APPENDIX C: CITYWIDE TREE CANOPY ANALYSIS

Introduction

The Buffalo Sewer Authority (BSA) began work on Rain Check 2.0, a multi-faceted Green Infrastructure (GI) project that identifies opportunities to implement GI in the City of Buffalo to reduce CSO volume and frequency. Task G of the Rain Check 2.0 effort is a Tree Analysis task, which includes two major elements: 1) a tree planting opportunity analysis; and 2) a stormwater crediting analysis. Both of these tasks were informed by the input and expertise of the Rain Check 2.0 Tree Technical Advisory Committee (the Tree TAC), and completed by the Center for Watershed Protection, Inc. (the Center) and CORE Environmental Consultants (CORE). The methods and results of the analysis were presented to the Tree TAC, as a draft at the September 26, 2018 meeting and a revised version on November 14, 2018. Ross Hassinger, the City of Buffalo Forester , was a key member of the TAC and provided valuable input the work progressed.

This Technical Memorandum provides a description of the methods and results to provide the BSA with preliminary information on the location and extent of potential tree planting opportunities in the City of Buffalo. It is important to emphasize the results represent "potential" tree planting areas or locations as further site assessments are needed to determine the suitability of these areas for the long-term survival of the trees, as well as other planting constraints such as land ownership, use of property for active recreation or other uses, property owner willingness, infrastructure constraints, available space, and other factors. Further, the City of Buffalo Forestry capacity needs must be evaluated to accommodate any tree planting program on streets, in parks, or within other public properties. The tree planting locations of interest were broadly defined to include both street trees and areas within both public and private properties. Vacant lands under public ownership were excluded from the analysis due to maintenance concerns by the city.

(1) https://www.nrs.fs.fed.us/urban/utc/

The specific details on the approach or plan to plant trees in areas identified as 'opportunities' in this Technical Memorandum is not part of this work effort. It is recommended that the City of Buffalo develop a tree planting program describing an approach to plant trees on private property to include future maintenance and ensure long-term survivorship and health, along with allocation of resources to support such a program.

The objectives of this task included:
· Estimating existing canopy citywide and aggregated by various spatial aggregations
· Estimating potential planting area at the plot scale.
· Providing a planning level estimate of runoff volume reduction that would be achieved by these plantings.

Methods

The methods included an analytical approach to provide the City of Buffalo with potential areas and sites for future tree planting along with preliminary planning level estimates of the number of trees planted and estimated stormwater volume reduction using methods described in the Tree Crediting Technical Memo prepared for BSA. The tree planting opportunity method was based upon the US Forest Service (USFS) Urban Tree Canopy Assessment and the Spatial Analysis Lab Tree Canopy Assessment Team lead by Jarlath O'Neil-Dunne at the University of Vermont[1] , and modified to accommodate the data available in the City of Buffalo (see Table 1 for GIS layers used). The method employs a GIS-based approach, combined with assumptions regarding tree size and distribution, and the benefits associated with trees. The analysis was completed at three different spatial aggregations including: 1) priority CSO basins; 2) neighborhoods; and 3) census block groups. The three spatial aggregations provide an opportunity for the City of Buffalo and BSA to address the value

Table 1. GIS Layers Used in the Analysis

Data	Source/Type
Existing canopy cover	GIS layer developed by evolveEA based on 2014 LiDAR data
TreeKeeper Database	Geo database including both the public and internal version, provided by Davey Tree and City of Buffalo Bureau of Forestry. The initial TreeKeeper database was created based on a survey of all the street trees in the City of Buffalo in 2014 and is updated daily by Davey Tree.
• City of Buffalo parcel data • Roads • Railroads • Impervious surfaces	City of Buffalo GIS data provided by Buffalo Sewer Authority

of existing and future tree canopy from different perspectives as urban tree canopy provides multiple benefits at the city, community and city-wide scale.

The analysis included four steps:

1. Calculate the extent of the existing tree Canopy

2. Estimate the potential number of tree plantings.

3. Estimate the total potential canopy area.

4. Estimate the equivalent impervious cover reduction associated with potential future tree planting

Step 1: Existing Tree Canopy

As a part of the Rain Check 2.0 project, Evolve EA developed a layer of tree canopy from 2014 LiDAR data. This layer was used to represent existing tree canopy and was also included as a part of Step 2 of this analysis (identifying existing planting area). Tree canopy areas were intersected with CSO, neighbourhood and census tract boundaries. Canopy cover (percentage) was then calculated, and these percentages were summarized as a GIS layer. Figures 1 – 3 illustrate the percent canopy cover by CSO Basin, neighborhood and census block group.

