Section 5

Future Reclaimed Water Demands

5.1 Future Reclaimed Water Service Areas

The original reclaimed water service areas, as defined in Policy Statement 132, are shown in Figure 2-1. However, the Town plans to join the North and West service areas in order to enable the supply of reclaimed water from the NCWRF into the West Cary service area, assuming that water from the TWWTP will no longer be available to the Town in the future.

Several pipeline routing options were considered to bring reclaimed water from the North to West service areas (NW Connector), with the goal of adding as many potential large-demand reclaimed water customers as possible to mitigate the capital investment in the pipeline:

- Morrisville Carpenter Road (recommended in the 2007 Master Plan report)
- Weston Parkway/ Morrisville Parkway
- Interstate 40/ Perimeter Park Drive/ McCrimmon Parkway

Each route is identified on **Figure 5-1**. The Town ultimately selected a combination of these options with a NW Connector route that follows Evans Road to International Drive to McCrimmon Parkway and connects to the JLWR pipeline at Green Level Church Road (**Figure 5-2**). This route could provide reclaimed water to existing customers in Perimeter Park and along McCrimmon Parkway.

A reclaimed water service area was also defined along the selected NW Connector route, as shown in Figure 5-2. The service area includes an additional 5.5 square miles between the existing North service area and West service area and is roughly bounded by Interstate 540/ 40 to the north, Lake Crabtree to the east, and Church Street to the west. The combined North Cary, West Cary, and Northwest extension is referred to as the future Northwest Cary service area. The future demand scenarios discussed below include demands within this Northwest Cary service area. Recommendations regarding implementation of the NW Connector are discussed in Section 8.

5.2 Demand Scenarios

Four reclaimed water demand scenarios were developed as part of the Town's Long Range Water Resources Plan (LRWRP) project. For each scenario, annual average demands were determined for 2010 through 2060 in 5-year increments through 2040 and 10-year increments through 2060.

The detailed assumptions and methodology used in developing demand projections are described in the LRWRP report, included in Appendix E. In general, demands were developed for three different categories:

1) Existing reclaimed water meters – includes all existing reclaimed water customers.

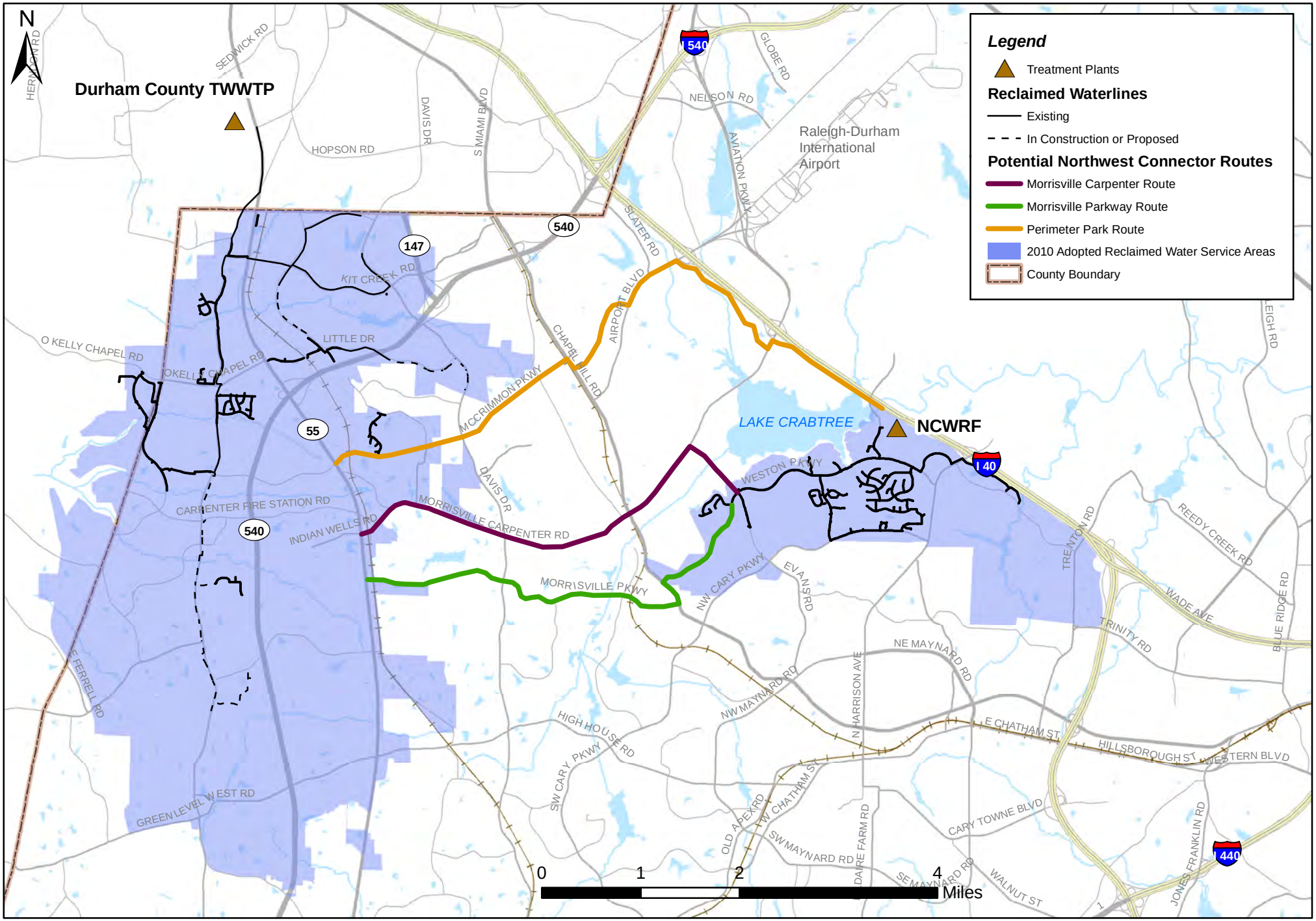
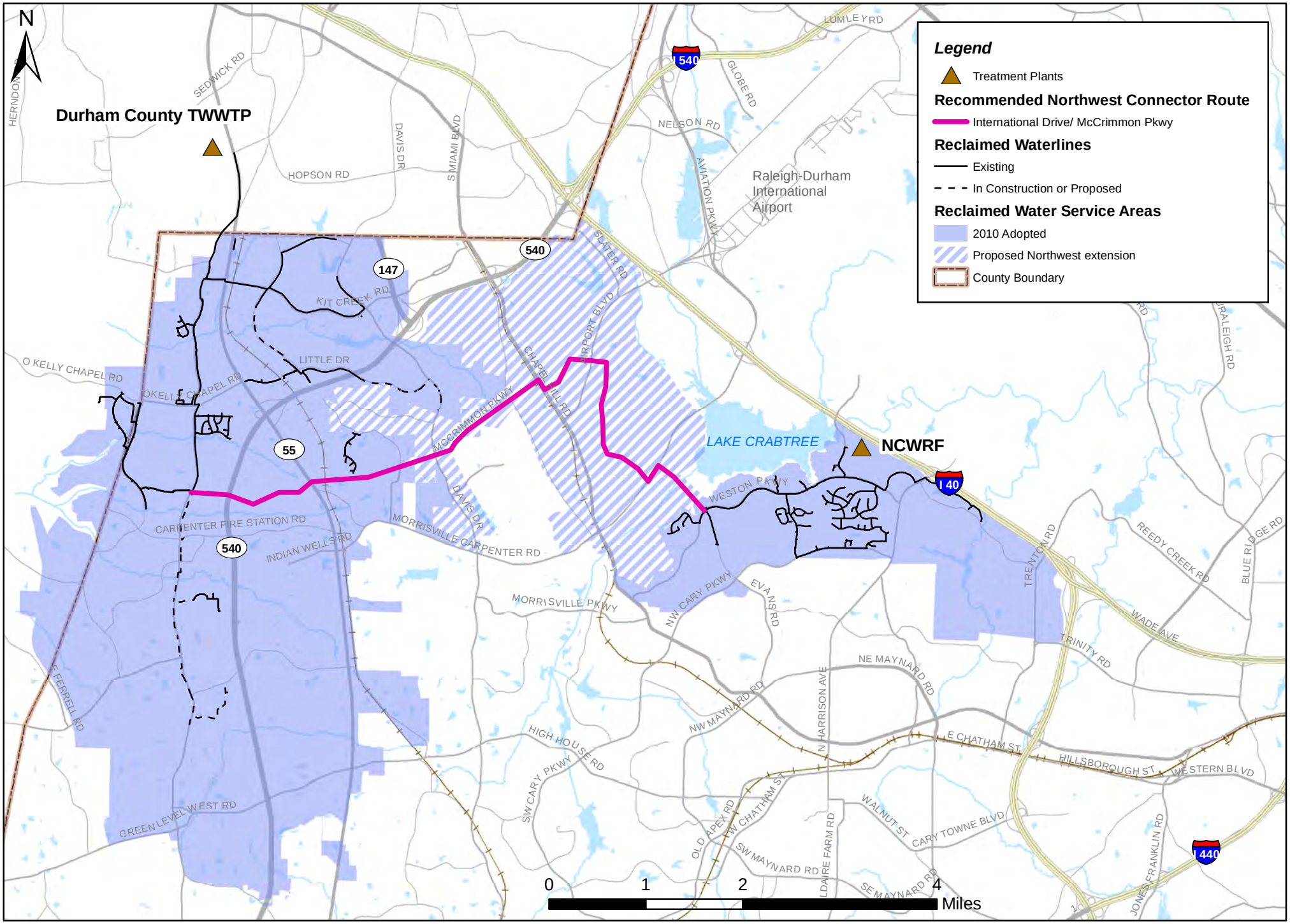


