks and open spaces continues to provide local residents with improved and modern facilities designed to accommodate a mix of age groups, uses and levels of ability.

Various programs have been established to meet the needs of teenagers in Chelsea, including beginner swimming, introduction to yoga, volleyball, community outdoor basketball, and indoor soccer. Moreover, the Chelsea Youth Commission regularly assesses the needs of youth as individuals and community members. The Commission is comprised of 11 members aged 13-20 who are currently enrolled in school.

The Council on Elder Affairs works to meet the needs of the city's aging population. It offers recreational programs, exercise classes, arts & crafts, dance parties, and day trips.

The City has more than 30 parks, playgrounds, open spaces and community gardens. This includes four citywide parks with recreational facilities, two of which were completely reconstructed as part of the school building project. The school building project also greatly expanded the number of recreational opportunities now existing locally. More than a dozen neighborhood parks, playgrounds, and play lots of various sizes, including a historic cemetery and several historic public squares add, to the City's inventory of parks and open space. An envisioned Chelsea waterfront open space system, parts of which already exist, is planned for future implementation through incremental design and development. Some of these parks and facilities need improvements to be brought to current safety and accessibility standards.

Historically, park funding has been derived almost exclusively from grants, which limited the City's ability to make planned improvements. In the past, an annual fund commitment in the CIP, supplemented by State funds, particularly through the State's Urban Self-Help Program, now the Parkland Acquisitions and Renovations for Communities (PARC) Program, provided a funding base and greatly accelerated improvements to the overall park system. Previous initiatives by the Massachusetts Historic Commission and the Department of Environmental Management (now the Department of Conservation and Recreation) for the preservation of historic

landscapes also offered opportunities to accomplish improvements to local historic spaces.

In the fall of 2016, Chelsea adopted the Community Preservation Act (CPA) with a 1.5% surcharge. The City is working to establish the Community Preservation Committee and develop a plan and strategy for implementing CPA.

Recognizing the constraints in the existing park system, the City advanced initiatives that resulted in the construction of an artificial turf field at the Chelsea Memorial Stadium, the construction of a new tot lot on a former brownfield, and the renovation of two Chelsea Housing Authority (CHA) tot lots. In addition to providing better quality "play" at the CHA tot lots and play opportunities at the new tot lot, the artificial field at Chelsea Memorial expanded the stadium's use by 17-times, from an estimated 250 hours per year to 4,400 hours per year. Another future consideration would be the programming of more recreational activities at Malone and Mary O'Malley Parks to help meet the recreational needs of the City.

To support additional planning and programming support, the City has updated its seven-year Open Space Plan. This new plan identifies and prioritizes action items for implementation, and makes the City eligible to apply for grants through the year 2023.

In addition to parks, the importance of open space and pleasant streetscapes to enhance the livability of local neighborhoods continues to be seen as a way of improving a neighborhood's appearance and connecting parks and open spaces to each other. The City's look and feel can be enlivened dramatically by attention to streetscapes and street trees. As indicated in the City's Open Space and Recreation Plan Update, providing sidewalk and street tree amenities to roadway projects will continue to be a priority, as will a stand-alone program for street trees.

Maintenance Overview

The Department of Public Works is responsible for maintenance of the City's parks although there is no prescribed plan or schedule for how each park, playground or ballfield is to be maintained. Their efforts are focused on ensuring that the parks are clean and safe for residents and other park users. The DPW maintains a regular schedule for trash removal, with trash collection crews visiting the most used parks during peak season every day, and visiting other parks in the peak season at least twice a week. One of the most significant comments received during the outreach effort during the planning process was that trash tended to pile up and that trash containers were overflowing on a regular basis. The DPW also is responsible for setting up and lining sports facilities, particularly the bocce courts and baseball field in Voke Park, which they do twice weekly during warmer months. DPW sends out two crews with two members each for trash collection and basic maintenance on a daily basis during peak season. For lawn maintenance, the Department hires a

contractor to cut park grass alongside lawns in other public grounds, such as the lawn in front of City Hall. For playing fields, the various sport and recreation leagues assist with some level of field preparation and maintenance, although that is focused on the most immediate needs at the time of a particular event.

Maintenance Observations

Overall Chelsea's parks seemed to be in a good state of maintenance. While park equipment varied as to its age and materials across the City's parks, it was found to be generally usable and clean. Clearly, in some of the older parks, new equipment will be needed in the next five years, but the equipment that was there was in decent repair. The quality of the planted surfaces was also seen to be positive, with the grass looking hearty, mowed and in good shape in most parks. Other landscaping was often minimal, but the flora was in control and there were not a lot of weeds or other undergrowth to speak of. While natural surfaces looked good, the turf field at Highland Park was in very poor condition. It was not level, and was patchy and worn in many places – clearly a result of its high usage, but also its age. Another park where the surface condition was poor was Dever Park. Its gravel pits were very unkempt, with gravel blowing all over the playground and out onto the sidewalks on both corners of its bordering streets. A high level of dust was created by this situation, and would make the park not very attractive for kids to play at, or to be safe from tripping when they did.

Cleanliness was generally positive across the parks, although there were some notable exceptions to this rule. Highland Park's soccer field surroundings were cluttered with water bottles and other trash left from players and fans at its regular soccer games. While the trash collection schedule shows Highland cleaned every day, this clearly must be restricted to the waste bins at the park, and not to trash outside of the bins. The trash was prominent in all corners of the park, especially under the stands, and gave Highland a dilapidated quality. Trash outside of the bins was also noted in Quigley Park, especially along its margins.

Further relating to cleanliness, there seemed to be little consistency in the types of waste receptacles provided at the parks. Moreover, residents suggested that recycling containers should be provided at the ballfields in particular given the amount of plastic bottles that find their way into the trash. In some cases there were Big Belly solar receptacles, but these were rare. In the most recently refurbished parks, such as Washington and Box District parks, they had nice looking trash bins and also dog waste receptacles with good signage. In all the older parks, such amenities did not exist. A number of parks had nothing more than untethered blue plastic cans. Signage around waste was very inconsistent across the parks, and the amount of receptacles provided seemed variable depending on the park. In Highland Park, there was clearly not enough bins for the trash created and this no doubt contributed to the amount not binned at all.

That Chelsea has been refurbishing parks, often in very creative and engaging ways, is hugely positive. The good quality of the parks also speaks to the value the City places on its open spaces as vital to its residents' quality of life. The DPW does have regular plans to ensure parks are clean and safe and the plans seem to be delivering positive results. There does however seem to be an absence of an overall management and maintenance plan for the city besides basic trash collection and field maintenance.

Recommendations on Parks Maintenance Management

While the state of Chelsea's parks are strong, effective long-term maintenance could benefit from adopting a number of recommended organizational and operational practices. First among them would be to designate a parks maintenance director within the DPW. Preferably this would be a full-time role for an experienced professional, but if that is not feasible for financial or administrative reasons, ensuring that a single senior official within the DPW is responsible for parks maintenance and directs the activities of DPW staff charged with maintaining staff would be the next best option. A designated lead for parks would enable all the other parts of Chelsea government to know who to discuss parks maintenance issues with. The individual and a parks division they would oversee, would enable accountability for parks maintenance issues to be clear and long-range plans to be devised.

To further facilitate effective long-term parks management, the DPW parks division should conduct annual condition audits to assess the status of each park, its equipment, surfaces and overall environment and use it to develop annual maintenance work plans, budgets and maintenance schedules, as well as to plan capital expenditures for the parks. The parks condition audit should look at a variety of maintenance elements, including: turf care, fertilization, irrigation, hardscape surfaces, play equipment and special features such drinking fountains, basketball netting, soccer goals, signage, placement and number of little receptacles, etc. The condition audit can give a maintenance score to each park and for each of the park's key elements, all of which can be used to guide development of a maintenance plan to sets out the key actions needed for weekly park maintenance.

Chelsea already has the building blocks for such a plan, but could go further to spell out parks maintenance tasks beyond trash collection and field lining. Maintenance plans should also detail how often turf, planted areas, irrigation systems, playgrounds and equipment will be inspected. The plan should set out schedules for mowing, but also further plant control, such as weed removal, tree pruning and watering and mulching planted areas. Beyond the current weekly trash and field lining schedule, a full maintenance plan should set out all the tasks and timetables for that work to be conducted throughout the year.

Chelsea uses the SeeClickFix tool enabling residents to visually report any infrastructure damage or issues to City officials. To the degree it is not already used by the DPW as a maintenance management software and workflow system, it could be purposed in such a way to support parks maintenance. Any issue reported by parks maintenance division DPW staff could be entered into the SeeClickFix system to ensure it is addressed. Signage at parks should also let residents know that they can relay any information about parks maintenance to City officials using the SeeClickFix tool.

Chelsea is considering deploying green infrastructure assets into its parks to capture and filter stormwater runoff and improve drainage. Green infrastructure assets, such as rain gardens or porous pavement, a certain level of upkeep beyond current activities. For example, rain gardens require additional inspection to assess plant health and ensure litter removal. Regular weeding and mulching are also necessary for such installations. Porous pavement can require power washing and vacuuming every few years to ensure it retains its permeability. If gravel or other porous surfaces have been used in parks to enable water infiltration, such materials will need to be refilled due to erosion or compacting. Other cities have implemented green infrastructure successfully and would be able to advise Chelsea's DPW parks about maintenance requirements for such assets.

Challenges

Previous Parks and Open Space initiatives built upon the priorities set forth in the 2010 Open Space and Recreation Plan. Projects focus on maintenance and rehabilitation of existing open space facilities and the management of these facilities to maximize recreation opportunities, and also seek to improve the appearance of neighborhood open spaces and provide connections between neighborhoods. The chief priority is to integrate open space into the fabric of the city so that all new planning and development initiatives acknowledge its inclusion as a component of the activity.

Given the constraints on the City's open space and recreational resources and the limitations that the City faces in developing new parkland, the City must continue to work to manage existing facilities in order to optimize their use. To further this goal, the City includes opportunities for various age groups in all its park design. In addition, the City has hired a full-time community schools director. The director has developed programs to make the community school programs more accessible to a greater number of city residents.

The Chelsea Boys and Girls Club continue to provide quality recreation and guidance to local youth. The update to the City's Open Space and Recreation Plan provides a framework for promoting use of the City's recreation facilities and a plan for management of the City's parks. Implementation of the plan has been a priority. The City's efforts at building lines of communication to anticipate the recreational

needs of local residents through more interactive planning processes has resulted in the establishment of constituencies to care for local parks and has improved the City's ability to compete for grants. The City must continue to foster this communication and to build upon it in order to involve more residents and businesses in the process. Building bridges between recreational programs in the public park system, and those offered through local non-profits and the after-school program will continue to bring age appropriate activities to everyone in the community.

The City's Park and Open Space system must continue to be an essential part of a vibrant and healthy community. Massachusetts is experiencing high childhood obesity rates (approximately 25 – 30% of children between the ages of 10 and 17), and it may be higher in Chelsea. The general lack of access to recreational opportunities may be one of the reasons for potentially elevated rates in Chelsea. The City will continue to refine open space priorities, and set new goals to realize that vision for a quality open space system to serve all the city's residents.

The City can continue to look for new opportunities in conjunction with local businesses. Eastern Mineral, which owns the land on which the road salt pile is located, established a publicly organized recreation territory (PORT) where a park now exists, which is programmed and managed by the City. In a City where land for recreation is scarce, private-public partnerships can be useful in creating additional opportunities.

Recent and Current Projects

In recent years, the CIP has supported an extensive system of improvements to the City's open space system, and resulted in the complete overhaul and modest additions to the system, including the following projects (including some that have utilized sources of money outside of City funding:

- Renovation of Washington Park, Voke Park, and Cipiella Park, Bosson Park, Bellingham Hill Park and Quigley Park
- Expansion of the park system with new parks including Kaboom! Park, PORT Park, pocket park at Highland and Library Sts.
- Completion of an historic building and site inventory, which includes residential and industrial/commercial structures;
- Expansion of its community garden program in concert with Chelsea GreenRoots
- Working to develop the Mystic River Overlook Park that includes trails up the hillside under the Tobin Bridge
- Working with the Stanton Foundation to develop the City's first dog park
- Work with the state to identify potential improvements to pedestrian and bicycle traffic in the downtown
- Work with the Safe Routes to School program to improve pedestrian routes;

- Planning for additional phases of the five-year Garden Cemetery Preservation Plan including tree planting and detailing the placement and names of the burial markers (including from the Civil War era)
- Using PARC grant to improve Highland Park in FY18
- Renovating Chelsea High School field, Mary C. Burke field, and Carter Park field and playground in 2017
- Developing a bike and pedestrian path to the waterfront in conjunction with downtown traffic and parking improvements ($6 million in funding in FY18)
- New streetscape improvements and new street trees; and
- Completion of this Open Space and Recreation Plan 2017-2023 Update

SCORP

The SCORP (Statewide Comprehensive Outdoor Recreation Plan) is the state's equivalent of a municipal open space plan. SCORP plans are developed by individual states to be eligible for federal Land and Water Conservation Fund (LWCF) grants. In 2012, the Executive Office of Energy and Environmental Affairs completed the Massachusetts' SCORP to help guide the distribution of federal funding to state agencies and municipalities for the acquisition of open space, renovation of parks, and development of new parks. The SCORP is a planning document that discusses the available recreational resources in a state, as well as its needs, and identifies the gaps between the two.

The Goals, Objectives and the Action Plan for this Plan were developed after distilling all of the information gathered through the public participation process and input from City staff, boards and commissions. They align very closely with the Goals and Objectives identified in the 2012 SCORP. These goals include:

1. Increase the availability of all types of trails for recreation.
2. Increase the availability of water-based recreation.
3. Invest in recreation and conservation areas that are close to home for short visits.
4. Invest in racially, economically, and age diverse neighborhoods given their projected increase in participation in outdoor recreation.

These goals will not only meet the needs of Massachusetts residents, but also the goals of America's Great Outdoors (AGO) for investments in urban parks and community green spaces. Multiple SCORP goals also coalesce with the Commonwealth's desire to increase the share of bicycling and walking among Massachusetts transportation choices. The SCORP goals are consistent with the goals and objectives of Chelsea's OSRP. For example, the City's open space and recreation facilities are generally well-distributed around the community so that they are relatively convenient to most residents, and they provide a wide variety of activities to meet the needs of its diverse population, including its EJ population. The City has a robust and varied recreation program that serves all its residents, as well as private

programs through organizations such as the Jordan Club and the youth and adult athletic leagues.

The City of Chelsea provides opportunities for many of these pastimes, such as walking and sightseeing in Mary O' Malley Park, which provides handsome vistas of Charlestown and Boston to its users. Soon it will be possible to walk along the Island End and Mystic Rivers from Beacham Street to Broadway, a distance of approximately one mile, via Island End Park and Mary O'Malley Park. Sightseeing is also a viable option in Chelsea with the presence of four National Register Historic Properties and four National Register Historic Districts. Swimming is available at the Vietnam Veterans Memorial Pool. There are also numerous playground, basketball, and baseball opportunities both in Chelsea and nearby within the region.

8

Goals and Objectives

Goals are the most basic statement about what Chelsea's open space and recreation facilities should achieve. There are four basic goals, with a number of more specific objectives under each of them. These goals incorporate the input received during the preparation of the Open Space and Recreation Plan, as described in Chapter 6. Three of the goals and objectives essentially mirror those of the 2010 Plan, but were reviewed, validated, and expanded by participants in the public input process associated with this Plan. A fourth goal was also added as a result of this review process.

Goal 1: Provide active and passive recreational and fitness opportunities for all ages suited to Chelsea's urban population

Chelsea is one of the smallest, most densely populated, and most ethnically diverse communities in Massachusetts. Its small size and high-density place severe limitations on the availability of park and recreation space in the city. This limitation to satisfying the open space needs of Chelsea residents is compounded by the minimal private open space and relatively poor transportation and financial resources of the residents, which limit their access to other public and private recreational opportunities. *Therefore, Chelsea's public parks and recreations facilities must meet the diverse recreational needs of the population year-round.*

- Give top priority to the rehabilitation and maintenance of existing parks, playgrounds, and indoor recreation facilities.
- Provide a full range of recreational opportunities appropriate to citywide and neighborhood recreation needs and age groups. These include but are not limited to: baseball and soccer; tot lots, basketball, bocce, chess tables; indoor facilities for year round and winter use; facilities for organized leagues; family oriented facilities; bicycling, jogging, roller skating, and walking facilities.
- Look for opportunities to expand the number of playing fields available.

- Provide each neighborhood with an adequate range of appropriately located parks, playgrounds and recreation facilities.
- Design facilities to serve the disabled, special needs, and elderly populations of Chelsea; remove barriers that prevent access to and use of existing parks.
- Pursue acquisition of other sites for open space and recreation development where available and appropriate.
- Provide safety and security in all parks and playgrounds through appropriate programming and design, proper upkeep, and community and police participation in planning and operation of the parks.
- Work with neighbors and park users to achieve compatible use at parks and playgrounds and to upgrade and maintain them. Encourage local park groups and the Community Schools program to be involved in programming activities.
- Provide adequate staffing to maintain parks and playgrounds and to coordinate programs in them. Programs such as a Kite Festival at Malone Park, the farmers market, and the park ranger program promote this goal.
- Assess conditions at city parks and playgrounds annually and take corrective action through routine maintenance and by budgeting capital improvements.

Goal 2: Take advantage of Chelsea's and regional environmental, historic, cultural, waterfront and scenic resources

- Chelsea is surrounded by water on three sides with direct access to Boston Harbor. There are five drumlins in the city with many scenic views. *New and existing parks and open space should take advantage of these opportunities to enrich the experience of city residents.*
- Take advantage of hilltop views in acquiring, designing, and maintaining hill top park sites.
- Acquire waterfront properties large enough to serve as park nodes. Develop clear connections to waterfront nodes using existing streets and improved streetscape.
- Preserve, enhance, and restore wetland areas through open space acquisition, easements, and deed restrictions.
- Provide waterfront vantage points from which marine activities can be viewed and expand the Harbor Walk.
- Incorporate Chelsea's historic resources, including the Garden Cemetery, in the open space system.
- Work with DCR and other state agencies in planning the acquisition, programming, operation, and maintenance of the city's natural, historic, and cultural resources.

Goal 3: Integrate the open space system into the city fabric

As an urban place, there is an intimate relationship between neighborhood open spaces and the surrounding residential, commercial, and industrial areas. Urban dwellers utilize public sidewalks and plazas in the same manner as parks. *Open space should help tie city neighborhoods together, provide buffers against incompatible uses, and add value to surrounding properties.*

- Provide safe and secure pedestrian and bicycle connections to major open space and recreation opportunities, transit, and Chelsea's schools. Encourage walking and hiking for transportation and fitness.
- Facilitate access to parks through pedestrian and bicycle improvements, and thereby assist in the rehabilitation of neighborhoods and the downtown. Use traffic calming to improve the safety of city streets and integrate streets into the public open space system.
- Enhance the open space value of city streets and squares for passive use.
- Use the open space system to help tie the city together. Develop physical connections and promote events that attract residents from various neighborhoods city wide.
- Help beautify the city through appropriate open space, park, and streetscape improvements, and thereby assist in the rehabilitation of neighborhoods and the downtown. Programs such as Chelsea's Street Tree Program and the expansion of community gardens would further this goal.
- Maximize the opportunities presented by the Silver Line and the greenway built alongside it.

Goal 4: Improve security and maintenance at all sites

This goal is critical to the success of each of the other goals and objectives in this plan. Issues at specific sites must be identified and addressed throughout each year as they occur.

- Develop a schedule of particular items of work that would contribute to the actual or perceived security at the site.
- Develop a routine maintenance schedule and program for all parks and ballfields.
- Integrate parks and recreational planning with ongoing efforts to control drugs and related crime

9

Seven Year Action Plan

Introduction

The Seven Year Action Plan is based on the goals and objectives of the previous section. To ensure the implementation on a year-to-year basis of these actions, the City of Chelsea will rely on existing City staff such as the directors of Planning and Development, Public Works, the School Department, Youth Commission, Cultural Council, and Health Services for overall execution of the Plan. The City will also work to ensure that public outreach and education is achieved.

The Seven Year Action Plan is often the most difficult component of an Open Space and Recreation Plan. Unlike the lofty goals and objectives of the previous sections, here is where the rubber meets the road, where the planning ideals are translated into concrete actions. An Action Plan can sometimes be difficult to commit to and be problematic to review over time. Items that have been accomplished fade from view, while the more intractable problems linger for years. Financial and political trends may change, advancing some items while leaving others untouched. For these reasons alone, many communities are hesitant to put in writing the full scope of their intentions.

The following action plan intends to deliver on the promise of the goals and objectives expressed throughout this process, with a program of tangible steps for the City to take over the next seven years. There is a high level of activity already underway on many of these steps, based upon the input received during the planning process.

These actions are targeted to address the physical as well as the organizational issues confronting the City, as described and analyzed in *Section 7, Analysis of Needs*. The seven year action plan described below works to correct these "process" problems, while still maintaining a focus on the substantive issues of open space and recreation preservation, acquisition, enhancement, management, and maintenance. In addition to the more detailed plan below, some key items are displayed on *Map 8, Action Plan and Priorities.*

Some of these actions may already be well underway; others are ongoing but need additional support. And while all actions listed are recognized as important, three areas in particular rise to the top as being absolutely essential for any future progress towards meeting the goals of this Plan:

- Obtaining support from City staff, commissions, and boards that open space and recreation is a central and lasting priority for Chelsea. While it is to be understood that there may be competing needs in the City, all groups must abide by the central tenet that these issues are extremely important to the residents of Chelsea. Essentially, this was the tone of the public comments, which reinforced the need for the City to have and maintain high quality open space and recreational resources. Where open space and recreational resources are concerned, the goals and policies of this Plan and the committee members and staff of the City must be consulted. Furthermore, groups must agree in advance on the proper decision making procedures to be followed in such matters.

- Securing additional sources of funding, staffing, and other support for park facility maintenance and enhancement. One of the City's main concerns is the need to maintain and enhance its existing parks and playing fields. Resources to achieve these goals can be scarce and the City must be creative in how funds are raised. The City took a major step toward leveraging more funds for open space and recreation when it adopted the Community Preservation Act in 2016. Thus, one of the most important priority action items in this plan is to ensure effective implementation of CPA within the 2017-2018 timeframe. Several recommendations are made specifically to identify the means for spreading the responsibility specifically for parks maintenance, such as creating "friends of" groups for local parks and working with Chelsea's Green Space and Recreation Committee and its Park Rangers.

It is a general policy of the City that parks and open space must be maximized to:

- Provide active and passive recreational opportunities suited to the city's urban population;
- Resolve conflicts among those competing to use open space that is available;
- Take advantage of local environmental, waterfront, historic, cultural, and scenic resources, and
- Integrate the open space system into the city fabric to help link neighborhoods, provide buffers against incompatible uses and add value to surrounding properties.

Moreover, the City's recreation facilities need to be assessed and updated:

- To monitor the condition of existing facilities;

- To meet code requirements, and

- To address changes in recreation demand.

The programs included in this Plan allow the City to better maintain its existing open space while also providing the resources to increase recreational opportunity to other parcels in the City. The programs also provide for the enhancement of the City's streetscape features through landscaping. Specific programs include:

- Continue to implement this Seven-Year Action Plan contained in the City's Open Space and Recreation Plan (2017-2023) to guide development of the park system;

- Adopt a more robust Comprehensive Maintenance Program for all City open space and recreation facilities, coordinated with the school playground and playfield facilities;

- Renovation of community parks and open space to improve recreation opportunities and enhance the quality of life for the City's residents, and

- Installation of street trees and other features to enhance the City's streetscape and to provide amenities for pedestrians

The Open Space Program area will focus on making the following types of enhancements over the next seven years:

- Renovations to playing fields, basketball and tennis courts, and playground areas at existing parks to address the most pressing safety concerns and community needs in the park system;

- Assessment of ongoing open space needs as they pertain to recreation and resource (passive) opportunities;

- Enhancement of existing open spaces to improve recreational opportunities;

- Acquisition and development of new parks and playgrounds, especially in neighborhoods underserved by current resources;

- Purchase and installation of street trees to improve neighborhood streets and City parks; and

- Update the Open Space and Recreation Plan, as needed, to maintain the City's eligibility for open space and recreation funding.

In addition, the City, in conjunction with the MAPC prepared Waterfront Vision Plan. This plan was prepared to document the community's vision for Chelsea Creek and the corresponding waterfront areas, identify needed infrastructure

improvements, and look for ways to promote for public access to the waterfront that do not conflict with the existing uses governed by the state's Designated Port Area regulations. In the plan, several open space and recreation recommendations designed to enhance public access to the waterfront were identified that the City should pursue in more detail during its 2017 Municipal Harbor Plan process. They are made with the recognition that the waterfront presents a number of opportunities that need to be carefully considered given the potential conflicts with existing industrial activities. Thus, public safety and security require careful planning as these recommendations are considered for future action.

- *Environmental Restoration*
  The communities should continue to work with local community groups to seek funding and implement environmental restoration activities in and along Mill Creek.
- *Neighborhood Connections and Public Access*
  The plan envelops conceptual recommendations for enhancing pedestrian and other public infrastructure that would harmoniously integrate the waterfront with surrounding neighborhoods. These linkages would benefit public open space access. Sites for public access and recreation were also conceptually documented, pending the completion of the City's Municipal Harbor Plan

The plan also raised the possibility of recreational boating, including a community boating program for kayaking and rowing outside of the actively used shipping areas, and long-term goals to create recreational marinas and a public boat launching ramp outside of the Designated Port Area.

The August 2009 Addison-Orange Neighborhood Revitalization Plan prepared by Vine Associates contained several recommendations pertaining to open space and recreation. In summary, the report states the following:

> There is a need to provide additional open space opportunities in the neighborhood and a community desire to create a youth center and/or outdoor youth activities. Suggested open space and recreation improvements include:
>
> - Community garden(s)
> - Pocket parks
> - Green space/additional landscaping
> - Large, more central green space
> - Recreational facilities for youth such as skateboard or bike path
> - Wider sidewalks and small plazas at Cary Square to support cafés, additional trees and seating
> - A linear, green, multi-use path connecting Spruce Street to Carter
> - Street along the east side of Sixth Street

- Youth Center/Programs[16]

Recommendations relating to the revitalization plan are included within the seven year action plan below.

Both the City's 2007 *Gerrish Avenue/Bellingham Street Neighborhood Action Plan*, and The Neighborhood Developers' (TND) 2009 *North Bellingham Hill Revitalization Plan* planning process, in which the City was a major participant, recommend the development of open space in the Gerrish-Bellingham neighborhood. Specifically, the plans recommended:

- The development of a park on an underutilized parcel on Highland Avenue;
- The development of linear open space along the abandoned CSX right-of-way;
- Enhancement of the open space at the Highland Steps;
- Enhancement of the parking area at the top of Bellingham Hill to include landscaping; and
- Streetscape improvements to tie these green spaces together.

▼

[16] Vine Associates, Addison-Orange Neighborhood Revitalization Plan, August 2009, p. 39

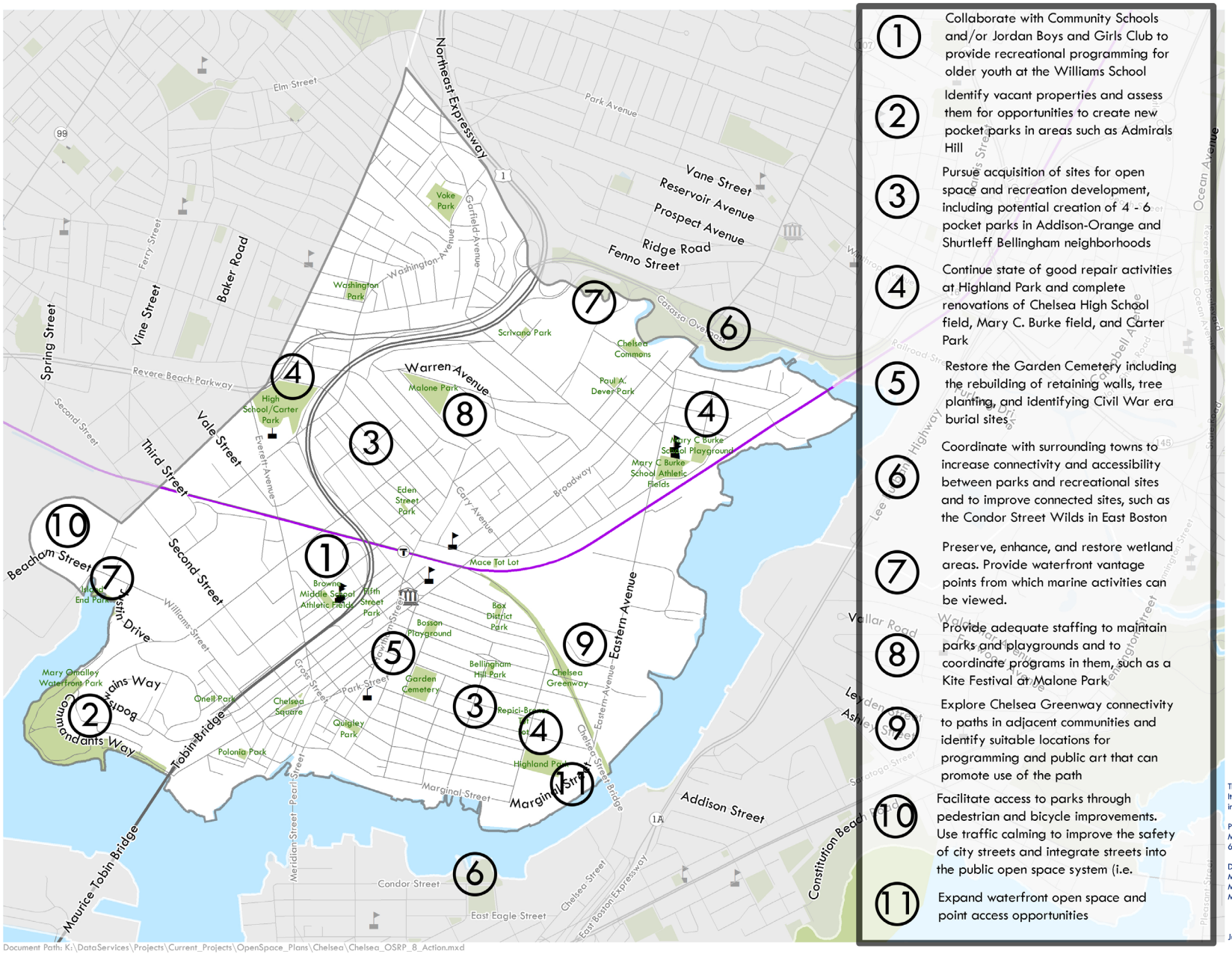
Table 7: Seven-Year Action Plan

Objective/Action Item	Potential Funding Source	Responsible Party	Action Year(s) 2017	2018	2019	2020	2021	2022	2023
Goal 1: Provide active and passive recreational and fitness opportunities for all ages suited to Chelsea's urban population Provide a full range of recreational opportunities appropriate to citywide and neighborhood recreation needs and age groups. These include, but are not limited to: baseball and soccer; tot lots, basketball, bocce, chess tables; indoor facilities for year round and winter use; facilities for organized leagues; family oriented facilities; bicycling, jogging, roller skating, and walking facilities.									
• Collaborate with Community Schools and/or Jordan Boys and Girls Club to provide recreation programming for older youth at the Williams School	City	Community Schools; Jordan Boys & Girls	●	●	●	●	●	●	●
• Provide each neighborhood with an adequate range of appropriately located parks, playgrounds and recreation facilities.	City	Planning & Development	●	●	●	●	●	●	●
• Design facilities to serve the disabled, special needs, and elderly populations of Chelsea; remove barriers that prevent access to and use of existing parks.	PARC, CPA	Planning & Development	●	●	●	●	●	●	●
• Continue City policy to build all new facilities to meet ADA standards and develop plan to upgrade existing facilities as needed to meet standards	PARC, CPA	Planning & Development	●	●	●	●	●	●	●
• Use ADA self-assessment information to develop a list of the top ten safety and ADA compliance issues	City	Planning & Development	●	●					
• Identify vacant or abandoned properties and assess them for opportunities to create new pocket parks and tot lots, including the proposed park under the Tobin Bridge and the dog park on Admirals Hill	n/a	Planning & Development	●	●					
• Pursue acquisition of other sites for open space and recreation development where available and appropriate. This includes potential creation of 4 – 6 pocket parks in Addison-Orange neighborhood.	LAND, PARC, CPA	City Council; Planning & Development				●	●		
• Create a variety of new green spaces and small parks to serve a range of user groups including community gardens and passive parks for socialization and relaxation	LAND, PARC, CPA	City Council; Planning & Development		●	●				
• Improve bike infrastructure to promote cycling as a safe choice and as a commuting option over driving. Secure funds for provision of bike parking, bike racks, and bike lane markings.	MassDOT/MAPC Bike Parking Program, CPA	Planning and Development; Chelsea; DPW	●	●					
• Complete Highland Park improvements, and renovation of Chelsea High School field, Mary C. Burke field, and Carter Park	PARC, City	Planning and Development	●	●					

