Tree Canopy Assessment

Seattle City Council

EEMU Committee

April 28, 2009

Seattle reLeaf
keep the emerald city green

Tree Canopy Assessment Goals

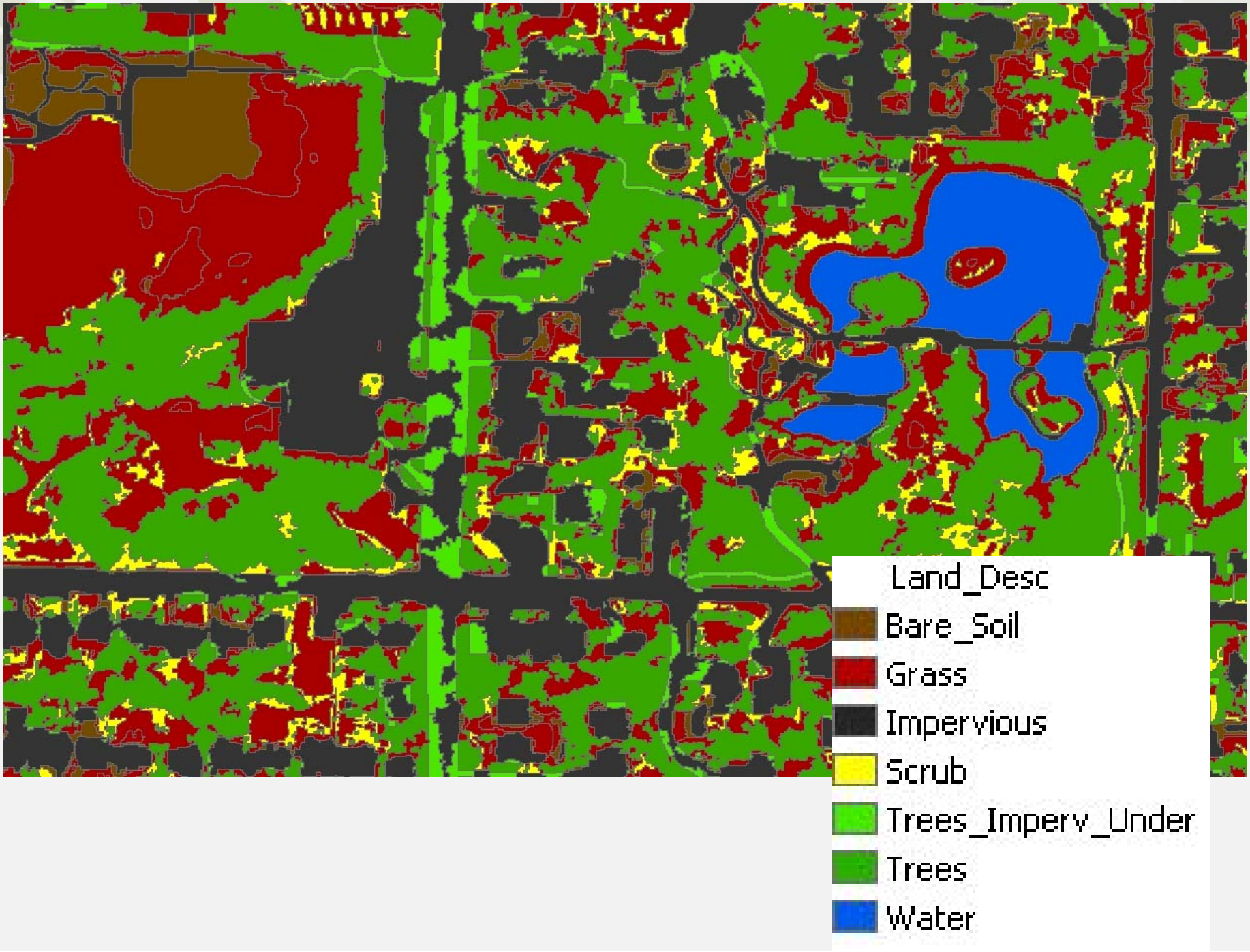
- Prioritize City investments to those actions that will create the greatest tree canopy gain
  - Current canopy cover and recent trends in canopy gain and loss
  - Impacts of development
  - Planting potential
  - Baseline to monitor our progress against the 30% canopy cover goal

Assessment Methods

- Previous Assessment
  - Data source: readily available, free regional remote sensing data (LIDAR)
  - Images not generated for this type of use and collected in winter
- Current Assessment
  - High resolution satellite data
  - Advanced data extraction & analysis techniques

Tree Canopy Analysis Parameters

- Citywide
- Land Use Categories – single-family, multi-family, manufacturing/industrial, downtown, developed parks, parks natural areas, commercial/mixed use, institutional
  - ROW and Private Property
  - Community Reporting Areas (CRAs)
  - Urban Villages
- Summer 2003 (w/hazy areas replaced with 2002 data) & summer 2007 data