Table 2. Tree Statistics for City Regions

CSO Basin (entire basin area, not just target SPPs)	Existing Canopy (Acres)*	% Existing Canopy
CSO 014	25.3	16.6
CSO 026	197.1	15.2
CSO 027	66.5	7.2
CSO 028	70.1	17.7
CSO 033	162.4	12.8
CSO 053	481.4	17.5

Neighborhood	Existing Canopy (Acres)*	% Existing Canopy
ABBOTT McKINLEY	79.8	20.4
ALBRIGHT	68.3	26.9
ALLEN	48.8	22.8
BABCOCK	78.7	8
BLACK ROCK	88.8	12.8
BROADWAY FILLMORE	114.0	12.8
BRYANT	90.5	27.1
BUFFALO STATE	10.8	9.2
CAZENOVIA PARK	159.2	29.4
CBD	41.9	9.1
COLD SPRING	12.4	11.6
COLUMBUS	37.0	16.9
DELAWARE PARK	125.2	21.9
DELAWARE W. FERRY	74.8	22.4
EMERSON	41.5	14.4
EMSLIE	33.3	14.1
FIRST WARD	106.1	8.8
FOREST	101.8	14.3
FRONT PARK	115.1	16.6
FRUIT BELT	64.3	17.3
GENESEE MOSELLE	83.0	16.5
GRANT FERRY	59.4	15.1
GRIDER	98.8	13.8
HAMLIN PARK	46.8	14.7
JOHNSON	21.2	19.2
KAISERTOWN	76.2	9.7

Neighborhood	Existing Canopy (Acres)*	% Existing Canopy
KENFIELD	60.1	14.3
KENSINGTON	94.4	17.2
KINGSLEY	45.0	18
LAKEVIEW	21.0	12.4
LaSALLE	98.8	16.1
LEROY	79.4	15.7
LOVEJOY	82.8	13.7
M.L.K. PARK	70.0	18.1
MASTEN PARK	66.5	21
MILITARY	53.5	9.7
NORTH DELAWARE	29.0	9
NORTH PARK	120.5	14.9
PARK MEADOW	94.2	19.9
PARKSIDE	54.7	21.2
PERRY	16.4	7.5
RIVERSIDE PARK	90.7	13.2
SCHILLER PARK	119.6	15.4
SENECA	75.7	20.1
SOUTH ABBOTT	40.9	15.5
SOUTH ELLICOTT	38.7	9.4
SOUTH PARK	164.5	12.8
STARIN CENTRAL	90.9	18.2
TIFFT	125.1	10.9
TRIANGLE	46.8	15.5
UNIVERSITY	81.3	16.3
VALLEY	17.1	5.3
WATERFRONT	29.8	10.5
WILLERT PARK	51.7	9.5