Figure 5-1
Optional Routes for Northwest Connector Reclaimed Water Pipeline



CDM Smith

Figure 5-2
Selected Northwest Connector Route and Extended Service Area

2) Existing potable water meters – includes existing potable water customers with irrigation meters and potable water customers that do not currently have an irrigation system, but may choose to connect to the reclaimed system for irrigation when reclaimed water is available. For Industrial/Commercial/Institutional (ICI) customers, this also includes irrigation meters installed for cooling water use. Retrofits would be required to connect these customers to the reclaimed water system.

3) Future customers – includes undeveloped parcels that are expected to have a future non-potable water demand, consistent with the development projections in the LRWRP. For future residential customers, non-potable demands include irrigation only. For future ICI customers, non-potable demands include irrigation, evaporative cooling water, boiler feed water, and toilet flushing.

A discussion of the four reclaimed water demand scenarios developed in conjunction with the LRWRP follows.

5.2.1 Scenario 1

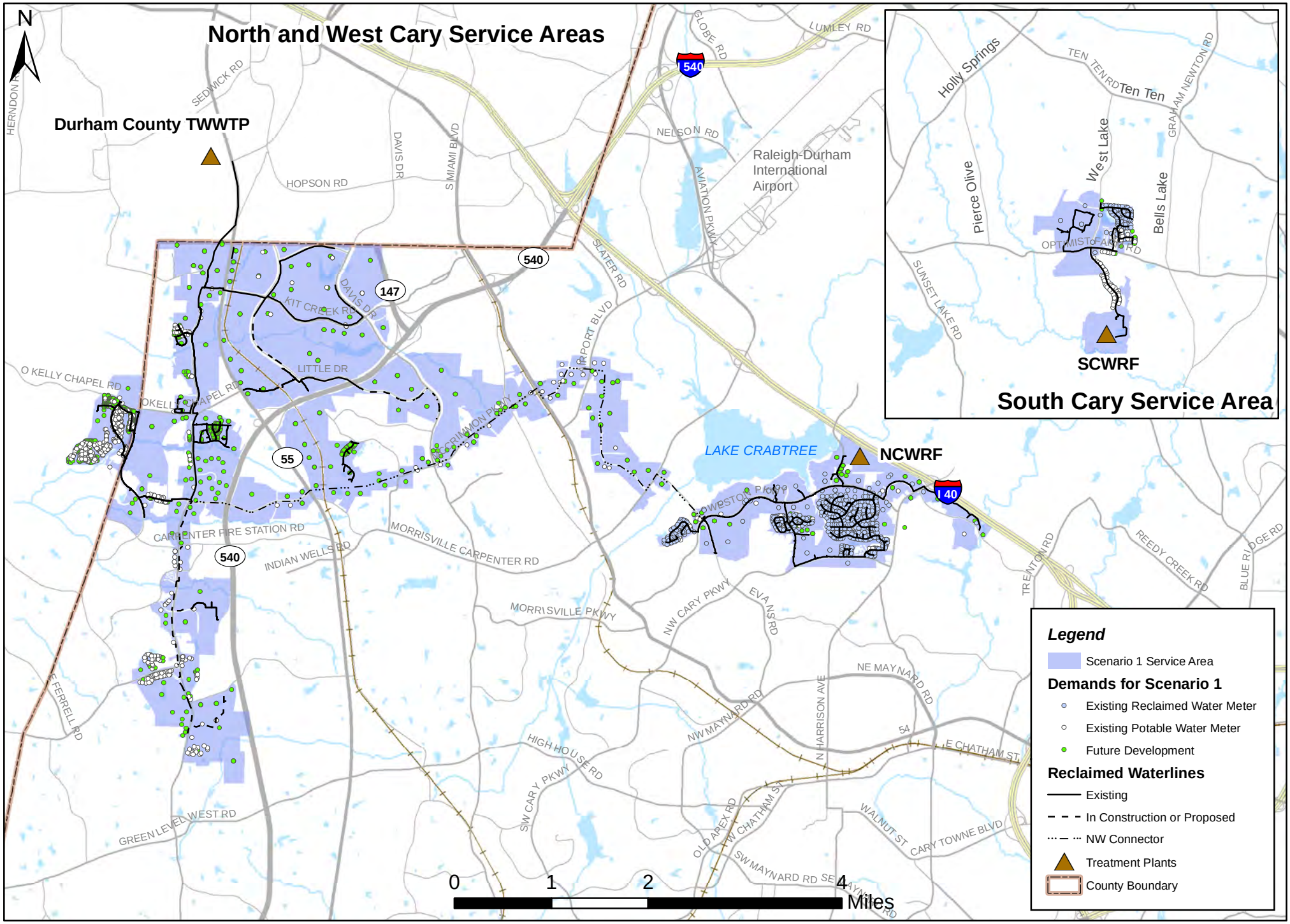
Scenario 1 represents a baseline for the reclaimed water system. This scenario provides reclaimed water for all existing and future irrigation demands and all future ICI cooling/heating and toilet flushing demands for parcels adjacent to existing and already funded reclaimed water lines, as well as the proposed NW Connector (**Figure 5-3**). This includes the JLWRP Phase 1 and 2 reclaimed water pipelines in the West Cary service area. Developments that have already installed dual infrastructure for the reclaimed water system will also be included in Scenario 1. This scenario will not provide reclaimed water to all the parcels within the 2010 adopted service area boundary defined in the Policy Statement 132. The projected annual average reclaimed water customer demands for Scenario 1 are summarized in **Table 5-1**.