Land_Desc
Bare_Soil
Grass
Impervious
Scrub
Trees_Imperv_Under
Trees
Water

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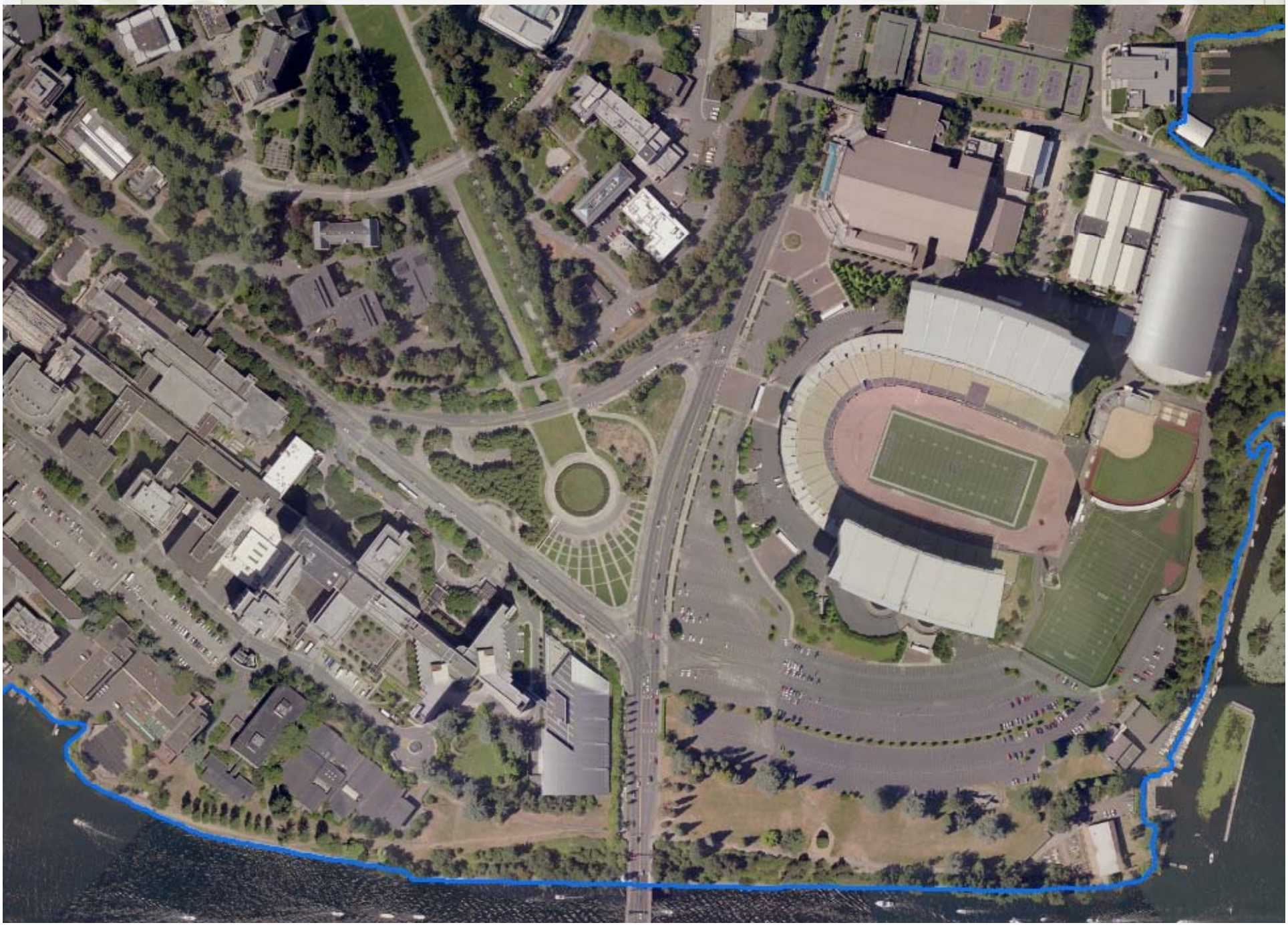
Seattle 2007 Natural Color Aerial Imagery