*canopy includes street trees
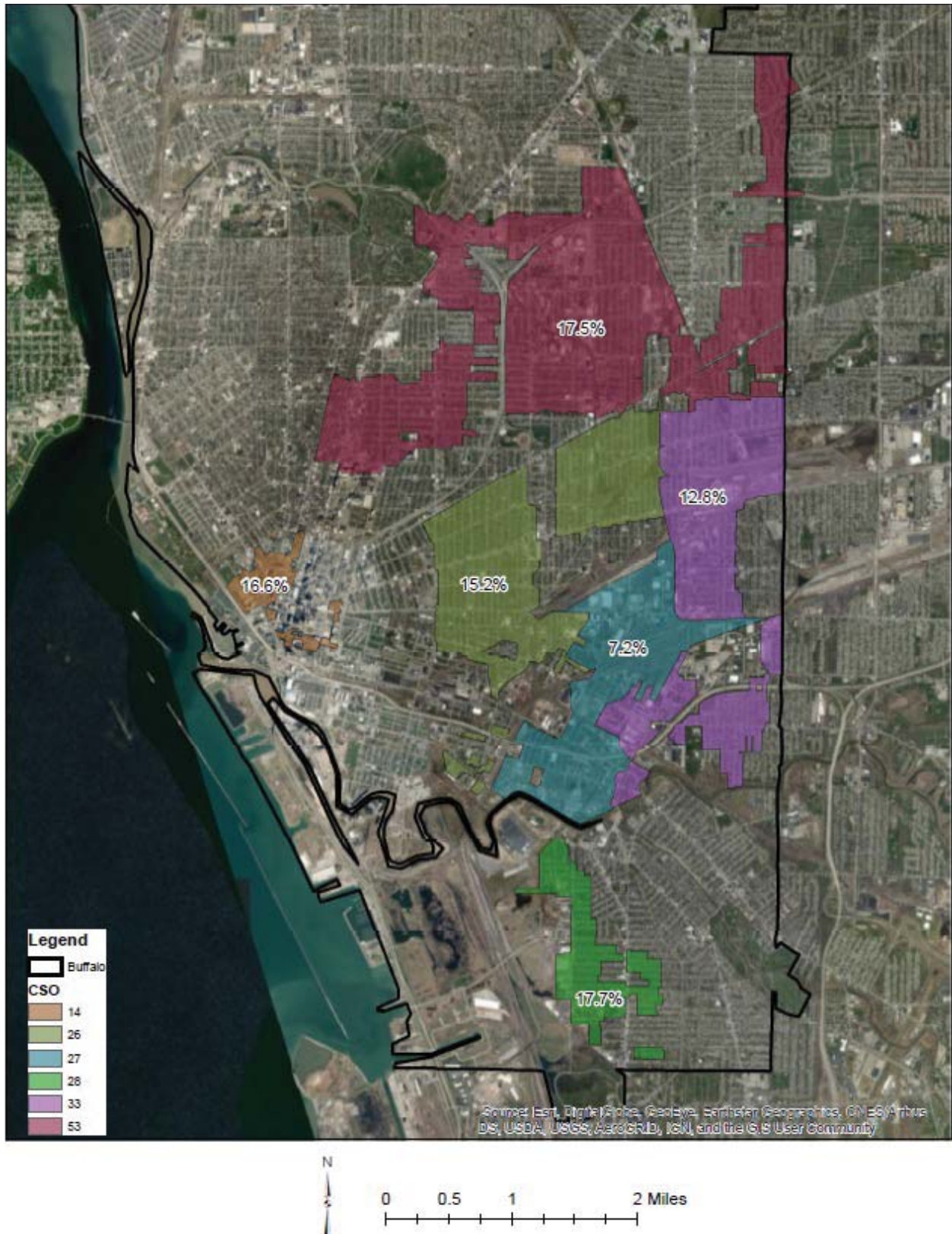
Figure 1. Existing tree canopy cover in six priority CSO Basins in Buffalo, NY.
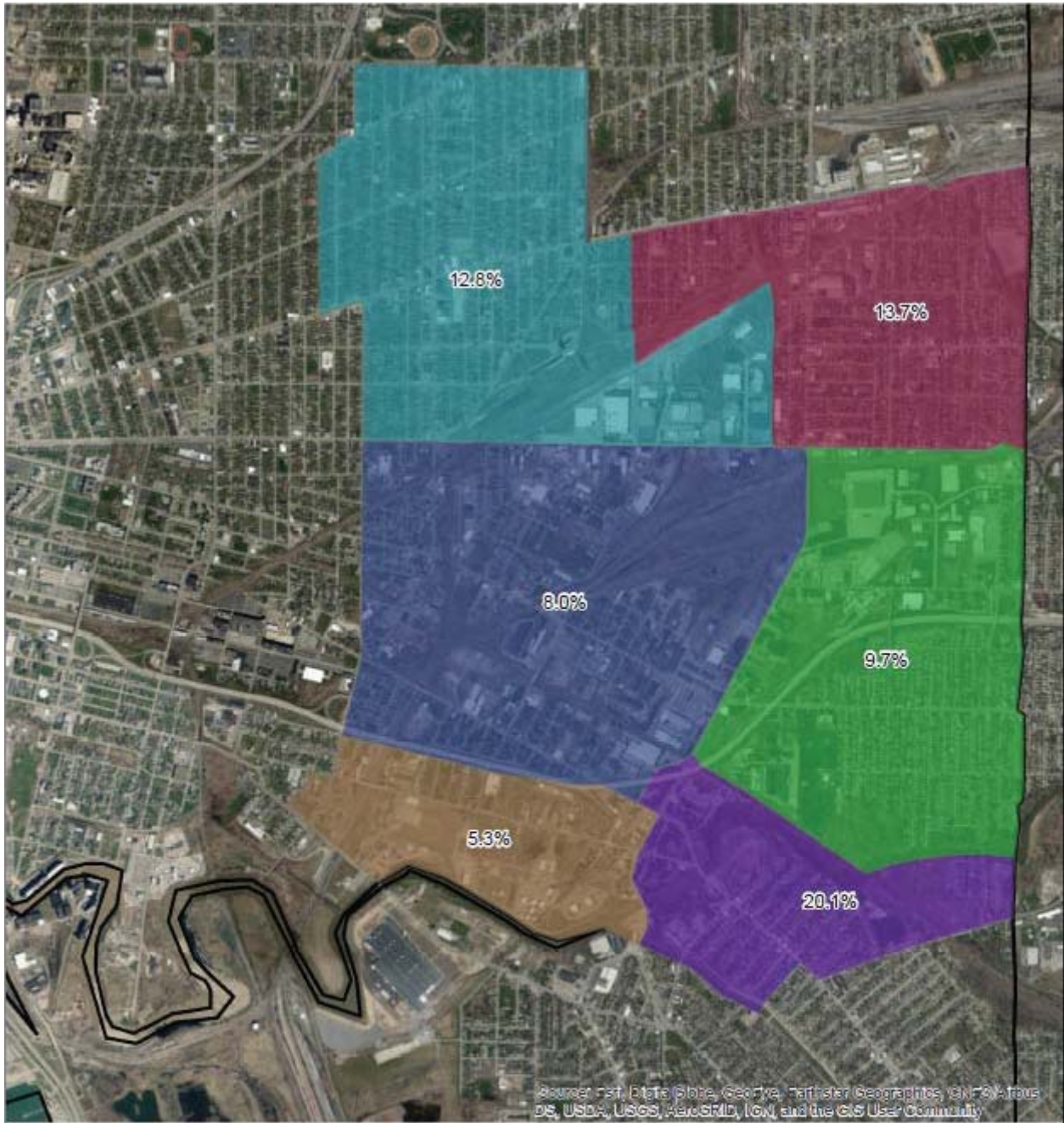