Objective/Action Item	Potential Funding Source	Responsible Party	Action Year(s) 2017	2018	2019	2020	2021	2022	2023
• Work with neighbors and park users to achieve compatible use at parks and playgrounds and to upgrade and maintain them. Encourage local park groups and the Community Schools program to be involved in programming activities.	Private in-kind	Planning & Development; Community Schools; Chelsea Green Space	●	●	●	●	●	●	●
• Expand citizen stewardship programs to identify and rectify problems	Private in-kind	Chelsea Green Space; DCR	●	●	●	●	●	●	●
• Provide adequate staffing to maintain parks and playgrounds and to coordinate programs in them. Programs such as a Kite Festival at Malone Park, the farmers market, and the park ranger program promote this goal.	City	City Council; DPW	●	●	●	●	●	●	●
Goal 2: Take advantage of Chelsea's and regional environmental, historic, cultural, waterfront and scenic resources Chelsea is surrounded by water on three sides with direct access to Boston Harbor. There are five drumlins in the city with many scenic views. New and existing parks and open space should take advantage of these opportunities to enrich the experience of city residents.									
• Take advantage of hilltop views in acquiring, designing, and maintaining hill top park sites.	LAND, CPA	City Council; Planning & Development					●	●	
• Acquire waterfront properties large enough to serve as park nodes. Develop clear connections to waterfront nodes using existing streets and improved streetscape.	LAND, CPA	City Council; Planning & Development		●	●				
• Preserve, enhance, and restore wetland areas through open space acquisition, easements, and deed restrictions.	LAND, CPA	Conservation Commission	●	●	●	●			
• Provide waterfront vantage points from which marine activities can be viewed.	City, PARC, CPA	Planning & Development	●	●	●	●	●	●	●
• Work toward implementation of the 2016 Chelsea Waterfront Visioning Plan	Seaport Economic Council grant, City	Planning & Development		●	●	●	●		
• Prepare and implement the Municipal Harbor Plan	Seaport Economic Council grant, City	Planning & Development		●	●	●	●	●	●
• Incorporate Chelsea's historic resources, including the Garden Cemetery, in the open space system.	CPA	Planning & Development; Historical Commission			●	●			
• Restore the Garden Cemetery including the rebuilding of retaining walls, tree planting, and identifying Civil War era burial sites	CPA	Planning & Development; Historical Commission, Veterans		●	●				

Objective/Action Item	Potential Funding Source	Responsible Party	Action Year(s) 2017	2018	2019	2020	2021	2022	2023
• Work with DCR and other state agencies in planning the acquisition, programming, operation, and maintenance of the city's natural, historic, and cultural resources.	LAND, Historic tax credits, CPA	Planning & Development, Cultural Council	●	●	●	●	●	●	●
Goal 3: Integrate the open space system into the city fabric As an urban place, there is an intimate relationship between neighborhood open spaces and the surrounding residential, commercial, and industrial areas. Urban dwellers utilize public sidewalks and plazas in the same manner as parks. Open space should help tie city neighborhoods together, provide buffers against incompatible uses, and add value to surrounding properties.									
• Provide safe and secure pedestrian and bicycle connections to major open space and recreation opportunities, transit, and Chelsea's schools. Encourage walking and hiking for transportation and fitness.	Recreation Trail Grants, PARC, CPA	Planning & Development; DPW	●	●	●	●	●	●	●
• Facilitate access to parks through pedestrian and bicycle improvements, and thereby assist in the rehabilitation of neighborhoods and the downtown. Use traffic calming to improve the safety of city streets and integrate streets into the public open space system (i.e. downtown traffic and parking improvements in FY'18, Beacham St.).	City, Chpt. 90 funding	Planning & Development; DPW	●	●	●	●	●	●	●
• Enhance the open space value of city streets and squares for passive use.	City	Planning & Development; DPW	●	●	●	●	●	●	●
• Use the open space system to help tie the city together. Develop physical connections and promote events that attract residents from various neighborhoods city wide.	n/a	Planning & Development, Cultural Council	●	●	●	●	●	●	●
• Explore Silver Line Shared-Use Path connectivity to paths in adjacent communities, i.e., Northern Strand Trail.	State and private funding from Community Benefits Agreements	Planning & Development; DPW; Green Roots	●	●	●				
• Identify suitable locations for programming and public art that can promote use of the Path and facilitate interactions between Chelsea residents and visitors.	State and private funding from Community Benefits Agreements	Cultural Council	●	●	●				
• Work with partners to identify, create, and manage community gardening plots on underutilized parcels and vacant parcels that can be suitable for community gardening, with a focus on neighborhoods between Broadway and the Silver Line Corridor that are currently less well served by fresh food access	City; private grants	Planning & Development; GreenRoots;	●	●	●	●	●	●	●
• Help beautify the city through appropriate open space, park, and streetscape improvements, and thereby assist in the rehabilitation of neighborhoods and the downtown. Programs such as Chelsea's Street Tree Program and the development of community gardens would further this goal.	City; private grants	Planning & Development; DPW	●	●	●	●	●	●	●

Objective/Action Item	Potential Funding Source	Responsible Party	Action Year(s) 2017	2018	2019	2020	2021	2022	2023
• Link the Chelsea Green Space and Recreation Committee to the City website in an effort to increase outreach on important open space and recreation issues facing the City.	n/a	Chelsea Green Space; Info Tech	●						
• Coordination with surrounding cities to increase open space opportunities and potential, given the relatively small amounts of available open space in the City. Examples include the improvement of the Condor Street Wilds in East Boston, and potential bicycle connections to East Boston and Revere.	Recreation Trails Grant, PARC, CPA	Planning & Development	●	●	●	●	●	●	●
• Develop a multi-use pathway/linear park on former CSX ROW		Planning & Development	●	●	●				
Goal 4: Improve security and maintenance at all sites This goal is critical to the success of each of the other goals and objectives in this plan. Issues at specific sites must be identified and addressed throughout each year as they occur.									
• Identify regular maintenance needs and the resources necessary to achieve the maintenance schedule	City	DPW	●						
• Assess conditions at city parks and playgrounds annually and take corrective action through routine maintenance and by budgeting capital improvements.	n/a	DPW	●	●	●	●	●	●	●
• Give top priority to the rehabilitation and maintenance of existing parks, playgrounds, and indoor recreation facilities.	City	DPW; Community Schools	●	●	●	●	●	●	●
• Work with Police Department to identify park and recreation facilities where public safety needs are highest	City	Police; Community Schools	●	●					
• Consider public safety criteria in the design of future facilities	PARC, City	Planning & Development; Police	●	●	●	●	●	●	●
• Provide safety and security in all parks and playgrounds through appropriate programming and design, proper upkeep, and community and police participation in planning and operation of the parks.	City	Police; Community Schools	●	●	●	●	●	●	●



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1. Collaborate with Community Schools and/or Jordan Boys and Girls Club to provide recreational programming for older youth at the Williams School
2. Identify vacant properties and assess them for opportunities to create new pocket parks in areas such as Admirals Hill
3. Pursue acquisition of sites for open space and recreation development, including potential creation of 4 - 6 pocket parks in Addison-Orange and Shurtleff Bellingham neighborhoods
4. Continue state of good repair activities at Highland Park and complete renovations of Chelsea High School field, Mary C. Burke field, and Carter Park
5. Restore the Garden Cemetery including the rebuilding of retaining walls, tree planting, and identifying Civil War era burial sites
6. Coordinate with surrounding towns to increase connectivity and accessibility between parks and recreational sites and to improve connected sites, such as the Condor Street Wilds in East Boston
7. Preserve, enhance, and restore wetland areas. Provide waterfront vantage points from which marine activities can be viewed.
8. Provide adequate staffing to maintain parks and playgrounds and to coordinate programs in them, such as a Kite Festival at Malone Park
9. Explore Chelsea Greenway connectivity to paths in adjacent communities and identify suitable locations for programming and public art that can promote use of the path
10. Facilitate access to parks through pedestrian and bicycle improvements. Use traffic calming to improve the safety of city streets and integrate streets into the public open space system (i.e.
11. Expand waterfront open space and point access opportunities

Chelsea, MA Open Space and Recreation Plan Update 2017

Map 8: Action Plan Map

- Open Space
- Schools
- Town Hall
- Commuter Rail Stations
- Commuter Rail Line
- Open Space in surrounding communities

0 0.25 0.5 Miles

The information depicted on this map is for planning purposes only. It is not adequate for legal boundary definition, regulatory interpretation, or parcel-level analyses.

Produced by:
Metropolitan Area Planning Council
60 Temple Place, Boston, MA 02111 | (617) 933-0700

Data Sources:
Metropolitan Area Planning Council (MAPC)
Massachusetts Geographic Information System (MassGIS)
Massachusetts Department of Transportation (MassDOT)

July 2018

10

Letters of Approval

1. Thomas G. Ambrosino, City Manager
2. City of Chelsea Planning Board
3. Metropolitan Area Planning Council (MAPC)

Thomas G. Ambrosino
City Manager

City of Chelsea
EXECUTIVE OFFICE
City Hall, 500 Broadway
Chelsea, Massachusetts 02150
tambrosino@chelseama.gov

Telephone: (617) 466-4100
Fax: (617) 466-4175

October 3, 2018

Executive Office of Energy and Environmental Affairs
100 Cambridge Street, #900
Boston, MA 02114
Attn: OSRP Review Staff – Melissa Cryan

Re: *City of Chelsea 2017 Open Space and Recreation Plan*

Dear Ms. Cryan:

As the Chelsea's City Manager, I've reviewed the 2017 Open Space and Recreation Plan ("OSRP") and hereby issue this letter of support for its final approval by the Executive Office of Energy and Environmental Affairs.

The Chelsea OSRP serves as a blueprint for the utilization, enhancement and expansion of our open space and recreational facilities over the next seven years. Recognizing the importance of the OSRP, this document will serve as a tool to thoughtfully plan and shepherd improvements to the City's open space system. By harnessing community input, the City looks forward to realizing the objectives presented in the Plan.

On behalf of the City of Chelsea, I respectfully recommend approval of this document and look forward to working with EEA on future open space matters.

Sincerely,

Thomas G. Ambrosino
City Manager

CITY OF CHELSEA
PLANNING BOARD
City Hall, 500 Broadway, Room 101
Chelsea, Massachusetts 02150
Tel: (617) 466-4188 | Fax: (617) 466-4195
Lad Dell: Staff

October 23, 2018

Executive Office of Energy and Environmental Affairs
Division of Conservation Services
100 Cambridge St., Suite 900
Boston, MA 02114

Re: Open Space and Recreation Plan

Dear Ms. Cryan and EEA Staff,

The Chelsea Planning Board reviewed the proposed 2017 Open Space and Recreation Plan (OSRP) and is pleased to recommend it for approval by the Executive Office of Energy and Environmental Affairs. The Planning Board voted unanimously to endorse the OSRP as presented.

The Planning Board is supportive of the goals and objectives, as outlined in the OSRP. Chelsea's parks, playgrounds, and recreational facilities are vital community assets that are critical to the health, well-being, and quality of life of the City's residents.

The OSRP details specific objectives and actions for improving, preserving, and expanding open space resources throughout the City, as well as measures to maintain and safeguard these assets. We look forward to the City's continued stewardship of its open spaces.

Sincerely,

William Tuck Willis
Chairperson, Chelsea Planning Board

MAPC
METROPOLITAN AREA PLANNING COUNCIL

SMART GROWTH AND REGIONAL COLLABORATION

October 25, 2018

Melissa Cryan
Executive Office of Energy and Environmental Affairs
Division of Conservation Services
100 Cambridge Street
Boston, MA 02114

Re: Chelsea Open Space and Recreation Plan

Dear Ms. Cryan:

This letter will serve as MAPC's review of the City of Chelsea 2017 - 2024 Open Space and Recreation Plan. MAPC enjoyed working with the City of Chelsea to develop this plan. It was written to comply with the Division of Conservation Services (DCS) guidelines and to integrate a regional perspective on the issues addressed during the planning process. We have also worked to make the plan consistent with the goals and objectives of *MetroFuture*, the regional policy plan for the Boston metropolitan area. We believe that the participation of City staff, the enhanced outreach conducted during the preparation of the plan, and MAPC's regional perspective have generated a plan that will help to guide the City in its continued efforts to improve open space and recreation opportunities and facilities in Chelsea.

MAPC wishes the best of luck to the City as it moves forward with implementation of the plan.

Sincerely,

Mark Racicot
Land Use Planning Director

11

References

References

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Chelsea Neighborhood Developers (CND) North Bellingham Hill Revitalization Plan, 2009

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Individuals and Agencies

Thomas G. Ambrosino, City Manager
John DePriest, AICP – Director of Planning and Development
Alexander Train, Senior Planner/Project Manager, Department of Planning and Development

Chelsea Boys and Girls Club
Chelsea City Clerk's Office
Chelsea Community Schools Program
Chelsea Department of Public Works
Chelsea Housing Authority
Chelsea School Department
Chelsea Council on Elder Affairs
Chelsea Cultural Council
Healthy Chelsea
Chelsea GreenRoots

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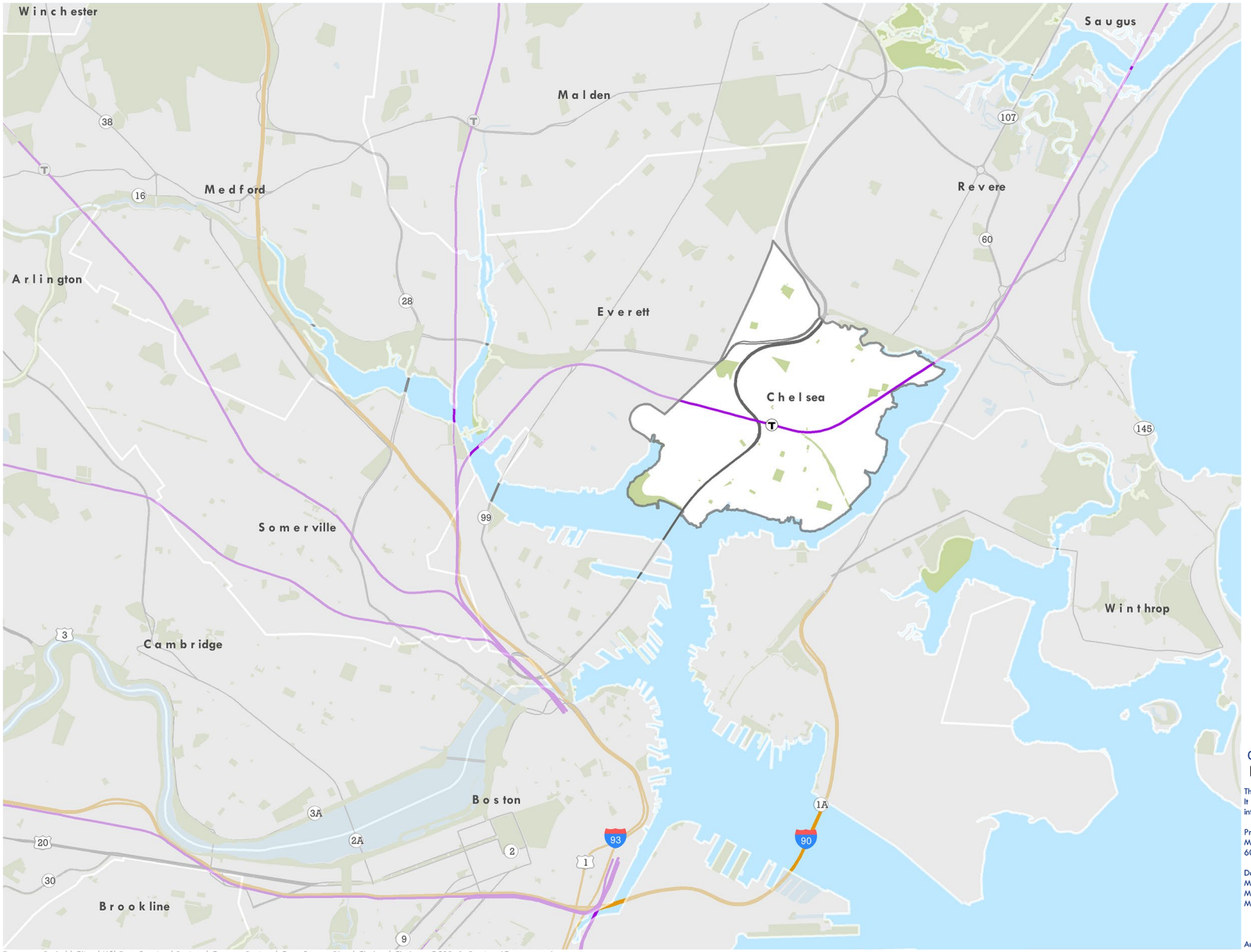
Maps

1. Regional Context Map
2. Environmental Justice Populations
3. Zoning
4. Soils and Geologic Features
5. Unique Features
6. Water Resources
7. Open Space Inventory
8. Regional Open Space
8. Action Plan



Chelsea, MA Open Space and Recreation Plan Update 2017

Map 1: Regional Context

- Open Space
- Commuter Rail Stations
- Commuter Rail Line
- Lakes and Ponds
- Open Space in surrounding communities

0 0.275 0.55 1.1 Miles

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60 Temple Place, Boston, MA 02111 | (617) 933-0700

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Massachusetts Geographic Information System (MassGIS)
Massachusetts Department of Transportation (MassDOT)

August 2018

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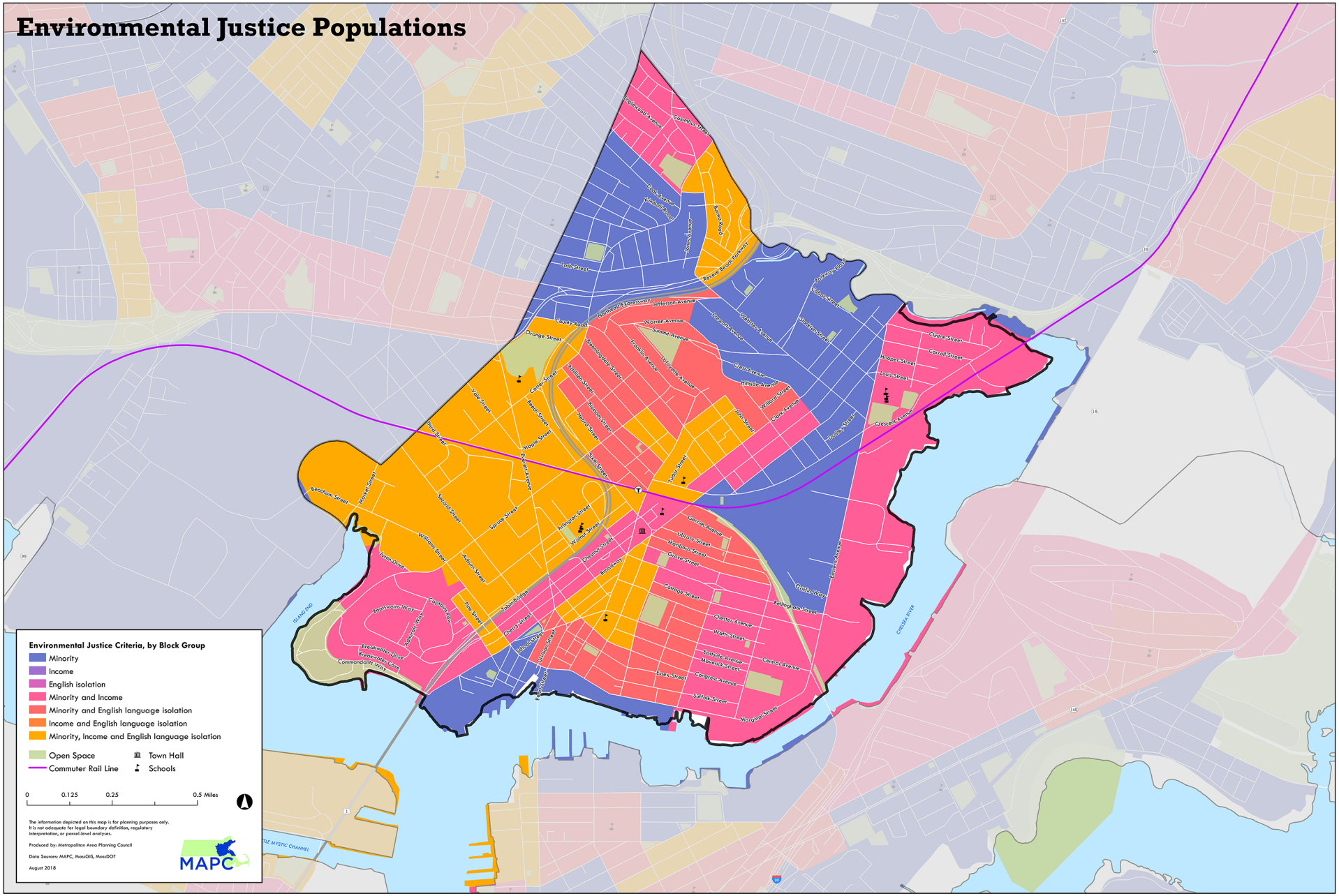
Environmental Justice Populations
Environmental Justice Criteria, by Block Group
Minority
Income
English isolation
Minority and Income
Minority and English language isolation
Income and English language isolation
Minority, Income and English language isolation
Open Space
Commuter Rail Line
Town Hall
Schools
0
0.125
0.25
0.5 Miles
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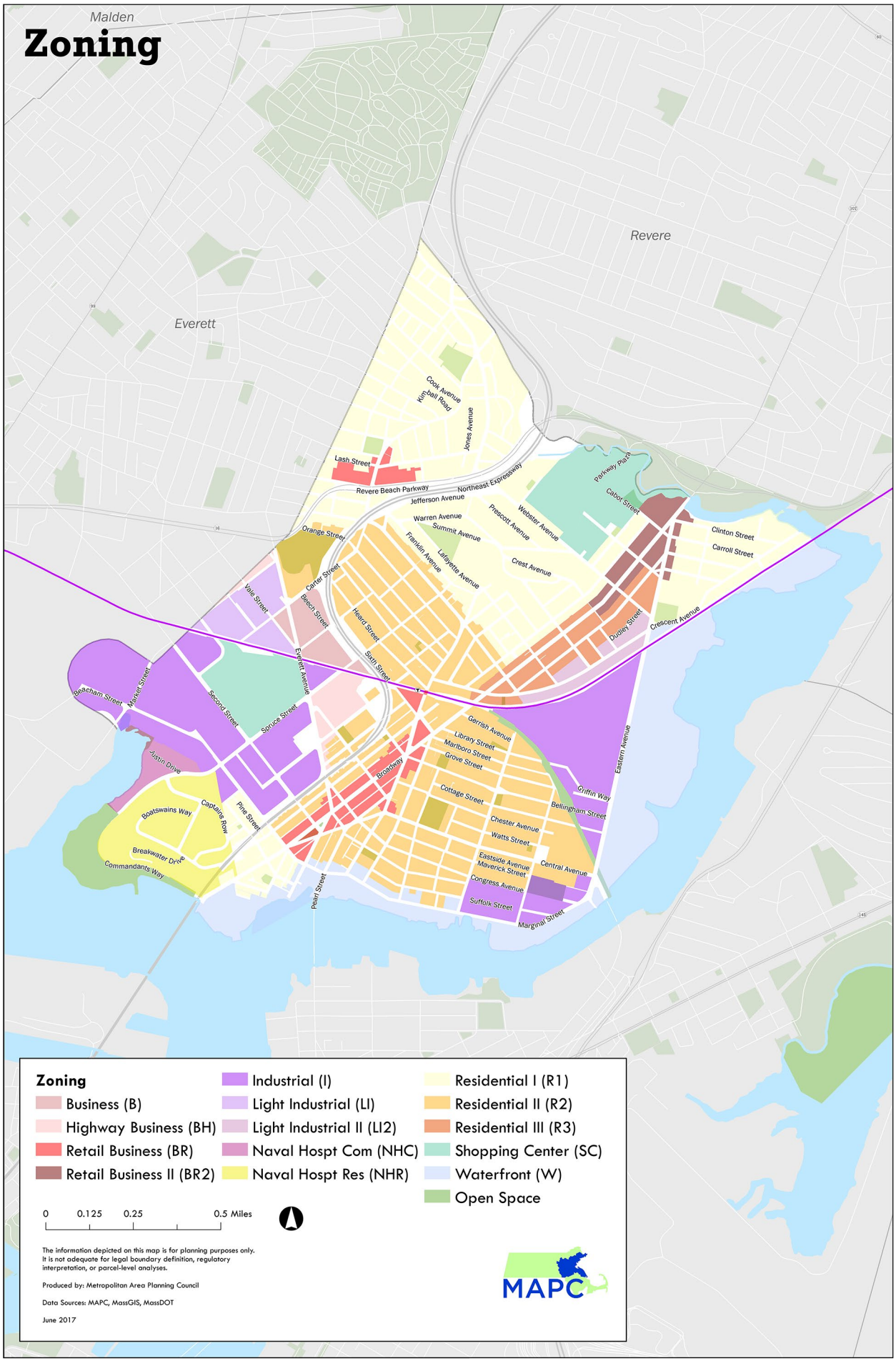
MAPC



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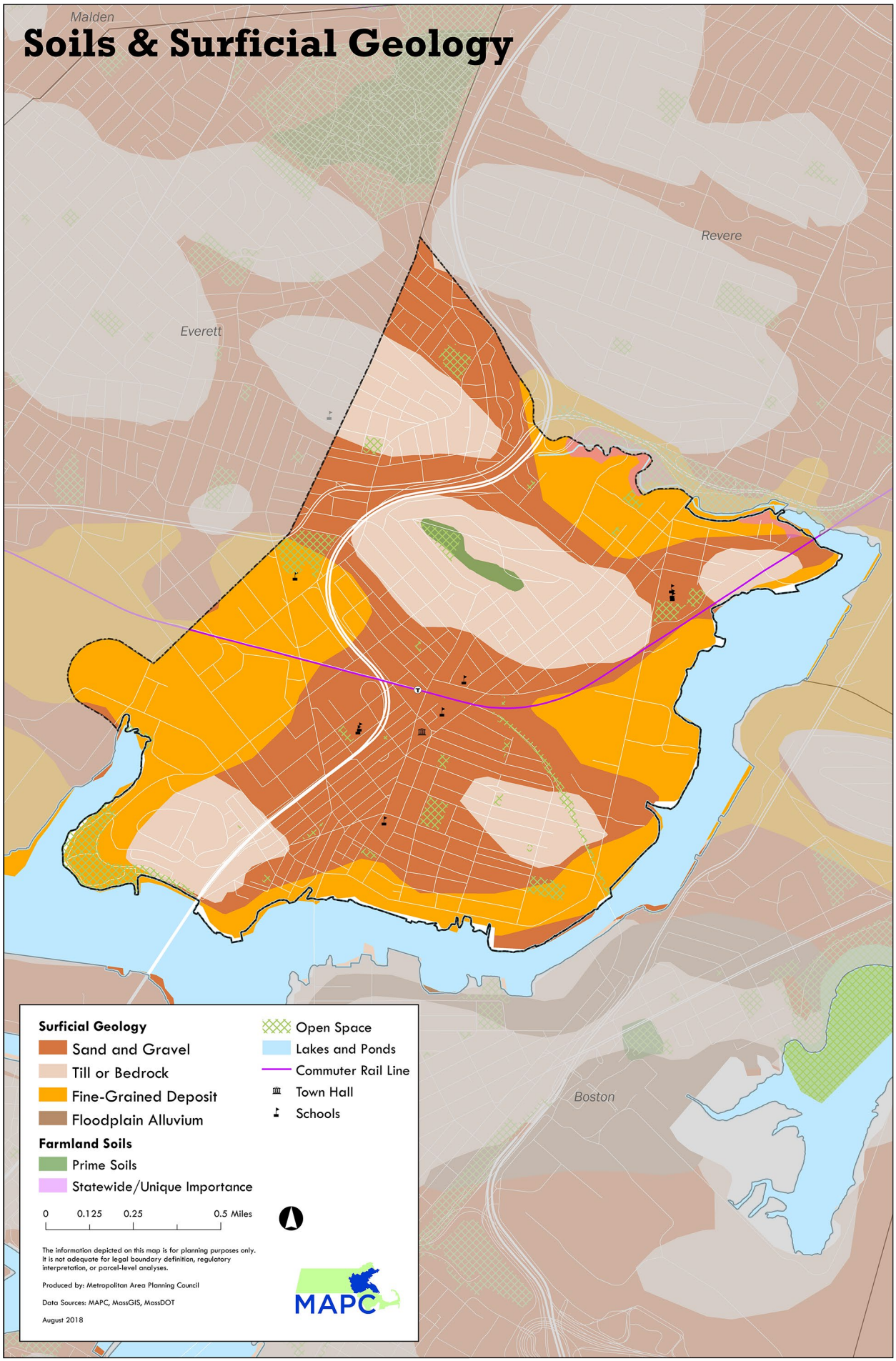
Soils & Surficial Geology
Malden
Revere
Everett
Boston
Surficial Geology
Sand and Gravel
Till or Bedrock
Fine-Grained Deposit
Floodplain Alluvium
Farmland Soils
Prime Soils
Statewide/Unique Importance
Open Space
Lakes and Ponds
Commuter Rail Line
Town Hall
Schools
0 0.125 0.25 0.5 Miles
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August 2018
MAPC
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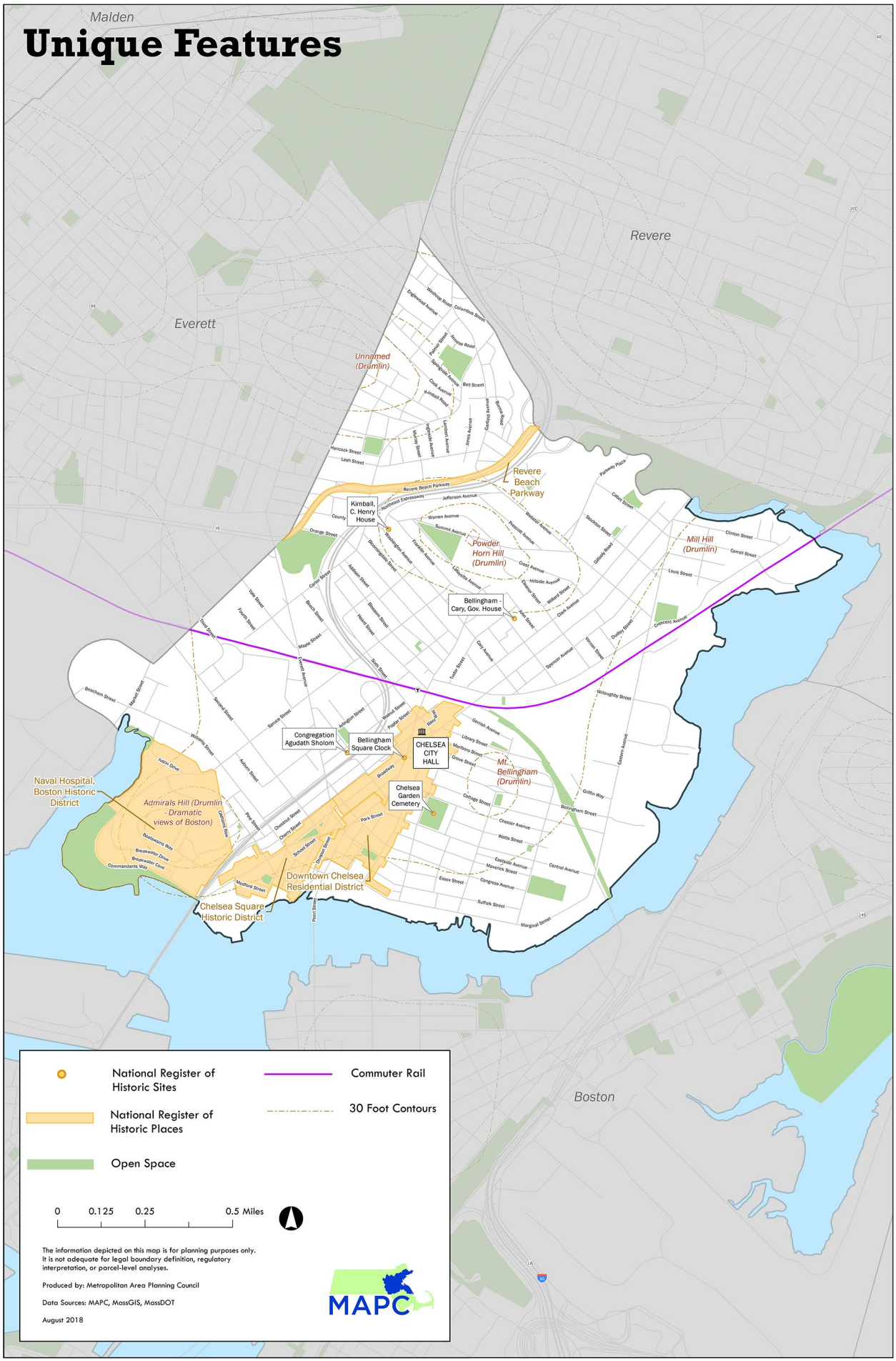