Table 5-1. Summary of Scenario 1 Annual Average Reclaimed Water Customer Demands

	Annual Average Customer Demand (gpd)							
Type	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**	**2050**	**2060**
Existing Reclaimed Water Meters	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
Existing Potable Water Meters	0.23	0.28	0.29	0.30	0.31	0.31	0.31	0.31
Future Development	0.29	0.49	0.68	0.85	1.02	1.15	1.24	1.25
Total	**0.78**	**1.03**	**1.23**	**1.41**	**1.59**	**1.72**	**1.81**	**1.82**

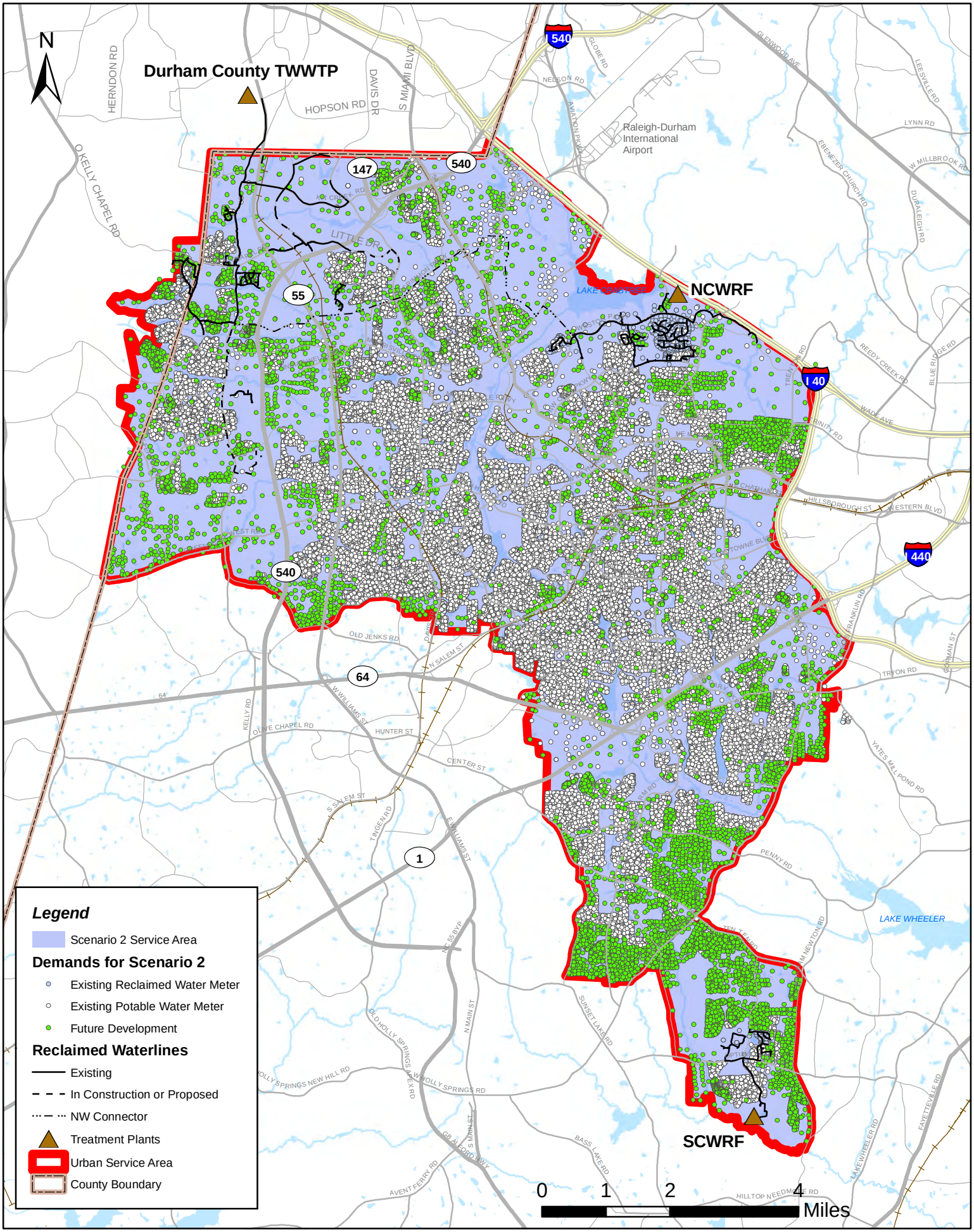
5.2.2 Scenario 2

Scenario 2 represents the maximum reclaimed water use by providing reclaimed water throughout the entire Town. This includes all existing and future irrigation demands and all future ICI cooling/heating and toilet flushing demands within the Town of Cary Urban Service Area identified on **Figure 5-4**. The projected annual average reclaimed water customer demands for Scenario 2 are summarized in **Table 5-2**.



CDM Smith

Figure 5-3
Scenario 1 Reclaimed Water Demand Projections



CDM Smith

Figure 5-4
Scenario 2 Reclaimed Water Demand Projections

Table 5-2. Summary of Scenario 2 Annual Average Reclaimed Water Customer Demands

Type	Annual Average Customer Demand (gpd)							
	2015	2020	2025	2030	2035	2040	2050	2060
Existing Reclaimed Water Meters	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
Existing Potable Water Meters	0.27	0.76	1.44	2.38	2.99	3.04	3.04	3.04
Future Development	0.73	1.46	2.25	2.95	3.63	4.03	4.63	4.67
Total	**1.26**	**2.48**	**3.95**	**5.59**	**6.88**	**7.33**	**7.93**	**7.97**

5.2.3 Scenario 3

Scenario 3 represents the maximum reclaimed water use within the 2010 adopted reclaimed water service area. This scenario provides reclaimed water for all existing and future irrigation demands and all future ICI cooling/heating and toilet flushing demands within the 2010 adopted Policy Statement 132 service areas as well as the proposed NW Connector service area extension described in Section 5.1. The Scenario 3 service area is shown on **Figure 5-5**. The projected annual average reclaimed water customer demands for Scenario 3 are summarized in **Table 5-3**.