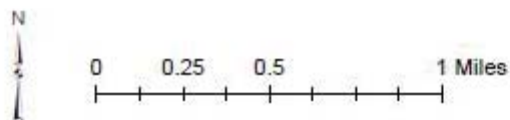
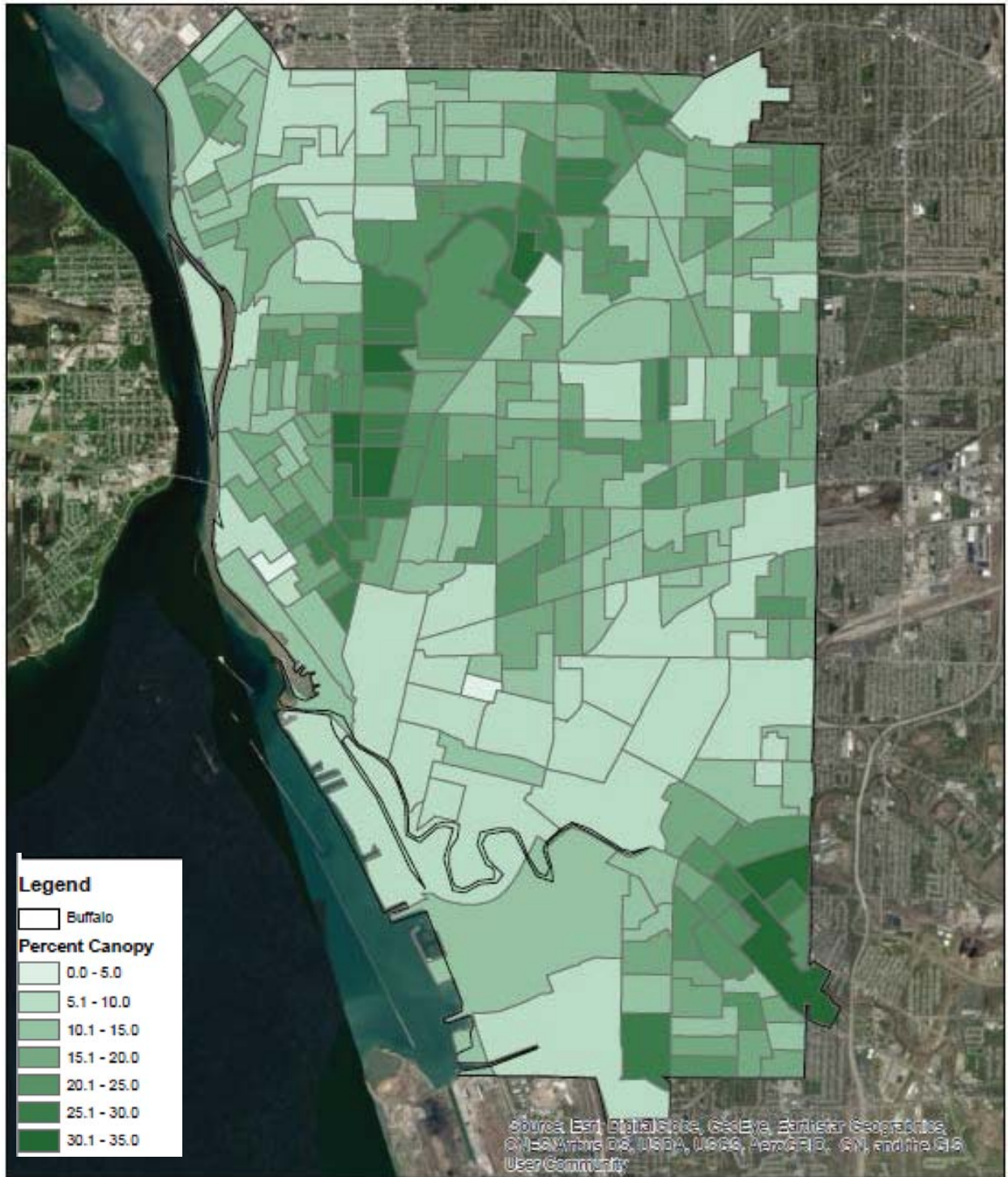Figure 2. Existing tree canopy cover (%) in selected neighborhoods in Buffalo, NY.