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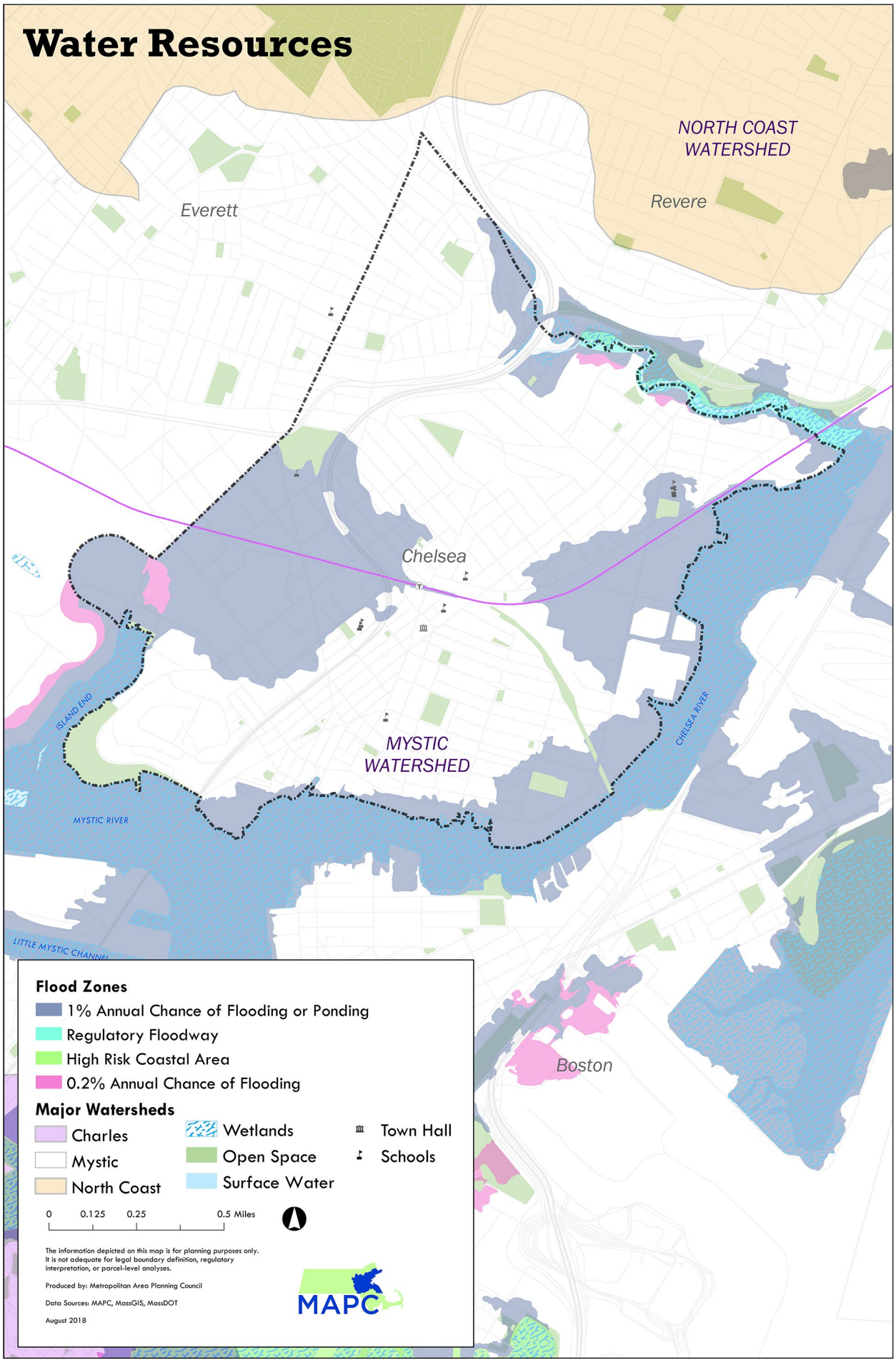
Water Resources
NORTH COAST WATERSHED
Everett
Revere
Chelsea
ISLAND END
MYSTIC WATERSHED
CHELSEA RIVER
MYSTIC RIVER
LITTLE MYSTIC CHANNEL
Boston
Flood Zones
1% Annual Chance of Flooding or Ponding
Regulatory Floodway
High Risk Coastal Area
0.2% Annual Chance of Flooding
Major Watersheds
Charles
Mystic
North Coast
Wetlands
Open Space
Surface Water
Town Hall
Schools
0 0.125 0.25 0.5 Miles
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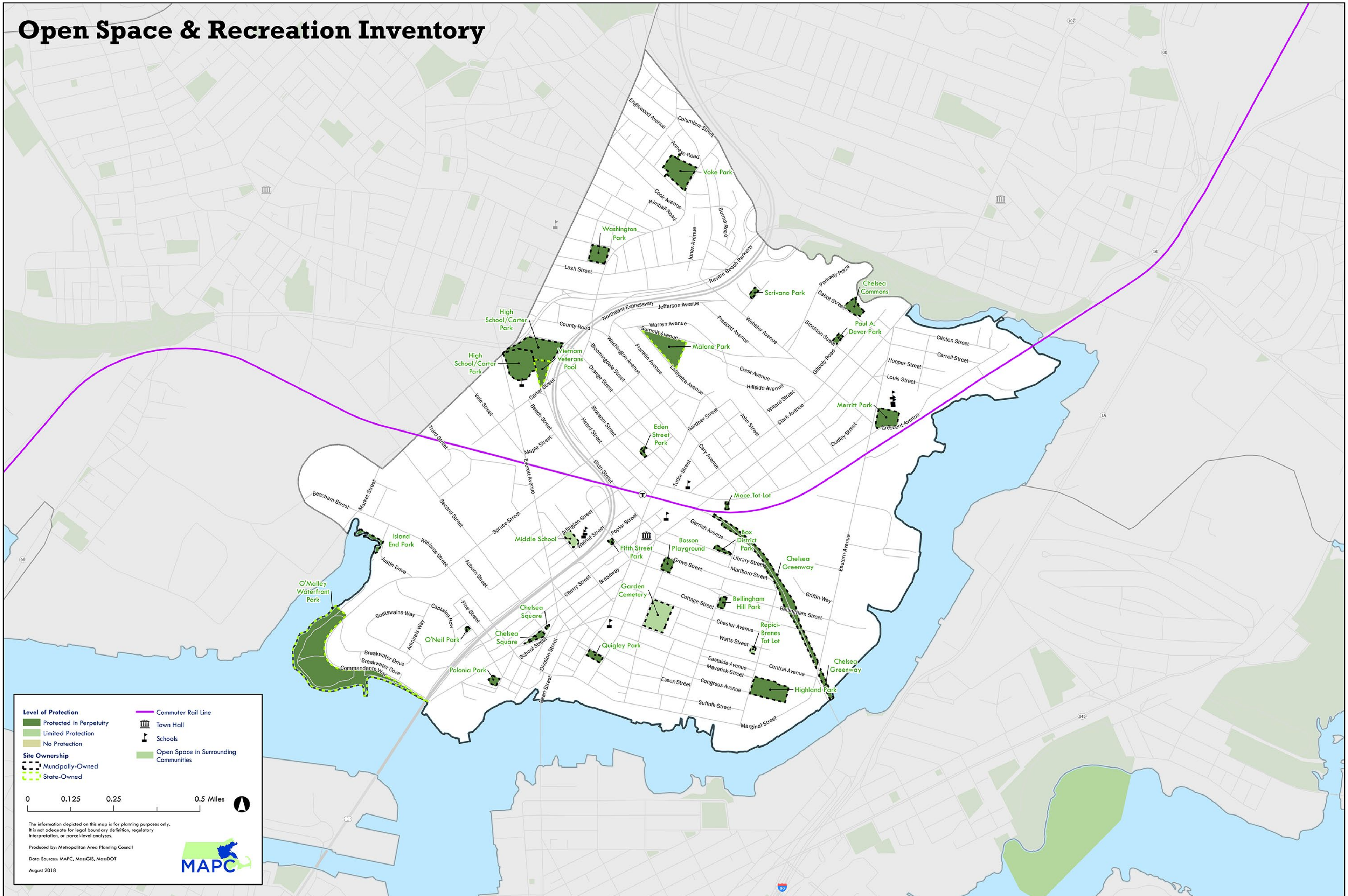
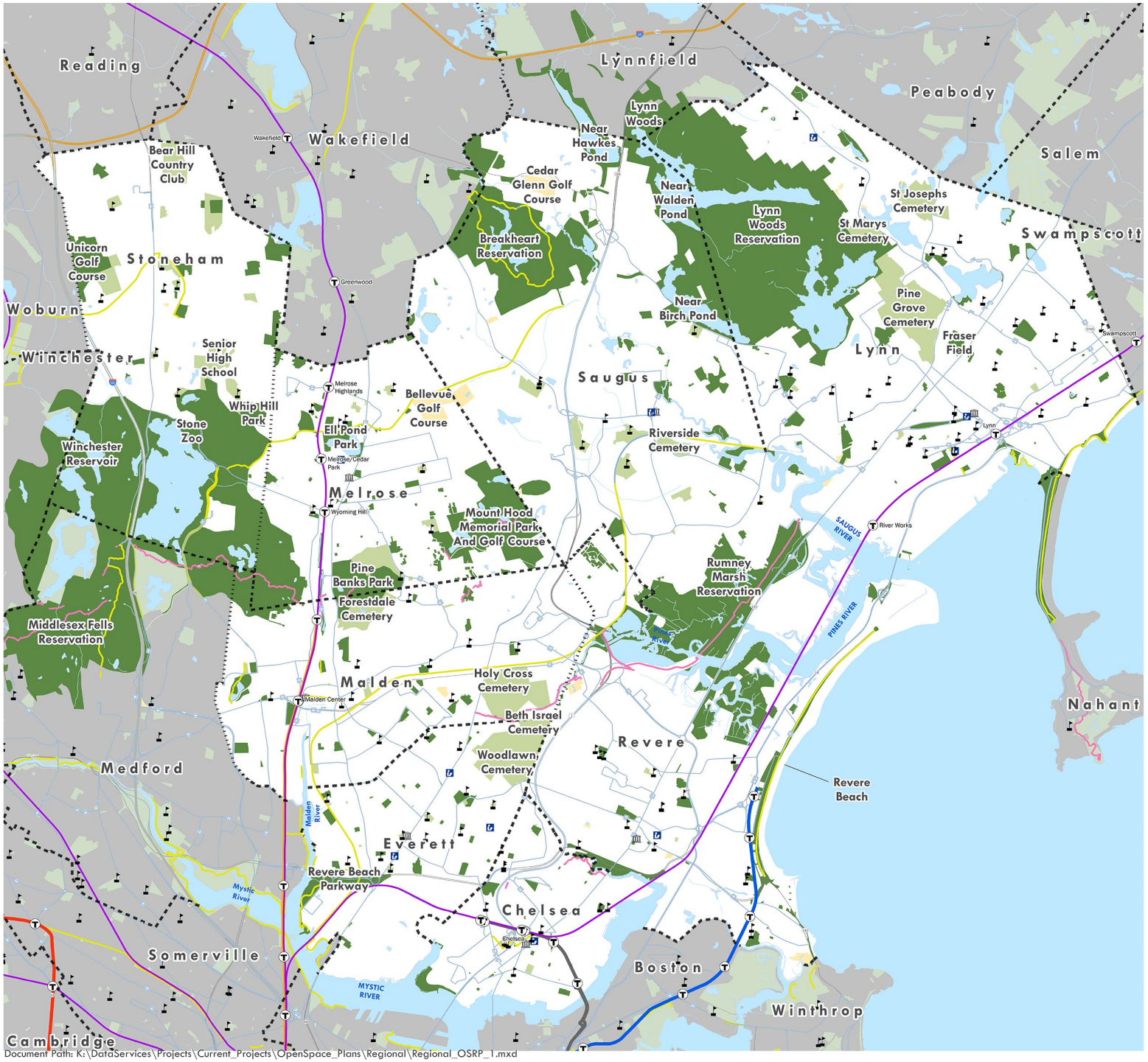
Open Space & Recreation Inventory





Open Space and Recreation Plan Update 2017

- Schools
- Libraries
- Town Hall
- Commuter Rail Stations
- Commuter Rail Line
- MBTA Blue Line
- MBTA Orange Line
- MBTA Red Line
- MBTA Silver Line
- MBTA Bus Routes
- Water Bodies

Regional Open Space Sites

- Permanently Protected
- Limited Protection
- Not Protected/Unknown

Landline Regional Greenways

Existing or In Construction

- Greenway Route
- Greenway and Walking Trail
- Regional Walking Trail
- Open Space in Surrounding Communities

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Metropolitan Area Planning Council
60 Temple Place, Boston, MA 02111 | (617) 933-0700

Data Sources:
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Massachusetts Department of Transportation (MassDOT)

October 2017

MAPC

0 0.375 0.75 1.5 Miles

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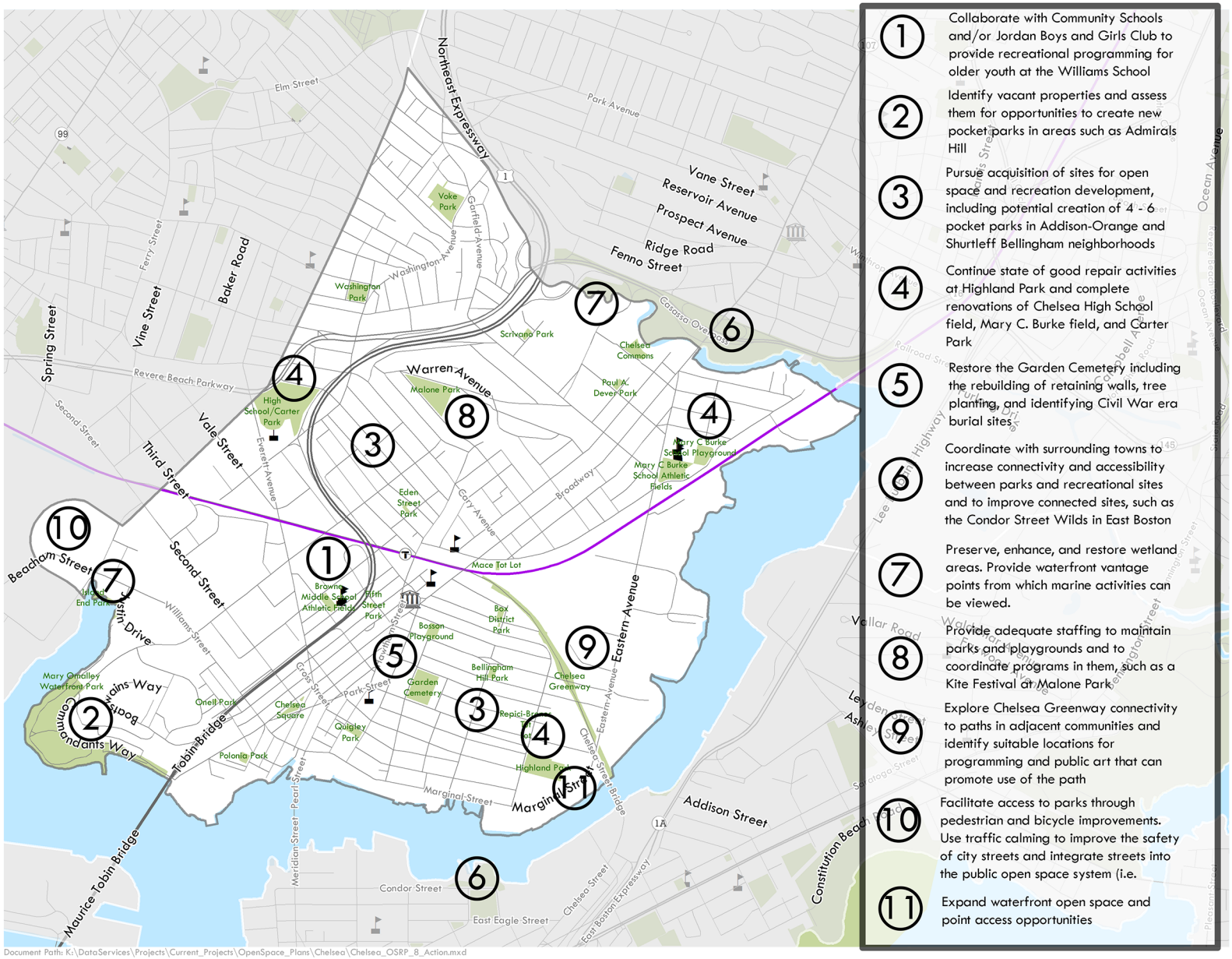

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1. Collaborate with Community Schools and/or Jordan Boys and Girls Club to provide recreational programming for older youth at the Williams School
2. Identify vacant properties and assess them for opportunities to create new pocket parks in areas such as Admirals Hill
3. Pursue acquisition of sites for open space and recreation development, including potential creation of 4 - 6 pocket parks in Addison-Orange and Shurtleff Bellingham neighborhoods
4. Continue state of good repair activities at Highland Park and complete renovations of Chelsea High School field, Mary C. Burke field, and Carter Park
5. Restore the Garden Cemetery including the rebuilding of retaining walls, tree planting, and identifying Civil War era burial sites
6. Coordinate with surrounding towns to increase connectivity and accessibility between parks and recreational sites and to improve connected sites, such as the Condor Street Wilds in East Boston
7. Preserve, enhance, and restore wetland areas. Provide waterfront vantage points from which marine activities can be viewed.
8. Provide adequate staffing to maintain parks and playgrounds and to coordinate programs in them, such as a Kite Festival at Malone Park
9. Explore Chelsea Greenway connectivity to paths in adjacent communities and identify suitable locations for programming and public art that can promote use of the path
10. Facilitate access to parks through pedestrian and bicycle improvements. Use traffic calming to improve the safety of city streets and integrate streets into the public open space system (i.e.
11. Expand waterfront open space and point access opportunities

Chelsea, MA Open Space and Recreation Plan Update 2017

Map 8: Action Plan Map

- Open Space
- Schools
- Town Hall
- Commuter Rail Stations
- Commuter Rail Line
- Open Space in surrounding communities

0 0.25 0.5 Miles

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Massachusetts Geographic Information System (MassGIS)
Massachusetts Department of Transportation (MassDOT)

July 2018

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Appendices

Appendix A: Section 504/ADA Compliance

Appendix B: Public Participation Notes

Appendix C: Inventory of Public and Private Open Space

Appendix D: Designing Parks and Playgrounds as Green Infrastructure for Stormwater and Climate Resilience

Appendix E: ParkServe City of Chelsea Park Equity Report

Appendix A: Section 504/ADA Compliance

The City of Chelsea has done extensive work to meet its obligations under Section 504 and the Americans with Disabilities Act (ADA). As new parks are built and existing parks are rehabilitated they are brought into compliance with ADA. As part of this Open Space and Recreation Plan Update each park was surveyed and compliance was recorded.

Part I: Administrative Requirements

1. Designation of the 504 Coordinator

The city has designated the Assistant Director of Public Works, Mr. Fidel Maltez as 504 Coordinator.

2. Grievance Procedures

The 504 Coordinator has developed a Grievance Procedure. The procedure is based on the model procedure provided in the ADA Title II Guide for State and Local Governments, a handbook which has been reviewed for accuracy the U.S. Department of Justice. To date, no grievances have been filed.

3. Public Notification Requirements

The 504 Coordinator has complied with requirements for public notice. Standard procedures for notice will be based on the model provided in the ADA Title II Guide for State and Local Governments.

4. Participation

Chelsea established a 504/ADA Committee which included people with disabilities and organizations representing the interests of people with disabilities. The Committee worked with the city to perform the required self-evaluation. The Open Space and Recreation Plan emphasizes the involvement of neighborhood residents

and park users in the design, construction, operation and maintenance of parks. Accessibility issues were discussed in public forums with all participating groups.

Part II: Program Accessibility

Chelsea has surveyed all parks under its jurisdiction and identified necessary improvements in site conditions, access, and equipment to comply with Section 504 and ADA. Based on this input, the city continues to develop methods for creating programmatic and/or physical access to ensure people with disabilities have equal opportunity to participate in recreation programs and to fully utilize and enjoy public parks and open space. The city continuously works on its strategy for accessibility, which includes priorities for improving and upgrading accessibility at facilities such that the system in its entirety will have sufficient and appropriate access for all. Once project specific methods have been decided upon, the city will draft a plan which includes all of the 504/ADA required components for parks and open space. Chelsea will incorporate these measures in each action plan item for new parks, park improvements, management, maintenance and programming.

At present, many city parks and playgrounds have level, barrier-free access in at least one direction, but nearly all require replacement or upgrading of equipment to comply fully with Section 504 and ADA. To be fully accessible, several would also need access improvements in some places and accessible paving around play structures. New indoor and outdoor recreation facilities developed in conjunction with Chelsea Schools construction comply, and represent an important first step toward full compliance. Other municipal buildings, including City Hall and the Chelsea Public Library, have been made accessible with ramps and elevators.

Mystic River Overlook Park

Facility	Evaluation
Parking	The proposed park design includes plans for a small parking lot which would include a handicap parking area adjacent to an ADA compliant entrance. However, at the time of the assessment visit, only informal gravel parking was available.
Pathway	Paved walking paths wind their way through the park, and are accessible from the paved entrance off of Commandants Way. However, due to the topography of the site, there are points where the pathways angle steeply uphill.
Activity Area	Exercise equipment, benches, and water fountain are accessible.

Mystic River Overlook Park, steep walking trail

Mystic River Overlook Park, activity area

Ciepela Park

Facility	Evaluation
Parking	The park is accessible from the sidewalk and has street parking in front. There is a level cut out leading into the park from the rear of the site along Eldridge Lane. Resident sticker parking spaces are adjacent to the rear entrance, but there are no designated handicap spaces and the pavement is uneven.
Benches	This park consists of a small area of brick paving and benches. The surface is level and the benches are an appropriate height

Polonia Park

Facility	Evaluation
Parking	Street parking is available, and the park is fronted by a curb cut which matches the width of the park entrance.
Play area	Accessing the playground equipment requires stepping down from the

	surrounding paved pathway onto a rubberized play surface.
Pathway	The park has a paved pathway through the park which is in good repair. Benches along the path are an appropriate height.

O'Neil Park

Facility	Evaluation
Entrance	2 of the 3 access points for the park are stairs. While there is a cut out allowing access, it is located along a moderately steeply sloped sidewalk.
Play area	The rubber floor material of the play area is torn along its border with the park's cement. Access to an upper play level requires the use of stone stairs.

Kayem Park

Kayem Park was built recently and does not have any notable accessibility limitations.

Kayem Park

Bosson Playground

Bosson playground is comprised of several adjacent play areas, including a playground, water feature, and open blacktop area painted to support activities such as hopscotch. The park was recently renovated and is ADA compliant.

Bosson Playground, play equipment

Paul A. Dever Park

The placement of two picnic benches at the very edge of paved area and gravel makes them inaccessible from one side.

Paul A. Dever Park, picnic benches

Creekside Common

Creekside common is a new park with no notable accessibility issues, with the exception of the games area, which includes a horsehoe pit and bocce alley. In order to access the games area, one must leave the paved pathway and walk across a grassy area and step down to a lower level.

Creekside Commons, games area

Mary C. Burke Playground

Unlike many other playgrounds, the Burke Playground equipment includes wheelchair accessible ramps which allow access to at least parts of the larger play structure. However, the first half of the cement ramp lacks handrails. In order to access the play area in the rear of the site, one must cross an area covered by a rubber floor material. The poor condition of this material may limit access for some.

Part III: Employment Practices

The city departments with responsibilities for open space, parks and recreation are municipal entities which adhere to Chelsea's employment practices. The access consultants assisting the city with 504/ADA compliance are in the process of reviewing city employment policies and practices for compliance with the regulations.

Thomas G. Ambrosino
City Manager

City of Chelsea
EXECUTIVE OFFICE
City Hall, 500 Broadway
Chelsea, Massachusetts 02150
tambrosino@chelseama.gov

Phone: (617) 466-4100
Fax: (617) 466-4210

Americans with Disabilities Act Grievance Procedure

This grievance procedure is established to meet the requirements of the ADA. It may be used by anyone who wishes to file a complaint alleging discrimination on the basis of disability in the provision of services, activities, programs, or benefits by the City of Chelsea. The complaint should be submitted as soon as possible, preferably within 60 calendar days of the alleged violation to:

Fidel Maltez, ADA Coordinator
Chelsea City Hall
500 Broadway
Chelsea, MA 02150
fmaltez@chelseama.gov or 617-466-4200

Please fill out form completely. Alternative means of filing complaints, such as personal interviews or a tape recording of the complaint will be made available for persons with disabilities upon request.

Complainant: _____

Address: _____

City, State, and Zip Code: _____

Telephone Primary: _____

Telephone Secondary: _____

Person Allegedly Discriminated Against: (if other than the complainant)

_____

Address: _____

City, State, and Zip Code: _____

Telephone Primary: _____

Telephone Secondary: _____

Thomas G. Ambrosino
City Manager

City of Chelsea
EXECUTIVE OFFICE
City Hall, 500 Broadway
Chelsea, Massachusetts 02150
tambrosino@chelseama.gov

Phone: (617) 466-4100
Fax: (617) 466-4210

Program, department, or organization which you believe has discriminated:

Name: _____

Address: _____

City, State, and Zip Code: _____

Telephone Number: _____

Date of Alleged Discrimination: _____

Please describe the alleged acts of discrimination, providing the name(s) where possible of individuals involved in the incident: (Please use additional space if necessary)

_____

_____

_____

_____

_____

Have efforts been made to resolve this complaint through the internal grievance procedure of the program, department, or organization?

Yes: _____ No: _____

If yes, what is the status of this grievance?

_____

_____

_____

_____

Thomas G. Ambrosino
City Manager

City of Chelsea
EXECUTIVE OFFICE
City Hall, 500 Broadway
Chelsea, Massachusetts 02150
tambrosino@chelseama.gov

Phone: (617) 466-4100
Fax: (617) 466-4210

Has this complaint been filed with any bureau of the Department of Justice or any other Federal,

State, or local civil rights agency or court?

Yes: _____ No: _____

If yes:

Agency or Court: _____

Contact Person: _____

Address: _____

City, State, and Zip Code: _____

Telephone Number: _____

Date Filed: _____

Do you require the City's response to this grievance be provided in an alternate format?

___ Yes ___ No. (If yes, please check preferred format):

___ Large Print ___ Audio-Cassette ___ Computer Disc ___ Braille

____Other (please specify)

Procedure:

Within 15 calendar days after receipt of the complaint, Fidel Maltez will meet with the complainant to discuss the complaint and the possible resolutions. Within 15 calendar days of the meeting, Fidel Maltez will respond in writing, and where appropriate, in format that is accessible to the complainant, such as large print, Braille, or audio tape. The response will explain the position of the City of Chelsea and offer options for substantive resolution of the complaint.

If the response by Fidel Maltez does not satisfactorily resolve the issue, the complainant may appeal the decision within 15 calendar days after receipt of the response to the City Manager, or designee.

Thomas G. Ambrosino
City Manager

City of Chelsea
EXECUTIVE OFFICE
City Hall, 500 Broadway
Chelsea, Massachusetts 02150
tambrosino@chelseama.gov

Phone: (617) 466-4100
Fax: (617) 466-4210

Within 15 calendar days after receipt of the appeal the City Manager, or designee will meet with the complainant to discuss the complaint and possible resolutions. Within 15 calendar days after the meeting the City Manager or designee will respond in writing, and, where appropriate, in a format that is accessible to the complainant, with a final resolution of the complaint.

Appendix B: Public Participation

Public Meetings

The first public meeting for Open Space and Recreation Plan Update was held on June 280, 2017. Notes from this meeting are included in this appendix.

During the June 2017 public forum, a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis was conducted.

Strengths:

- They are out throughout the city
- Walk Wednesdays
- There are many playgrounds
- Close/accessible
- Dog bag stations
- Walkable
- Contemporary playground structures

Weaknesses:

- Maintenance of trees, vegetation
- CH Authority parks are not clean
    - Often locked
- Too much fences around the park
    - Find something more creative
- Lack of signage
- Not much for adults/seniors (benches etc.)
- Parks are very small
- Perception of safety
- Drugs/needles/trash (not frequently picked up)
- Water fountains don't work
- Feel like they are designed for younger kids, not teens
- Not green, safe

Opportunities:

- Use of technology in benches (charging stations for phones)
- Better link the parks within the city
- Use the water (canoeing)
- Waterfront access
- Energy efficiency
- Water storm containers
- Graveyard
    - Take it back
    - Attention of the public
- Views of Boston
    - Hills
- Silver Line linkages
- Information about the history of the park
- Info-signs
- Host community events
- Solar powered trash
- Where we are located strategically (airport)
- Safe connector to the beach
- Block parties => organized activities => sports may draw more people
- Movie night in some of the parks
- Park by police station
    - Quiet place to hang out

Threats:

- Stormwater
- Land speculation
- Environmental
- Insects attacking vegetation
- Financial cuts by administration
- Noise airport, trucks
- Highland Park area factory smells bad

Additionally, the attendees were asked to discuss the goals and objectives of the plan using those from the 2010 as a starting point. The participants agreed that those goals and objectives were still valid and accurately reflected how the City should continue to address open space and recreational needs for the next seven years. Additional comments regarding the goals and objectives include:

Provide a full range of recreational opportunities appropriate to citywide and neighborhood recreation needs and age groups. These include: baseball and soccer; tot lots, basketball, bocce, chess tables; indoor facilities for year round and winter

use; facilities for organized leagues; family oriented facilities; waterfront access; bicycling, jogging, roller skating, and walking facilities (including improvements to the harbor walk.

Help beautify the city through appropriate open space, park, and streetscape improvements, and thereby assist in the rehabilitation of neighborhoods and the downtown. Programs such as Chelsea's Street Tree Program and the development of community gardens would further this goal.

Provide adequate staffing to maintain parks and playgrounds and to coordinate programs in them.