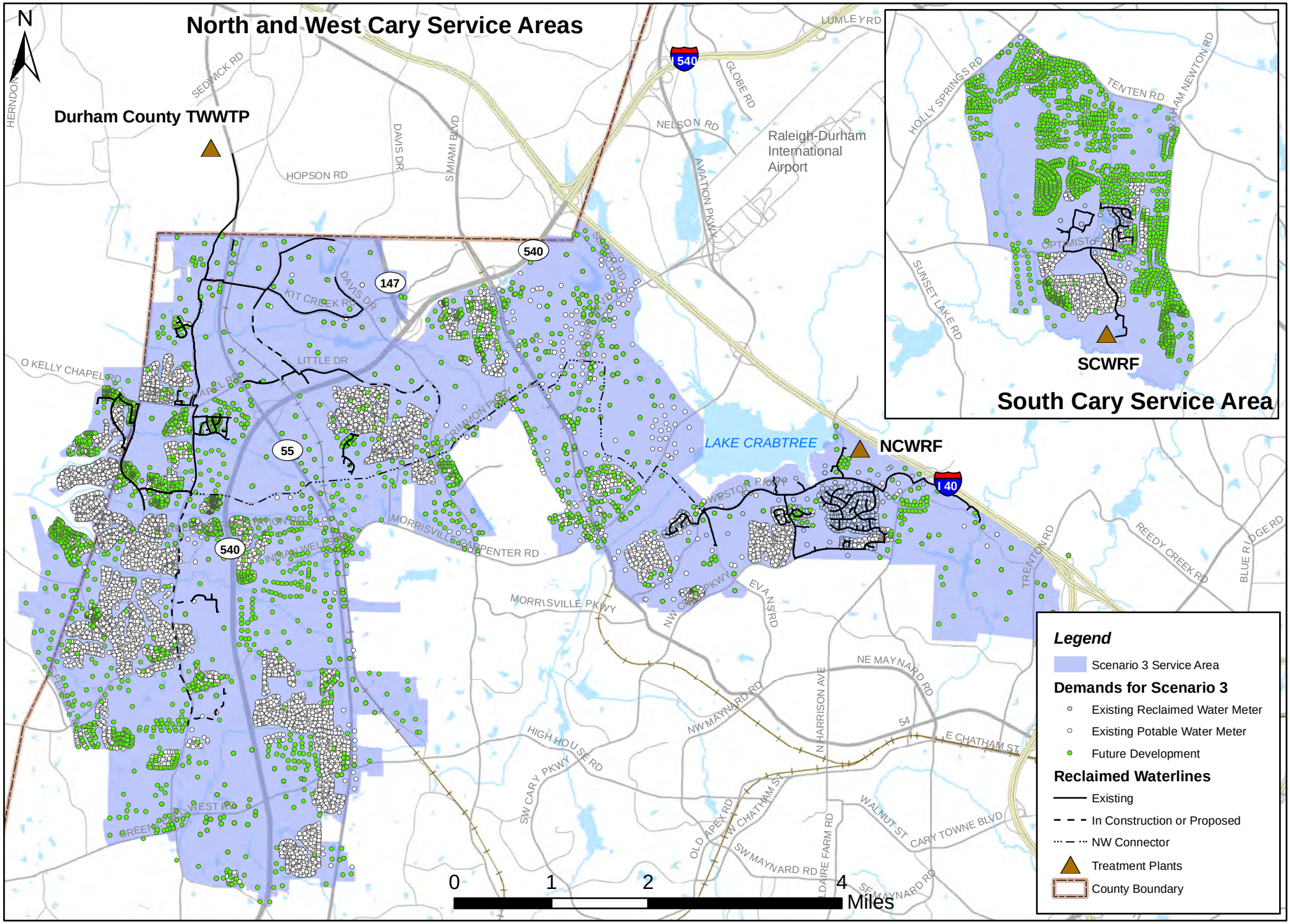
Table 5-3. Summary of Scenario 3 Annual Average Reclaimed Water Customer Demands

Type	Annual Average Customer Demand (gpd)							
	2015	2020	2025	2030	2035	2040	2050	2060
Existing Reclaimed Water Meters	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
Existing Potable Water Meters	0.26	0.52	0.76	1.02	1.15	1.15	1.15	1.16
Future Development	0.50	0.95	1.49	1.98	2.45	2.73	3.11	3.14
Total	**1.02**	**1.73**	**2.51**	**3.26**	**3.86**	**4.14**	**4.52**	**4.56**

5.2.4 Scenario 4

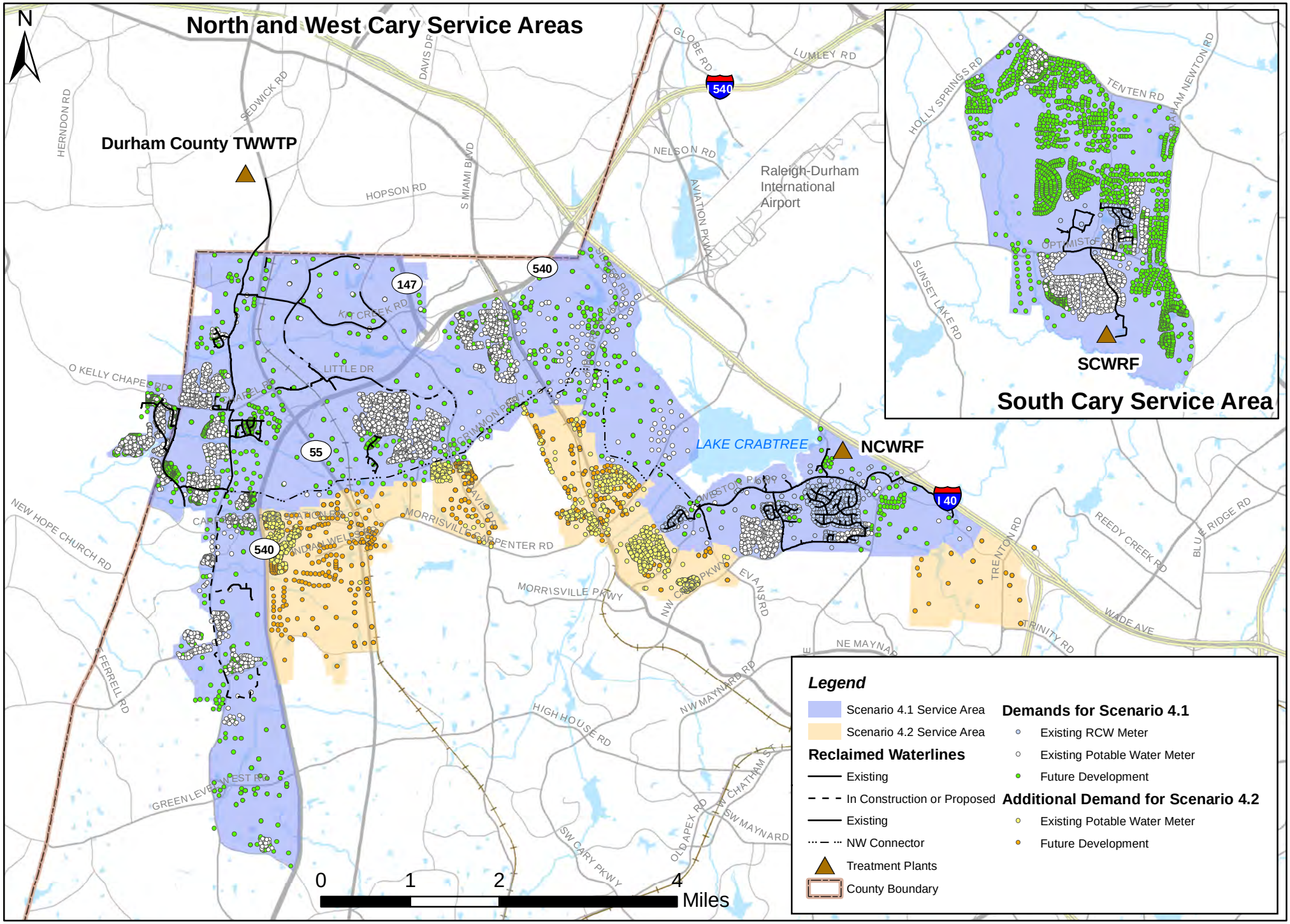
Scenario 4 limits the demands on the reclaimed water system to the maximum available supply from the NCWRF and SCWRF. This scenario will not provide reclaimed water to all the parcels within the 2010 adopted service area boundary defined in the Policy Statement 132. Reclaimed water is provided for as much of the 2010 adopted service area and NW Connector service area extension as is available through 2060. The goal of this scenario is to maximize demand while minimizing additional reclaimed water system infrastructure.