Figure 3. Existing canopy cover (%) by census block group in Buffalo, NY.

Step 2: Estimate the Potential Number of Tree Plantings

Two separate analyses were completed to identify suitable tree planting areas: street trees and non-street trees. In both analyses, the assessment first finds areas that are not suitable for tree planting, and the remaining areas are considered available for potential tree planting.

STREET TREES

The Street Tree analysis uses the TreeKeeper database, combined with other available spatial data to identify potential feasible street tree planting locations. The Treekeeper database includes an inventory of trees on public land, including all street trees. Treekeeper database includes an inventory of locations where trees are planted as well as locations with no trees. Trees that were located within a parcel, or designated as "in lot" by the TreeKeeper database were not considered "street trees" and were removed from the analysis. Locations identified as being in the front of the lot, on the side of the lot, on the rear of the lot, or in a median in the street were included in the analysis. Trees that had a species designation of "vacant" and status of "acceptable" were included as a potential tree planting location.

The designation of vacant acceptable and vacant unacceptable was sourced from the non-public TreeKeeper database. Site locations that are considered unacceptable are identified for a variety of reasons. Examples of why a location may be considered unacceptable include: a lack of soil volume; the presence of utilities at the site such as underground wires, telephone poles, or fire hydrants; or various other factors that impact the ability to plant a tree or the long-term survival of the tree (pers comm., Ross Hassinger). The vacant tree locations were not given a measurable area in the database. They were marked as points along the streets solely as location identifier that have already been assessed on the ground to be suitable for street tree planting. The number of street trees planted was simply a count of the vacant, acceptable locations identified in the TreeKeeper database.

It should be noted there were twenty street trees identified in TreeKeeper that fell just outside of the City of Buffalo boundary. These twenty trees (existing trees) were counted towards the total but were not counted in the spatial aggregate breakdowns.

NON-STREET TREES

This step included a spatial analysis of land use land cover data to broadly delineate areas unacceptable for tree planting. The remaining area within each of the spatial aggregations was considered 'plantable'. Based on the available data, unplantable areas included: existing tree canopy, roads, railroads, within 50 ft of a railroad, impervious surfaces[2] (buildings, driveways, sidewalks etc), and all parcels that are city owned and vacant. City owned vacant parcels were removed due to maintenance concerns by the city. The analysis of the potential planting areas essentially removed all areas that were unsuitable for tree planting leaving a layer of polygons deemed to be potential planting areas. This analysis was run twice, once to include parcels zoned as residential and once to exclude parcels that are zoned as residential.

The pervious area between the end of the tax parcel and road was assumed to be the public right of way and was excluded from this analysis, as it was considered street tree planting area.

The number of non-street tree planting was estimated based on a tree planting density of 35 trees per acre applied to the potential tree planting area derived from Step 2. The 35 trees per acre is based on literature values, then

---

(2) The impervious surface layer was created from NDVI data, converted from raster format to a shapefile. The NDVI raster data was edited to re-classify a large train yard on the eastern side of the city that had been misclassified.

modified based on best professional judgement and likelihood of planting density achievable in the City of Buffalo and may represent an upper maximum. The estimates are based on very basic assumptions and should only be interpreted as guidance. From the literature, Schroeder and Green (1985) provide an analysis of tree density in municipal parks and supporting imagery (Figure 4), while McNeil et al (2006[3] provide tree densities of existing trees for various land uses. These densities ranged from 67 to 1,371 trees/acre. Both of these estimates were considered high for this application. Consequently, the 35 trees per acre was derived from an average residential lot size in the City of Buffalo assumed two trees were planted per parcel.

Step 3: Estimate the Potential Canopy Area

The total canopy area was estimated by multiplying an assumed canopy area per tree. For street trees, we assumed that the typical canopy area was 400 sf, which was equivalent to the iTree forecast estimate for a broadleaf small tree 25 years after planting. Non-street trees were multiplied by an assumed canopy area of 600 sf, equivalent to a broadleaf medium tree 25 years after planting.

Step 4: Estimate of Impervious Acres Treated

The impervious acres equivalent of the number of trees planting as a result of the analysis is estimate. This required multiplying the street tree canopy area multiplied by the default planning level estimate for trees planted over impervious areas of 17% or 0.17 or 12% (0.12) for non-street trees. These default estimates were derived from a modelling effort supported by input from the Tree TAC. A complete description of this modelling and crediting framework is described in Caraco (2019).[4]

Figure 4. Illustration of a tree planting density of 42 trees/acre (from Schroeder and Green 1985).

(3) McNeil, J., C. Vava and Town of Oakville. 2006. Oakville's Urban Forest: Our solution to our pollution. Town of Oakville Parks and Open Space Department, Forestry Section.

(4) Caraco, D. 2019.   "Rain Check 2.0 Tree Crediting Framework". Memo to the Buffalo Sewer Authority. Revised January 24, 2019.

Results

The results provide an upward maximum of the tree planting opportunity area and number of trees planted. There are a number of site specific constraints that may limit opportunities in these general areas identified once a site assessment is completed verifying the applicability of the site to accommodate tree planting and its long-term survivorship. The attached spreadsheet includes results aggregated at the neighborhood, census block and CSO scales. The shaded columns include final summary results, including # of trees, estimated canopy area and estimated impervious cover reduction. Each of these is then aggregated by street trees, non-residential non-street trees, and residential non-street trees. Results aggregated at the CSO Basin scale (in acres) area included in Tables 3-5.