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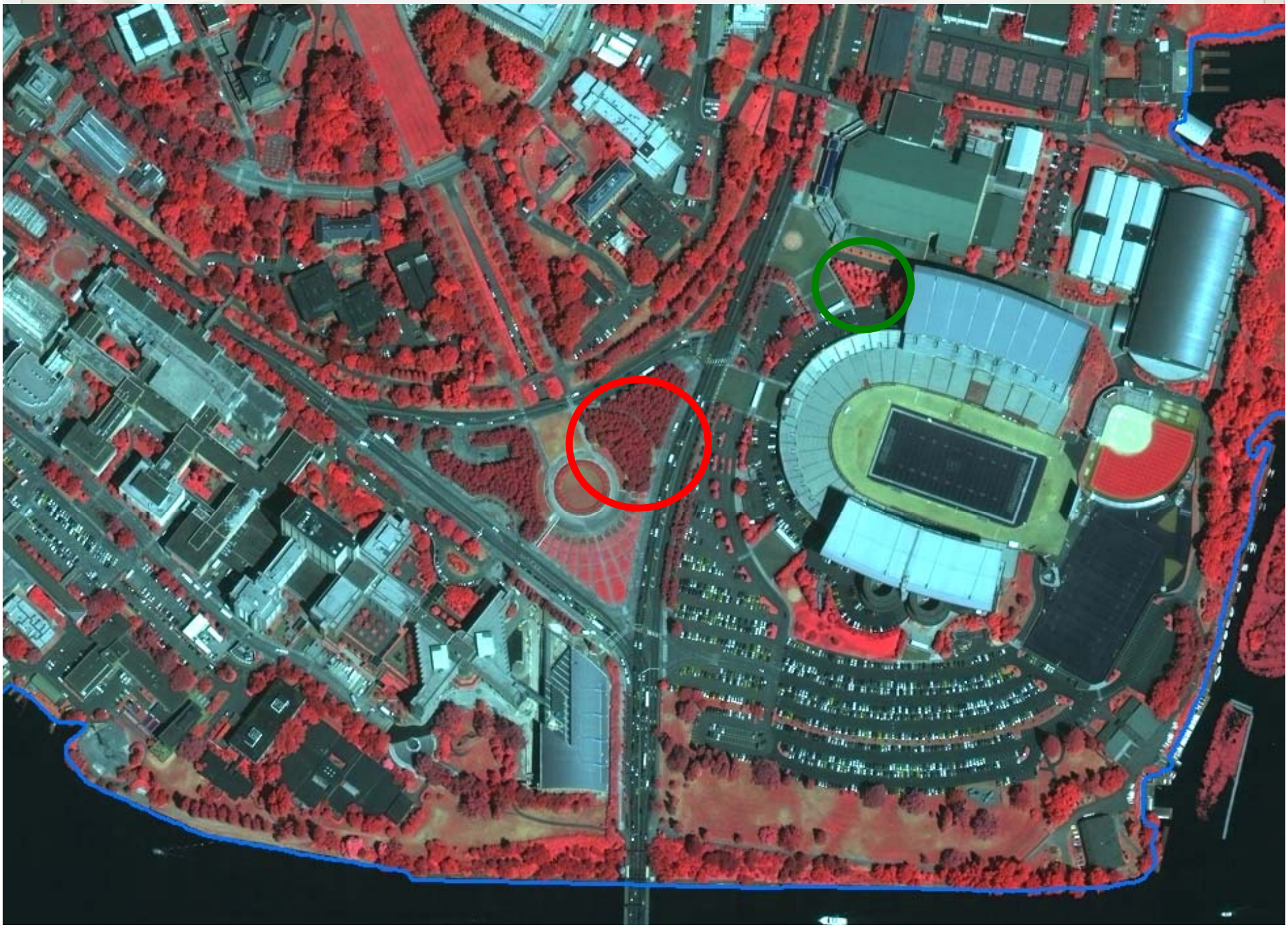
2-ft Resolution 4-Band, QuickBird Satellite Imagery (2003)