This scenario was developed in two parts. Scenario 4.1 represents the primary portion of the area to be served under Scenario 4. Scenario 4.1 demands are identified in blue, white, and green on **Figure 5-6**. Scenario 4.1 includes demands for existing and future customers in the vicinity of the 16-inch diameter wastewater force main along Green Level Church Road that is available to be converted to a reclaimed water transmission main after the summer of 2014. Additional secondary demands are identified under Scenario 4.2 (in orange and yellow on Figure 5-6). These secondary demands may potentially be added to the reclaimed water system on a first come, first served basis. The projected annual average reclaimed water customer demands for Scenario 4 are summarized in **Table 5-4**. The available supply of reclaimed water is further discussed in **Section 6**.



CDM Smith

Figure 5-5
Scenario 3 Reclaimed Water Demand Projections



CDM Smith

Figure 5-6
Scenario 4 Reclaimed Water Demand Projections

Table 5-4. Summary of Scenario 4.1 & 4.2 Annual Average Reclaimed Water Customer Demands

Type	Annual Average Customer Demand (gpd)							
	2015	2020	2025	2030	2035	2040	2050	2060
Scenario 4.1 Primary								
Existing Reclaimed Water Meters	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
Existing Potable Water Meters	0.23	0.33	0.47	0.56	0.66	0.66	0.66	0.66
Future Development	0.39	0.73	1.09	1.41	1.71	1.91	2.12	2.16
Total	**0.88**	**1.32**	**1.82**	**2.23**	**2.63**	**2.83**	**3.04**	**3.08**
Scenario 4.2 Additional								
Existing Reclaimed Water Meters	-	-	-	-	-	-	-	-
Existing Potable Water Meters	-	0.01	0.03	0.07	0.11	0.11	0.11	0.11
Future Development	0.07	0.15	0.27	0.38	0.50	0.55	0.67	0.67
Total	**0.07**	**0.16**	**0.30**	**0.45**	**0.61**	**0.66**	**0.78**	**0.78**
Scenario 4 Cumulative								
Existing Reclaimed Water Meters	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
Existing Potable Water Meters	0.23	0.34	0.50	0.63	0.77	0.77	0.77	0.77
Future Development	0.46	0.88	1.36	1.79	2.21	2.46	2.79	2.83
Total	**0.95**	**1.48**	**2.12**	**2.68**	**3.24**	**3.49**	**3.82**	**3.86**

5.3 Maximum Day Customer Demand Projections

Annual average customer demands were developed for the following non-potable end uses: irrigation, cooling/heating make-up water, and toilet flushing. As discussed in Section 4.2, a historical reclaimed water maximum day peaking factor of 3.4 was developed based on current customer usage, which primarily represents irrigation use. Therefore, a maximum day to average annual peaking factor of 3.4 was applied to the irrigation portion of the reclaimed water demand projections. A maximum day to average annual peaking factor of 2.5 was applied to the cooling/heating make-up water portion of the reclaimed water demand projections. This peaking factor is consistent with the Town's existing cooling tower customer data. Toilet flushing demand is expected to remain relatively constant throughout the year, so no maximum day peaking factor was applied to this portion of the reclaimed water demand. Maximum day customer demands for each scenario are provided by service area in **Tables 5-5 through 5-9** at the end of this section.

5.4 Non-Revenue Water Demand Projections

In addition to the customer demand, NRW demands must also be considered for evaluation of the total volume of reclaimed water supply and hydraulic evaluation of the distribution system. Major NRW demands include:

- **WRF Non-Potable Water Use** – At the NCWRF, reclaimed water is used for washdown and some process uses. However, in general, the reclaimed water use is not directly proportional to wastewater flow, so future non-potable water use is estimated at a constant 200,000 gpd, which is similar to the current usage. For the SCWRF, reclaimed water is used for additional purposes including for the sludge dryer. Since SCWRF use is more proportional to flow, the on-site

reclaimed water use is estimated at 3 percent of the average annual wastewater flow at the plant.

- **Blowoffs** – The Town uses blowoffs when demand on the system is not sufficient to maintain chlorine residual. With increased future demands, it is assumed blowoffs will not be needed on the maximum day. New reclaimed water pipes will be sized for the build-out (2060) maximum day demand, without blowoff flows. However, in the interim, until demands increase to meet design conditions, some blowoff may be necessary to maintain water quality in new and existing pipelines.
  The maximum day demands in Tables 5-5 through 5-9 do not include blowoff flows, with the exception of the South Cary service area. Until South Cary maximum day customer demands are projected to exceed 0.5 mgd, blowoff flows similar to the current estimates (118,000 gpd) are included for the purpose of estimating maximum day reclaimed water pumping from the SCWRF.
- **Bulk Water** – Currently makes up less than 1 percent of the total reclaimed water and is estimated to remain a similarly small percentage of overall future reclaimed water use.
- **Miscellaneous** – Miscellaneous uses are estimated at 5 percent of the total pumped reclaimed water. This accounts for system losses through leaks or uncalibrated meters, un-metered uses of reclaimed water, and allowance for a factor of safety in future system design. For hydraulic modeling purposes, miscellaneous water will be assigned proportionally to all nodes in the system.

Figure 5-7 shows the buildout (2060) projected maximum day reclaimed water demands by service area, including NRW estimates. For Scenario 2, the 'other' demand shown in Figure 5-7 is demand outside the Northwest and South reclaimed water service areas, but within the Town's Urban Service Area.