The results in Table 4 suggest that, while trees cannot achieve impervious cover reduction targets by themselves, planting at all of the locations identified would achieve between 13% and 61% of the impervious cover targets, although this is an absolute upper limit on the possible impervious cover reduction. The data also suggest that the opportunities available only through planting vacant street trees would achieve a much smaller target impervious reduction, from about 1% to 9% of the impervious cover reduction targets. These results suggest that street tree planting should be combined with other tree planting efforts on private property.

Table 3. Estimated Number of Potential Plantings

CSO	Street Trees	Non-Residential Non-Street Trees	Residential Non-Street Trees
014	68	889	67
026	3,684	6,637	10,601
027	619	6,420	717
028	1,507	6,879	2,019
033	2,854	8,073	4,861
053	8,232	24,242	13,818

Table 4. Estimated Potential Canopy Area (acres)

CSO	Street Trees	Non-Residential Non-Street Trees	Residential Non-Street Trees
014	1	12	1
026	34	91	146
027	6	88	10
028	14	95	28
033	26	111	67
053	76	334	190

Table 5. Estimated Potential Equivalent Impervious Cover Reduction (acres)[1]

CSO	Street Trees	Non-Residential Non-Street Trees	Residential Non-Street Trees	Total	Goal for Sewershed	% of Goal
014	0.1	1.5	0.1	1.7	13	13%
026	5.8	11.0	17.5	34.2	64	53%
027	1.0	10.6	1.2	12.8	73	18%
028	2.4	11.4	3.3	17.1	28	61%
033	4.5	13.3	8.0	25.8	94	27%
053	12.9	40.1	22.8	75.8	299	25%

(1) The impervious cover reduction estimates included in this table are derived by multiplying the potential canopy area in Table 3 by the estimated canopy area equivalents reported in Caraco (2019). Street tree canopy area is multiplied by 0.17 and the canopy area of other trees is multiplied by 0.12.

Table 6. Tree Statistics for City Block Groups

Block Group	Area (Acres)	Existing Canopy (Acres)*	% Existing Canopy	Block Group	Area (Acres)	Existing Canopy (Acres)*	% Existing Canopy
360290001101	164.3	50.9	31.0	360290014024	99.6	7.0	7.0
360290001102	737.5	50.2	6.8	360290015001	101.7	13.6	13.4
360290001103	1168.6	127.4	10.9	360290015002	134.6	20.1	15.0
360290001104	94.3	11.6	12.3	360290016001	79.8	12.3	15.4
360290002001	104.4	16.6	15.9	360290016002	304.8	27.0	8.9
360290002002	48.8	6.0	12.2	360290016003	31.8	2.9	9.1
360290002003	89.4	17.1	19.1	360290016004	68.8	7.5	10.9
360290002004	58.2	8.6	14.8	360290017001	219.0	19.3	8.8
360290005001	1159.3	94.9	8.2	360290017002	68.6	6.4	9.3
360290005002	72.6	6.2	8.6	360290019001	195.6	26.7	13.7
360290006001	85.4	12.5	14.6	360290019002	71.8	7.0	9.8
360290006002	69.9	9.4	13.4	360290019003	33.2	3.2	9.7
360290006003	63.2	9.6	15.2	360290023001	48.4	8.4	17.4
360290006004	69.0	16.4	23.7	360290023002	42.6	9.8	23.1
360290007001	40.0	8.3	20.9	360290023003	45.5	3.7	8.1
360290007002	49.4	5.6	11.4	360290023004	54.7	6.2	11.3
360290007003	55.4	9.9	17.9	360290024001	91.0	12.6	13.8
360290007004	66.2	10.0	15.0	360290024002	32.2	3.7	11.5
360290007005	53.0	13.3	25.1	360290024003	50.1	10.6	21.2
360290008001	48.8	10.4	21.3	360290024004	40.5	7.6	18.8
360290008002	81.7	18.4	22.5	360290024005	115.3	8.8	7.6
360290008003	95.3	19.7	20.7	360290024006	84.7	12.9	15.2
360290008004	43.6	4.9	11.2	360290025021	87.3	12.4	14.2
360290009001	46.1	8.0	17.4	360290025022	184.8	17.1	9.2
360290009002	44.8	10.1	22.6	360290027021	44.5	5.0	11.3
360290009003	44.8	9.2	20.5	360290027022	56.3	10.2	18.1
360290010001	52.6	15.3	29.2	360290027023	78.4	8.8	11.2
360290010002	46.1	31.0	67.2	360290027024	44.5	5.0	11.3
360290010003	246.1	75.6	30.7	360290028001	79.4	10.5	13.3
360290010004	42.9	11.5	26.8	360290028002	84.4	13.3	15.7
360290010005	123.3	23.3	18.9	360290028003	28.2	3.9	13.8
360290011001	151.8	36.3	23.9	360290028004	95.4	14.5	15.2
360290011002	47.1	11.5	24.4	360290029001	36.5	6.7	18.3
360290011003	177.5	33.2	18.7	360290029002	46.0	10.9	23.7
360290014021	38.8	1.1	2.9	360290029003	55.9	9.1	16.3
360290014022	37.2	4.4	11.8	360290029004	53.6	11.5	21.5
360290014023	93.4	9.3	9.9				