Appendix C: Inventory of Public and Private Open Space

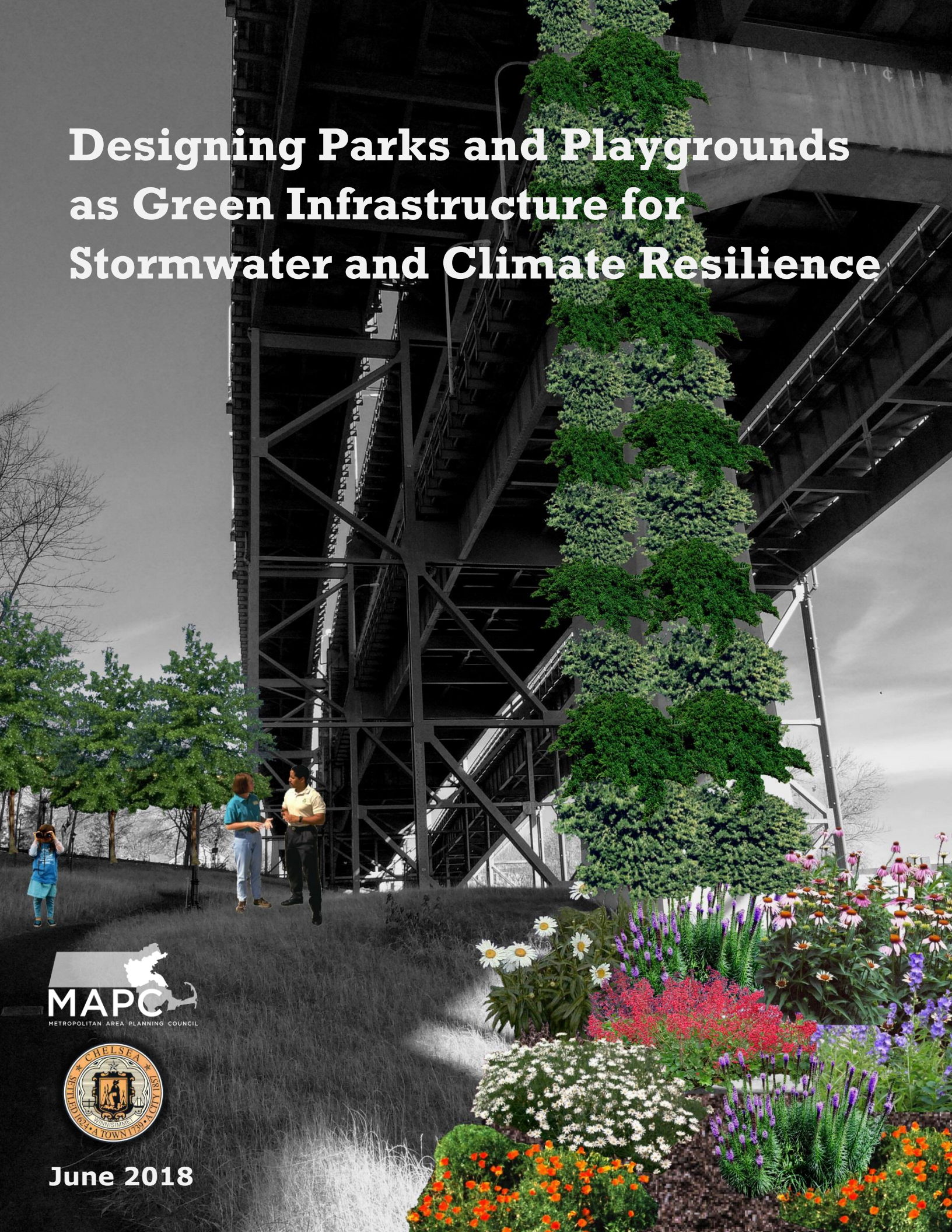
Inventory of Public and Private Open Space

Park Name	General Info										Condition				
	Public Access	*Area (acres)*	*Ownership*	*Management Agency*	*Protected?*	*Recreation Potential*	*Current Use*	*Zoning District*	*Public Grant Type*	*ADA*	*Pavement*	*Equipment*	*Walls/Curbs*	*Trees*	*Lawns*
91 Marginal Street	N	0.55	MWRA	MWRA	N	None	Passive	W		N	n/a	n/a	n/a	Good	Good
Basset Square	Y	n/a	City	DPW	Y	None	Passive	R2			Fair	n/a	good	Good	n/a
Bellingham Hill Park	Y	4.1	City	DPW	Y	Playground	Active Passive	R2		Y	Good	Good	Good	Good	Good
Bellingham Square	Y	0.062	City	DPW	N	None	Passive	BR			Good	Good	n/a	Good	n/a
Bosson Playground	Y	0.73	City	DPW	Y	Playground	Active	R2	Urban Self-Help, LCWF	Y	Good	Good	Good	Good	Good
Carter Park Athletic Fields	Y	2.58	City	DPW	Y	Baseball	Active	R2	LCWF	Y	n/a	Good	Good	Good	Good
Carter Park Playground	Y	0.377	City	DPW	N	Playground	Active	R2	LCWF	Y	Good	Good	Good	Fair	Good
Chelsea Square	Y	0.48	City	DPW	N	None	Passive	BR			Fair	Poor	Good	Good	Good
Ciepiela Park	Y	0.04	City	DPW	N	None	Passive	R1	Urban Self-Help	Some	Poor	Fair	n/a	Good	Fair
City Hall Lawn	Y	0.128	City	DPW	Y	None	Passive	BR			Fair	Fair	Good	Good	Good
Cordero Park	Y	0.185	CHA	CHA	Y	Playground	Active	R1			Good	Good	Good	Good	Good
Creekside Common	Y	±1	City	DPW	Y	Playground, Lawn games	Active	SC	Urban Self-Help		Excellent	Excellent	Excellent	Excellent	Excellent
Dever Park	Y	0.28	City	DPW	Y	Playground, Basketball	Active	R1		Y	Fair	Fair	n/a	Good	Poor
Early Learning Center Playground (East)	Limited	0.238	City	School Dept	Y	Playground	Active	R2			Good	Good	Good	Good	n/a
Early Learning Center Playground (West)	Limited	0.226	City	School Dept	Y	Playground	Active	R2			Good	Good	Good	Good	Poor
Early Learning Center Lawn	Y	0.052	City	School Dept	N	Lawn games	Passive	R2			n/a	Good	Good	Good	Good
Eden Street Garden	Y	0.22	City	DPW	Y	Playground	Passive	R2		Y	Good	Good	Good	Good	Good
Garden Cemetery	Locked	3	City	DPW	Y	Walking	Passive	R2		N	Fair to Poor	Fair	Fair	Good	Good
High School Memorial Stadium	Y	5.04	City	School Dept	Y	Football, running, walking, soccer, lacrosse	Active	R2		Y	Good	Good	Good	Good	Good
Highland Park	Y	1.74	City	DPW	Y	Soccer, football, basketball	Active	I/AROD	Urban Self-Help, LCWF	Y	Good	Good	Good	Good	Poor
Island End Park	Y	0.16	City	DPW	Y	Low	Passive	I	PARC		Good	Good			
Island End Waterfront Parkway	Y	0.17	Private/ City	Private/ DPW	N	Walking	Active	NHD/NHC/I			Good	Good			
Kayem Park	Y	0.11	City	DPW	Y	Playground	Active	R2	Urban Self-Help		Good	Good	Good	Good	Good
Library Lawn	No	0.155	City	DPW	Y	None	n/a	R2			Good	Fair	Good	Good	Good
Mace Housing Development Court	Y	0.11	CHA	CHA	N	Playground	n/a	R1			Fair	Fair			
Mace Tot-Lot	Y	0.137	Private	Nstar	N	Playground	Active	R3			Good	Good	Good	Good	Fair
Malone Park	Y	5.426	State	DCR	N	Walking	Passive	4			Good	n/a	n/a	Good	n/a
Mary C. Burke Athletic Fields	Y	2.214	School Dept	School Dept	Y	Baseball	Active	R1	LCWF		Good	Good	Good	Good	Good
Mary C. Burke Playground	Y	1.137	City	School Dept	Y	Playground	Active	R1			Good	Good	Good	Good	Good

Park Name	General Info										Condition				
	Public Access	*Area (acres)*	*Ownership*	*Management Agency*	*Protected?*	*Recreation Potential*	*Current Use*	*Zoning District*	*Public Grant Type*	*ADA*	*Pavement*	*Equipment*	*Walls/Curbs*	*Trees*	*Lawns*
Mary O'Malley Memorial Park	Y	15.335	State	DCR	Y	Walking, Playground, Tennis	Active Passsive	NHR, LCWF			Good	n/a	n/a	Good	Good
Mill Creek Riverwalk	Y	0.554	Private	Private	N	Walking	Active Passsive	SC/BR2							
O'Neil Tot Lot	Y	0.08	City	DPW	N	Playground	Active	R1		Y	Fair	Good	Fair	Fair	Good
Polonia Park	Y	0.39	City	DPW	Y	Playground	Active	R1	LCWF	Y	Fair	Good	Good	Good	Fair
Prattville-Fitzpatrick Development Park	Y	0.1	CHA	CHA	Y	Playground	Active	R1			Fair	Good	Good	Poor	Fair
Quigley Park	Y	0.55	City	DPW	Y	Playground	Active	R2	LCWF	Y	Good	Fair	Fair	Good	Fair
Recipi-Brenes Tot-Lot	Y	0.126	CHA	DWP	Y	Playground	Active	R2			Good	Good	Good	Good	Good
Roche Park	Y	0.182	CHA	CHA	Y	Playground	Active	R2			Good	Good	Good	Good	Good
Scrivano Court	Y	0.166	CHA	CHA	N	Basketball	Active	R2			Poor				
Vietnam Veterans Memorial Pool	Y	0.579	State	DCR	Y	Swimming	Active	R2			Good	Good	Good	Fair	
Voke Park	Y	3.338	City	DPW	Y	Playground Baseball Basketball Walking	Active	R1	Urban Self-Help, LCWF	Y	Fair to Poor	Good	Good	Good	Good
Washington Park	Y	1.7	City	DPW	N	Playground Walking	Active	R1		Y	Good	Fair	Good	Good	Good
Williams School	Y	0.719	City	School Dept	Y	Basketball	Active	R2		Y	Good	Fair	Good	Good	Good
Total Open Space		**53.466**													

Appendix D: Designing Parks and Playgrounds as Green Infrastructure for Stormwater and Climate Resilience

Designing Parks and Playgrounds as Green Infrastructure for Stormwater and Climate Resilience



MAPC
METROPOLITAN AREA PLANNING COUNCIL

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June 2018

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Introduction

To date, Chelsea has completed important planning for stormwater management, coastal flooding with climate change, waterfront visioning and parks and open space planning. The intent of this plan is to build upon existing efforts and create a frame work for implementing green infrastructure through retro fits and/or re-development for Chelsea's park and open space system.

Parks and open space are integral to the City's "Fundamentals" or core principals where finance, economic development, public safety, neighborhood enhancement, and community and civic engagement relate their importance in enacting livable communities.[1] Driven by these fundamentals, in 2016, Chelsea voted to enact the Community Preservation Act, a dedicated source of funds for parks, recreation, affordable housing, and historic preservation. In 2017-2018, Chelsea worked with the Metropolitan Area Planning Council (MAPC) to update its Open Space and Recreation Plan (OSRP), creating an action plan to integrate parks and open space into the city fabric, and in the last 7 years, Chelsea has completed 14 parks projects for reconstruction, improvements, and access.[1] It is renowned for its success in securing the EEA Parkland Acquisitions and Renovations for Communities grant administered by the State Executive Office of Energy and Environmental Affairs, on an almost yearly basis.[2] Despite the physical and environmental challenges Chelsea faces with density, soil suitability, and topography,[3] the City is well-poised to mitigate stormwater, inland flooding, and urban heat island with green stormwater infrastructure and nature-based climate resilience into the City.

Several cities have taken great strides to operationalize green infrastructure solutions, particularly for stormwater management but also public health and community livability, into planning and redevelopment. Cities that have implemented these at scale are ones that pursued a programmatic approach that includes marketing, public engagement, policy, and dedicated funding. Particularly in dense urban environments with competing demands for constrained space, the following are identified as key strategies for successful green infrastructure in park system planning:

1. Engaging communities on the benefits and designs of green infrastructure;
2. Maximizing the benefits of green infrastructure solutions within a physically connected network;
3. Enabling equitable access to parks and green infrastructure within system planning; and
4. Specifying actions and funding sources to effectively implement at scale.[4]

[1] Chelsea Open Space and Recreation Plan 2017-2024 DRAFT. MAPC. June 2017
[2] Personal Communication. Kurt Gaertner, Executive Office of Energy and Environmental Affairs. September 2017.
[3] EPA Region 1 Green Infrastructure Partnership with the City of Chelsea: Technical Support Document to Assist the City to Further Encourage and Promote the Use of Green Infrastructure. Horsley Witten Group. December 2012
[4] National Recreation and Parks Association. Resource Guide for Planning, Designing, and Implementing Green Infrastructure in Parks. 2017.

Existing Conditions- Climate Change and Green Infrastructure in Parks

Many studies document the ancillary benefits of green infrastructure, from parks and living shorelines, to rain gardens and green roofs. These structures serve not only to capture and infiltrate stormwater but also serve to cool cities and reduce energy demands during extreme heat events. Green infrastructure is also an important mechanism for climate resilience where nature-based solutions work in tandem and emulate engineered systems that serve to mitigate stormwater, flooding, and extreme heat. This section will provide a brief overview of relevant historic and climate change projection data as it pertains to future design of green infrastructure in parks.

Sea Level Rise and Coastal Parks

In 2017, the Woods Hole Group completed the Boston Harbor Flood Risk Model (BH-FRM), a comprehensive hydrodynamic model that incorporates hydrology, topography, infrastructure, and other local landscape data with future sea level rise (SLR) and storm surge scenarios to ascertain the future impact on Chelsea's waterfront. Because Chelsea is low-lying and sheltered from wave energy, the geographic extent of sea level rise does not increase over time, but the depth increases. Overall, Chelsea could experience, relative to mean SLR in 2000, an additional eight inches of SLR by 2030, additional two feet by 2070 and approximately four feet by 2100.[5] In addition, approximately 20% of Chelsea is within a current flood zone where 0.5-2 feet could occur in a 1% Annual Chance Flood, particularly in key vulnerable areas such as Island End River, Upper Chelsea Creek and Lower Chelsea Creek. The depth of this flooding could increase to 2.5 feet in 2030 and there is a greater probability of that depth of flooding occurring more frequently.[6]

Coastal flooding is important in considering future design and redevelopment of new and existing waterfront parks. Coastal parks can serve as a resilient strategy to coastal flooding but sea level rise could also negatively affect future efficacy of infiltration structures in parks in flood zones in areas where Chelsea has a high groundwater table. When sea level rises, it could potentially raise the water table, reducing the depth to groundwater and subsequently the depth of infiltration space required to adequately capture stormwater and rainfall. For example, rain gardens require two -six feet of depth to bedrock or groundwater for best function.[7,8]

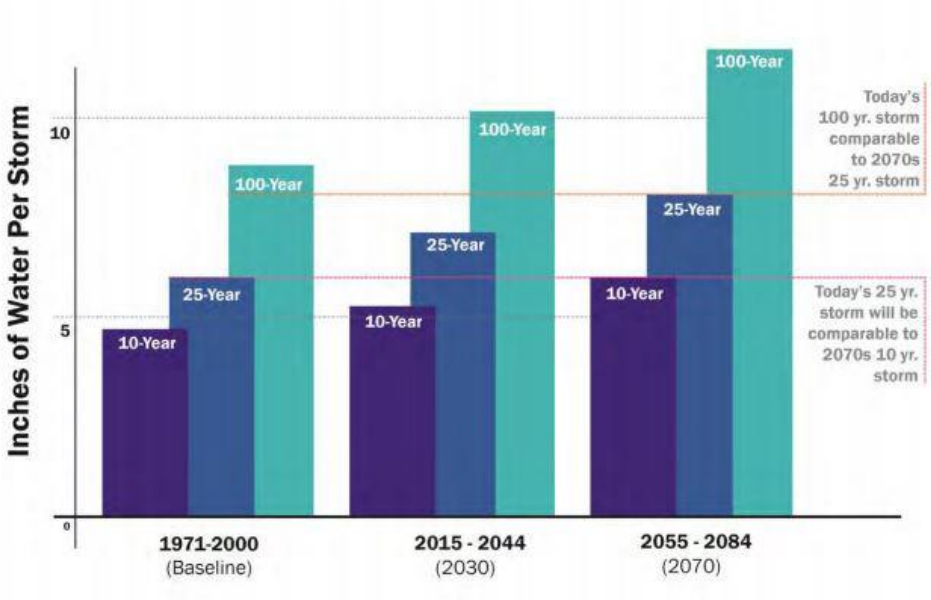
Precipitation

For the last fifty years, precipitation in Massachusetts has increased by approximately 10%[9] and 71% in the Northeast in the amount of rain that falls in the top 1% of storm events.[10] Projections for future precipitation suggest an increase in total precipitation, changes in precipitation patterns, and increased frequency of extreme storms such as hurricanes and nor'easters. For example, a 100-year storm is defined as a storm that would have a 1% chance of occurring in

[5] Northeast Climate Science Center. UMass Amherst. Massachusetts Climate Change Projects. January 2018.
[6] Designing Coastal Community Infrastructure for Climate Change. Stantec and Woods Hole Group, January 2017
[7] Stormwater Best Management Practices: Guidance Document for Boston Water and Sewer Commission. Geosyntec Consultants. January 2013
[8] City of Lancaster Green Infrastructure Plan. PA DCNR and Lancaster County Planning Commission. February 2011. http://www.docs.dcnr.pa.gov/cs/groups/public/documents/document/dcnr_004822.pdf
[9] Massachusetts Climate Adaptation Report. 2011. Executive Office of Energy and Environmental Affairs. pp.
[10] Horton, R., G. Yohe, W. Easterling, R. Kates, M. Ruth, E. Sussman, A. Whelchel, D. Wolfe, and F. Lipschultz, 2014: Ch. 16: Northeast. Climate Change Impacts in the United States: The Third National Climate Assessment, J. M. Melillo, Terese (T.C.) Richmond, and G. W. Yohe, Eds., U.S. Global Change Research Program, 16-1-nn.

any given year or consecutive years. Historically this could create 8.9 inches of rain, but that could increase to 10 inches of rain by 2044 and 11.7 inches of rain by 2084 (Figure 1).[11]

Figure 1 Precipitation Projections



Precipitation projections. Modeling from Kleinfelder and ATMOS indicates more rain in any given storm event above the baseline into the end of the century. Source: Cambridge Climate Vulnerability Assessment 2015. Kleinfelder based on ATMOS projections November 2015

However, the actual amount of increased precipitation or number of extreme weather events per year is difficult to ascertain, largely due to localized climate variability and greenhouse gas emissions into the future.[12,13] The Northeast Climate Center at UMass Amherst predicts an increase in total annual precipitation from 46 inches today up to approximately 50 inches by 2030, 54 inches by 2070, and 55 inches by the end of the century.[14] Nonetheless, climate scientists still anticipate some periods of drought. Warming temperatures can cause greater evaporation in the summer and fall as well as earlier snowmelt, [15] and this could cause nearly 20 consecutive dry days in the Boston Harbor Basin by the end of the century.[13] Additionally, though scientists anticipate overall decrease in snowfall, they anticipate the Boston region will continue to experience significant snow events through 2100.[12]

Planning and design for green infrastructure in Chelsea's parks need to carefully consider vegetation resilience to water stress and infiltration design that accommodates future precipitation projections. Trees and shrubs may experience long periods of pooling during and after major storms. Water storage in parks may be an important green infrastructure component for extreme precipitation events to alleviate stress on the stormwater and/or sewer system where combined

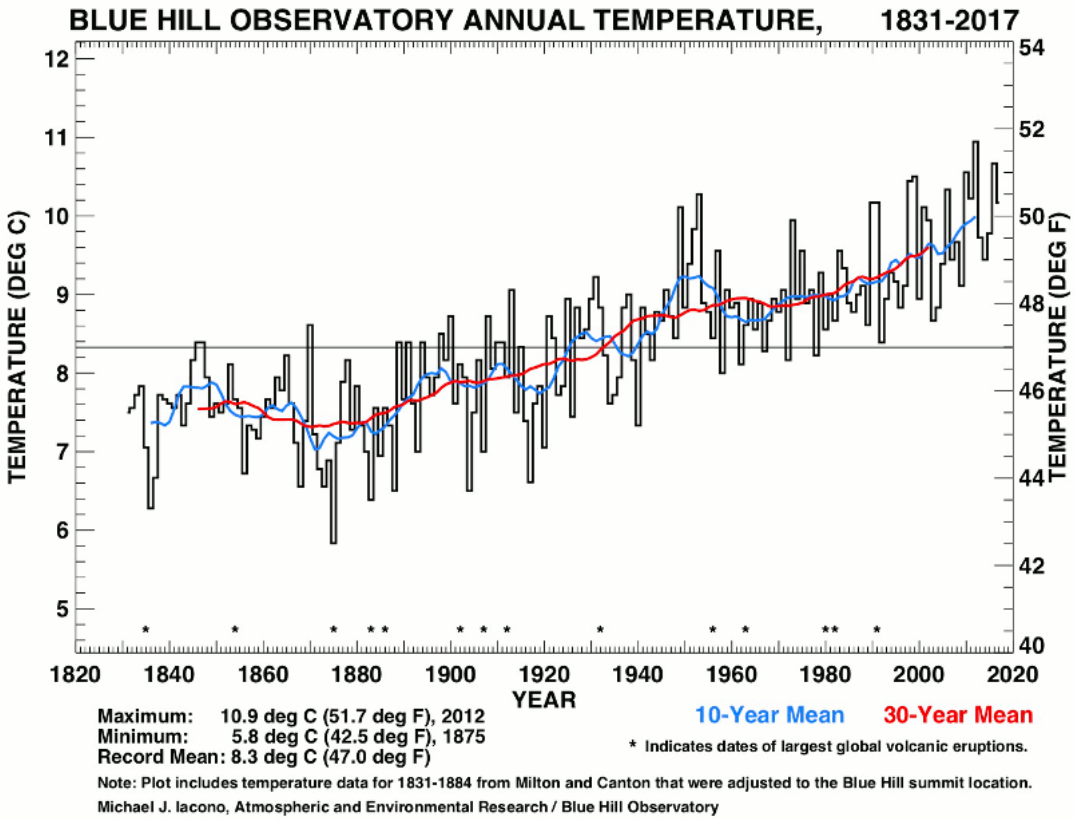
[11] City of Cambridge, Climate Change Vulnerability Assessment, (City of Cambridge, 2015), Temperature and Precipitation Projections (http://www.cambridgema.gov/CDD/Projects/Climate/~/media/A9D382B8C49F4944BF64776F88B68D7A.ashx)
[12] Climate Ready Boston, "The Boston Research Advisory Group Report: Climate Change and Sea Level Rise Projections for Boston," June 2016
[13] Horton, R., G. Yohe, W. Easterling, R. Kates, M. Ruth, E. Sussman, A. Whelchel, D. Wolfe, and F. Lipschultz, 2014: Ch. 16: Northeast. Climate Change Impacts in the United States: The Third National Climate Assessment, J. M. Melillo, Terese (T.C.) Richmond, and G. W. Yohe, Eds., U.S. Global Change Research Program, 16-1-nn
[14] Northeast Climate Science Center, UMass Amherst. Massachusetts Climate Change Projections. January 2018.
[15] Climate Ready Boston, "The Boston Research Advisory Group Report: Climate Change and Sea Level Rise Projections for Boston," June 2016

flows could contaminate rivers directly with untreated discharge. Furthermore, storage systems could provide opportunities for localized park irrigation, reducing water and energy costs, particularly in periods of drought.

Temperature

According to the US National Climate Assessment 2017, temperatures in the Northeast US have increased by almost two degrees Fahrenheit between 1895 and 2016. Data from the Blue Hill Observatory in Milton located 17 miles from Chelsea, reflects this trend (Figure 2).

Figure 2. Observed Temperature Change



Future temperature projections for the Northeastern US show a greater increase in average summer temperatures relative to winter and are projected to increase at an accelerated rate.[16] A number of local temperature projection models for Massachusetts and the Boston region also demonstrate an increasing likelihood of heat waves, as indicated by the increased number of days over 90 and 100 degrees each year.[17,18,19] Whereas Chelsea today averages approximately eight days above 90° annually, that may increase to 23 days by the 2030s, 37 days in the 2070s, and 75-90 days by the end of the century.[16,17] The impact of increasing

[16] Climate Ready Boston, "The Boston Research Advisory Group Report: Climate Change and Sea Level Rise Projections for Boston," June 2016
[17] Under RCP 4.5 conditions. City of Cambridge, Climate Change Vulnerability Assessment, (City of Cambridge, 2015), http://www.cambridgema.gov/CDD/Projects/Climate/climatechangeresilianceandadaptation.aspx cited in BRAG.
[18] Boston Indicators, "Trends in Climate Change, Metro Boston and New England," http://www.bostonindicators.org/indicators/environment-and-energy/5-4clean-energy-and-climate-stability/5-4-1trends-in-climate-change-metro-boston, accessed March 25, 2017
[19] Northeast Climate Science Center, UMass Amherst. Massachusetts Climate Change Projections. January 2018.

temperatures is a shorter winter and longer growing season. For example, scientists expect five-17 fewer winter days by the 2070s and nine-34 fewer winter days by the end of the century.[20]

Chelsea is already experiencing extreme temperatures during the summer due to significant heat-trapping substrates such as asphalt and nominal tree canopy. Green infrastructure is a critical mechanism to cooling cities through shading of tree canopies, evapotranspiration, and increased albedo effect. Parks present a great opportunity to increase the City's tree canopy, especially where street and sidewalk width are too constrained to incorporate street trees.

Stormwater Infrastructure

Approximately 70% of the City if serviced by a Combined System Overflow (CSO) and Chelsea's wastewater and stormwater is transported to the Massachusetts Water Resource Authority's Deer Island Treatment Plant, treated, and then discharged. However excessive stormwater and rainwater in a given event, such as a severe rain storm, can exceed the capacity of the wastewater/stormwater infrastructure. During this time, the CSO, an overflow safeguard, can releases excess flow to local water bodies to prevent backflow into homes, businesses, and other buildings.[21] CSO flows are untreated potentially carrying debris, street pollutants from stormwater runoff, and potentially untreated wastewater. The CSOs are activated yearly raising concerns from residents that climate change could exacerbate existing challenges before stormwater infrastructure upgrades and improvements are completed.[22]

Chelsea has a discharge permit from the U.S. Environmental Protection Agency authorizing this discharge. CSO discharge areas include (i) Winnisimmett Street discharging to Chelsea River, (ii) Pearl Street discharging to the Chelsea River, and (iii) Eastern Avenue discharging to the Chelsea River. Chelsea permanently closed one of its CSO discharging to Boston Inner Harbor and has been aggressively constructing sewer separation to reduce the quantity of stormwater into the CS0. In 2015, it completed over 10 sewer separation and other utility improvements and designed seven future projects. These are funded by Chelsea's capital improvement plan and other grant and loan programs.[23]

In 2015, the City activated two of its three CSOs, the Winnisimmet Street CSO three times totaling 551,935 gallons and the Eastern Avenue CSO 13 times totaling 1,181,189 gallons. Chelsea's most significant challenges are (i) the high costs and time required to separate the CSO, (ii) the quantity of stormwater in the CSO, and (iii) water quality issues in nearby waterways, a significant concern for the City and community. Implementing green infrastructure solutions can bring water back into the ground before going into storm drains, minimizing the need for the CSO but also saving the City the expense of treatment at Deer Island.

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[20] Under RCP 4.5 conditions. City of Cambridge, Climate Change Vulnerability Assessment, (City of Cambridge, 2015), http://www.cambridgema.gov/CDD/Projects/Climate/climatechangeresilianceandadaptation.aspx cited in BRAG.

[21] City of Chelsea Combined Sewer Overflows.
https://www.chelseama.gov/sites/chelseama/files/uploads/combined_sewer_overflow._city_of_chelsea.pdf

[22] MAPC. 2018. *City of Chelsea Municipal Vulnerability Preparedness Program. Community Resilience Building Workshop Summary of Findings.*

[23] R.H.. White Construction, Weston & Sampson, and Flow Assessment Services, LLC. City of Chelsea, MA Combined Sewer Overflow Calendar Year 2015 Annual Report.

Implementing Green Infrastructure in Parks-Case Studies

Managing stormwater with green infrastructure is a well-accepted and encouraged practice, particularly under regulatory drivers such as consent decrees or MS4 permits. Cities across the U.S. are implementing innovative programs that not only maximize natural system stormwater capture but also community partnerships, beautification, and air and water quality improvements.

Overall, MAPC's research indicates that cities that implement a programmatic approach, which includes both public outreach/marketing as well as regulatory drivers, for installing green infrastructure have had demonstrated success city-wide. Building public support, marketing multiple benefits, and connecting residents to projects and nature help secure funding for operationalizing green infrastructure at the city scale. For example, the City of Portland, OR instituted a Grey to Green (G2) Initiative in part for compliance for its National Pollutant Discharge Elimination System stormwater permit. The initiative includes ecoroofs (green roofs), green streets, tree planting, invasive species removal and revegetation, acquiring undeveloped land, and planting in natural areas. The result of this initiative has not only reduced the amount of stormwater entering its sewer system but also provided multiple benefits of improving livability, carbon sequestration, greenhouse gas reduction, and cooling.[24] The City quantified these benefits to understand their efficacy and justify further investment. They found that 43 acres of ecoroofs enabled 60% peak flow reduction and 95% reduction of metals in runoff. It also removed 0.58 tons of CO_2 per acre per year and reduced emissions 6.48 tons per acre per year per ecoroof.[24]

Overall, one popular mechanism for implementing green infrastructure in parks at city-scale is through greening schoolyards into water-smart parks. This program has gained popularity and momentum across the U.S. including Boston (i.e., the first demonstration park opened October 2017), Philadelphia, New York City, Newark, and Chicago. These serve the multiple purpose of removing impervious surface, engaging students in design, education, monitoring, and management of natural features in their school yard, enhancing water and air quality while providing shade, beautifying neighborhoods and in some cases reducing crime. Programs utilize public private partnerships that include Water and Sewer Departments, School Departments, Parks and Recreation Departments, Public Facilities, and private non-profits. More information on these programs can be found at Healthy Schools Campaign (www.healthyschoolscampaign.org).

This section will review two programmatic approaches to implementing green infrastructure in parks and a case study on an innovative green infrastructure park in a small dense, urban city with contaminated soils.

[24] Entrix, Inc. *Portland's Green Infrastructure: Quantifying the Health, Energy, and Community Livability Benefits*. City of Portland Bureah of Environmental Services. February 2010.

Case Study I: Riverfront Park/Wetland Construction in Former Industrial Site.

Renaissance Park in Chattanooga, Tennessee was once a highly contaminated industrial site of manufacturing plants. Located on the shores of the Tennessee River, it contained an intermittent stream draining over 175 acres of urban watershed contributing significant pollution to the River. The City re-designed the 23.5 acre space into natural area restoring ecosystem and flood plain function while creating an important cultural, historic, and recreational amenity to residents and visitors (Figure 3).[25]

Figure 3 Before and after photos of Renaissance Park in Chattanooga, TN.

Source: https://landscapeperformance.org/case-study-briefs/renaissance-park

The site of the park once contained appliance manufacturing plant and enameling facility that had left significant post-industrial waste. As part of an environmental site assessment, the project leaders identified semi-volatile organic compounds and heavy metals within a 1% Annual Chance Flood Zone and leaching into the groundwater. The industrial waste was disposed onsite in receiving cells, capped once filled. The City of Chattanooga explored hard-engineering solutions to manage the contaminated soils and groundwater contamination such as asphalt caps and subterranean groundwater diversion wells, but these were approximately 25% more expensive than the implemented "green" solutions. Overall, the project team managed approximately 30,000 cubic yards of contaminated soil onsite.

