
Proposed Sewer Projects

A Ranking Methodology

Planning Research Section
Regulatory & Economic Resources Department
Miami-Dade County



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Background

On July 2, 2013 the Board of County Commissioners approved R-597-13. The resolution mandated that a plan be developed to extend sewer service to commercial and industrial areas lacking sewers.

A study was commissioned by Miami-Dade Water and Sewer Department and finalized by its consultant, Black and Veatch, on January 2014. The emphasis of the study was to identify commercial and Industrial areas in or near transportation corridors lacking sewers. The intent was to maximize economic development and job creation.

As a result, the study identified 29 projects (see Map 1 in Appendix A). The projects were dispersed throughout all Commission Districts with the exception of Commission Districts 5, 11, and 13. These districts did not have any projects as they are currently served by sewers.

The assumption is that by providing sewers to these areas this will eliminate a constraint to the expansion of existing business and to the potential creation of new businesses in the area. While not a guarantee that economic development will occur immediately, it will not be an impediment to it.

In addition to improving the chances for economic development and job creation, the protection of the County's water supply will also be improved and enhanced by eliminating commercial/industrial septic tanks from these areas. (See Map 1)

Ranking of Projects

The Research Section of RER Planning Division was tasked with developing a framework that would produce a methodology ranking the projects identified in the study by Black and Veatch. To that effect a methodology was developed that enables a ranking process (See Appendix B for a detailed explanation). This methodology evaluates all the proposed projects in a consistent, objective and comprehensive manner that can be replicated. It ranks projects based on a set of priorities grouped into the following categories: 1. Planning Considerations 2. Environmental Considerations 3. Special Economic areas 4. Land Use Considerations 5. Current Business Environment 6. Existing Socio-Economic Condition. Each of these categories include a number of variables (See Appendix B) that were weighed and a rank by project was derived. A final composite ranking for the "Ranking Priorities" was then computed.

The final step involved the selection of projects based on rank order up to the funding constraint.

Cost and Funding

The current ranking effort is undertaken with two goals in mind. The first is to help choose projects to be undertaken in the event that the available funds are insufficient to complete all projects. The second is to prioritize projects in terms of scheduling and implementation.

Whether the ranking will be needed for the first goal or not will become clearer as the planning efforts move forward for two reasons: 1) The current estimated costs provided by the consultant rely on a “Class 5 Opinion of Probable Cost” which includes a 40% contingency and a +/- 40% accuracy typical of initial planning phases and 2) The estimated costs were computed based on the installation of traditional gravity line sewers. However, there is a possible alternative approach that relies on the installation of “Low Pressure Lines” that tentatively could reduce the projects costs by half.

Regardless of the installation option chosen and the final actual cost, all of the projects’ costs are divided between “Local” and “Regional” costs, as laid out in the consultant’s report¹.

The “funding constraint” assumed in this report stems from the availability of \$126 million in General Obligation Bonds (GOB) available to cover “Local” costs that in the consultant’s report totaled \$233 million.

If traditional gravity line sewers were selected, only the top ten projects could be built before exhausting \$126 million. On the other hand, if the “Low Pressure” system is selected, the total cost would be lowered, allowing for all projects to be built. The latter does not eliminate the need for a ranking since it provides a prioritization of scheduling construction.

Conclusion

The result of applying the Priorities Ranking methodology to all the proposed projects is shown in the Ranking Table (Table 1).

Given the original funding constraints, based on gravity sewers, only the top 10 projects could be undertaken. This in no way asserts that projects below this mark are not worth pursuing, but that under the current assumptions and the given constraint in funding, the selected projects score higher. If a decision is made to pursue “Low Pressure lines” sewer system, the \$126 million in the GOB would likely be sufficient for the construction of all the proposed sewer projects.