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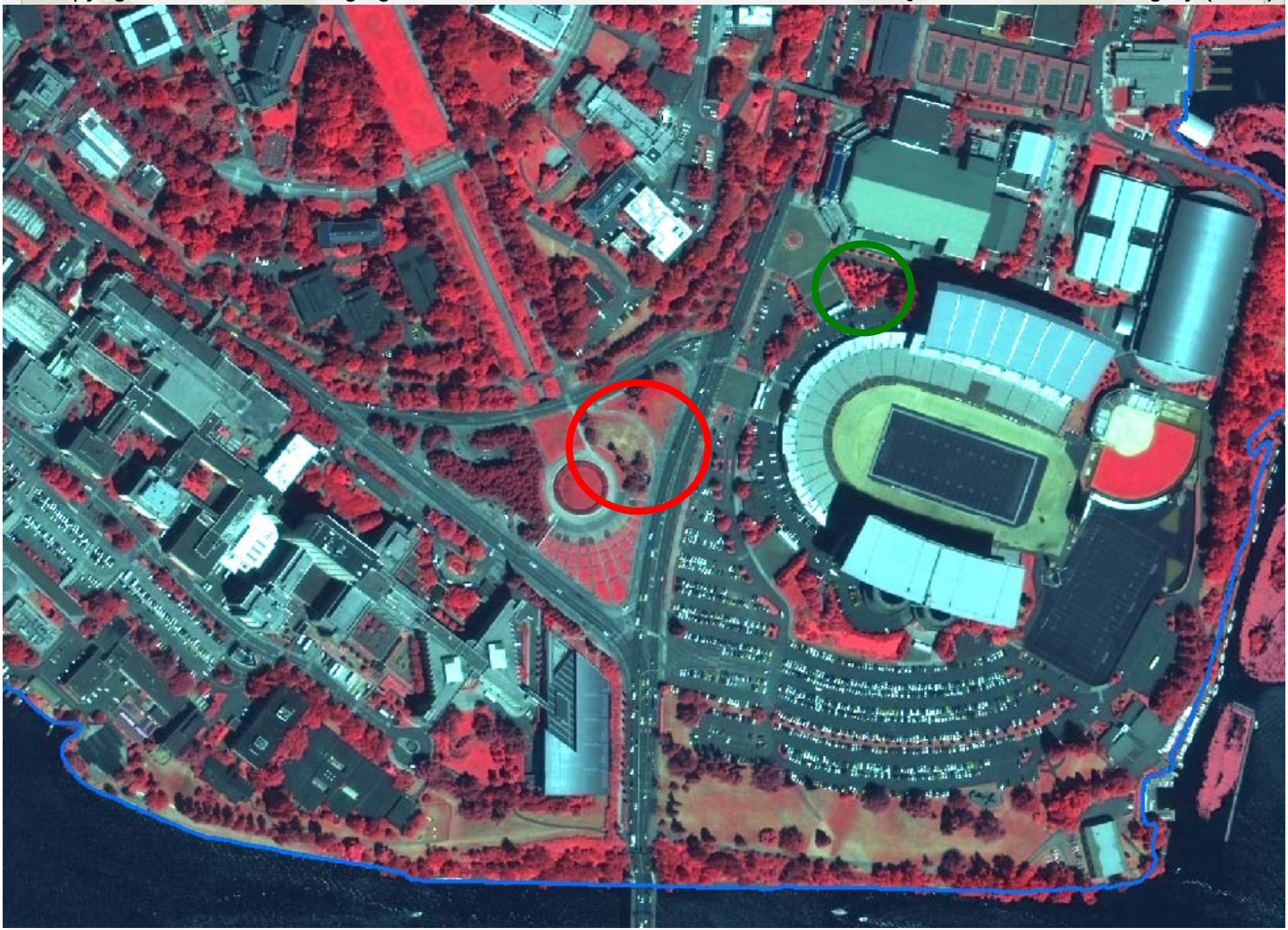
2-ft Resolution 4-Band, QuickBird Satellite Imagery (2007)



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2-ft Resolution 4-Band, QuickBird Satellite Imagery

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Seattle Trees, Parcels & Public Right-of-Way (PROW)