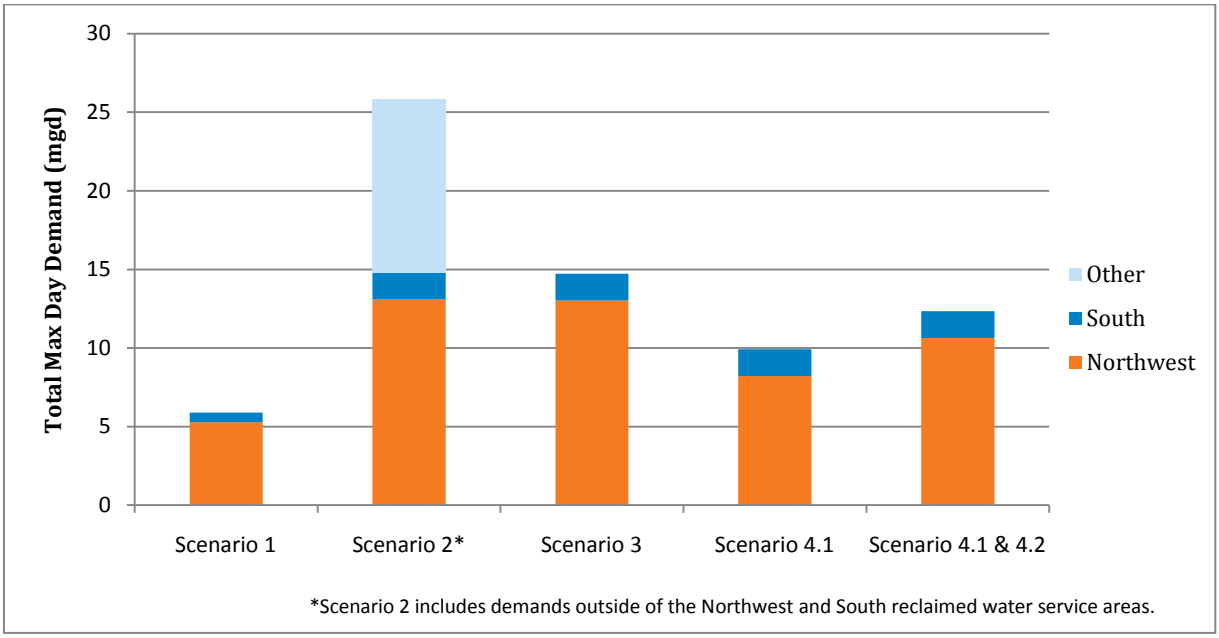


Figure 5-7
Buildout (2060) Maximum Day Reclaimed Water Demand by Service Area

Table 5-5. Scenario 1 - Maximum Day Customer Demand Projections by Service Area

Service Area	Demand Type	Year 2015	2020	2025	2030	2035	2040	2050	2060
Northwest	**Average Annual Customer Demand (mgd)**								
	Irrigation	0.56	0.72	0.82	0.90	0.99	1.04	1.10	1.11
	Cooling/Heating	0.10	0.13	0.16	0.20	0.23	0.26	0.27	0.27
	Toilet Flushing	0.06	0.12	0.18	0.24	0.30	0.35	0.37	0.38
	Total	0.72	0.97	1.16	1.34	1.52	1.65	1.74	1.75
	Maximum Day Customer Demand (mgd)								
	Irrigation	1.90	2.45	2.79	3.06	3.37	3.54	3.74	3.76
	Cooling/Heating	0.25	0.33	0.40	0.50	0.58	0.65	0.68	0.67
	Toilet Flushing	0.06	0.12	0.18	0.24	0.30	0.35	0.37	0.38
	Total	2.21	2.90	3.37	3.80	4.25	4.54	4.79	4.81
	Non Revenue Water (mgd)								
	WRF Use	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	Other	0.13	0.16	0.18	0.20	0.23	0.25	0.27	0.27
	Total	0.33	0.36	0.38	0.40	0.43	0.45	0.47	0.47
	Total Maximum Day Demand (mgd)	**2.54**	**3.26**	**3.75**	**4.20**	**4.68**	**4.99**	**5.26**	**5.28**
South	**Average Annual Customer Demand (mgd)**								
	Irrigation	0.06	0.06	0.07	0.07	0.07	0.07	0.07	0.07
	Cooling/Heating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Toilet Flushing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total	0.06	0.06	0.07	0.07	0.07	0.07	0.07	0.07
	Maximum Day Customer Demand (mgd)								
	Irrigation	0.20	0.22	0.22	0.22	0.22	0.22	0.22	0.22
	Cooling/Heating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Toilet Flushing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total	0.20	0.22	0.22	0.22	0.22	0.22	0.22	0.22
	Non Revenue Water (mgd)								
	WRF Use	0.16	0.17	0.19	0.21	0.22	0.23	0.25	0.25
	Other	0.14	0.14	0.15	0.15	0.15	0.15	0.15	0.15
	Total	0.30	0.31	0.34	0.36	0.37	0.38	0.40	0.40
	Total Maximum Day Demand (mgd)	**0.50**	**0.53**	**0.56**	**0.58**	**0.59**	**0.60**	**0.62**	**0.62**
Total	**Average Annual Customer Demand (mgd)**								
	Irrigation	0.62	0.78	0.89	0.97	1.06	1.11	1.17	1.17
	Cooling/Heating	0.10	0.13	0.16	0.20	0.23	0.26	0.27	0.27
	Toilet Flushing	0.06	0.12	0.18	0.24	0.30	0.35	0.37	0.38
	Total	0.78	1.03	1.23	1.41	1.59	1.72	1.81	1.82
	Maximum Day Customer Demand (mgd)								
	Irrigation	2.10	2.67	3.01	3.28	3.59	3.76	3.96	3.98
	Cooling/Heating	0.25	0.33	0.40	0.50	0.58	0.65	0.68	0.67
	Toilet Flushing	0.06	0.12	0.18	0.24	0.30	0.35	0.37	0.38
	Total	2.41	3.12	3.59	4.02	4.47	4.76	5.01	5.03
	Non Revenue Water (mgd)								
	WRF Use	0.36	0.37	0.39	0.41	0.42	0.43	0.45	0.45
	Other	0.27	0.30	0.33	0.35	0.38	0.40	0.42	0.42
	Total	0.63	0.67	0.72	0.76	0.80	0.83	0.87	0.87
	Total Maximum Day Demand (mgd)	**3.04**	**3.79**	**4.31**	**4.78**	**5.27**	**5.59**	**5.88**	**5.90**