*canopy includes street trees

Table 6. Tree Statistics for City Block Groups (continued)

Block Group	Area (Acres)	Existing Canopy (Acres)*	% Existing Canopy	Block Group	Area (Acres)	Existing Canopy (Acres)*	% Existing Canopy
360290030001	42.2	7.5	17.8	360290040011	70.3	7.7	11.0
360290030002	250.2	22.9	9.2	360290040012	70.6	16.8	23.8
360290030003	54.6	12.5	22.9	360290040013	78.5	16.1	20.5
360290031001	117.6	22.8	19.4	360290040014	117.1	16.8	14.3
360290031002	60.2	12.1	20.1	360290040015	43.8	7.9	18.1
360290031003	87.9	15.6	17.7	360290041001	78.0	14.4	18.5
360290031004	103.7	13.7	13.2	360290041002	59.7	11.3	19.0
360290033011	36.3	6.3	17.4	360290041003	40.3	4.7	11.7
360290033012	53.9	8.4	15.5	360290041004	90.2	17.1	19.0
360290033013	45.4	5.0	10.9	360290042001	33.7	7.3	21.6
360290033014	39.7	6.5	16.5	360290042002	41.7	7.9	18.8
360290033021	64.9	10.8	16.6	360290042003	46.2	6.9	14.9
360290033022	81.4	16.1	19.8	360290042004	70.4	7.6	10.8
360290033023	66.3	10.6	16.1	360290042005	47.3	9.1	19.3
360290033024	39.3	7.0	17.8	360290043001	41.7	8.1	19.5
360290034001	37.9	11.0	29.0	360290043002	34.7	5.2	15.1
360290034002	45.0	9.6	21.3	360290043003	37.3	7.8	20.9
360290034003	40.7	6.9	16.9	360290043004	61.4	15.3	24.9
360290034004	52.1	6.9	13.2	360290043005	34.4	6.7	19.4
360290034005	191.0	17.7	9.3	360290043006	52.7	7.8	14.8
360290035001	82.4	9.4	11.4	360290043007	26.9	6.1	22.8
360290035002	62.4	13.2	21.1	360290044011	46.2	7.8	17.0
360290035003	85.9	19.7	22.9	360290044012	50.4	8.5	16.8
360290035004	154.0	27.8	18.0	360290044013	88.8	10.8	12.1
360290036001	105.7	15.4	14.6	360290044014	58.8	10.0	17.0
360290036002	39.0	6.6	16.9	360290044021	75.7	4.6	6.1
360290036003	95.9	18.2	19.0	360290044022	69.7	8.0	11.5
360290036004	70.5	5.5	7.8	360290045001	135.1	64.0	47.4
360290037001	56.0	6.7	11.9	360290045002	84.9	9.5	11.2
360290037002	80.8	13.3	16.5	360290045003	77.4	12.5	16.2
360290037003	34.6	8.5	24.4	360290045004	96.5	26.6	27.6
360290037004	64.7	10.9	16.8	360290045005	57.5	17.5	30.4
360290037005	35.1	5.7	16.4	360290045006	48.4	8.5	17.5
360290038001	56.2	12.9	22.9	360290046011	56.9	11.2	19.7
360290038002	31.5	6.6	21.1	360290046012	38.9	3.8	9.7
360290038003	63.4	10.4	16.4	360290046013	68.1	0.6	0.8
360290039011	129.6	16.9	13.0				