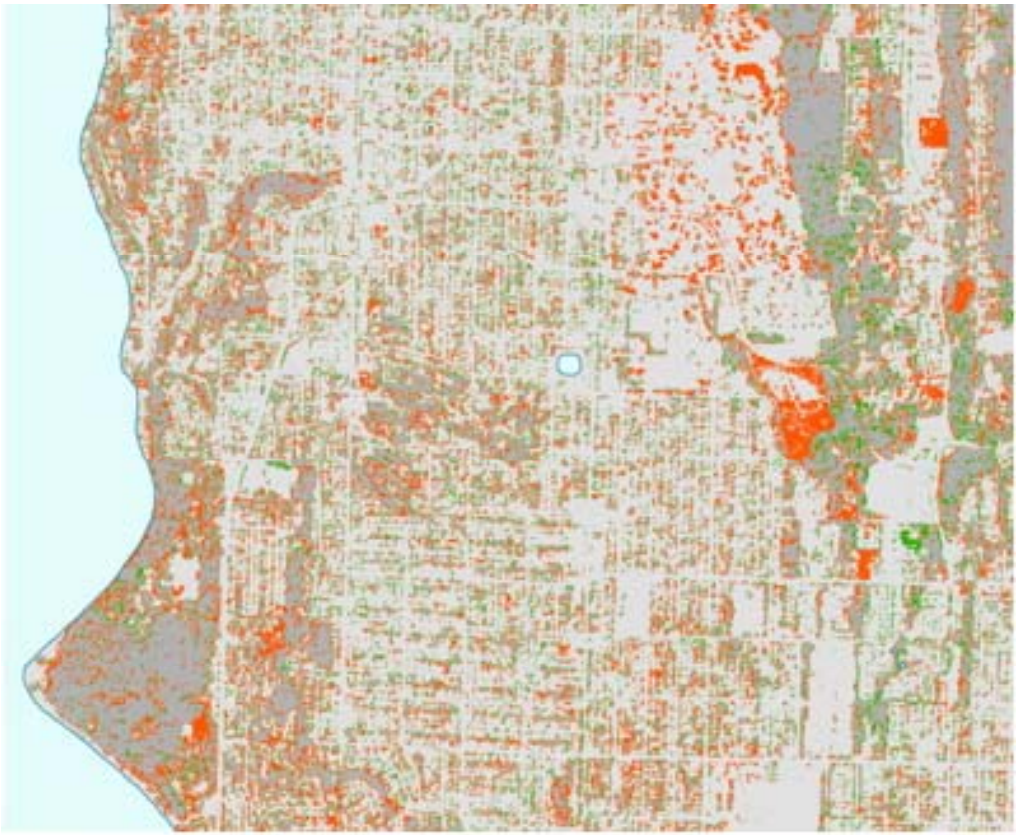
Preliminary Results

- Citywide tree canopy cover in 2007 was about 23%
- Canopy cover citywide increased slightly with gains balancing losses
- ROW tree cover is increasing more quickly than non-ROW property
- Canopy loss occurs during redevelopment
- We need to double the acres of canopy increase each year to meet the UFMP 30% goal by 2037

Preliminary Results Con't

- Small gains overall in most land uses
- Parks natural area declined which we expected - Green Seattle Partnership
- Developed parks show some declines, we are evaluating
- ROW increased 1%
  - ROW is 27% of the city land area and 61% of canopy cover gain

Land Use Category	2002 Canopy Cover	2007 Canopy Cover	Goal Canopy Cover
Commercial/ Mixed Use	8.4%	9.7%	15%
Developed Park or Boulevard	25.9%	25.5%	25%
Downtown	4.2%	4.7%	12%
Major Institution	18.4%	19.4%	20%
Manufacturing/ Industrial	3.8%	4.3%	10%
Multi-Family	16.6%	17.1%	20%
Parks Natural Area	82.5%	80.4%	80%
Single Family	25.2%	25.7%	31%
Total	22.5%	22.9%	30%



Tree Canopy Change 2002-2007

- No Change (non-canopy in 02 & 07)
- Negative Change (canopy lost between 02 & 07)
- Positive Change (new canopy since 2002)
- No Change (canopy in both 02 & 07)

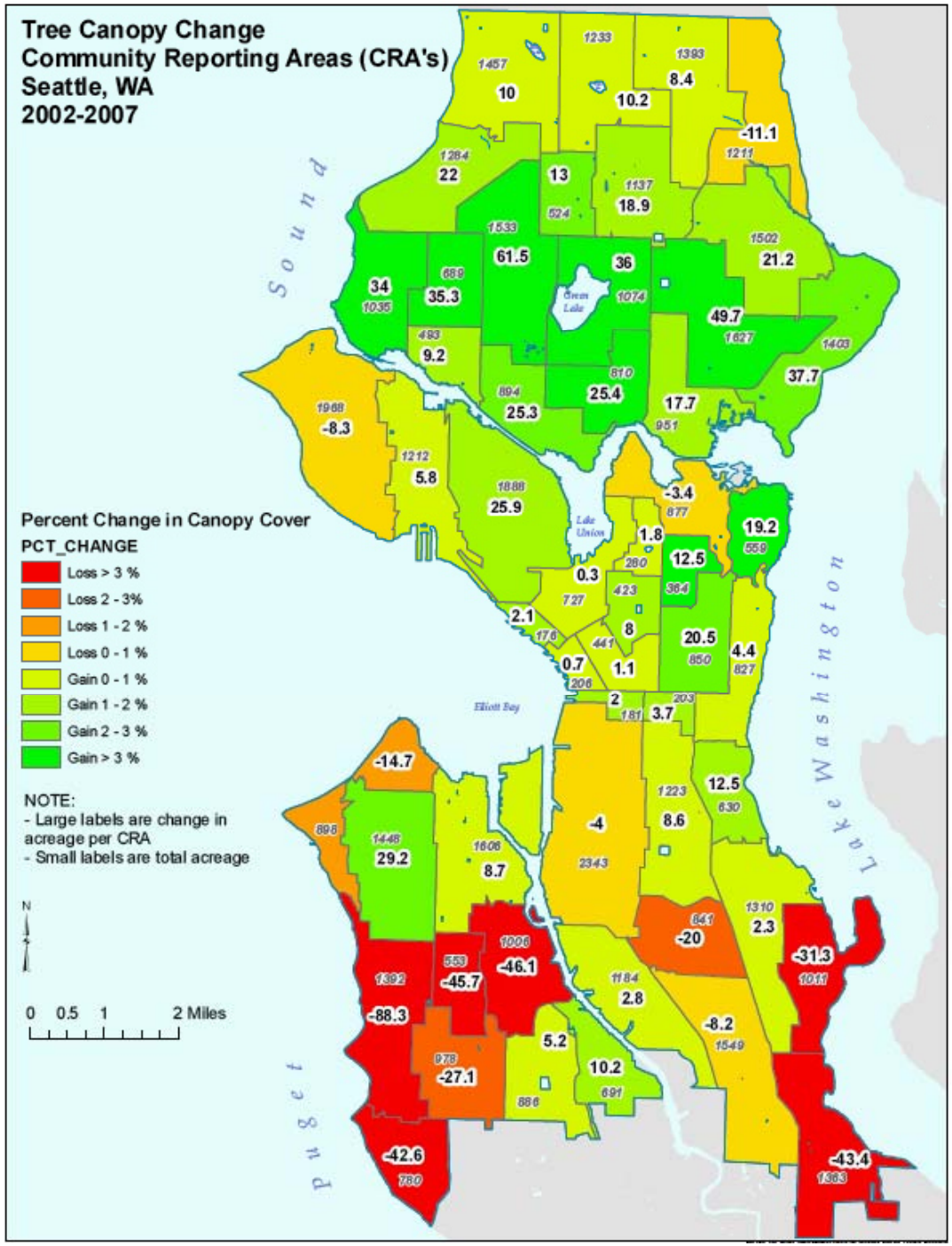
Community Reporting Areas (53 CRAs)