*Note: Numbers may not sum due to rounding

Table 5-6. Scenario 2 - Maximum Day Customer Demand Projections by Service Area

Service Area	Demand Type	Year 2015	2020	2025	2030	2035	2040	2050	2060
Northwest	**Average Annual Customer Demand (mgd)**								
	Irrigation	0.74	1.28	1.82	2.35	2.76	2.90	3.15	3.17
	Cooling/Heating	0.10	0.14	0.18	0.23	0.27	0.30	0.32	0.32
	Toilet Flushing	0.11	0.21	0.33	0.44	0.54	0.62	0.68	0.69
	Total	0.95	1.63	2.33	3.02	3.57	3.82	4.14	4.18
	Maximum Day Customer Demand (mgd)								
	Irrigation	2.51	4.35	6.19	8.00	9.37	9.87	10.71	10.77
	Cooling/Heating	0.25	0.35	0.46	0.57	0.67	0.76	0.79	0.80
	Toilet Flushing	0.11	0.21	0.33	0.44	0.54	0.62	0.68	0.69
	Total	2.87	4.91	6.98	9.01	10.58	11.25	12.18	12.26
	Non Revenue Water (mgd)								
	WRF Use	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	Other	0.16	0.27	0.37	0.48	0.56	0.60	0.66	0.66
	Total	0.36	0.47	0.57	0.68	0.76	0.80	0.86	0.86
	Total Maximum Day Demand (mgd)	**3.23**	**5.38**	**7.55**	**9.69**	**11.34**	**12.05**	**13.04**	**13.12**
South	**Average Annual Customer Demand (mgd)**								
	Irrigation	0.08	0.11	0.18	0.24	0.31	0.34	0.40	0.40
	Cooling/Heating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Toilet Flushing	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
	Total	0.08	0.11	0.19	0.25	0.32	0.35	0.41	0.41
	Maximum Day Customer Demand (mgd)								
	Irrigation	0.26	0.37	0.63	0.83	1.05	1.15	1.35	1.35
	Cooling/Heating	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01
	Toilet Flushing	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
	Total	0.26	0.37	0.63	0.84	1.07	1.17	1.37	1.37
	Non Revenue Water (mgd)								
	WRF Use	0.16	0.17	0.19	0.21	0.22	0.23	0.25	0.25
	Other	0.15	0.15	0.04	0.06	0.07	0.07	0.09	0.09
	Total	0.31	0.32	0.23	0.27	0.29	0.30	0.34	0.34
	Total Maximum Day Demand (mgd)	**0.57**	**0.69**	**0.86**	**1.11**	**1.36**	**1.47**	**1.71**	**1.71**
Other Areas Within USB*	**Average Annual Customer Demand (mgd)**								
	Irrigation	0.13	0.55	1.15	1.99	2.61	2.75	2.91	2.91
	Cooling/Heating	0.01	0.02	0.03	0.03	0.04	0.04	0.05	0.05
	Toilet Flushing	0.09	0.18	0.25	0.30	0.35	0.37	0.42	0.42
	Total	0.24	0.74	1.42	2.32	3.00	3.16	3.38	3.39
	Maximum Day Customer Demand (mgd)								
	Irrigation	0.45	1.86	3.92	6.76	8.87	9.34	9.89	9.91
	Cooling/Heating	0.02	0.04	0.07	0.08	0.10	0.11	0.13	0.13
	Toilet Flushing	0.09	0.18	0.25	0.30	0.35	0.37	0.42	0.42
	Total	0.56	2.08	4.24	7.14	9.32	9.82	10.44	10.46
	Non Revenue Water (mgd)								
	WRF Use	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Other	0.03	0.11	0.22	0.38	0.49	0.52	0.55	0.55
	Total	0.03	0.11	0.22	0.38	0.49	0.52	0.55	0.55
	Total Maximum Day Demand (mgd)	**0.59**	**2.19**	**4.46**	**7.52**	**9.81**	**10.34**	**10.99**	**11.01**
Total	**Average Annual Customer Demand (mgd)**								
	Irrigation	0.95	1.94	3.16	4.59	5.67	5.99	6.45	6.48
	Cooling/Heating	0.11	0.16	0.21	0.26	0.31	0.35	0.37	0.38
	Toilet Flushing	0.20	0.38	0.58	0.74	0.90	0.99	1.11	1.12
	Total	1.26	2.48	3.95	5.59	6.88	7.33	7.93	7.97
	Maximum Day Customer Demand (mgd)								
	Irrigation	3.22	6.58	10.74	15.59	19.29	20.36	21.95	22.03
	Cooling/Heating	0.27	0.39	0.53	0.66	0.78	0.88	0.93	0.94
	Toilet Flushing	0.20	0.39	0.58	0.74	0.90	1.00	1.11	1.12
	Total	3.69	7.36	11.85	16.99	20.97	22.24	23.99	24.09
	Non Revenue Water (mgd)								
	WRF Use	0.36	0.37	0.39	0.41	0.42	0.43	0.45	0.45
	Other	0.34	0.53	0.63	0.92	1.12	1.19	1.30	1.30
	Total	0.70	0.90	1.02	1.33	1.54	1.62	1.75	1.75
	Total Maximum Day Demand (mgd)	**4.39**	**8.26**	**12.87**	**18.32**	**22.51**	**23.86**	**25.74**	**25.84**

*Includes areas outside of the defined Reclaimed Water Service Area boundaries, but within the Town's Urban Service Boundary

**Note: Numbers may not sum due to rounding

Table 5-7. Scenario 3 - Maximum Day Customer Demand Projections by Service Area

Service Area	Demand Type	Year 2015	2020	2025	2030	2035	2040	2050	2060
Northwest	**Average Annual Customer Demand (mgd)**								
	Irrigation	0.73	1.27	1.81	2.34	2.73	2.88	3.13	3.14
	Cooling/Heating	0.10	0.14	0.18	0.23	0.27	0.30	0.32	0.32
	Toilet Flushing	0.11	0.21	0.33	0.44	0.54	0.61	0.68	0.69
	Total	0.94	1.62	2.32	3.01	3.54	3.79	4.12	4.15
	Maximum Day Customer Demand (mgd)								
	Irrigation	2.48	4.32	6.15	7.96	9.28	9.79	10.63	10.68
	Cooling/Heating	0.25	0.35	0.45	0.58	0.68	0.75	0.79	0.80
	Toilet Flushing	0.11	0.21	0.33	0.44	0.54	0.61	0.68	0.69
	Total	2.84	4.88	6.93	8.98	10.50	11.15	12.10	12.17
	Non Revenue Water (mgd)								
	WRF Use	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	Other	0.16	0.27	0.38	0.48	0.56	0.60	0.65	0.65
	Total	0.36	0.47	0.58	0.68	0.76	0.80	0.85	0.85
	Total Maximum Day Demand (mgd)	**3.20**	**5.35**	**7.51**	**9.66**	**11.26**	**11.95**	**12.95**	**13.02**
South	**Average Annual Customer Demand (mgd)**								
	Irrigation	0.08	0.11	0.18	0.24	0.31	0.34	0.40	0.40
	Cooling/Heating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Toilet Flushing	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
	Total	0.08	0.11	0.19	0.25	0.32	0.35	0.41	0.41
	Maximum Day Customer Demand (mgd)								
	Irrigation	0.26	0.37	0.63	0.83	1.05	1.15	1.35	1.35
	Cooling/Heating	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01
	Toilet Flushing	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
	Total	0.26	0.37	0.63	0.84	1.07	1.17	1.37	1.37
	Non Revenue Water (mgd)								
	WRF Use	0.16	0.17	0.19	0.21	0.22	0.23	0.25	0.25
	Other	0.15	0.15	0.04	0.06	0.07	0.07	0.09	0.09
	Total	0.31	0.32	0.23	0.27	0.29	0.30	0.34	0.34
	Total Maximum Day Demand (mgd)	**0.57**	**0.69**	**0.86**	**1.11**	**1.36**	**1.47**	**1.71**	**1.71**
Total	**Average Annual Customer Demand (mgd)**								
	Irrigation	0.81	1.38	1.99	2.58	3.04	3.22	3.52	3.54
	Cooling/Heating	0.10	0.14	0.18	0.23	0.27	0.30	0.32	0.32
	Toilet Flushing	0.11	0.21	0.33	0.44	0.55	0.62	0.68	0.70
	Total	1.02	1.73	2.51	3.26	3.86	4.14	4.52	4.56
	Maximum Day Customer Demand (mgd)								
	Irrigation	2.74	4.69	6.78	8.79	10.33	10.94	11.98	12.03
	Cooling/Heating	0.25	0.35	0.45	0.59	0.69	0.76	0.80	0.81
	Toilet Flushing	0.11	0.21	0.33	0.44	0.55	0.62	0.69	0.70
	Total	3.10	5.25	7.56	9.82	11.57	12.32	13.47	13.54
	Non Revenue Water (mgd)								
	WRF Use	0.36	0.37	0.39	0.41	0.42	0.43	0.45	0.45
	Other	0.31	0.42	0.42	0.54	0.63	0.67	0.74	0.74
	Total	0.67	0.79	0.81	0.95	1.05	1.10	1.19	1.19
	Total Maximum Day Demand (mgd)	**3.77**	**6.04**	**8.37**	**10.77**	**12.62**	**13.42**	**14.66**	**14.73**