Approximately 18,000 cubic yards were excavated, reformed into iconic cone landforms above the 1% Annual Chance Flood zone and capped and sealed. The project team used turf grass on the cone landforms to minimize maintenance and degradation from public use. The cone

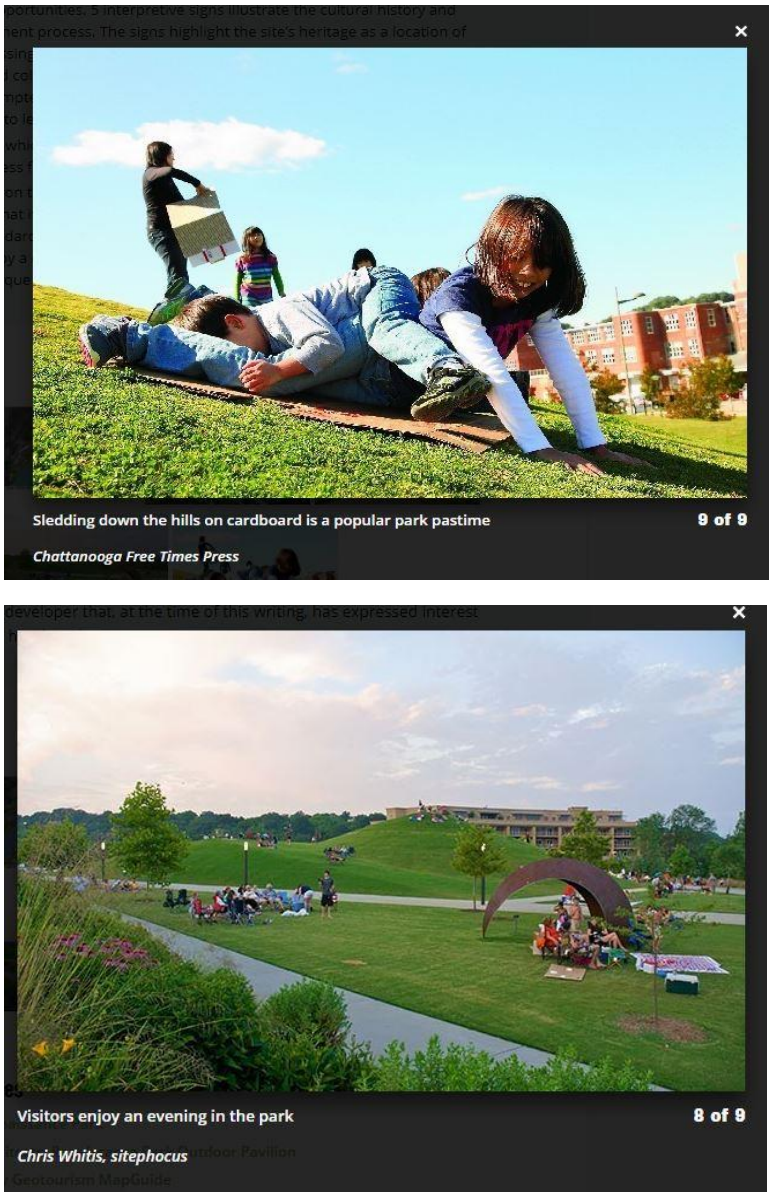
[25] http://www.hargreaves.com/work/chattanooga-renaissance-park/

landforms are an attractive topographic features of the park, adding topography, river views, and a new recreational area for "sledding" (Figure 4).

The excavated void was transformed into a one-acre constructed wetland with native plants and trees treating stormwater before entering the Tennessee River. This wetland increased water storage capacity of the floodplain by 9.32 acre feet. The constructed wetland is lined with a geo-synthetic clay liner to prevent groundwater contamination and the project leaders added two feet of freeboard between the wetlands average pool level and stream discharge areas. The stream is lined with gabions and wetland plantings to create an artful path of the stream to the constructed wetland (Figure 5).[26]

The remaining 12,000 cubic yards of contaminated soil was remediated onsite, which was 75% less expensive than hauling the soil offsite to a proper landfill. The project team also incorporated many other sustainability features into park development. They reused approximately 18,000 cubic yards of concrete factor floor, crushed for fill, providing a cost-savings of over $1 million. They removed approximately 21% of the impervious surface transforming into meadows, grassy open space, and wetlands. Also, the new park provided erosion control for the banks of the Tennessee River and intermittent stream; banks contained rip-rap, gabions, seeded coir erosion control blankets, logs, root wads, and live stakes.[26]

Figure 4 Cone landforms at Renaissance Park, TN.



Source: https://landscapeperformance.org/case-study-briefs/renaissance-park#/sustainable-features

[26] Landscape Performance Series. Case Study Briefs: Renaissance Park. Landscape Architecture Foundation. https://landscapeperformance.org/case-study-briefs/renaissance-park#/sustainable-features

Figure 5 Constructed wetlands at Renaissance Park, TN.

Source: http://www.hargreaves.com/work/chattanooga-renaissance-park/

Renaissance Park Economics

The total cost of the park project was $8 million. The cost of managing all the contamination did preclude the opportunity for other park amenities, such as a proposed playground and nursery. However, the City saved $1,080,000 in construction cost by salvaging the onsite concrete and reusing it as fill. And the site design reduces long-term maintenance costs by approximately $4,500 in comparison to comparable large parks with lawns and decorative plantings.

Additional amenities to the park provide ancillary economic benefits as well. The City installed a 490-seat amphitheater, a boat ramp for canoers and kayakers, and an interpretive trail with signage and cell-phone audio tour. The interpretive trail educates the public on the important stormwater and flood mitigation features of the site as well as historic assets from the Civil War and Trail of Tears. The park has an estimate 145,000 visitors annually, 89% of whom shop or dine within ½ mile of the park. It has also leveraged new residential development. The park was completed in 2007, and from 2005-2013, two redevelopment projects worth $55 million

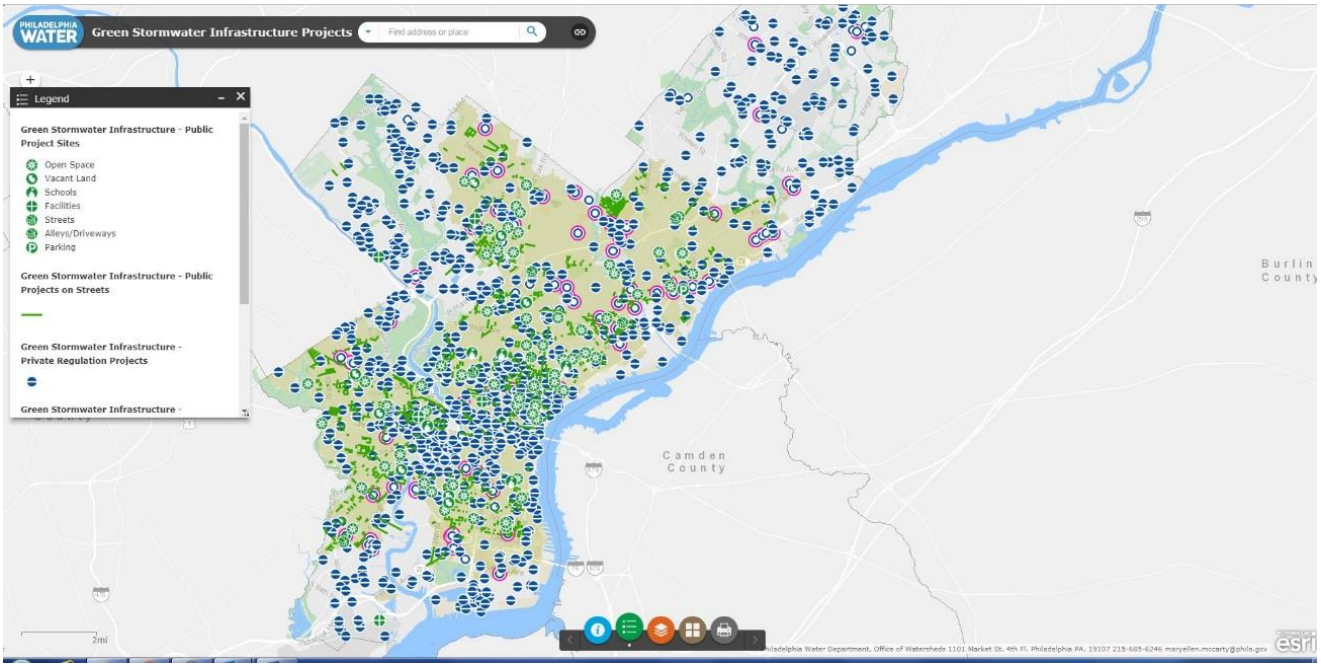
adjacent to the park have been completed and five more additional properties within ¼ mile have been redeveloped.[27]

[27] Landscape Performance Series. Case Study Briefs: Renaissance Park. Landscape Architecture Foundation. https://landscapeperformance.org/case-study-briefs/renaissance-park#/sustainable-features

Case study II: Philadelphia Green City, Clean Water

City of Philadelphia created its *Green City, Clean Water* program as a mechanism for meeting its 2011 Environmental Protection Agency Consent decrees to reduced combined sewer overflows by 85%. The program is entirely focused on using green infrastructure to weave the fabric of nature into the city, bring the water into the ground, and creating water ways that are cleaner and more beautiful than its early history.[28] The city uses a combination of public right of ways, parking areas, open space, public facilities, driveways, etc. for green infrastructure and since its inception, they have constructed over 1,100 green infrastructure interventions (Figure 6). The 25-year plan seeks to prevent cost increases to rate-payers, create healthy, livable neighborhoods, attract new business, support green jobs, and enhance public space and schools. Green infrastructure is less expensive and the program minimizes capital expenditures to gray infrastructure upgrades that would be required to improve and separate their current system.[28]

Figure 6. Green infrastructure interventions in Philadelphia.



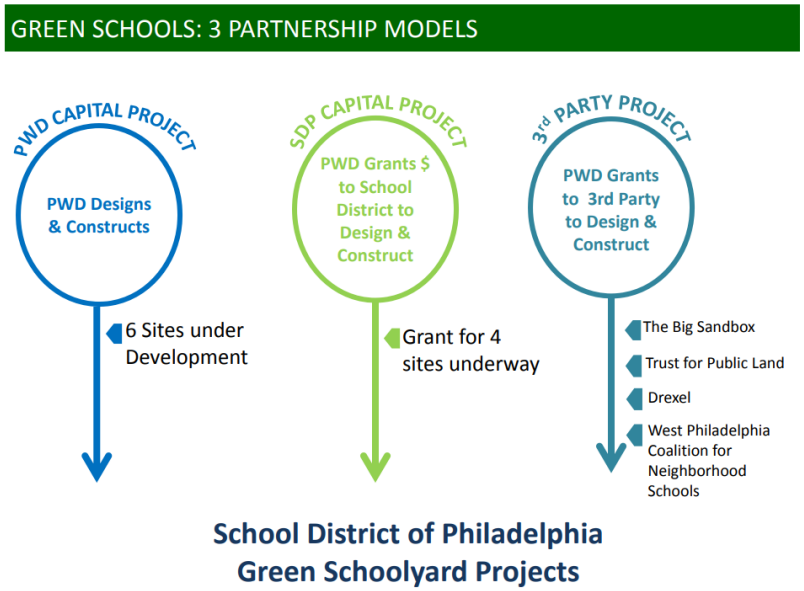
The Philadelphia Water Department and Recreation Department have been leading this effort with community partners to educate, maintain, and engage in green infrastructure solutions. For example, they provide free rain barrels to all residents for water management.[29] They also provide education programs with the students on the urban water cycle.

Most recently, they have expanded their partnership to develop the Philadelphia Green Schools program. The Water Department calculated it had over 1,000 acres of impervious surface from their school properties and set a goal to create a long-term partnership with the School Department to create 550 acres across public, private, and charter schools.[30] In October 2015, the School Department announced plans to invest $5 million to create 20 new green school yards.

[28] http://phillywatersheds.org/what_were_doing/documents_and_data/cso_long_term_control_plan).
[29] http://phillywatersheds.org/what_were_doing/documents_and_data/cso_long_term_control_plan).
30 https://www.epa.gov/sites/production/files/2015-10/documents/urbanwatersgreenschoolspres_20150512-.pdf

In combination with funding from the *Green City, Clean Water* program and private funding from non-profit partners such as the BigSandBox, Philadelphia Schools Alliance, and The Trust for Public Land, their investment will leverage $20 million in new park and green infrastructure investments. In conjunction with the program, five schools are participating in the greenSTEM for student monitoring, nine schools are participating in the Fairmount Water Works Urban Watershed Curriculum, and 50 schools are using the guidelines for the Urban Watershed Curriculum.[31] Figure 7 describes the roles and responsibilities in the public private partnership.

Figure 7 Philadelphia Green Schools stakeholder matrix.



Philadelphia is greening 550 of over 1,000 acres of impervious surface in all schools across the City. *Source: The U.S. Environmental Protection Agency*

Finally, the Philadelphia Water department offers two incentive programs to advance its goals for implementing green infrastructure at the city-scale. These include the Stormwater Management Incentives program that provides up to $100,000 per acre of impervious surface removed to non-residential property owners to implement green infrastructure for stormwater infiltration. Typical applicants include public and private schools, non-profits, apartment/condo buildings, etc. The Greened Acre Retrofit Program provides funding to contractors, companies, or aggregates to retrofit multiple properties (minimum acreage is 10 acres) with green infrastructure interventions in the areas of the combined system only.

Green City Clean Waters Economics

Econsult Solutions in 2016 performed a return on investment study on the five-year progress and economic implications of the Green City, Clean Water program in Philadelphia. The Philadelphia Water Department has projected investing $1.2 billion in stormwater projects over the 25- year program life.[32] They are leveraging additional projects with the private sector through incentives

31 https://www.epa.gov/sites/production/files/2015-10/documents/urbanwatersgreenschoolspres_20150512-.pdf

[32] The Economic Impact of Green City, Clean Waters: The First Five Years. 2016. Econsult Solutions, LLC. For the Sustainable Business Network of Philadelphia. January 2016.

and regulation for additional projects. For example, as of 2016, there were 363 planned or constructed public projects in comparison to 674 planned or constructed private projects. And as of 2016, these projects have supported 430 jobs generating nearly $1 million in tax revenue. Projects supported by the Stormwater Incentives Programs range from $57,000 for retrofits in schoolyards to $630,000 for a two-phased larger project. There are approximately 100 projects throughout the City, mostly in the combined sewer service area, completed with the Stormwater Incentives Program.

Over the 25-year program, the Philadelphia Water's investment are projected to produce a $3.1billion economic impact, supporting 1,000 jobs and $2 million in local annual tax revenue.[33]

[33] The Economic Impact of Green City, Clean Waters: The First Five Years. 2016. Econsult Solutions, LLC. For the Sustainable Business Network of Philadelphia.

Case Study III: Northeast Ohio Regional Stormwater District-Green Infrastructure Policy

In 2010, the EPA and the Northeast Ohio Regional Stormwater District (NEORSD) agreed on a settlement on Clean Water Act violations for discharges into waterways and Lake Erie. NEORSD serves 62 communities, more than one million people, and 350-square miles, and their agreement will capture and treat 98% of wet weather flows entering the combined sewer system.[34] Green Infrastructure is a major component of their strategy. To date, they have spent approximately $118,560,417 on Sewer District implemented or funded green infrastructure projects, some of these are new parks or retrofitted in existing parks. NEORSD implements green infrastructure parks via funding from a stormwater utility fee but implement green infrastructure in a variety of ways such as through capital improvement plans, regulatory review of new development/discharge permits, grant programs, or their own construction. Some innovative projects are underway or completed as a result of this effort.

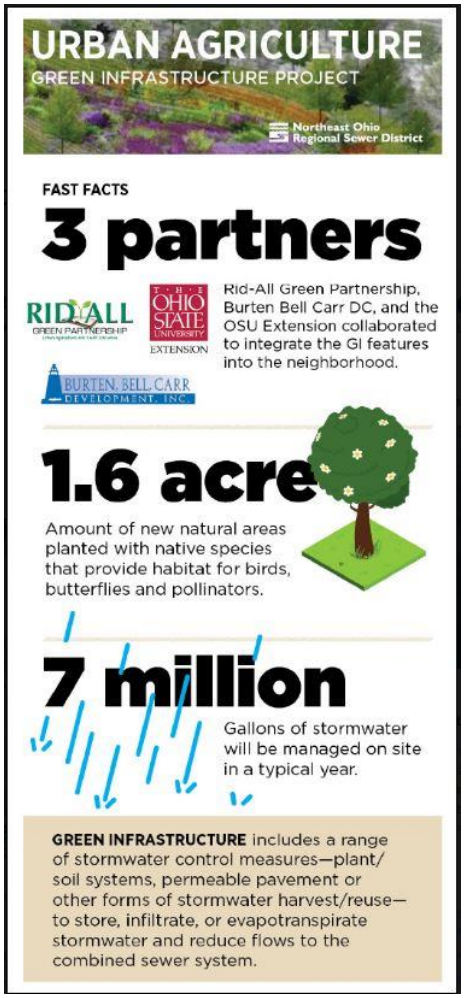


Photo Source: http://neorsd.blogspot.com/2015/08/projects-urban-agriculture-project.html

Urban Agriculture Innovation Zone. The City of Cleveland, and Burton, Bell, Carr Community Development Corporation, created the "Urban Agriculture Innovation Zone," a 28-acre urban revitalization project that is transforming vacant land in an inner-city neighborhood into the one of the largest urban agriculture districts in the US. Land is redeveloped and leased to local farmers, such as the Ohio State University Extension program, a tilapia farm, an orchard, outdoor classroom, and community events. NEORSD is supporting development of green infrastructure in its redevelopment controlling 12.4 million gallons of stormwater in a year by installing four bio-retention systems throughout the zone.

Buckeye Shaker Plaza. With construction underway in 2017, NEORSD partner with LAND studio, Buckeye Shaker Square Development Corporation, and the Greater Cleveland Regional Transit Authority to transform an underutilized space between roads into a park, festival ground, transit waiting area, and public art. The new park is part of a larger redevelopment vision to use arts as a tool for neighborhood revitalization. NEORSD is supporting the installation of detention basins and raingardens for managing stormwater.[35] The basin will encompass 1.6 acres overall with native plants attracting birds, butterflies, and pollinators. One basin will parallel a new pathway that connects to the RTA Station and the other forms an elaborate entry feature to the space (Figure 8).[36]

[34] https://www.neorsd.org/I_Library.php?SOURCE=library/GI_201707_Policy_web.pdf&a=download_file&LIBRARY_RECORD_ID=7240

[35] http://buckeyeshaker.org/visit/public-art-or-galleries

[36] http://www.bbcdevelopment.org/development/streetscape/green-infrastructure/

Figure 8 Buckeye Shaker redevelopment with green infrastructure.

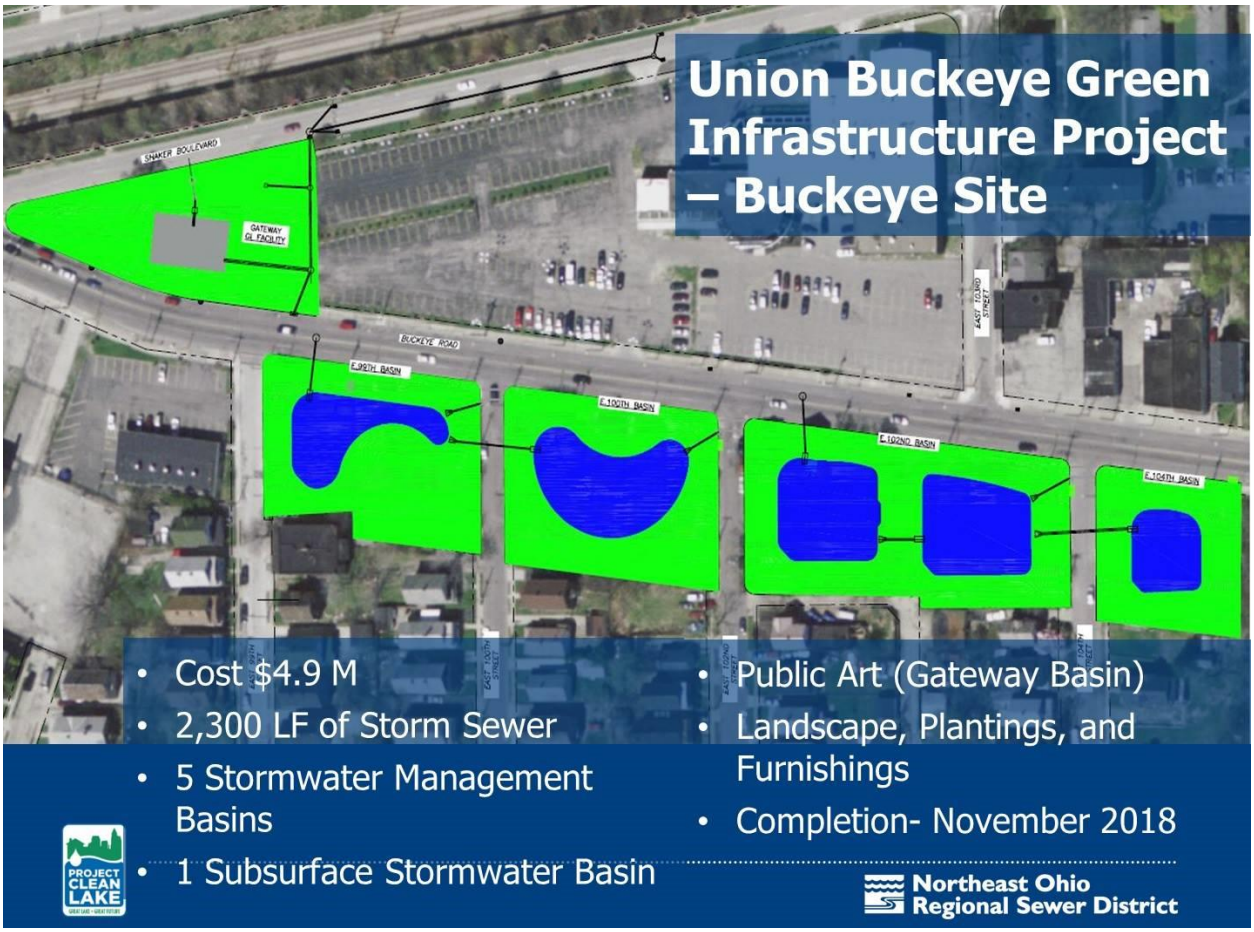


Photo credit NORDS, Project Clean Lake.

Acacia Reservation. Through its Water Resource Restoration Sponsor Program, NEORSD is able to reduce its interest payments on state loans by funding non-profit groups to restore and preserve natural areas that manage stormwater and improve water quality in their service area. The Acacia Reservation is a Cleveland Metropark project designed to restore stream channel and tributary flow of Euclid Creek. Ecological restoration efforts include reconnecting the floodplain and creating wetlands. Acacia Reservation also has regenerative swales designed to capture, treat, and slowly convey stormwater runoff to Euclid Creek.

NEORSD Green Infrastructure Economics

To minimize flows into its CSOs, NEORSD has committed $42 million in green infrastructure projects for its CSO Long-Term Control Plan and its National Pollution Elimination System permit (NPDES) with the EPA. A total of nine projects are already or will be constructed and fully operational by 2019.[37]

Eight green infrastructure projects completed by NEORSD were completed by 2016 and the District performed a co-benefits analysis on their performance on community, environmental, and

[37] Northeast Ohio Regional Sewer District. 2016. *Comprehensive Annual Financial Report*.

financial benefits. NEORSD analyzed eight completed GI projects, two of these are described above. The GI projects captured 192 million gallons of stormwater, created 25 acres of new public space, repurposed 19 acres of distressed properties, planted 1,500 new trees, avoided 189 metric tons of reduced greenhouse gas emissions from wastewater treatment, and saved $145,528 of annual energy costs savings due to avoided wastewater treatment. Specific details related to the GI examples above are described in Table 1.

Table 1 Economic benefits of two green infrastructure projects completed by NEORSD.

Project Details and Benefits	Urban Agriculture	Buckeye
GI Project Size	4.8 acres	3.2 acres
Stormwater Managed Annually	7.0 million gallons	10 million gallons
Drainage Area Managed	61 acres	22 acres
Net Present Value of Life Cycle Costs	$11 million for 30 years	$8.3 million
Annual Energy Savings Avoided Wastewater Treatment	$8,960	$5,200
Green Jobs	0.5 Full Time Equivalent	0.33 FTE
Economic Development	$21,961 annual indirect	$31,359 annual indirect
Air Pollution Mitigation (avoided wastewater flows)	65.8 kilograms	48.2 kilograms
Reduced Greenhouse Gas Emissions (avoided wastewater flow)	11.4 tons	5.8 tons

Park Selection and Design Recommendations

This section provides a summary of our green infrastructure suitability analysis, prioritization methodology, and park by park design recommendations for implementing green infrastructure for stormwater management and climate resilience. It also provides site characteristics and regulatory considerations important to consider when pursuing green infrastructure. Parks that have undergone recent construction or renovation, we have included some retrofit opportunities for now or for future consideration.

Suitability Analysis

MAPC utilized several methods to ascertain site suitability of green infrastructure design in Chelsea's parks.

1. Two site visits to Chelsea's Parks.
2. Green Infrastructure Site Assessment Checklist by Rutgers University.[38]
3. Metro Mayors Climate Smart Region Decision Support Tool.[39]

Prioritization analysis of parks for implementing and/ or renovating with green infrastructure.

Figure 9 The Trust for Public Land Climate Smart Cities™ strategies. Applied in the Metro Mayors DST.

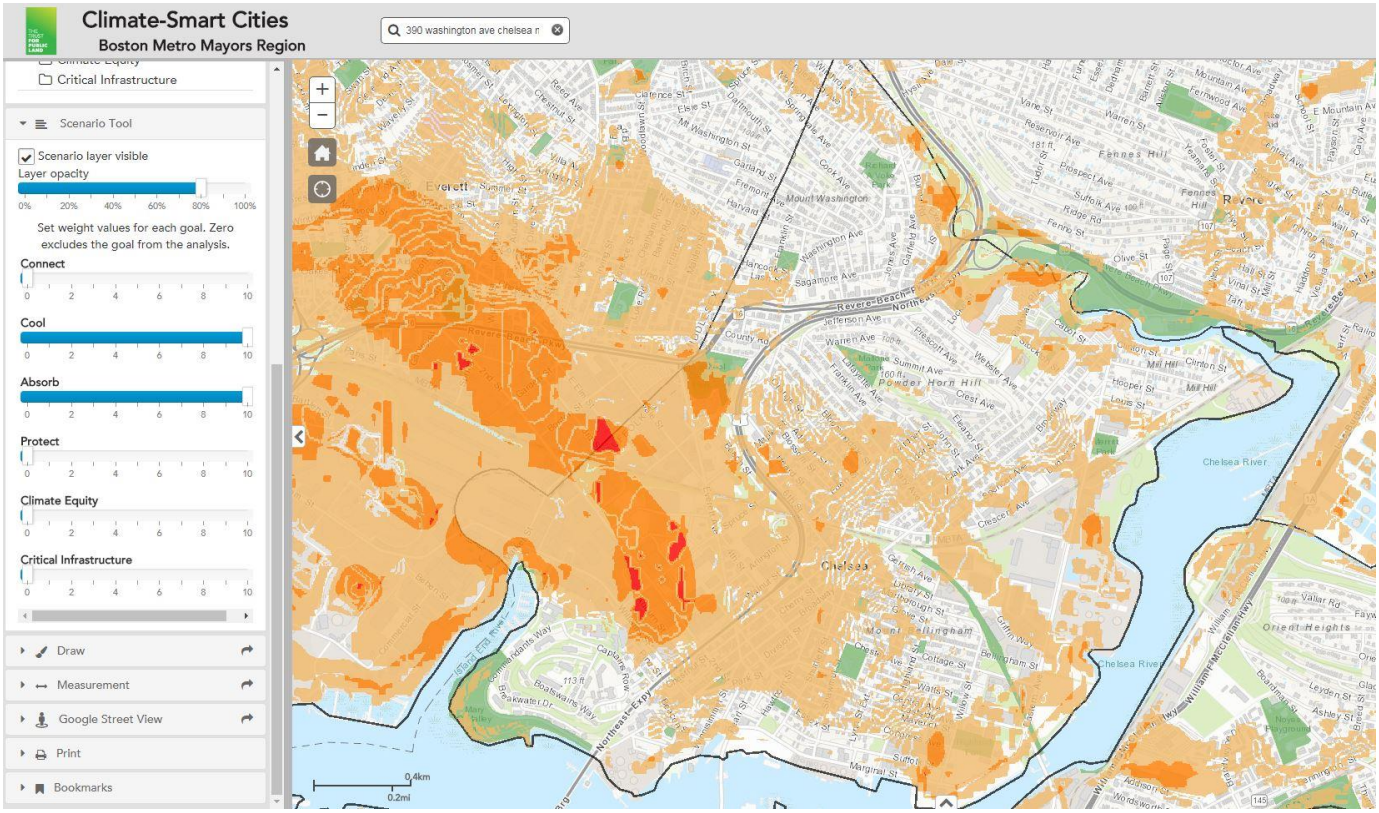
Credit: The Trust for Public Land (www.tpl.org)

In 2017, the Metropolitan Area Planning Council and The Trust for Public Land released the Metro Mayors Climate Smart Region decision support tool (the "Metro Mayors DST") for planning for climate resilience. The tool, open to the public, is a planning guide that illustrates the intersection of climate risk and opportunity for utilizing green infrastructure and nature-based solutions for climate resilience in the 14 municipalities of the Metro Mayors Coalition, including Chelsea (Figure 9). MAPC did a preliminary assessment with the decision support tool to identify key park locations that can serve to manage runoff, flooding, and urban heat. We then performed a park site reconnaissance of most of Chelsea's parks. The first site visit on September 22, 2017, the conditions were variably rainy. The second site visit on October 19, 2017, the conditions were clear, sunny, and warm. On site visits, we consulted the Rutgers University Green Infrastructure Site Assessment Checklist, recommended by the National Recreation and Park Association for

[38] http://www.water.rutgers.edu/Projects/Newark/Objective%201/Green%20Infrastructure%20Site%20Assessment%20Checklist.pdf
[39] https://web.tplgis.org/metromayors_csc/

evaluating green infrastructure in parks.[40] The checklist served to inform Best Management Practices in design recommendations and suitability. MAPC assessed park amenities, users, infrastructure, slope, sinks, pooling, stormwater drains, vegetation, evidence of erosion and/or runoff, and date of last renovation.

Figure 10 Metro Mayors Climate Smart Region DST scenario results.



After completing the park site analysis, we utilized the Metro Mayors DST to further green infrastructure suitability to refine siting and design opportunities. We utilized the DST green infrastructure suitability tool as an addition measure to prioritize parks in need or most suited to implement green infrastructure opportunities. Using the Metro Mayors DST, we performed a scenario analysis with Cool and Absorb at 10 and Protect at a level eight. From the scenario results, we identified parks that qualified as a high or medium high priority for green infrastructure (Figure 10). Since all data in the Metro Mayors DST is tagged to the parcel, we further investigated site characteristics the selected parks, including priority areas for Cool, Absorb, Protect, soil properties, locations near 21E sites, depth to bedrock and groundwater, slope, current and future flood zones, and estimated runoff potential. If the parcel contained characteristics agreeable toward implementing green infrastructure, they were assigned a one or they were assigned a zero if they did not qualify. If a park is within 500 feet of a 21E site, it was assigned a negative one value or if not, a positive one value. The parcel characteristics and value

[40] National Recreation and Park Association. Resource Guide for Planning, Designing and Implementing Green Infrastructure in Parks. 2017. http://www.nrpa.org/contentassets/0e196db99af544bbba4f63f480c1316b/gupc-resource-guide.pdf

determinations are listed in Table 2. One important consideration to note is that depth to bedrock and depth to water table data was not available for the entire City of Chelsea.

Table 2 Prioritization method for scoring parks for green infrastructure suitability.

Parcel Characteristics	"Yes" Value	"No" Value
Absorb Priority	1	0
Cool Priority	1	0
Protect Priority	1	0
Climate Equity Priority	1	0
Sinks	1	0
Estimated Runoff Potential	1	0
FEMA Flood Zone	1	0
BH_FRM Flood Zone 2013	1	0
Within 500 feet 21 E	-1	1
Slope	1	0
Soil Permeability (A or B SSURGO Hydro Group)	1	0
Depth to Bedrock (≥61 cm)	1	0
Depth to Groundwater (≥ 61cm)	1	0

Results

Analysis from the Metro Mayors DST indicates there is significant demand for green infrastructure and nature-based solutions for managing inland and coastal flooding, urban heat island, and general overall city-greening (Figure 9). However, several geomorphological environmental characteristics narrow the scope in green infrastructure design based upon the Metro Mayors DST Green Infrastructure suitability analysis. These include poorly drained soils across much of the City SSURGO Hydro Soil Groups C and D), shallow depth to groundwater and shallow depth to bedrock. These geomorphological characteristics limit the infiltration capabilities. In addition, the distribution of 21E sites across the City also presents further study and/or modified design strategies to ensure any remaining contaminants remain in place to prevent groundwater contamination.

We found 15 City-owned parks within the scenario modeling for green infrastructure priority areas for Cool, Absorb, Climate Equity, and Green Infrastructure Suitability. Table 3 lists the parks and their prioritization value-i.e., ones that are the most important and most accessible to implementing green infrastructure due to their climate risks and green infrastructure suitability. Appendix A illustrates the values of each park, green infrastructure characteristics, and values.