*canopy includes street trees

Block Group	Area (Acres)	Existing Canopy (Acres)*	% Existing Canopy	Block Group	Area (Acres)	Existing Canopy (Acres)*	% Existing Canopy
360290046014	38.1	6.9	18.2	360290055004	82.6	10.1	12.2
360290046021	293.3	20.7	7.1	360290056001	48.3	3.4	6.9
360290047001	66.2	11.2	16.8	360290056002	261.9	16.8	6.4
360290047002	53.4	8.9	16.6	360290056003	159.1	19.0	12.0
360290047003	56.2	8.9	15.9	360290056004	50.0	5.5	11.0
360290047004	123.7	17.0	13.8	360290056005	23.5	2.2	9.4
360290047005	66.4	14.9	22.4	360290057001	128.6	14.7	11.4
360290048001	75.2	10.0	13.3	360290057002	62.2	6.5	10.5
360290048002	88.9	20.0	22.5	360290057003	45.6	8.6	18.9
360290048003	80.0	12.7	15.9	360290058011	89.9	12.1	13.4
360290049001	70.1	8.0	11.4	360290058012	52.5	5.1	9.6
360290049002	85.1	9.4	11.0	360290058013	26.9	6.1	22.7
360290049003	33.5	4.6	13.8	360290058021	42.9	8.4	19.6
360290049004	30.4	3.6	11.8	360290058022	130.5	18.0	13.8
360290049005	58.0	7.3	12.6	360290058023	29.4	5.7	19.2
360290050001	129.4	8.5	6.6	360290058024	54.8	5.3	9.6
360290050002	31.8	4.8	15.1	360290059001	27.1	4.9	17.9
360290050003	159.0	10.2	6.4	360290059002	39.1	4.9	12.6
360290051001	136.6	20.5	15.0	360290059003	61.3	7.9	12.9
360290051002	54.7	8.5	15.5	360290059004	30.6	5.4	17.5
360290051003	50.2	7.2	14.4	360290059005	149.2	19.7	13.2
360290051004	45.8	6.5	14.2	360290061001	122.7	14.4	11.7
360290052011	60.0	14.6	24.3	360290061002	33.1	5.0	15.2
360290052012	42.1	10.9	25.8	360290061003	41.7	4.6	11.0
360290052013	100.8	9.8	9.8	360290061004	33.5	6.0	18.0
360290052014	56.0	16.1	28.7	360290061005	35.5	4.9	13.8
360290052021	65.1	8.1	12.4	360290062011	118.1	10.9	9.2
360290052022	77.9	12.6	16.2	360290063011	33.3	7.6	22.8
360290053001	130.0	37.6	29.0	360290063012	37.1	8.9	24.1
360290053002	442.9	89.6	20.2	360290063013	36.5	6.6	18.0
360290054001	189.9	41.5	21.9	360290063014	47.3	9.5	20.1
360290054002	106.9	14.2	13.3	360290063015	26.6	5.6	21.2
360290054003	72.2	15.8	21.8	360290063021	154.6	42.5	27.5
360290054004	108.1	25.5	23.6	360290063022	68.4	19.7	28.7
360290055001	78.9	7.6	9.6	360290063023	36.7	9.4	25.7
360290055002	47.0	7.4	15.8	360290065011	35.8	7.6	21.2
360290055003	174.9	26.0	14.9				

*canopy includes street trees

Table 6. Tree Statistics for City Block Groups (continued)

Block Group	Area (Acres)	Existing Canopy (Acres)*	% Existing Canopy	Block Group	Area (Acres)	Existing Canopy (Acres)*	% Existing Canopy
360290065012	29.5	6.9	23.2	360290072021	269.4	29.6	11.0
360290065013	24.9	5.5	21.9	360290163001	213.8	11.4	5.3
360290065014	26.6	4.1	15.6	360290163002	387.4	33.2	8.6
360290066011	24.2	4.4	18.1	360290163003	441.1	25.9	5.9
360290066012	46.9	13.9	29.5	360290164001	149.5	13.5	9.0
360290066013	25.7	5.1	20.0	360290164002	117.8	14.4	12.2
360290066021	38.5	11.0	28.4	360290164003	208.7	18.8	9.0
360290066022	29.4	6.3	21.6	360290164004	159.2	9.2	5.8
360290066023	42.2	9.4	22.2	360290165001	469.9	42.9	9.1
360290067011	56.4	17.6	31.3	360290166001	73.7	14.9	20.2
360290067012	40.3	7.3	18.0	360290166002	46.7	7.1	15.2
360290067013	41.3	13.1	31.7	360290166003	58.7	13.2	22.4
360290067021	63.1	15.9	25.2	360290166004	109.5	21.2	19.3
360290067022	47.0	10.8	22.9	360290167001	54.1	5.5	10.1
360290067023	85.4	27.5	32.2	360290167002	33.0	2.8	8.6
360290068001	30.9	7.2	23.4	360290167003	383.8	23.3	6.1
360290068002	88.3	16.7	18.9	360290168001	115.0	26.3	22.9
360290068003	52.0	14.4	27.6	360290168002	103.3	22.4	21.7
360290068004	42.6	11.4	26.7	360290168003	107.2	12.6	11.8
360290069011	37.1	5.1	13.7	360290168004	100.8	17.5	17.4
360290069012	29.3	3.9	13.2	360290169001	38.8	12.6	32.4
360290069013	50.2	9.0	17.9	360290169002	57.3	13.0	22.7
360290069014	29.4	4.7	16.2	360290169003	80.4	15.6	19.4
360290069021	64.8	9.9	15.3	360290169004	46.2	8.3	17.9
360290069022	35.9	8.9	24.8	360290170001	87.3	16.0	18.3
360290069023	34.8	5.3	15.2	360290170002	261.1	29.0	11.1
360290069024	24.3	4.3	17.5	360290171001	213.6	20.6	9.6
360290070001	70.6	9.2	13.1	360290171002	35.4	5.9	16.7
360290070002	153.2	15.6	10.2	360290171003	31.8	7.4	23.4
360290070003	72.4	13.4	18.5	360290171004	31.8	7.5	23.8
360290071011	26.1	5.7	21.7	360290171005	183.6	21.3	11.6
360290071012	41.1	2.7	6.5				
360290071013	64.3	11.8	18.3				
360290071014	38.3	1.8	4.8				
360290071021	149.2	20.9	14.0				
360290071022	42.2	11.0	26.2				
360290071023	24.5	4.7	19.3				

*canopy includes street trees