- Canopy in less developed areas tended to decrease
  - 6 CRAs had a 3% or greater decline and all of these were south of downtown
  - Significant areas of remaining forest land in SF zones were redeveloped in these areas
- Canopy in fully developed areas tended to increase
  - 8 CRA's had a 3% or greater increase and all of these were north of downtown

CRA's con't

- 8 CRAs had single family zones have canopy cover of <20%
  - Ballard, Beacon Hill, Georgetown, Judkins Park, N. Beacon Hill, Roxhill, W. Seattle Junction, Whittier Heights

- 12 CRAs have overall tree canopy <15%
  - Cluster in center of City: downtown, Belltown, Judkins, First Hill, Pioneer Sq, Capital Hill, Eastlake
  - South: Duwamish, South Park, Georgetown
  - North: Ballard, Interbay


Tree Canopy Change
Community Reporting Areas (CRA's)
Seattle, WA
2002-2007
Percent Change in Canopy Cover
PCT_CHANGE
Loss > 3 %
Loss 2 - 3%
Loss 1 - 2 %
Loss 0 - 1 %
Gain 0 - 1 %
Gain 1 - 2 %
Gain 2 - 3 %
Gain > 3 %
NOTE:
- Large labels are change in acreage per CRA
- Small labels are total acreage
N
0 0.5 1 2 Miles
Sound
Puget
Lake Washington
Green Lake
Lake Union
Elliott Bay
1457
10
1233
10.2
1393
8.4
-11.1
1211
1264
22
13
524
1137
18.9
1533
61.5
36
1074
1502
21.2
34
1035
689
35.3
493
9.2
49.7
1627
1403
37.7
810
25.4
894
25.3
17.7
951
1968
-8.3
1212
5.8
1888
25.9
-3.4
877
19.2
559
1.8
280
12.5
364
0.3
727
423
2.1
176
8
441
20.5
850
4.4
827
0.7
206
1.1
2
181
3.7
203
-14.7
898
1448
29.2
1606
8.7
-4
2343
1223
8.6
12.5
630
1310
2.3
841
-20
1006
-46.1
553
-45.7
1392
-88.3
1184
2.8
-31.3
1911
-8.2
1549
5.2
978
-27.1
10.2
691
886
-42.6
780
-43.4
1363

Urban Villages

- Average canopy cover is 9.4%
  - Range from 25% University Campus to 4% Greater Duwamish and Ballard Interbay
- Average gain of 1% canopy cover
- Urban Villages with gains over 3%
  - Madison Miller, Roosevelt, Wallingford
- Urban villages with canopy cover loss

Columbia City	- .8%
MLK at Holly	-1.2%
Morgan Junction	-2.1%
Westwood	-1.3%

Redeveloped Parcels

- 2,262 parcels were redeveloped
- Total of 947 acres or 1.78% of the city
- Resulted in the loss of 35 acres or 3.8% decline in canopy cover on redeveloped parcels
- Single and multi-family residential parcels represent the majority of the canopy decline on redeveloped parcels