Figure 11 Green Infrastructure suitability geographic analysis.

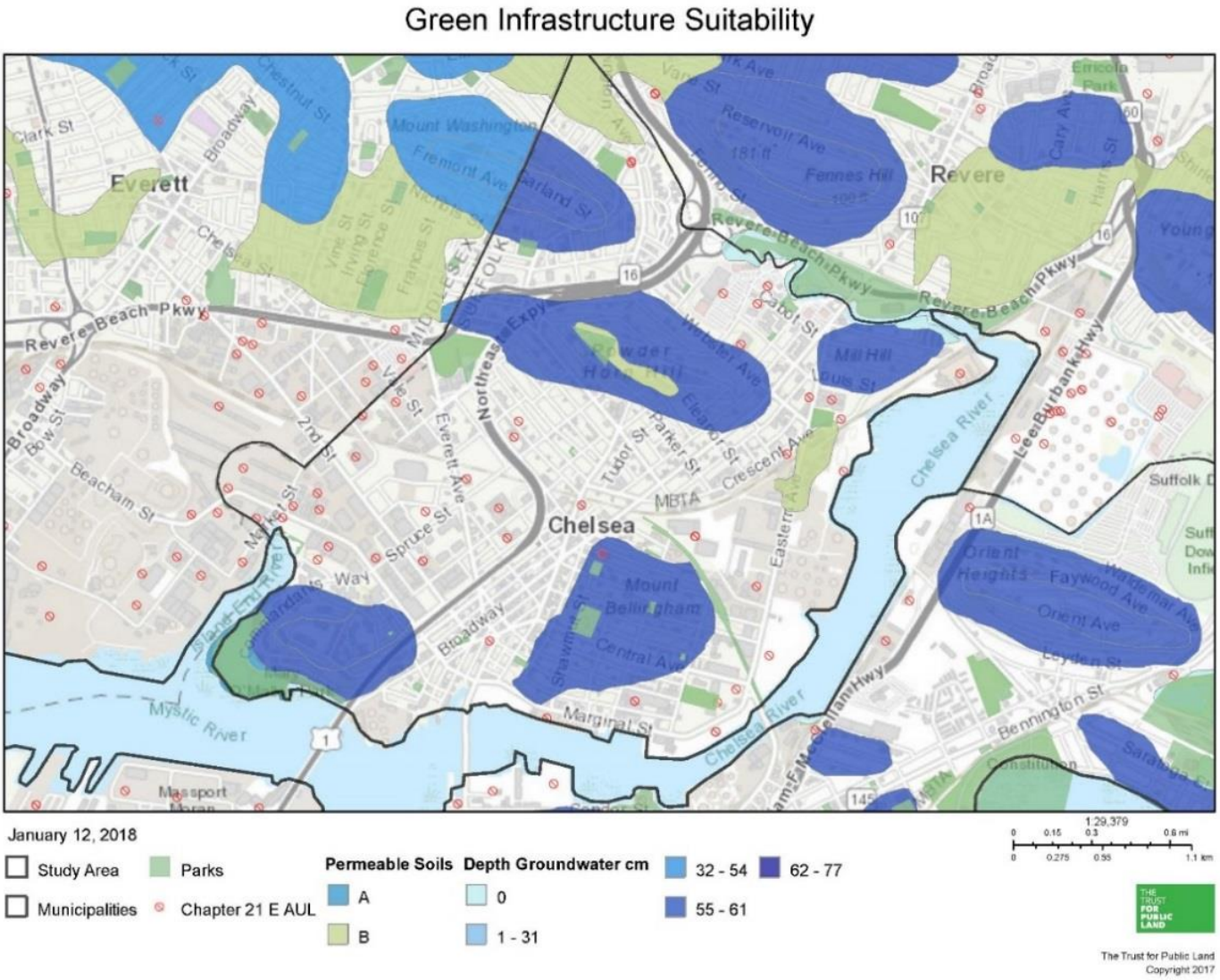


Table 3. Chelsea Parks and score for priority to implement green infrastructure.

Park	Total GI Priority Score
Merrit Park/Burke School Playground	*10*
Mill Creek Riverwalk	*8*
High School Carter Park	*8*
Paul A. Dever Park	*7*
Island End Park	*7*
Highland Park	*7*
Chelsea Greenway	*7*
John Ruiz Park	*7*
Eden Street Park	*6*
Quigley Park	*6*
Palonia Playground	*5*
Washington Park	*4*
Bosson Park	*4*
Mystic River Overlook Park	*3*
Ciepiela Park	*3*
Kayem Park	*3*
Winnisimmet Park/Chelsea Square	*2*

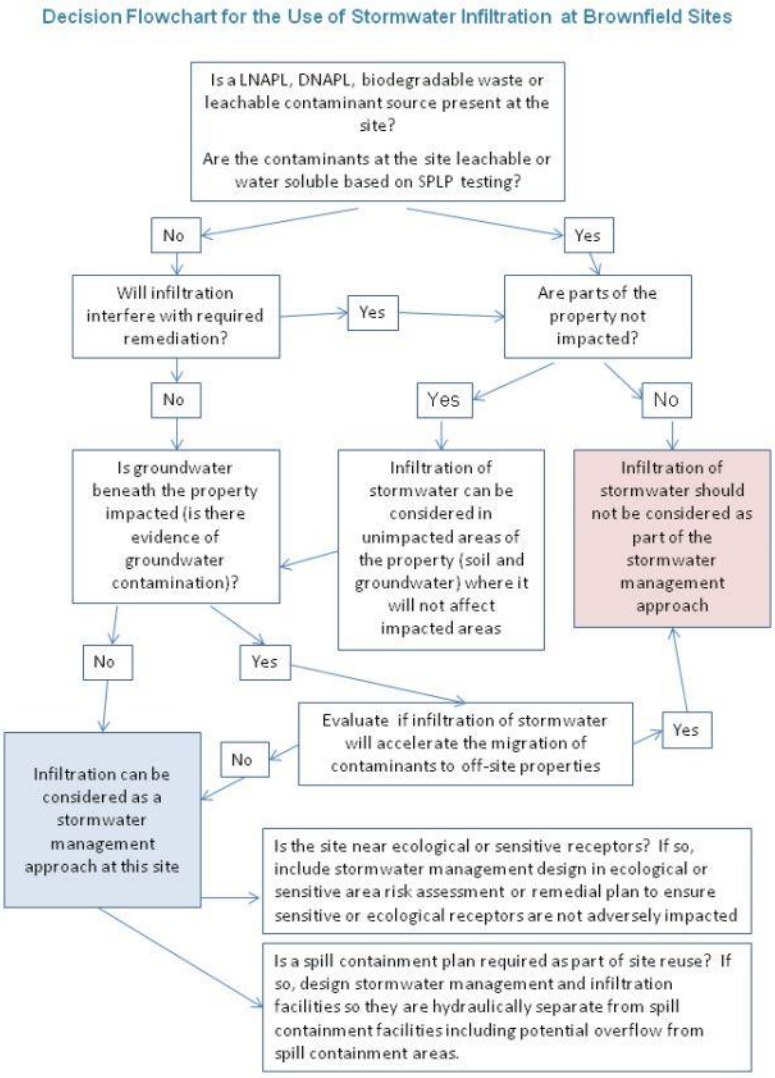
Score based upon need due to climate and stormwater risks as well as opportunity due to green infrastructure suitability.

Stormwater Infiltration and Brownfields

As an industrial city with an active working waterfront, Chelsea has many 21E sites located throughout the City. The feasibility for stormwater infiltration on any given park will depend on environmental site investigations, type of contaminants, and soil drainage type. In this plan, we note whether a park within 500 feet of a 21 E site but the design recommendations in this plan do not take into consideration the presence of contamination in the site soil or groundwater. Depending on the results of site specific environmental investigations, infiltration may or may not be an appropriate recommendation, depending on its water solubility, density, and mobility. The Environmental Protection Agency provides recommendations and guidance on implementing stormwater infiltration on brownfields including a decision flow chart (Figure 12).[41]

[41] Environmental Protection Agency. Case Studies for Stormwater Management on Compacted, Contaminated Soils in Dense Urban Areas. EPA-560-07-232. April 2008

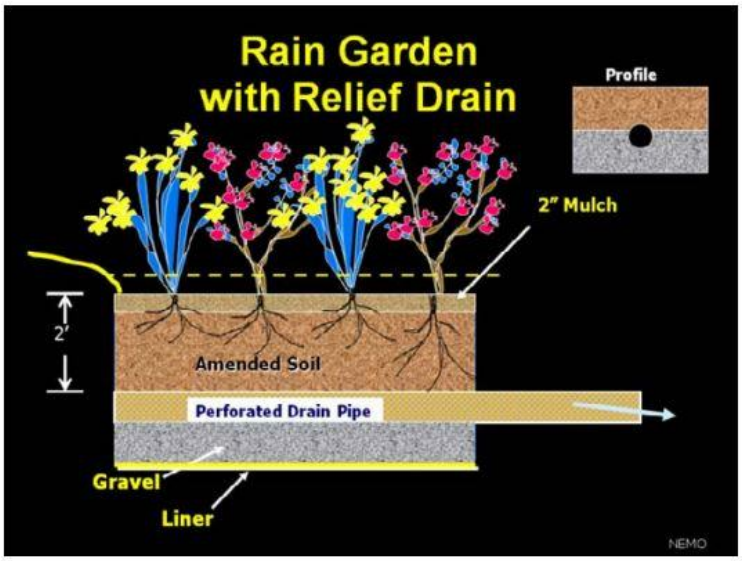
Figure 12 U.S. EPA decision flow chart on implementing green infrastructure on brownfields.[42]



For example, stormwater detention, retention and bio-filtration are generally acceptable green infrastructure solutions in contaminated soils though pervious pavers and raingardens are not generally suitable for sites with residual contamination.[43] However, there are mechanisms to use infiltration that ensures contaminants do not enter the groundwater or further leach into soils, when soil contaminants concentrations are low and do not cause public health issues. Figure 13 illustrates how rain gardens can be used in contaminated soils, with a perforated pipe that leads to the sewer system and an impermeable environmental barrier at the base underground. This ensures some infiltration and reducing the amount of runoff entering the stormwater system. Other mechanisms include green roofs, vertical green walls, water harvest systems, cisterns, etc.

[42] http://www.epa.state.il.us/water/watershed/publications/implementing-stormwater-infiltration-practices.pdf
[43] U.S. Environmental Protection Agency. Implementing Stormwater Infiltration Practices at Vacant Parcels and Brownfield Sites. 905-F13-001. June 2013

Figure 13 Stormwater management without infiltration for brownfields.



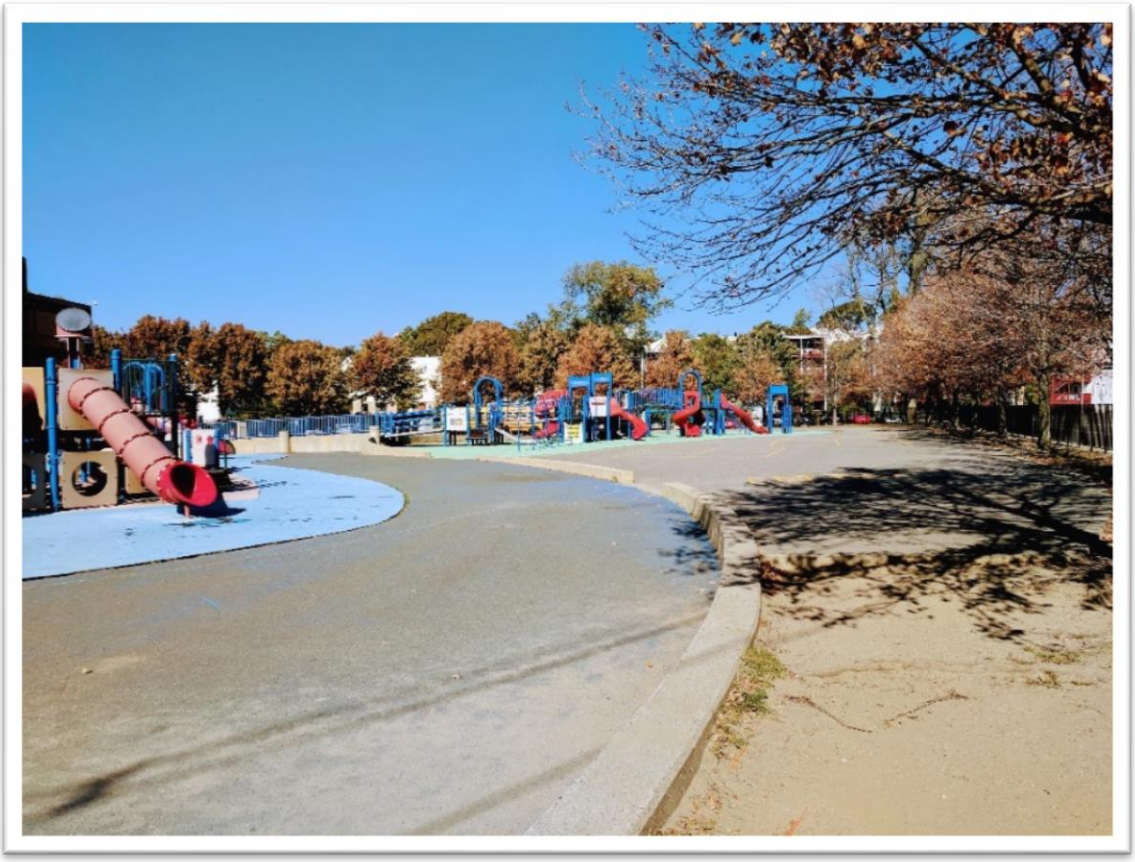
Rain Garden with liner and underdrain. Designs such as this allow for filtration and evapotranspiration, but prevent infiltration into subsoils.

Source: http://www.epa.state.il.us/water/watershed/publications/implementing-stormwater-infiltration-practices.pdf

Finally, because urban soils are typically urban fill, soil classifications used in this analysis are from the best information available. However, we recommend site specific testing of soil, its drainage properties, and rate of infiltration for each green infrastructure installation.

Park Design Recommendations

Merritt Park/Berkowitz/Burke Elementary Complex School Playground



Merritt and Berkowitz/Burk Elementary School Park is a large and intensely used play recreation area, particularly for the 570 elementary students who attend the Berkowitz Burke Elementary Schools. The play area is currently undergoing a re-design process with CBA Architects. This site is the highest priority and opportunity for green infrastructure scoring a 10 on our analysis.

Park Site Considerations

- The park contains 271,594 square feet of impervious surface totaling 70% of the park area;
- It contains mature trees along the park perimeter at Crescent Avenue and Eastern Avenue creating a 16% canopy cover;
- It lies within 500 feet of a 21E site;
- The park is susceptible to flooding of 0.5-1.5 feet in 2013 along Eastern Ave and Crescent Ave and onto the baseball diamond.
- It is susceptible to flooding of 0.5-2.5 feet of the entire park area by 2030 (Figure 14).[44]
- Park contains compacted and degraded soils around trees at the playground area.
- Park contains poured-in-place rubber safety surface with potentially outdated play equipment.

[44] Designing Coastal Community Infrastructure for Climate Change. Stantec and Woods Hole Group, January 2017

- Merritt Park is well-maintained, attractive area with a baseball diamond, sports shed, walking path, sitting areas, and perimeter tree canopy.

Figure 14 Coastal Flooding in 2030 for a 1% Annual Chance Storm at the School Complex.

Source: Woods Hole Group BH-FRM and TPL Metro Mayors DST.

Design Recommendations

- Merritt Park is in good condition with well-maintained fields and healthy, mature tree canopy. We suggest only to design/develop a small green roof on the small outbuilding. A green roof will reduce stormwater flowing onto the field and promote additional evapotranspiration for cooling.
- For the Berkowitz/Burke Elementary Schools playground, we recommend pursuing an overall redesign/redevelopment park project. Consider landscape architects and engineers experienced in green infrastructure for stormwater management/climate resilience and experience in working with youth in participatory design processes.
- Enable a student/teacher participatory design process for the park master plan. Use the design process as a platform to educate students on stormwater management, urban heat island, locally grown food, climate change and/or also building consensus.
- Replace asphalt and poured rubber safety surface with a permeable surface. Given the intense use of the site, we recommend a pervious artificial turf with an environmentally friendly/healthy subsurface and perforated pipes that direct excess, non-infiltrated runoff into the sewer system (Figure15). Perforated pipes allow a slow infiltration of stormwater into the ground reducing the amount entering the sewer system. Rather than using a rubber-crumb subsurface, which tends to be controversial, utilize more ecologically friendly infills such as sand, coated silica sand, TPE, or Nike Grind.[45],[46]

[45] Mayer, R. 2016. "If Not Crumb-Rubber, Then What? 7 Alternative Infills." Sportsfield Management. https://www.sportsfieldmanagementmagazine.com/maintenance/artificial-turf/crumb-rubber-alternatives/

[46] http://www.woodardcurran.com/blog/alternatives-to-crumb-rubber-for-synthetic-turf-fields

Figure 15 Artificial Turf with Perforated Pipe for Water Infiltration.

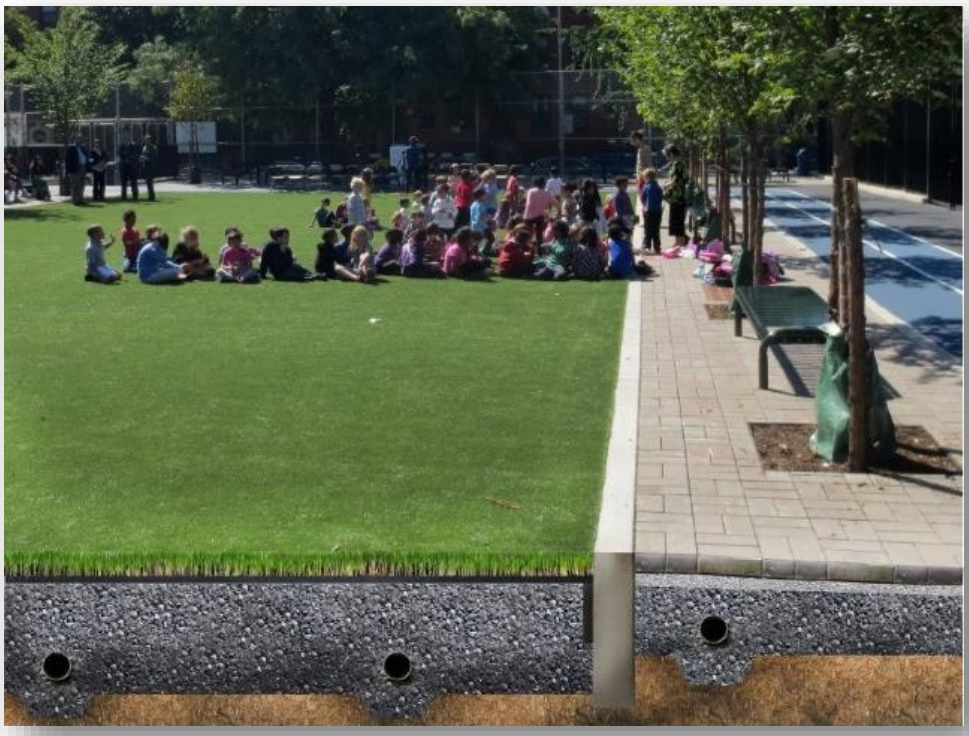


Photo credit The Trust for Public Land

- Consider increasing the tree canopy to 75% of the site with 10 years. Given artificial turf can exacerbate the urban heat island effect, strategically sites additional trees to ensure turf is shadowed throughout the day. Also consider turf and engineering solutions that enables evapotranspiration for cooling.
- Work with students to design and install community gardens in raised and/or container beds (Figure 16). Consider having gardens open during the summer months for year-round Use a geotextile barrier at the base of the raised/container beds. Import new high-organic content soils to fill the raised/container beds.
- Create rain gardens and/or vegetated bioswales around storm drains to minimize water entering the system.
- Consider creating earthen berms and/or topographic "cones" within and around the park to create a topographic, natural play feature, strategy to direct stormwater to gardens or other infiltration features, and to mitigate coastal flooding and sea level rise.
- Consider salt water resistant trees, shrubs, and plants acclimated to endure periodic coastal flooding.
- Use pervious pavers that allow for infiltration for walking paths. Where vehicles are required for safety, ensure that any stormwater runoff generated from asphalt of impervious surface is captured onsite.

Figure 16 Container gardens for growing food at a NYC school playground.

Photo Credit: The Trust for Public Land

- Incorporate a design strategy and/ or barrier that minimizes trampling on tree roots for trees on the Crescent Street side. Replenish and enrich the soil with more organic content for greater permeability and water retention. Minimize park design that would encourage trampling of roots.

Mill Creek Riverwalk/Creekside Commons

Photo Credit Darci Schofield

The Mill Creek Riverwalk is an approximate 0.6 acre park along Mill Creek on property managed by Chelsea Commons, LLC and owned by multiple entities including Chelsea Housing Authority, Chelsea Commons LLC, Parkway Plaza Venture, LLC and the Commonwealth of Massachusetts. The Commonwealth owns Mill Creek and its floodplain. Mill Creek received a nine score for green infrastructure opportunity/priority, and is worthy of recommendations despite being owned by multiple entities. It is one of the few parks with the significant nature-based experience and has tremendous opportunity to increase resident connections to the waterfront, encourage biking, protect critical infrastructure in the floodplain, and create park amenities for teen and older youth, a priority defined in the 2018 OSRP.

Park Site Considerations

- Creekside Commons and Mill Creek Greenway is within a 1% Annual Chance Storm in 2013, according to the BH-FRM with depths of 0.5-1.0 feet.
- A chain link fence separates the park user on the path from experiencing or viewing Mill Creek.
- Significant trash and litter on the creek side of the chain link fence, where the fence itself seems to encourage dumping.
- Floodplain is overgrown with invasive and exotic species and is a degraded ecosystem.

- The site contains priority areas for green infrastructure solutions as determined by the Metro Mayors DST for Absorb, Cool, Protect, and Climate Equity.
- The entrance is located adjacent to housing owned by the Chelsea Housing Authority, making it an important Climate Equity opportunity.
- The Greenway and Creekside Commons produce runoff during a one-inch storm event.
- The site is located within 500 feet of a 21E site.

Figure 17 Photo of a pump track in Redding, CA.

Pump tracks promote youth biking at many levels and social connectedness. Photo Credit: Ride Redding

Design Recommendations

- Collaborate with the Commonwealth of Massachusetts on ecological restoration of the floodplain, including invasive and exotic species removal, forest management, habitat and marsh restoration to ecological function of the marsh and upland areas as important barriers to flooding. Restoration should also consider planting salt resistant shrubs and trees.
- Given the residents of Chelsea in their 2018 OSRP indicated a desire to have better connections to their waterfront, consider removing the fence between the greenway path and the creek. This combined with floodplain ecosystem restoration can significantly enhance the beauty, integrity and experience along the Greenway and Creekside Commons. Consider lighting and sighting in design.
- Dredge Mill Creek for better flow, river habitat, and floodplain protection. If sediments are determined non-toxic, use sediment to build earthen berms along the shoreline and at Creekside Commons to minimize future flooding. Use earthen berms as an elevated walking path along the creek.

- To encourage more Greenway use and develop recreational amenities for older youth and teens, consider creating a pump track/park along underutilized areas on the Greenway and Creekside Commons.[47] The pump track can also have the dual function of protecting infrastructure from riverine flooding as well as capture stormwater runoff from adjacent pervious surfaces (Figure 17) by creating infiltration bioswales in between the berms and rolls of the pump track.[48]

[47] Pump Tracks are off-road terrain for bikes consisting of banked turns, berms, and rollers designed to be ridden by riders creating momentum by up and down movements or "pumping". Relatively simple and inexpensive to construct, serve a wide-range of rider skills, and easier to maintain (Wikipedia, 2018).

[48] The City of Providence is creating a teen adventure park with bike trails and pump track along the dense, highly urbanized Woonasquatucket River. https://www.tpl.org/our-work/woonasquatucket-river-adventure-park#sm.001512ahrmwldks11rx287vxsvjsi

Island End Park

Photo credit Darci Schofield

In January 2017, CAM, Stantec, Woods Hole Group, WPI, and Woods Hole Sea Grant created a conceptual plan for renovating Island End Park and restoring the Island End river shoreline and salt marsh. Island End park received an eight for green infrastructure priority/opportunity in our analysis and we encourage the City of Chelsea to pursue this effort, generally with the recommendations put forth in the aforementioned report.

Park Considerations

- Access to the park is unclear and park amenities are view obstructed by overgrown invasive species.
- The shoreline on Market Street is degraded with compacted soils and is fully exposed to street allowing stormwater runoff to enter directly into Island End River.
- The park is a priority area for green infrastructure according to the Metro Mayors DST for Absorb, Cool, Protect, and Climate Equity.
- The site produces runoff in a one-inch storm.
- The site is within a BH-FRM 1% Annual Chance Flood for 2013 subject to 1.5- 5 feet of flooding.
- The site is within 500 feet of a 21E site.

Design Recommendations

- Perform a robust, community-based participatory design process for the re-design and development of Island End Park.
- Consider sightlines as a baseline park requirement preventing the "nooks and crannies" effect for safety and offering park users a more profound visual experience with the waterfront, a goal identified in the 2018 OSRP.
- Enhance the visibility of park entrances.
- Pursue the recommendations for climate and flood resilience put forth in "Designing Coastal Community Infrastructure for Climate Change" including invasives/exotics removals, shoreline restoration of Island End River at Market Street, and earthen berms for critical infrastructure protection within the floodplain.
- Create design features that provide space for flooding, create wetlands, utilize innovative recreation amenities with water, and provide a greater experience to the waterfront (Figure 18).

Figure 18 Urban park wetlands to accommodate flooding and pathways for walking/biking.

Photo Credit The Trust for Public Land

- CAM et. al suggest salt marsh restoration at the shoreline of Island End Park. Because salt marshes are highly susceptible to degradation from non-point pollution, stormwater, and other water quality impairments, install a floating wetland in addition or as an alternative to salt marsh restoration, since both Mystic and Island End Rivers are impaired waters.[49]

Floating Wetlands (Figure 19) can:

[49] Massachusetts Department of Environmental Protection, 2014 List of Integrated Waters.

- Provide additional measure of shoreline protection to infrastructure.
- Increase marine species habitat and biodiversity.
- Withstand tidal inundation and sea level rise.
- Absorb pollutants such as Nitrogen.
- Provide surface area for beneficial root bacteria to clean water.
- Mitigate water turbidity.[50]

Figure 19 Floating Wetland in Chesapeake Bay, Baltimore and schematic.

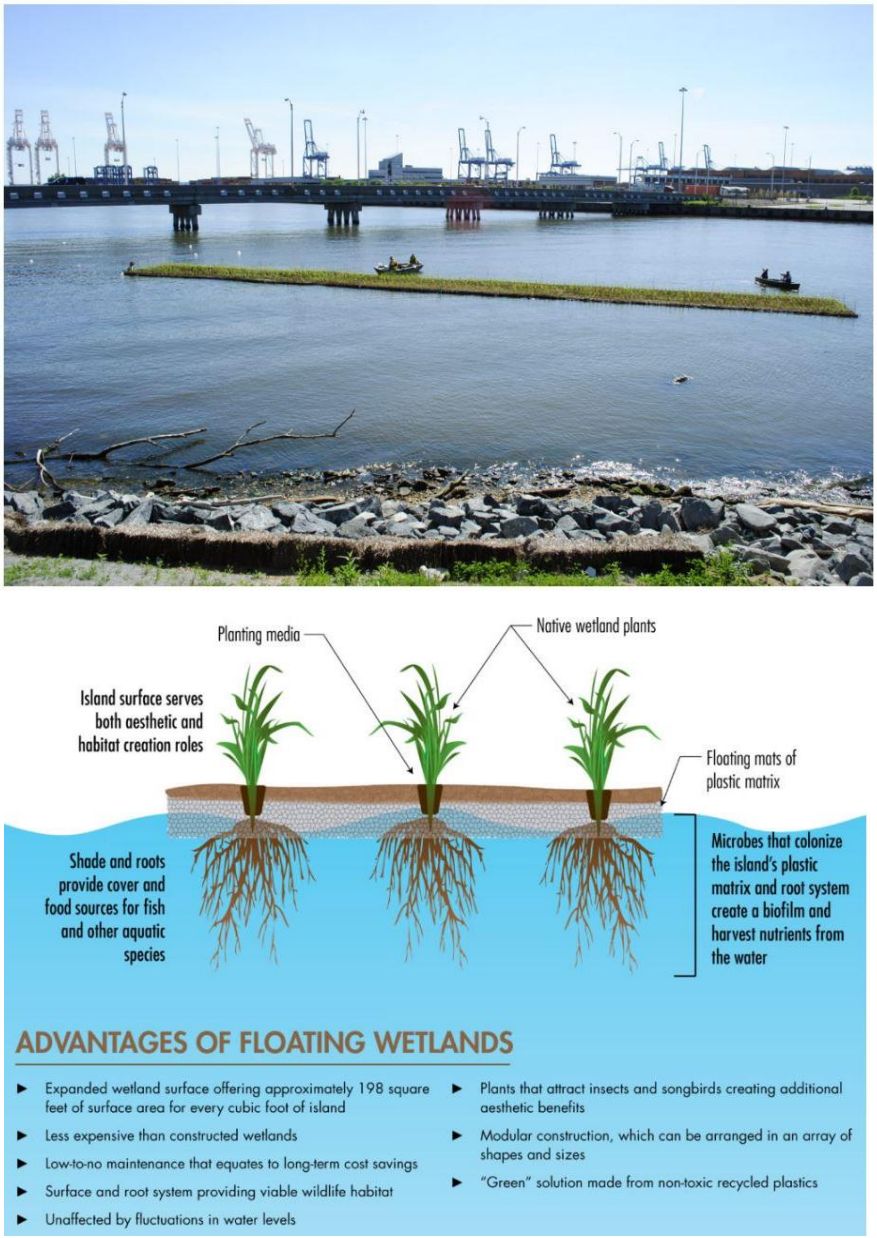


Photo Credit KCI

[50] Haynes, Andrea. A Floating Wetlands Handbook for San Francisco's Southeast Waterfront. https://issuu.com/andreahaynes/docs/patri_booklet_issuu

Highland Park

Photo Credit City of Chelsea

Highland Park is one of Chelsea's most popular recreation facilities and intensely used park. It currently contains a regulation-sized artificial turf soccer field, concession stand, play equipment, seating, and a parking lot. The City has completed a schematic design and received public input on this on April 27, 2017. Highland Park scored eight for priority/opportunity for green infrastructure installations.

Park Site Considerations

- The proposed redesign of the park contains a parking lot consuming approximately 50% of the site.
- Currently, 30% of the park area is impervious surface, and 18% of the park contains tree canopy cover. The new design incorporates additional trees to the site.
- The park is a priority area for green infrastructure according to the Metro Mayors DST for Absorb, Cool, Protect, and Climate Equity.
- Located within a BH-FRM 1% Annual Chance Flood Zone for 2013 with 0.5-1.0 feet of flooding.
- Will produce runoff in a one-inch rain storm.
- Is located within 500 feet of a 21E site.

Design Recommendations

- Ensure that all stormwater is captured onsite.
- Consider creating a "green" parking lot. Benefits include stormwater infiltration, enhanced evapotranspiration to "cool" the park, beautification and air quality mitigation from vehicle emissions (Figure 20). Utilize engineered materials capable of supporting vehicle traffic for travel and parking.

Figure 20 Green Parking Lots that capture stormwater and promote evapotranspiration for cooling the urban heat island.

Photo Credit Ecoterr.com

- An alternative "green" parking lot is using pervious pavers and directing runoff to the trees and vegetation in the proposed plan. Using tree wells provides maximizes water storage and minimizes soil compaction. A small trench within the parking lot promotes slow speeds and directs stormwater to infiltration areas such as the tree wells and vegetation alleviating stormwater into the storm system (Figure 21).

Figure 21 Parking lot design that promotes infiltration and directs runoff to adjacent vegetation.