*Note: Numbers may not sum due to rounding

Table 5-8. Scenario 4.1 - Maximum Day Customer Demand Projections by Service Area

Service Area	Demand Type	Year 2015	2020	2025	2030	2035	2040	2050	2060
Northwest	**Average Annual Customer Demand (mgd)**								
	Irrigation	0.62	0.91	1.21	1.44	1.66	1.74	1.85	1.87
	Cooling/Heating	0.10	0.13	0.17	0.21	0.24	0.28	0.28	0.29
	Toilet Flushing	0.08	0.16	0.25	0.33	0.41	0.47	0.50	0.51
	Total	0.80	1.21	1.63	1.98	2.31	2.48	2.63	2.67
	Maximum Day Customer Demand (mgd)								
	Irrigation	2.11	3.09	4.11	4.90	5.64	5.92	6.29	6.36
	Cooling/Heating	0.25	0.34	0.43	0.53	0.60	0.69	0.70	0.73
	Toilet Flushing	0.08	0.16	0.25	0.33	0.41	0.47	0.50	0.51
	Total	2.44	3.59	4.79	5.76	6.65	7.08	7.49	7.60
	Non Revenue Water (mgd)								
	WRF Use	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	Other	0.14	0.20	0.26	0.31	0.36	0.38	0.41	0.41
	Total	0.34	0.40	0.46	0.51	0.56	0.58	0.61	0.61
	Total Maximum Day Demand (mgd)	**2.78**	**3.99**	**5.25**	**6.27**	**7.21**	**7.66**	**8.10**	**8.21**
South	**Average Annual Customer Demand (mgd)**								
	Irrigation	0.08	0.11	0.18	0.24	0.31	0.34	0.40	0.40
	Cooling/Heating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Toilet Flushing	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
	Total	0.08	0.11	0.19	0.25	0.32	0.35	0.41	0.41
	Maximum Day Customer Demand (mgd)								
	Irrigation	0.26	0.37	0.63	0.83	1.05	1.15	1.35	1.35
	Cooling/Heating	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01
	Toilet Flushing	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
	Total	0.26	0.37	0.63	0.84	1.07	1.17	1.37	1.37
	Non Revenue Water (mgd)								
	WRF Use	0.16	0.17	0.19	0.21	0.22	0.23	0.25	0.25
	Other	0.15	0.15	0.04	0.06	0.07	0.07	0.09	0.09
	Total	0.31	0.32	0.23	0.27	0.29	0.30	0.34	0.34
	Total Maximum Day Demand (mgd)	**0.57**	**0.69**	**0.86**	**1.11**	**1.36**	**1.47**	**1.71**	**1.71**
Total	**Average Annual Customer Demand (mgd)**								
	Irrigation	0.70	1.02	1.39	1.68	1.97	2.08	2.25	2.27
	Cooling/Heating	0.10	0.13	0.17	0.21	0.24	0.28	0.28	0.29
	Toilet Flushing	0.08	0.17	0.25	0.33	0.42	0.47	0.51	0.52
	Total	0.88	1.32	1.82	2.23	2.63	2.83	3.04	3.08
	Maximum Day Customer Demand (mgd)								
	Irrigation	2.37	3.46	4.74	5.73	6.69	7.07	7.64	7.71
	Cooling/Heating	0.25	0.34	0.43	0.54	0.61	0.70	0.71	0.74
	Toilet Flushing	0.08	0.16	0.25	0.33	0.42	0.48	0.51	0.52
	Total	2.70	3.96	5.42	6.60	7.72	8.25	8.86	8.97
	Non Revenue Water (mgd)								
	WRF Use	0.36	0.37	0.39	0.41	0.42	0.43	0.45	0.45
	Other	0.29	0.35	0.30	0.37	0.43	0.45	0.50	0.50
	Total	0.65	0.72	0.69	0.78	0.85	0.88	0.95	0.95
	Total Maximum Day Demand (mgd)	**3.35**	**4.68**	**6.11**	**7.38**	**8.57**	**9.13**	**9.81**	**9.92**

*Note: Numbers may not sum due to rounding

Table 5-9. Scenario 4.2 Additional Areas - Maximum Day Customer Demand Projections by Service Area

Service Area	Demand Type	Year 2015	2020	2025	2030	2035	2040	2050	2060
Northwest	**Average Annual Customer Demand (mgd)**								
	Irrigation	0.04	0.11	0.22	0.35	0.49	0.53	0.62	0.62
	Cooling/Heating	0.00	0.01	0.01	0.02	0.02	0.02	0.03	0.03
	Toilet Flushing	0.02	0.04	0.06	0.08	0.10	0.11	0.13	0.13
	Total	0.07	0.16	0.30	0.45	0.61	0.66	0.78	0.78
	Maximum Day Customer Demand (mgd)								
	Irrigation	0.15	0.38	0.76	1.19	1.66	1.80	2.10	2.11
	Cooling/Heating	0.01	0.02	0.03	0.04	0.06	0.06	0.07	0.07
	Toilet Flushing	0.02	0.04	0.06	0.08	0.10	0.11	0.13	0.13
	Total	0.18	0.44	0.85	1.31	1.82	1.97	2.30	2.31
	Non Revenue Water (mgd)								
	Other	0.01	0.02	0.04	0.07	0.10	0.10	0.12	0.12
	Total Maximum Day Demand (mgd)	**0.19**	**0.46**	**0.89**	**1.38**	**1.92**	**2.07**	**2.42**	**2.43**
Total	**Average Annual Customer Demand (mgd)**								
	Irrigation	0.04	0.11	0.22	0.35	0.49	0.53	0.62	0.62
	Cooling/Heating	0.00	0.01	0.01	0.02	0.02	0.02	0.03	0.03
	Toilet Flushing	0.02	0.04	0.06	0.08	0.10	0.11	0.13	0.13
	Total	0.07	0.16	0.30	0.45	0.61	0.66	0.78	0.78
	Maximum Day Customer Demand (mgd)								
	Irrigation	0.15	0.38	0.76	1.19	1.66	1.80	2.10	2.11
	Cooling/Heating	0.01	0.02	0.03	0.04	0.06	0.06	0.07	0.07
	Toilet Flushing	0.02	0.04	0.06	0.08	0.10	0.11	0.13	0.13
	Total	0.18	0.44	0.85	1.31	1.82	1.97	2.30	2.31
	Non Revenue Water (mgd)								
	Other	0.01	0.02	0.04	0.07	0.10	0.10	0.12	0.12
	Total Maximum Day Demand (mgd)	**0.19**	**0.46**	**0.89**	**1.38**	**1.92**	**2.07**	**2.42**	**2.43**

*Note: Numbers may not sum due to rounding