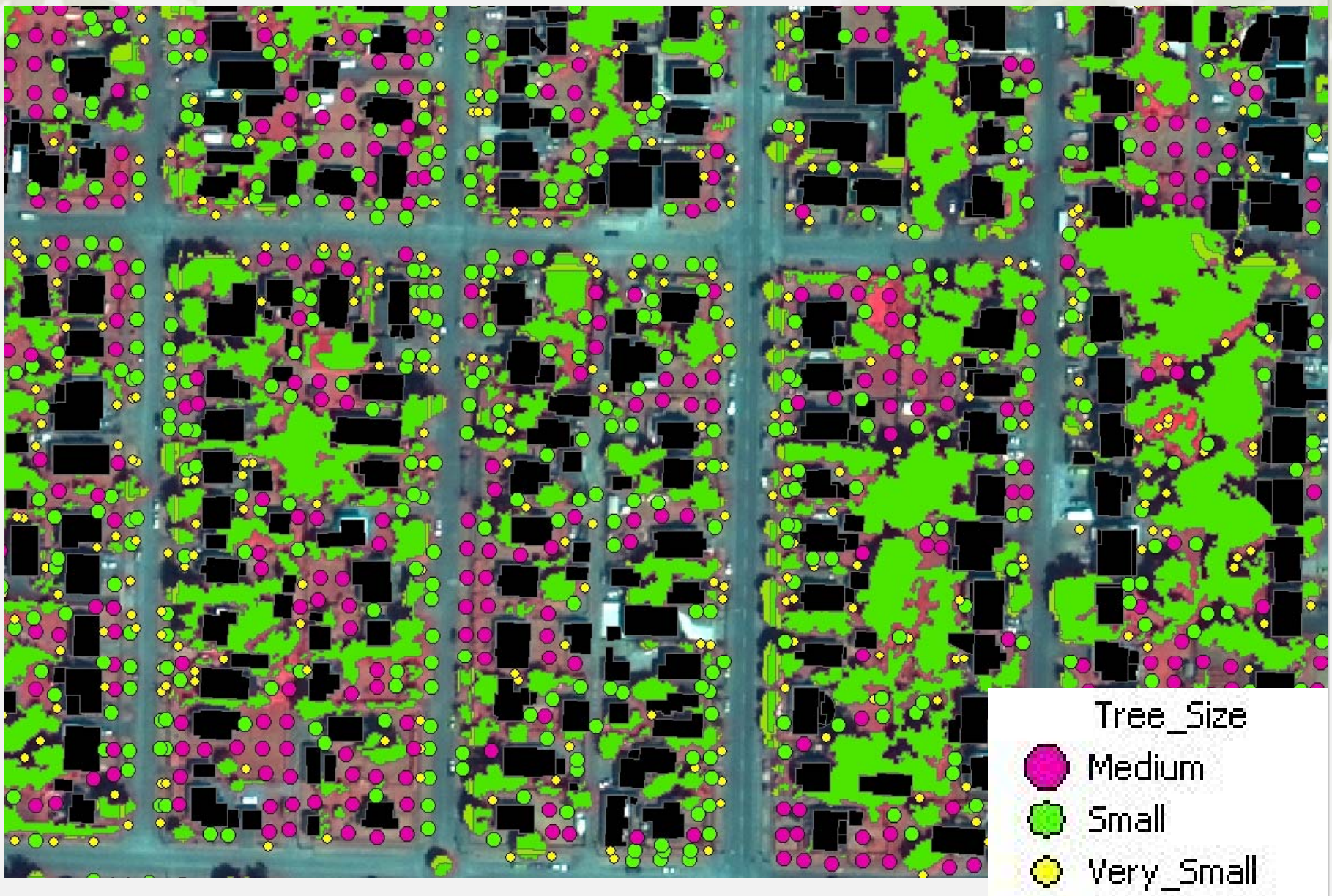
Redeveloped Parcel Canopy Cover Change

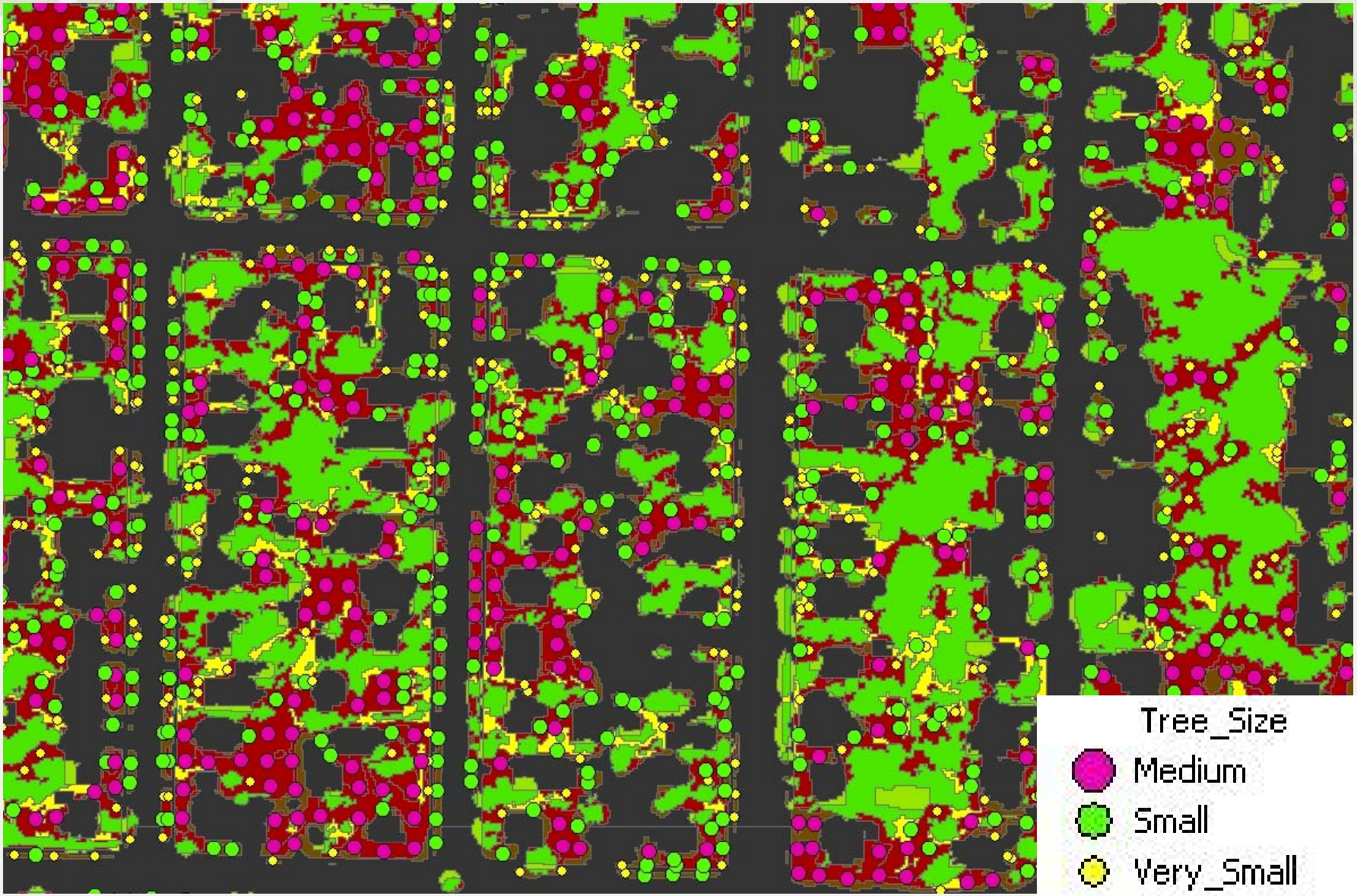
Land Use Category	Total Redeveloped Parcel Area (Acre)	Parcel Tree Cover Change 02 - 07 (Acre)	Parcel Tree Cover Change 02 - 07
Commercial/ Mixed Use	224.9	-4.9	-2.2%
Downtown	30.4	-0.8	-2.7%
Major Institutions	157.5	-1.0	-0.7%
Manufacturing/ Industrial	265.4	0.2	0.1%
Multi-Family	74.9	-9.1	-12.2%
Single Family	160.4	-19.5	-12.1%
Total	**913.5**	**-35.2**	**-3.9%**

Tree Planting Potential

- Very preliminary
- Included
  - Grass
  - Bare soil
  - Shrub
  - Areas with at least 36 sq ft available
- Overestimates in that no other use for the land is considered (e.g. gardens)
- Underestimates in areas like downtown

Tree_Size
Medium
Small
Very_Small


Tree_Size
Medium
Small
Very_Small


Tree_Size
Medium
Small
Very_Small

Potential Planting Sites

Zoning Category	Area (Acre)	Tree Cover 2002 (Acre)	Tree Cover 2007 (Acre)	Potential Planting Sites
Commercial/Mixed Use	4522.25	381.40	437.47	28,967
Developed Park or Boulevard	2578.17	667.39	656.42	70,266
Downtown	815.25	34.29	38.55	1,104
Major Institutions	1101.09	202.59	213.95	18,384
Manufacturing/Industrial	6190.75	235.67	267.47	27,209
Multi-Family	5645.47	935.72	963.51	92,965
Parks Natural Area	2355.48	1943.06	1894.40	25,194
Single Family	29918.02	7543.61	7700.63	817,411
Total	53126.48	11943.72	12172.40	1,081,500

Strategy Options

- Regulations
  - During development
  - Outside of development
  - Street tree regulations
- Incentives & Outreach
  - Expanded DON Tree Fund
  - Broader scale tree giveaways
  - Utility rate incentives
  - Expand Seattle reLeaf outreach

Community Outreach

- Reconvene the peer group that reviewed the draft UFMP to review results and potential strategies
- Create a web-based presentation with embedded feedback questions
- Survey single family property owners with low tree cover but high planting potential
- Pursue earned media to raise community interest
- Host 2 public workshops – recruit community group participation

Roll Out

Spring/Early Summer

- Peer review workshop
- Community workshops

Fall 2009

- Staff proposed UFMP five-year strategic plan