Pratt Institute parking lot retrofit, Brooklyn, NY. *Photo credit Inhabitat.*

- Use pervious pavers for walking paths around the park, in seating areas, and around basketball courts.
- For the proposed water feature, create a system that harvests and stores the water for irrigation reuse or infiltration. For example, used water from the spray feature could be stored in an underground tank that allows slow infiltration into the ground (but still connected to the stormwater system in the event of overflow). Another option is to create a small wetland, gravel area that creates a natural space that stores the spray waste water (Figure 22).

Figure 22 Created wetland that stores, cleans, and infiltrates spray feature wastewater.

Photo Credit: The Trust for Public Land

High School Carter Park

Photo Credit Google Earth

Chelsea High School Carter Park is a nearly 4-acre, active recreation park adjacent to Chelsea High School. It contains baseball diamonds, tot lot, play equipment, running track and football field. It also is the site of the recently restored Massachusetts Department of Conservation and Recreation Vietnam Veterans Memorial Pool, which is an important community amenity especially during hot summer days.[51] Carter Park and Burke are currently undergoing a master design planning process in 2018 and the high school Veterans Stadium will be renovated in 2018. Carter Park received a score of seven for green infrastructure priority/opportunity.

Park Site Considerations

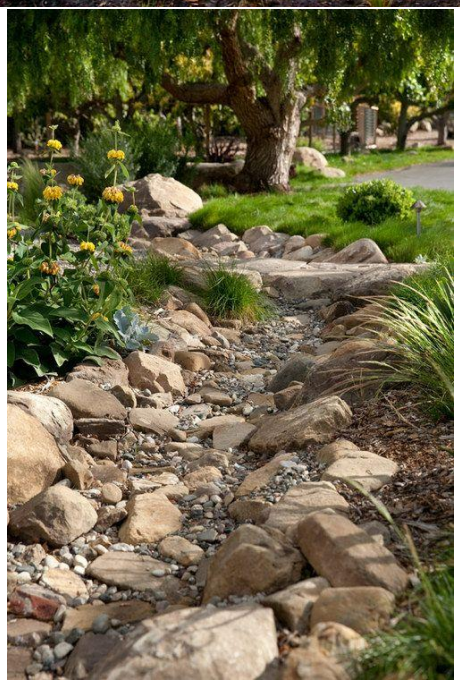
- The site is a priority area for green infrastructure for Absorb, Cool, Protect, and Climate Equity.
- The two parcels on the site owned by the City of Chelsea contain approximately 67% impervious surface and 20% tree canopy cover.
- The parcel contains active recreation amenities that require significant space, openness, and specialized surfaces.
- The site is located within a 1% Annual Chance Flood zone according to the BH-FRM in 2030 with a flood depth of 0.5 feet. Flooding originates from Island End River.
- The site is within 500 feet of a 21E site.

Design Recommendations

[51] http://www.chelsearecord.com/2010/07/08/heat-wave-hits-region-chelsea-prepared/

- The recreation amenities, recently renovated, are anchors to the park itself. There is sufficient space in some small underutilized areas to perform small green infrastructure installations where pooling may occur. We suggest a comprehensive understanding on the flow, infiltration, and runoff of stormwater onsite for best site design within the park.
- Create an opportunity to collect stormwater runoff from the track and football field into an artful and natural amenity for managing stormwater in the non-recreation areas.

Figure 23 "Dry" beds or stream beds that manage stormwater as art installations.



Design by Penn State. Photo Credit Inhabitat (top) and robmaday.com (bottom).

- Create a dry bed that can collect runoff from pervious surfaces that enters into a created stream. Figure 23 illustrates two types created streams. The top photo is a "dry" bed that

allows infiltration into the ground and the bottom photo collects water through a system that allows slow infiltration (i.e., such as perforated pipes). Ensure the design enables water infiltration within 72 hours to prevent mosquitos to adhere to local health regulations.

- Seek an artist to create creative, artful storm drains from the roof toward an infiltration area adjacent to the school (Figure 24)

Figure 24 Rain water capture with artistic gutters and rain gardens.

Photo credit Curbed Philly. Artist Stacy Levy (StacyLevi.com).
Springside Chestnut Hill Academy, Philadelphia in parthernship with the Philadelphia Water Department and Philadelphia Horticultural Society, hired artist Stacy Levi to create a system to manage stormwater while creating a space of beauty in an underutilized area on the school campus. The rain water flows from the gutters through PVC pipes decorating the side of the building. It then flows to a graded bio-swale planted with native species (planted by the school children), then to a planted infiltration basin where it slowly infiltrates into the ground.

Chelsea Greenway

Photo Credit Massachusetts Department of Transportation

Chelsea Greenway is a 0.75 mile mixed-use path parallel to the under-construction Silver Line Bus Rapid Transit from Chestnut Street to Eastern Ave. This is a Massachusetts Department of Transportation Project and the Greenway itself is funded in part by the Massachusetts Executive Office of Environmental Affairs. The City of Chelsea has committed to maintain the Greenway. The Greenway opened in April 2018. The Chelsea Greenway received a score of seven for priority/opportunity for implementing green infrastructure in our analysis.

Park Site Considerations

- The site is a priority area for green infrastructure for Cool, Absorb, Protect, and Climate Equity according to the Metro Mayors DST.
- The Greenway, from Eastern Avenue to Cottage Street, could experience 0.5-1.0 feet of flooding in a 1% Annual Chance Strom in 2013 and 2030 according to the BH-FRM.
- The site does have a slope overall.
- The Greenway contains mostly poorly drained soils with low depth to bedrock and depth to water table.
- The City of Chelsea will be installing final landscaping along the Chelsea Greenway in 2018.
- As part of the Greenway/Silverline BRT development, some site clearing required a few substantive trees to be removed.

- The Chelsea Greenway/ Silverline BRT contained the following green infrastructure installations in its recent development:
    - 1,500 linear feet of a vegetated bio-retention swale between the Busway and the Shared Use Path.
    - Stormwater recharge systems, a stormwater detention basin and drainage swales.
    - At the BRT stations, 40 trees and 500 shrubs.[52]

Design Recommendations

- At the terminus of the Greenway at Eastern Ave, consider working with the Commonwealth of Massachusetts to create a skate park that serves to hold and mitigate coastal flooding (Figure 25). This park would serve to address Goal One (providing full range of recreational opportunities and Goal Two (acquire waterfront properties large enough to serve as park nodes) in the 2018 OSRP while also providing a system to protect critical infrastructure and economic centers from coastal flooding. The community of Chelsea also identified this area as a park priority in "A VISION for the Chelsea Waterfront" in October 2016.

Figure 25 Rabalder Park in Roskilde, Denmark.

The skate park serves to help mitigate flooding and hold up to nearly 10 swimming pools of water during a flood event. Photo credit/Source InHabitat. https://inhabitat.com/denmarks-rabalder-park-can-contain-10-swimming-pools-worth-of-floodwater/

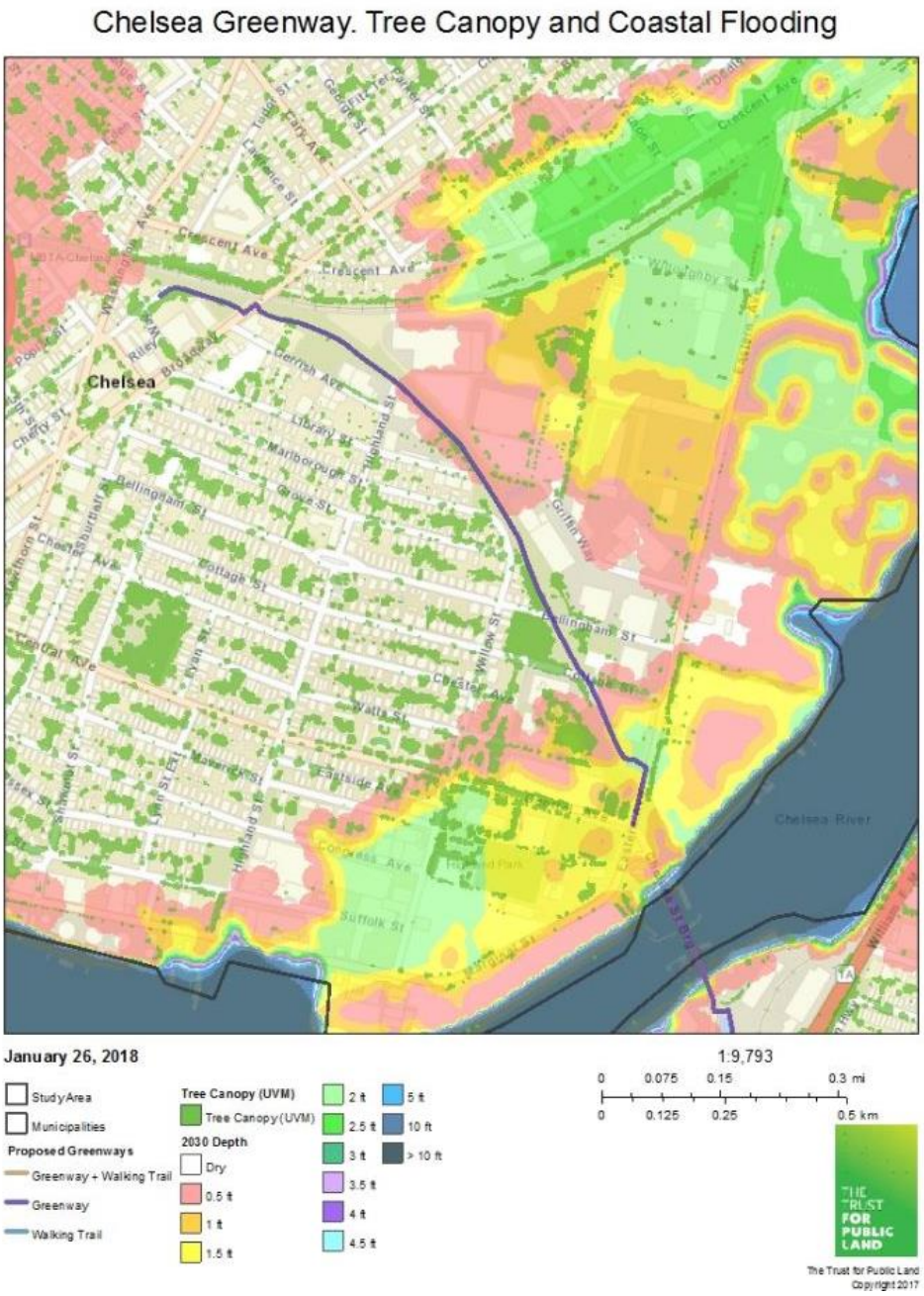
- The Chelsea Greenway is an excellent opportunity to increase Chelsea's tree canopy, particularly do to its adjacency to significant impervious surface, high urban heat island,

[52] Fancis Astone. AECOM. Personal Communication. January 25, 2018.

and minimal tree canopy within the adjacent industrial area (i.e., Logan Pre-Flight Parking Lot, Gulf Oil Terminal, Eagle Air Freight, etc.).

Adding trees to the Greenway will provide a "cool" and pleasant riding and walking experience during very hot days, particularly for those who will use the Greenway for commuting. Figure 26 illustrates Chelsea's tree canopy which was evaluated using LIDAR at one meter resolution.

Figure 26 LIDAR Tree Canopy and Coastal Flooding in Chelsea.



John Ruiz Park

Photo Credit CBA Landscape Architects, LLC

John "The Quietman" Ruiz Park is a 0.2-acre park is dedicated to the Chelsea born and raised, first Latino, and twice won heavyweight champion. This attractive park was renovated and dedicated in 2014 and it contains fitness equipment, water features, playground, walking and sitting areas. Attractive perennial gardens decorate the perimeter of the park. John Ruiz Park scored a six for priority/opportunity for green infrastructure.

Park Site Considerations

- The park is a high priority for green infrastructure for Cool, Absorb, and Climate Equity in the Metro Mayors DST.
- The site is within 500 feet of a 21E site.
- The site has a moderate slope, poorly drained soils, and high water table depth and low depth to bedrock.
- The site is 89.5% impervious. The tree canopy is immature with trees planted in 2014.
- The site produces runoff in a one-inch rain event.

Design Recommendations

- Given the site has significant impervious surface, consider reconstructing garden beds along the perimeter of the park into rain gardens.
- Create decorative trenches that transfers the water feature runoff toward rain garden beds.

- Consider hiring an artist to construct an art installation that harvests rain water that can be used to irrigate the gardens (Figure 27).

Figure 27 Sculpture that harvests and stores rainwater with a spicket at the base for water reuse.

Photo credit EcoFriend.com

Eden Street Park

Photo Credit Google Earth

Eden Street Park is 0.2-acre passive recreation and tot lot that forms an "L" shape connecting Eden and Addison Streets. The park is in good condition and has decorative gardens with roses at the entrances. Also, planters placed on the sidewalk on the Addision Street entrance as well as the showy roses indicate neighborhood care and beautification of the park. A utility box onsite on the Eden Street side, which could inhibit more significant infiltration practices. Eden Street Park scored a seven as a priority/opportunity for green infrastructure.

Park Site Considerations

- The site is a priority area for green infrastructure for Cool, Protect, and Climate Equity.
- The site will be exposed to approximately 0.5 feet of flooding by 2030 according to the BH-FRM in a 1% Annual Chance Flood.
- The site is within 500 feet of a 21E site.
- The soils is poorly drained with low depth to bedrock and groundwater.
- The site contains approximately 51.2% tree canopy cover and 47.2% impervious surface.

Design Recommendations

As a passive park in good condition, we suggest some retrofits to enable greater stormwater management capacity.

- Replace brick walkway with pervious pavers.
- Reconstruct gardens at the entrances as rain gardens that enable some infiltration.
- Gently remove and replant the existing roses in the rain gardens.
- Consider adding stormwater planters to enable the neighbor's gardening and planting interests (Figure 28).

- Consider installing rain harvesters to supply watering to the roses and decorative stormwater planter.

Figure 28 Stormwater Planters used to filter and slowly infiltrate rain water.

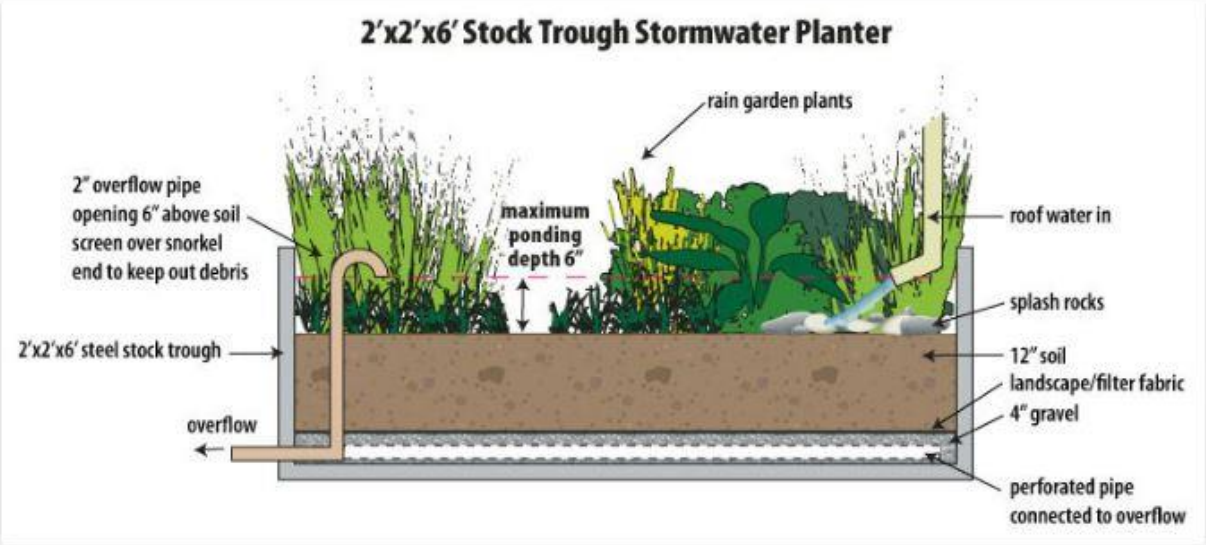


Photo Credit East Multnomah Soil and Water Conservation District

Mystic River Overlook

Photo Credit Darci Schofield

Mystic River Overlook Park is one of Chelsea's newest parks. Located under the Tobin Bridge, the 2.2 acre park contains large open areas providing excellent opportunities for walking, picnicking, community programming such as yoga classes and art installations. It also contains fitness equipment. The park was officially opened in September 2017 and the City of Chelsea mentioned interest in having public art installations be a future amenity. This park scored a six as a park priority/opportunity for green infrastructure.

Park Site Considerations

- The park is a priority area for green infrastructure for Absorb and Climate Equity.
- The site is within 500 feet of a 21E site.
- The site has a steeper slope (4.5), poorly drained soils, and greater 2 feet depth to bedrock.
- The site is adjacent to the Mystic River.

Design Considerations

Because the site was just recently constructed, we suggest retrofits that capture any potential stormwater runoff that could occur once soil is compacted from frequent use. The site has a steeper slope and its adjacency to the Mystic River are important considerations for ensuring

stormwater capture onsite for the first inch of rain and potentially stormwater capture from adjacent uphill properties.

- Create infiltration systems along the downslope perimeter areas of the park along the retaining wall at Broadway, areas that are not in recreational use.
- Use the bridge as an additional amenity to the park. Create vertical gardens along the drain pipes along the structural legs of the bridge (Figure 29). Vertical gardens will uptake rainfall and stormwater down the bridge structure, serve to clean the air, create a three-dimensional park space, and cool the park with additional evapotranspiration.

Figure 29 Vertical gardens along the Tobin Bridge piles.

Photo and design credit: Darci Schofield

- Host an artist design competition for Mystic Overlook Park that serves to capture, harvest, and infiltrate rain and stormwater while creating public art amenities that celebrate Chelsea's community character. For example, the Philadelphia Water Department, EPA, and Community Design Collaborative hosted "Infill Philadelphia: Soak it UP!" This design competition asked for retrofit designs that managed stormwater with green infrastructure while creating community assets and amenities.[53]

[53] http://planphilly.com/eyesonthestreet/2012/11/26/soak-it-up-green-infrastructure-design-competition

Paul A. Dever Park

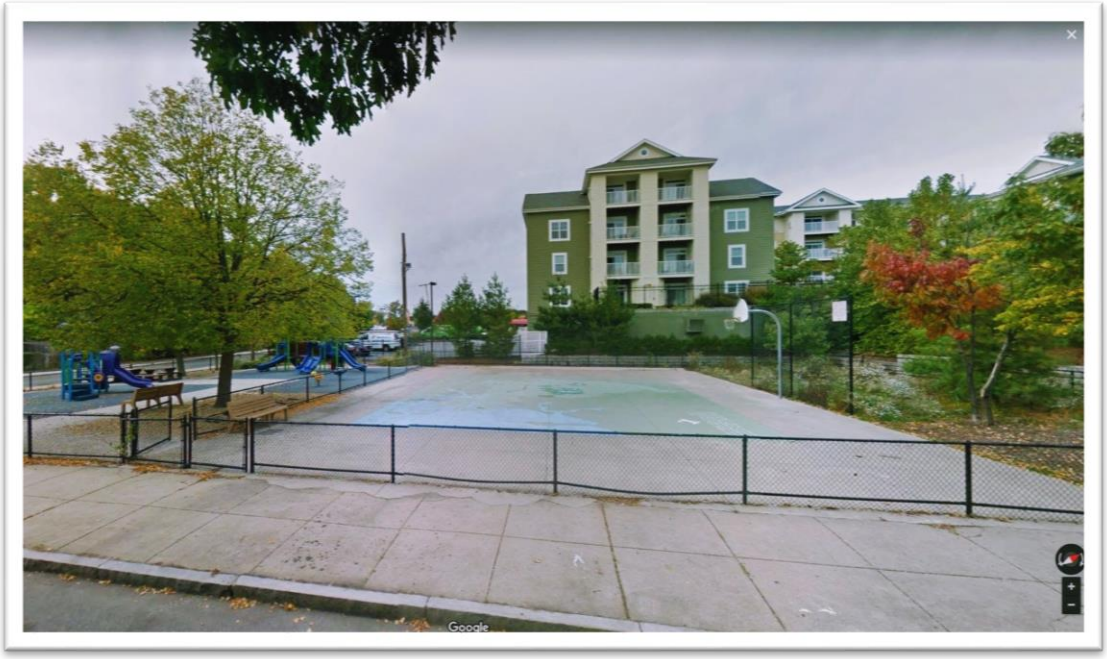


Photo Credit Google Earth

Paul A Dever Park is a 0.28-acre corner park adjacent to the newly developed Parkside Commons, an eco-friendly, higher-end condominium complex. Dever Park contains a basketball court, tot playground equipment, and benches. It also contains gravel around the trees and other surfaces which migrates onto the sidewalk, road, and rubber safety surface under the play equipment. It was rated in fair to poor condition in the 2018 OSRP. The park scores a six for priority/opportunity for implementing green infrastructure.

Park Site Considerations

- The site is a priority area for green infrastructure for Cool, Absorb, and Climate Equity according to the Metro Mayors DST.
- The site has low areas that would tend to pool water (i.e., sinks) and produces runoff in a one-inch rain.
- The site has poorly drained soils and low depth to water table and depth to bedrock.
- The park has 25% tree canopy cover and 65.5% impervious surface.

Design Recommendations

Given the fair to poor condition of the park, we suggest an entire redesign/redevelopment. Enable the community to define the amenities and participate in the design while using the opportunity to highlight climate risks and opportunities for resilience with the park design. Green infrastructure solutions should be complimentary to neighborhood amenities and vision to the plan. In the renovation and/or design, consider:

- Removing invasive/exotic vegetation and/or trees in poor condition.

- Keep mature trees in good condition.
- Plant new trees that will create 100% canopy cover within 10 years. Use tree wells for new trees to prevent soil compaction from trampling/use of the park.
- Utilize pervious pavers for walkways around safety surface and courts to allow some infiltration into the ground.
- Given the poorly drained soils and low depth to bedrock/water table, install permanent decorative planters to minimize stormwater runoff.
- Install artistic rain water harvesters that serve to capture, store, and re-use rainwater for nearby plants, trees, and stormwater decorative planters (Figure 30).

Figure 30 Rainwater harvesters and decorative stormwater planters.

These cisterns contain spickets at the base to allow for re-use of the water. Photo credit American Society of Landscape Architects.

- Direct run off from impervious surfaces, such as courts and rubber safety surfaces to a created wetland/dry pond, such as along the retaining wall at the northeast boundary of the park. This can serve to add more natural beauty to the park while minimizing stormwater runoff into the drains.

Washington Park

Photo Credit Darci Schofield

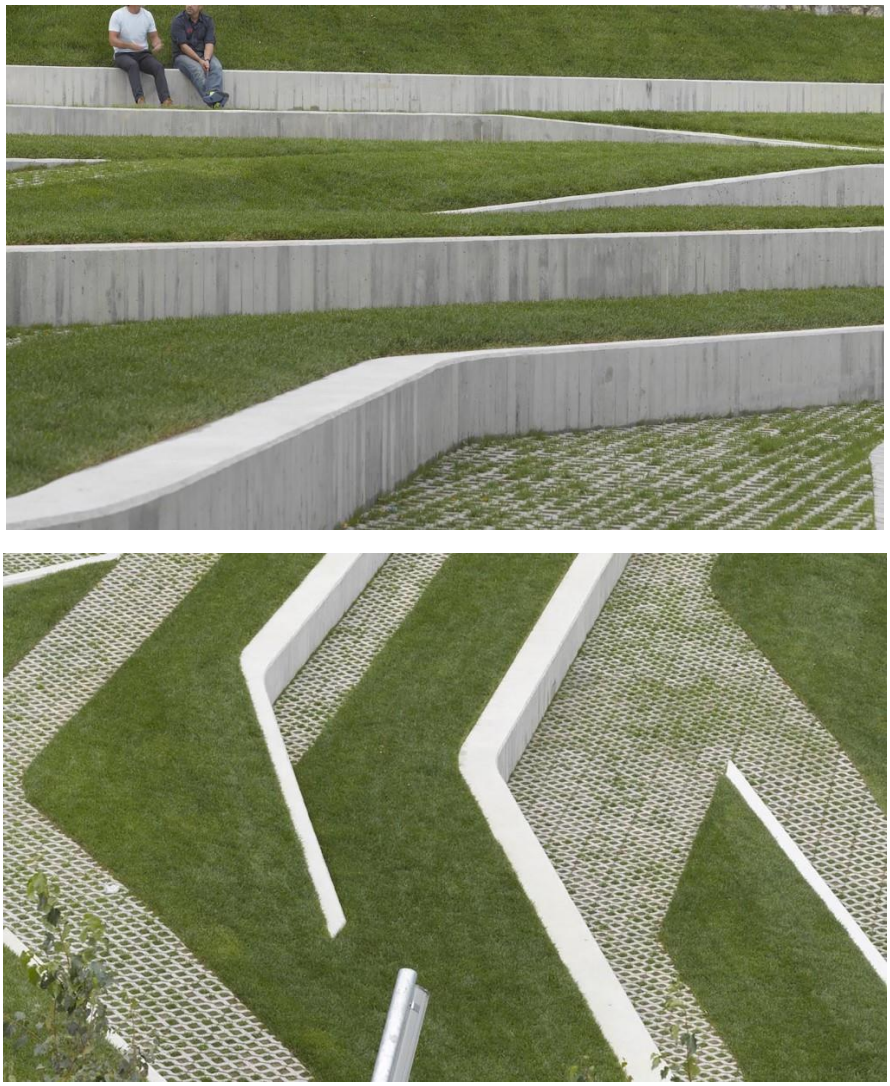
The 1.7-acre Washington Park is cultural, historic landscape for the City in addition to its beauty and recreational amenities. It is dedicated to General George Washington, the First President of the United States, whose troops were stationed at the area that is the park. The dedicated Pratt family of Chelsea pursued dedicating the area as a park beginning in 1875. The park was recently renovated in 2012 and contains many of the landscape design of the historic park. It is well-used for walking, resting, and playing with the playground area. The park received a score of six for priority/opportunity to implement green infrastructure.

Park Site Considerations

- The park is a priority area for green infrastructure for Cool and Climate Equity according to the Metro Mayors DST.
- The park contains poorly drained soils but a higher depth to water table making it more suitable for infiltration.
- The park has high runoff potential in a 1-inch rain storm due to its mean 2.5 slope.
- The park is within 500 feet of a 21E site.
- Existing terracing design promotes natural infiltration and minimizes stormwater entering the storm drain.

- Twenty-seven percent of the park is covered by tree canopy and only 4.3 % impervious surface.

Figure 31 Zig Zag terracing to managing stormwater at San Martin de la Mar Square urban park in Cantabria, Spain.



ZigZag Arquitetura used permeable paving as an opportunity to create a beautiful design component in this urban park. It consists of terraced geometric platforms with alternating bands of grass, permeable paving, and concrete. Photo Credit Zigzag Arquitectura, © Roland Halbe

Design Recommendations

Given the recent park renovations and the public interest in preserving the historic landscape character, we propose some green infrastructure retrofits that minimize runoff from entering the storm system.

- Replace walking paths with pervious pavers.

- Consider expanding the terrace retaining walls. Design in a switchback /geometric pattern such that water has even greater distance to travel and providing more opportunity to infiltrate prior to entering the storm system (Figure 31). This will be important as soil and turf become compacted with park use.

Figure 32 Downslope storm drain at Washington Park and raingarden installation.

The top photo is Washington Park today. The bottom photo is with recommended plantings and raingardens to capture stormwater before entering drains at the downslope park entrance. Design and Photo Credit: Darci Schofield

- Consider a green infrastructure intervention to capture stormwater running down central walking path to the storm drain at the entrance of the park at Washington Ave., Lyons Square, and Hancock Streets. Plant a tree on either side of the stone perimeter wall at the entrance and add rain garden/native vegetation designed to capture any stormwater prior to entering the drain. (Figure 32).
- Increase the canopy cover to 100% over 10 years. Historic photos indicated more trees in the park than exist today.

Palonia Playground

Photo Credit Google Earth

Palonia Park is a 0.4-acre active, shaded park, one of the few officially friendly to pets. It contains a tot lot, benches, a walking path and a significant tree canopy. According to the 2018 OSRP, the park lawn and pavement are reported in "fair" condition whereas the play equipment and benches are reported in "good" condition. Since the park is pet friendly, capturing the first inch of water onsite is critically important to prevent further impairment to the adjacent Chelsea Creek from dog waste contamination. However, the most downward slope of the park appears to contain a utility box potentially minimizing options for infiltration in that area. The park scored a five as a priority/opportunity to install green infrastructure.

Park Site Considerations

- The park is a priority area for green infrastructure for Cool and Climate Equity.
- The park will produce runoff in a one-inch storm.
- There is a 1.6 average slope, with poorly drained soils with low depth to bedrock/water table.
- Over 75% of the park is covered by tree canopy and only 35% is covered by impervious surface.

Design Recommendations

Given that the park is in good condition, we recommend some green infrastructure retrofits.

- Replace the pavement along walkways with pervious pavers that allows infiltration.
- Add high –organic content soils and mulch around trees to enhance growth and minimize root trampling and soil compaction. Repeat every two years.

Quigley Park

Photo Credit Darci Schofield

Quigley Park is a 0.5-acre vibrant, active recreation area with a baseball diamond, tot and older child play equipment, water feature, trees, and benches. Located on a hill, the site has a retaining wall decorated with a mural. The park contains strategically placed trees around the perimeter and throughout the park. According to the 2018 OSRP, the park equipment, walls, and lawn are in fair condition. Stormwater management is critical at this park because of its location uphill of Chelsea River. It received a score of five for priority/opportunity for green infrastructure installations.

Park Site Considerations

- Quigley Park is a priority area for green infrastructure interventions for Cool and Climate Equity, according to the Metro Mayors DST.
- The site has estimated runoff potential during a one-inch storm.
- Site contains mean 1.6% slope and greater than 2 feet depth to groundwater making it an ideal location for infiltration.
- The site contains approximately 35% tree canopy cover and approximately 66% impervious surface.
- Quigley Park was renovated just prior to 2010 making it an ideal location for retrofits.
- The storm drains are located at the southeast corner of the park, one of the lowest areas, within the baseball diamond playing area (Figure 33).

Figure 33 Storm drain at the southeast, downslope corner of Quigley Park. .

Figure 34 Quigley Park Bioswales and/or raingardens installed upslope of the storm drains but downslope of the park.

Water is directed down slope to the turf between the walls to enter bioswales/raingarden. Plants and mulch infiltrate runoff prior to entering storm drain. *Photo and design credit Darci Schofield*

Design Recommendations

- Perform soil enhancement and reduce trampling to the trees in the park. On a biennial basis, add soil with high organic content to the tree areas and cover with bark mulch. This serves to enhance rain water capture and minimize runoff; the mulch may reduce root damage due to trampling. In additional, installing small fences around the trees will minimize trampling and maximize rain and stormwater absorption.
- Because the lawn is in fair condition, we suggest reconfiguring the baseball diamond revitalizing the turf. A storm drain is located adjacent to the batting area in the southeast corner of the park by Shurtleff Street (Figure 33). Shift the new diamond several feet toward Essex Street. Install bioswales or rain gardens upslope of the storm drains to minimize runoff entering the stormwater system and maximizing infiltration. Direct runoff from the baseball diamond/playing field toward the bioswales.
- Remove the evergreen tree in poor condition, located at the southeast corner of the park by the storm drains. Remove invasive plants along the fence. Add two new trees inside the fence, within the bioswales upslope of the storm drains to maximize stormwater capture (Figure 34).

Bosson Playground

Photo Credit Google Earth

Bosson Playground is a 0.7-acre active recreation park that lies between Bellingham and Grove Streets, making it an active transportation corridor for pedestrians. It contains tot and older youth play equipment, benches, water feature, swings, and a paved court on the Bellingham Street side. On both Bellingham and Grove Streets, the park is supported by retaining walls decorated with murals. The 2018 OSRP reported all equipment and amenities were in good condition and park was renovated just prior to the 2010 OSRP. Bosson Playground scored a five for priority/opportunity to implement green infrastructure.

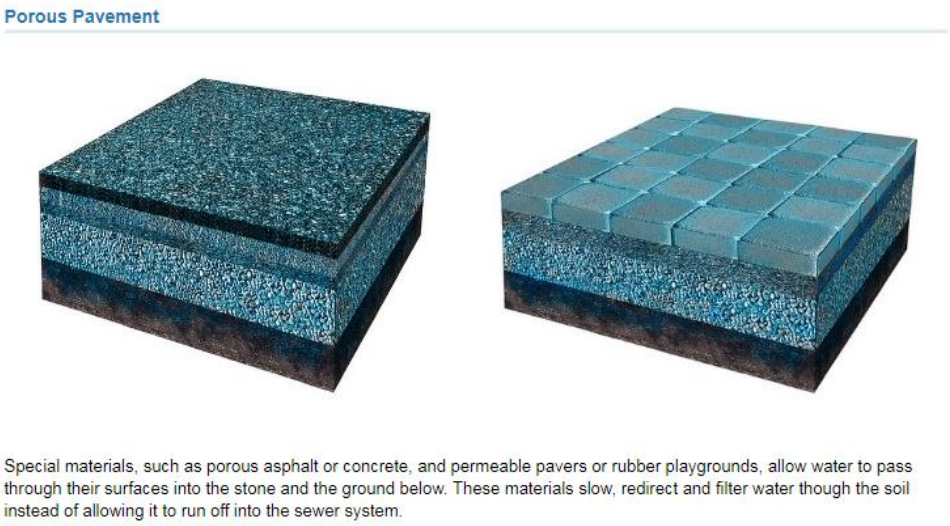
Park Site Considerations

- The park is a priority area for green infrastructure for Cool and Climate Equity according to the Metro Mayor DST.
- The site will produce runoff in a one-inch rain event.
- Though the site contains poorly-drained soils, there is greater than two foot depth to the water table creating ideal conditions to create infiltration features.
- The site is above the grade of the road contained by retaining walls and has a mean 1.7% slope.
- Bosson Park has 78% impervious cover and 39% tree canopy cover.
- The water from the water spray feature pools onsite.

Design Recommendations

- Plant trees along the Grove Street side of the park along the fence by the asphalt court. Use tree wells with mulch to prevent trampling and maximize infiltration with the adjacent active use of the site. This is also the location of the storm drain.
- Replace the walking path with pervious pavers that maximize infiltration (Figure 35).

Figure 35 Cross-section of porous pavement.



Photo/Diagram credit Philly Watersheds (www.phillywatershed.org)

- At the edge of the center walking path that meets the sidewalk, install decorative grates that directs additional stormwater through perforated pipes to the stormwater system. This feature can collect any remaining runoff from the central walking path not absorbed by the pervious pavers but still function to allow additional infiltration prior to entering the stormwater system (Figure 36).

Figure 36 Capture any potential excess runoff through grate at junction of sidewalk and walking path. Gravel and perforated pipe further minimize water entering stormwater system.

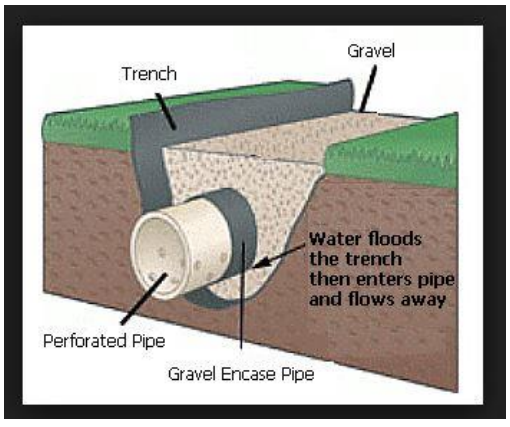
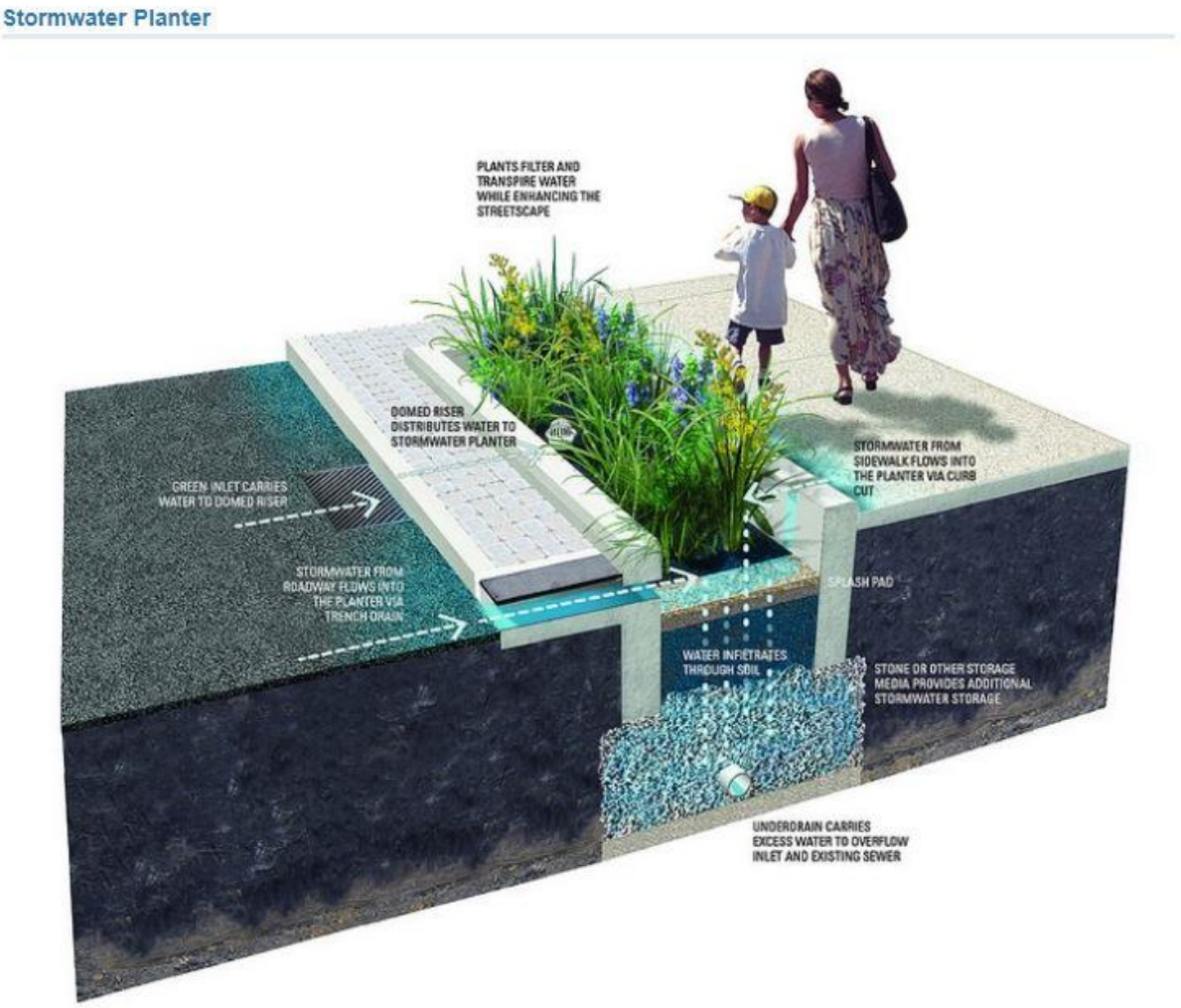


Photo Credit lafayettedirt.com

- Direct water feature runoff water to a stormwater planter planted along the Grove Street southeast side of the park (Figure 37). Any excess water from the stormwater plant allow to infiltrate through perforated pipes to the stormwater system.

Figure 37 Stormwater Planters and perforated pipe. Recommendation for capturing water spray feature and additional runoff.



Photo/Diagram credit Philly Watersheds (www.phillywatershed.org)

Ciepiela Park

Photo Credit Google Earth

Ciepiela Park is a pocket park near Chelsea's waterfront. Ciepiela, Palonia Park and a privately-owned natural area create a natural area corridor in this densely developed area of Chelsea. Ciepiela is a 0.04-acre passive park with benches, walkway and decorative shade gardens. The 2018 OSRP reported the pavement in poor condition, the trees in good condition, and the equipment in fair condition. It scores a five for priority/opportunity for implementing green infrastructure.

Park Site Considerations

- The park has nearly 100% tree canopy cover and contains a brick walkway that could be considered impervious.
- The park is a priority are for green infrastructure for Cool and Climate Equity according to the Metro Mayors DST.
- It contains a slight slope ideal for implementing green infrastructure, though poorly drained soils and low depth to bedrock/water table.
- The park is in high need for green infrastructure to absorb stormwater producing runoff in a one-inch rain event to protect non-point pollution to Chelsea Creek.

Design Recommendations

- The small size of the park makes it an ideal area for the passive shade park that it is today.
- Since the pavement was reported in poor condition, replace the brick/pavement with pervious pavers to add to its permeability and minimize runoff.

- Continue to ensure the shade gardens are maintained to ensure maximum uptake from stormwater runoff (i.e., remove invasives/exotic species and prevent plant overcrowding).

Kayem Park

Photo Credit Google Earth

Kayem is a 0.1-acre park, beloved by the neighborhood, containing trees, benches, public art, and play equipment. The land was donated to the City by Mass Port in 2008 and built in part with the support of Kayem Foods, one of the City's largest employers. The 2018 OSRP reports the park is in overall good condition. This park scored a four for green infrastructure opportunity and need in Chelsea.

Park Site Considerations

- The park is a priority area for Green Infrastructure for Cool and Climate Equity.
- It is within 500 feet of a 21E Site.
- The park contains only 17.8% impervious surface and 54.8% tree canopy cover.
- Though the site has a 0 mean slope and poorly drained soils, it is located within the Mystic River, an impaired River with TDMLs, catchment basin.
- The park is very small and heavily used by the neighborhood.

Design Recommendations

This park was created approximately a decade ago, and due to its recent creation and small size we recommend two green infrastructure retrofit opportunities.

- The park has a critical canopy cover for cooling the urban heat island in this part of the City and tree maintenance will be one of the most important green infrastructure interventions for this park. Reduce root and soil compaction from trampling by adding mulch, vegetation, or other conceptual barriers such as tree fences to ensure trees remain for the long-term.
- Remove exotic and/or invasive species at the perimeter of the park by the fence. Install stormwater planters and/or native shrubs at this location in the unused space (Figure 38).

Figure 38 Conceptual barriers to deter tree root trampling and soil compaction in urban area.

Photo Credit Google Earth

- Consider expanding the park along the right of way adjacent to Kayem (Figure 39) to provide additional recreational and artistic amenities as well as expand the green infrastructure opportunities for greater impact on managing stormwater and reducing the urban heat island effect (Figure 40).

Figure 39 Unused Right of Way adjacent to Kayem Park.

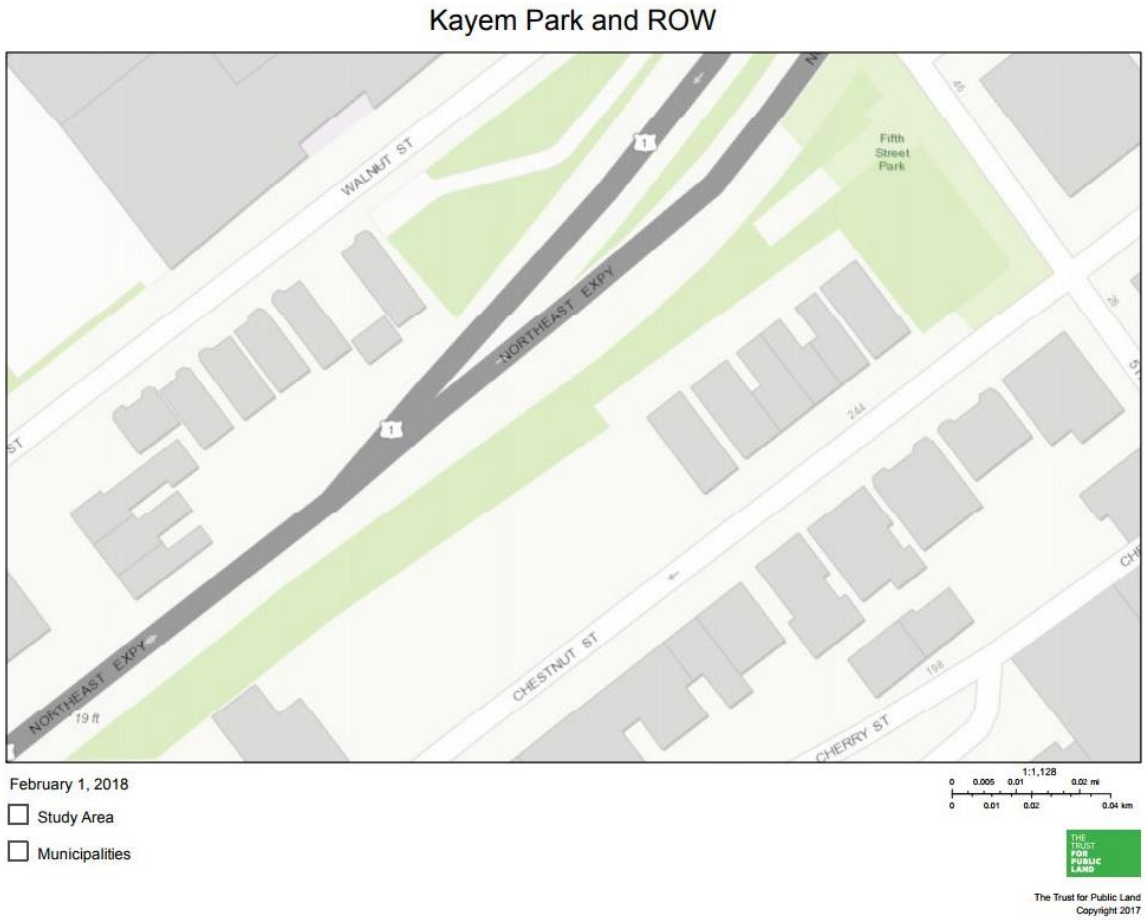


Photo credit Google Earth

Figure 40 Conceptual designs for part of Miami's Underline, a 10-mile linear park in a right of way, incorporating nature, art, and recreation.

Photo Credit TheUnderline.org

Winnisimmet Park/Chelsea Square

Photo credit Google Earth

Winnisimmet Park/Chelsea Square is a pocket park in Downtown Chelsea that contains a Christopher Columbus Monument, walking paths, trees, and benches. Located at the intersection of Broadway, Park and Second streets, the park calms traffic and provides a resting and gathering space for pedestrians downtown. It is a vibrant contribution to the downtown area. The 2018 OSRP reported the pavement (hardscape) in poor condition and equipment in fair condition, but the trees and retaining walls were in good condition. This park scored a three for priority/opportunity to implement green infrastructure.

Park Site Considerations

- The park is a priority area for Cool according to the Metro Mayors DST.
- The park contains approximately 38.5% tree canopy cover and 21.5% impervious surface.
- The site is within 500 feet of a 21E site.
- The site will produce runoff in a one-inch rain event.
- There is a mild slope at the park with poorly drained soils and low depth to bedrock/water table.

Design Recommendations

- Since the pavement/hardscape was reported in poor condition, we suggest replacing the hardscaping with pervious pavers.

- There is additional hardscaping/underutilized space at the Broadway/Park Street corner of the park. We suggest adding stormwater planters in this location to remove some of the impervious surface and minimize runoff into the storm system (Figure 41).
- Continue to maintain the trees in the square and replace dead or damaged street trees.

Figure 41 Stormwater planters at the edge of Chelsea Square to increase stormwater capture in the park.

Photo Credit Google Earth and Design by Darci Schofield (bottom)

Regulatory and Permitting Considerations for Installing Green Infrastructure

Though green infrastructure is becoming a widely accepted practice for managing stormwater and promoting climate resilience, public health, beautification, and livability, local and state regulatory and permitting processes are sometimes outdated with current practices. In September 2012, Horsley Witten Group provided a Memorandum to the City of Chelsea titled "Massachusetts Development Code Review to Promote Green Infrastructure." This report provides a review of development regulations and standards relevant to implementing green infrastructure and Low Impact Development for compliance with the 2010 North Coastal Small MS4 General Permit. It also provides opportunities to increase green design and decrease impervious cover in overall site plans and development. In addition to this report, we reviewed the most recent versions of the following for potential regulatory barriers toward implementing green infrastructure in Chelsea's parks[54]:

1. Chapter 91 The Massachusetts Public Waterfront Act
2. Wetlands Protection Act, MGL Ch. 1313 Sec. 40
3. Code of Ordinances City of Chelsea, Part II Code of Ordinances, Chapter 24 Streets, Sidewalks and Public Ways, Chapter 30 Water and Sewer, Chapter 34 Zoning,
4. Code of Ordinances City of Chelsea, Part III Regulations, Article 1 Board of Health.
5. The Massachusetts State Building Code-Ninth Edition
6. Massachusetts Stormwater Handbook and Stormwater Standards

Horsley Witten provides important recommendations in revising Zoning, Water and Sewer, and Subdivision Regulations to promote more widespread use of green infrastructure. Overall, in Chelsea's Code of Ordinances, there are no explicit barriers to implementing the recommendations provided in this plan that we found. However, any connections to the sewer/stormwater system do require Design Standards approved by the Director of the Department of Public Works. One potential barrier is developing the suggested skate park at Chelsea Bridge at the terminus of the Chelsea Greenway, which is located in the Designated Port Area, requiring State approval. Other potential challenges are through the Wetlands Protection Act for Island End Park for the Floating Wetland, though there is precedent is Massachusetts with the University of Massachusetts Green Harbors Project Floating Wetland in Fort Point.[55] Coastal park recommendations will also require a Chapter 91 License, which creates an additional layer of regulation, but since Chelsea's waterways and future flooding are such critical assets to its community and industry, these regulations are worth pursuing.

Table 4 illustrates regulatory considerations for implementing green infrastructure by regulatory authority and park, based upon design recommendations provided.

[54] MAPC performed a preliminary analysis on potential regulatory barriers across local and state codes. We recommend consulting a building code consultant when pursuing green infrastructure development.
[55] https://www.umb.edu/ghp/green_harbors/boston_harbor/current_projects/fort_point_channel

Table 4 Regulatory considerations for implementing green infrastructure in Chelsea's parks

Regulatory/Permitting Considerations Consideration		Merrit Park/Berkowitz School Playground	Mill Creek Riverwalk	Island End Park	Highland Park
Chelsea Code or Ordinances					
Chapter 24 Streets, Sidewalks, Public Ways	*Article II Section 24-52 Excavation*	◊	◊	◊	◊
	Section 24-84 Construction	◊	◊	◊	◊
Chapter 34 Zoning	*Section 34-106 (d) (5) Parking*	◊			◊
	Section 34-108 (d) General Landscaping	◊	◊	◊	◊
	Section 34-108 (f) Maintenance	◊	◊	◊	◊
	Section 34-110 Performance Standards	◊	◊	◊	◊
	Section 34-77 Setbacks W Zone				
	Section 34-187 Floodplain Overlay District		◊	◊	
Chapter 30 Water and Sewer	*Section 30-42 Regulation & Codes*	◊	◊	◊	◊
	Section 30-37 (a) Stormwater Application	◊	◊	◊	◊
	Section 30-37 (f) Director Design Criteria	◊	◊	◊	◊
	Section 30-128 Storm Drains/ Connections	◊	◊	◊	◊
	Section 30-219 Discharges	◊	◊	◊	◊
MA Building Code	*Plumbing (roof drains)*				
	Roof Materials	◊			
Wetland Protection Act	*FEMA 1% Annual Chance Flood*	◊	◊	◊	◊
	Riverine Wetlands		◊	◊	
	Coastal Wetlands		◊	◊	
MA DEP Waterways Program Chapter 91 License			◊	◊	
MA DEP/CZM Designated Port Area					

Regulatory/Permitting Considerations Consideration		High School Carter Park	Eden Street Park	Chelsea Greenway	John Ruiz Park	
Chelsea Code or Ordinances						
Chapter 24 Streets, Sidewalks, Public Ways	*Article II Section 24-52 Excavation*	◊	◊	◊	◊	
	Section 24-84 Construction	◊	◊	◊	◊	
Chapter 34 Zoning	*Section 34-106 (d) (5) Parking*					
	Section 34-108 (d) General Landscaping	◊	◊	◊	◊	
	Section 34-108 (f) Maintenance	◊	◊	◊	◊	
	Section 34-110 Performance Standards	◊	◊	◊	◊	
	Section 34-77 Setbacks W Zone					
	Section 34-187 Floodplain Overlay District					
Chapter 30 Water and Sewer	*Section 30-42 Regulation & Codes*	◊	◊	◊	◊	
	Section 30-37 (a) Stormwater Application	◊	◊	◊	◊	
	Section 30-37 (f) Director Design Criteria	◊	◊	◊	◊	
	Section 30-128 Storm Drains/ Connections	◊	◊	◊	◊	
	Section 30-219 Discharges	◊	◊	◊	◊	
MA Building Code	*Plumbing (roof drains)*	◊				
	Roof Materials	◊				
Wetland Protection Act	*FEMA 1% Annual Chance Flood*	◊	◊	◊		
	Riverine Wetlands					
	Coastal Wetlands					
MA DEP Waterways Program Chapter 91 License						
MA DEP/CZM Designated Port Area				◊		

Regulatory/Permitting Considerations Consideration		Mystic Overlook Park	Paul A. Dever Park	Washington Park	Palonia Play ground
Chelsea Code or Ordinances					
Chapter 24 Streets, Sidewalks, Public Ways	*Article II Section 24-52 Excavation*	◊	◊	◊	◊
	Section 24-84 Construction	◊	◊	◊	◊
Chapter 34 Zoning	*Section 34-106 (d) (5) Parking*				
	Section 34-108 (d) General Landscaping	◊	◊	◊	◊
	Section 34-108 (f) Maintenance	◊	◊	◊	◊
	Section 34-110 Performance Standards	◊	◊	◊	◊
	Section 34-77 Setbacks W Zone				
	Section 34-187 Floodplain Overlay District				
Chapter 30 Water and Sewer	*Section 30-42 Regulation & Codes*	◊	◊	◊	◊
	Section 30-37 (a) Stormwater Application	◊	◊	◊	◊
	Section 30-37 (f) Director Design Criteria	◊	◊	◊	◊
	Section 30-128 Storm Drains/ Connections	◊	◊	◊	◊
	Section 30-219 Discharges	◊	◊	◊	◊
MA Building Code	*Plumbing (roof drains)*				
	Roof Materials				
Wetland Protection Act	*FEMA 1% Annual Chance Flood*				
	Riverine Wetlands				
	Coastal Wetlands				
MA DEP Waterways Program Chapter 91 License					
MA DEP/CZM Designated Port Area					

Regulatory/Permitting Considerations Consideration		Quigley Park	Bossom Park	Ciepiela Park	Kayem Park	Winnisimmet Park/Chelsea Square
Chelsea Code or Ordinances						
Chapter 24 Streets, Sidewalks, Public Ways	*Article II Section 24-52 Excavation*	◊	◊	◊	◊	◊
	Section 24-84 Construction	◊	◊	◊	◊	◊
Chapter 34 Zoning	*Section 34-106 (d) (5) Parking*					
	Section 34-108 (d) General Landscaping	◊	◊	◊	◊	◊
	Section 34-108 (f) Maintenance	◊	◊	◊	◊	◊
	Section 34-110 Performance Standards	◊	◊	◊	◊	◊
	Section 34-77 Setbacks W Zone					
	Section 34-187 Floodplain Overlay District					
Chapter 30 Water and Sewer	*Section 30-42 Regulation & Codes*	◊	◊	◊	◊	◊
	Section 30-37 (a) Stormwater Application	◊	◊	◊	◊	◊
	Section 30-37 (f) Director Design Criteria	◊	◊	◊	◊	◊
	Section 30-128 Storm Drains/ Connections	◊	◊	◊	◊	◊
	Section 30-219 Discharges	◊	◊	◊	◊	◊
MA Building Code	*Plumbing (roof drains)*					
	Roof Materials					
Wetland Protection Act	*FEMA 1% Annual Chance Flood*					
	Riverine Wetlands					
	Coastal Wetlands					
MA DEP Waterways Program Chapter 91 License						
MA DEP/CZM Designated Port Area						

Appendix A Green Infrastructure Park Prioritization Scoring

Park	Address	Acres	Absorb Priority	Cool Priority	Protect Priority	Climate Equity Priority	Sinks	Estimated Runoff Potential	FEMA 1% Annual Chance Flood	BH_FRM Flood Zone 2013 or 2030	Within 500 feet 21 E	Mean Slope	SSURGO Soil Hydro Grou	Depth to Bedrock (cm)	Depth to Groundwater (cm)
Merrit Park/Berkowitz School Playground	300 Crescent Avenue	9	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.6	B	Unknown	61
Mill Creek Riverwalk	Off Locke Street	0.55	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	1.3	C	Unknown	Unknown
Island End Park	Justin Drive	0.6	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	1.3	C	Unknown	Unknown
Highland Park	31 Willow Street	3.3	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	0	C	Unknown	Unknown
High School Carter Park	200 Orange	3.9	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	1.6	C	Unknown	Unknown
Chelsea Greenway	Chestnut St to Eastern	0.75	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Multiple	C	Unknown	Unknown
John Ruiz Park	141 Washington Park	0.2	Yes	Yes	No	Yes	Yes	Yes	No	No	No	1.2	C	Unknown	Unknown
Eden Street Park	26 Eden Street	0.2	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	0.1	C	Unknown	Unknown
Mystic River Overlook Park	Under the Tobin	2.2	Yes	No	No	Yes	No	Yes	No	No	No	4.5	C	Unknown	61
Paul A. Dever	60 Gillolly Road	0.3	Yes	Yes	No	Yes	Yes	Yes	No	No	Yes	0	C	Unknown	Unknown
Washington Park	390 Washington Avenue	1.5	No	Yes	No	Yes	No	Yes	No	No	No	2.5	C	Unknown	61
Palonia Playground	37 Tremont Street	0.4	No	Yes	No	Yes	No	Yes	No	No	No	1.6	C	Unknown	Unknown
Quigley Park	25 Essex Street	0.5	No	Yes	No	Yes	No	Yes	No	No	Yes	1.6	C	Unknown	61
Bosson Park	50 Bellingham	0.7	No	Yes	No	Yes	No	Yes	No	No	Yes	1.7	C	Unknown	61
Ciepiela Park	29 Medford	0.04	No	Yes	No	Yes	No	Yes	No	No	No	0.2	C	Unknown	Unknown
Kayem Park	40 Fifth Street	0.1	No	Yes	No	Yes	No	Yes	No	No	Yes	0	C	Unknown	Unknown
Winnissimet Park/Chelsea	171 Broadway	0.4	No	Yes	No	No	No	Yes	No	No	Yes	1	C	Unknown	Unknown

Appendix E: ParkServe City of Chelsea Park Equity Report

ParkServe®

The Trust for Public Land

July 11, 2018

Project Areas

Chelsea, MA - City Level Report

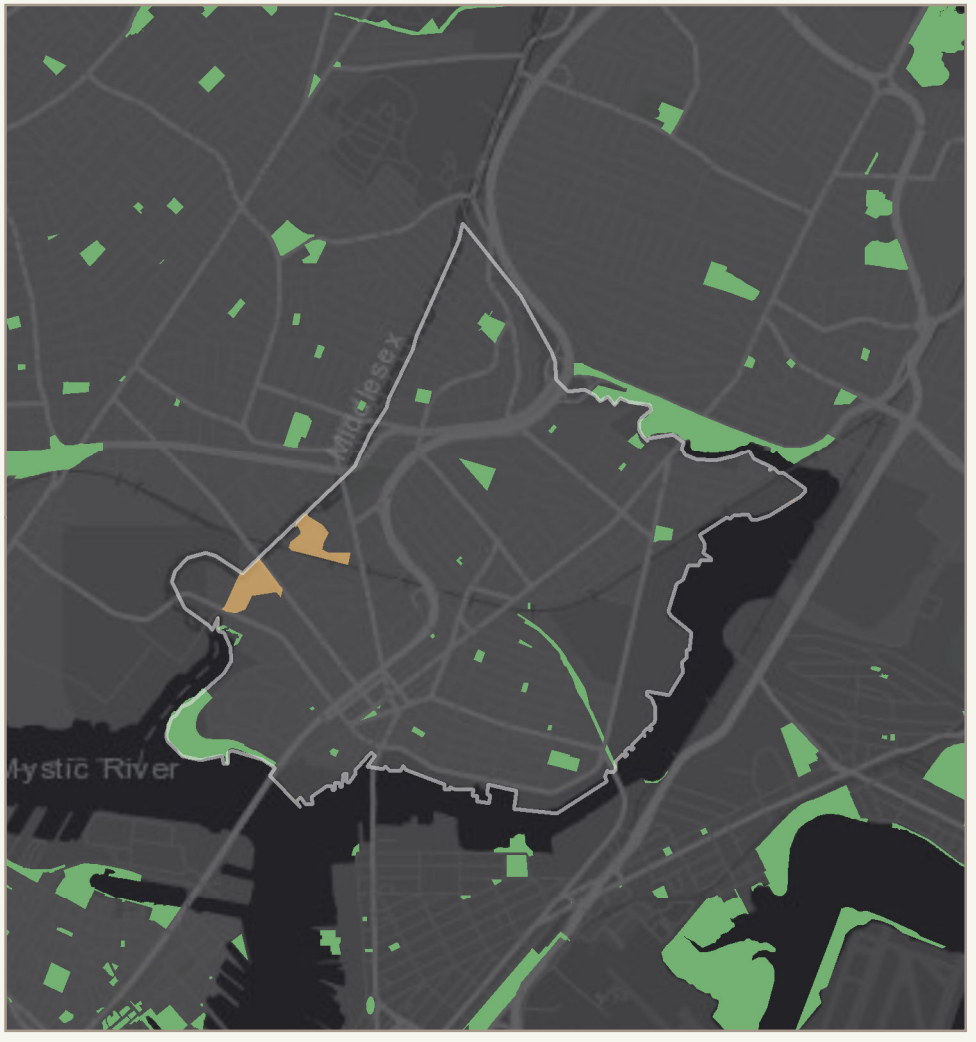
All statistical results are aggregated for the listed project areas and their service areas. Service areas are based on 10-minute (1/2 mile) walk times from project access points defined for each project area and based upon the walkable network.

Legend

- Report Area
- Parks

Park Need (Places)

- Very High
- High
- Moderate



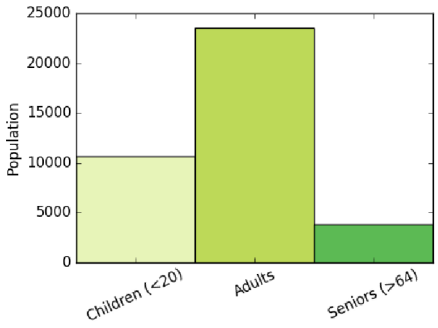
ParkServe®

The Trust for Public Land

July 11, 2018

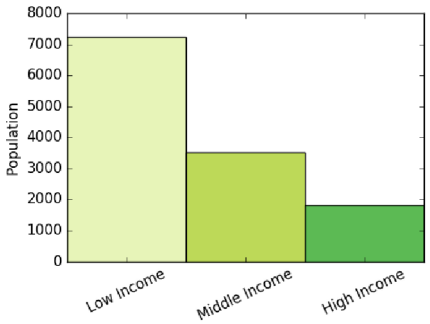
Population within a 10-minute walk	
Total Population	38,009

Age	Served
Children (less than age 20)	10,663
Adults (age 20 to age 64)	23,566
Seniors (age 65 and up)	3,777



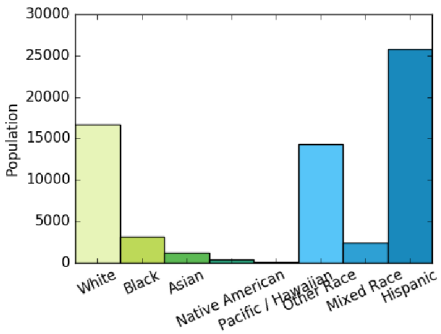
Household Income	Served
Low income	7,226
Middle income	3,510
High income	1,825

(Generated From Regional Median Incomes)



Race/Ethnicity	Served
White	16,705
Black	3,099
Asian	1,136
Native American	387
Pacific / Hawaiian	7
Other Race	14,257
Mixed Race	2,415
Hispanic*	25,842

* U.S. Census captures Hispanic Origin separate from race



Demographic information is derived from ESRI 2017 Demographic Forecast Block Groups data.