¹ Black & Veatch

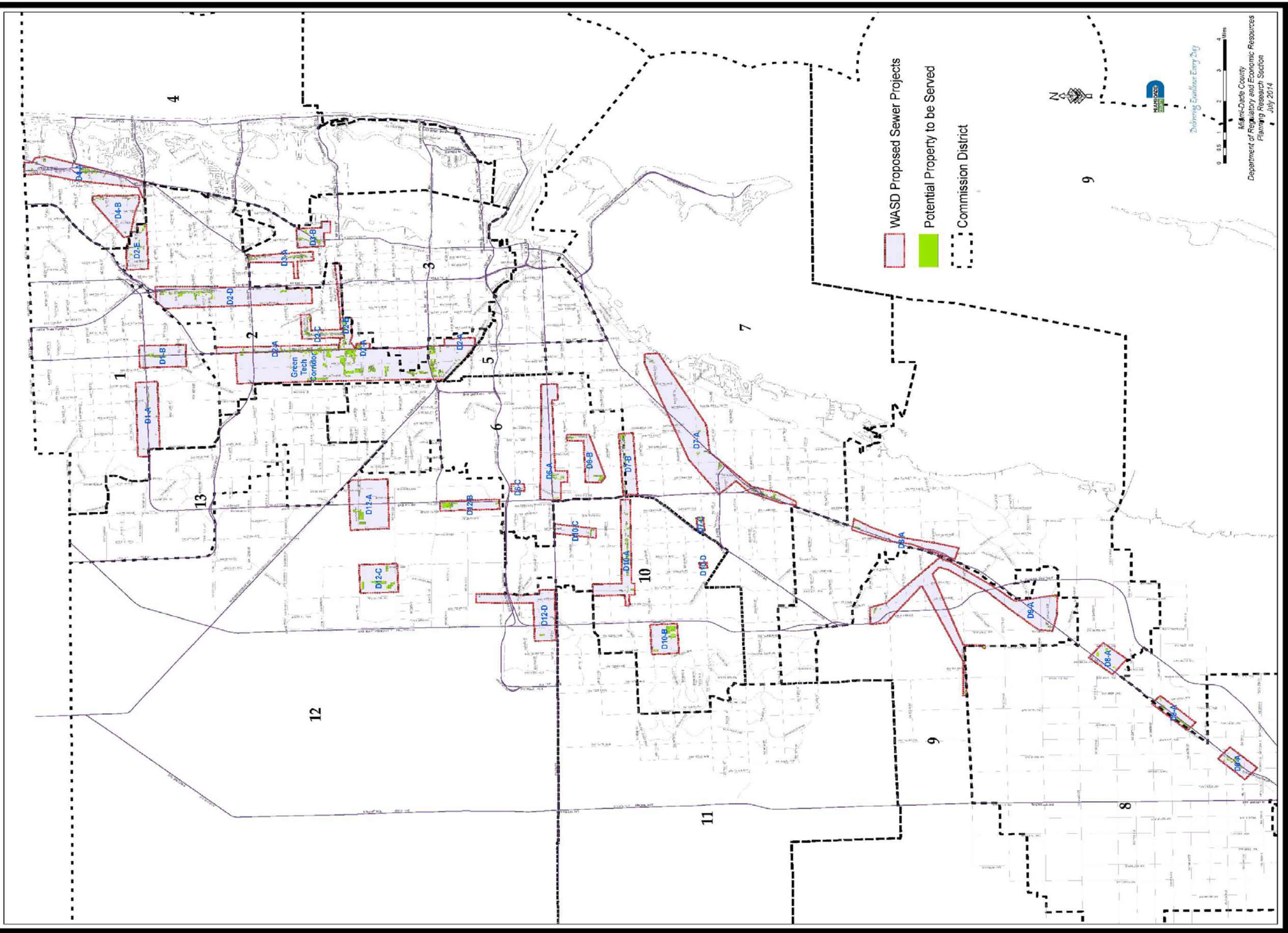
Table 1
Rank of Proposed Projects

Project Code	Project Name	Rank
GreenTech	Green Tech Corridor	1
D2-D	NW 7 th Avenue	2
D2-A	NW 27 th Avenue	3
D2-C	NW 22 nd Avenue	4
D2-B	NW 79 th Street	5
D7-A	South Dixie Highway	6
D9-A	South Dixie Highway	7
D8-A	South Dixie Highway	8
D3-A	NE 2 nd Avenue	9
D10-A	SW 40 th Street	10
D6-A	SW 8 th Street	11
D12-A	NW 74 th Street	12
D4-A	Biscayne Boulevard	13
D3-B	Biscayne Boulevard	14
D6-B	Red Road and SW 24 th Avenue	15
D2-E	NE 2 nd Avenue and NE 6 th Avenue	16
D1-B	NW 27 th Avenue	17
D1-A	NW 167 th Street	18
D7-B	SW 40 th Street	19
D4-B	NE 19 th Avenue	20
D12-B	NW 77 th Court	21
D12-C	NE 97 th Avenue	22
D10-B	SW 56 th Street	23
D6-C	Smaller Properties	24
D10-D	Smaller Properties	25
D10-C	SW 24 th Street	26
D7-C	SW 46 th Street	27
D12-D	Smaller Properties	28

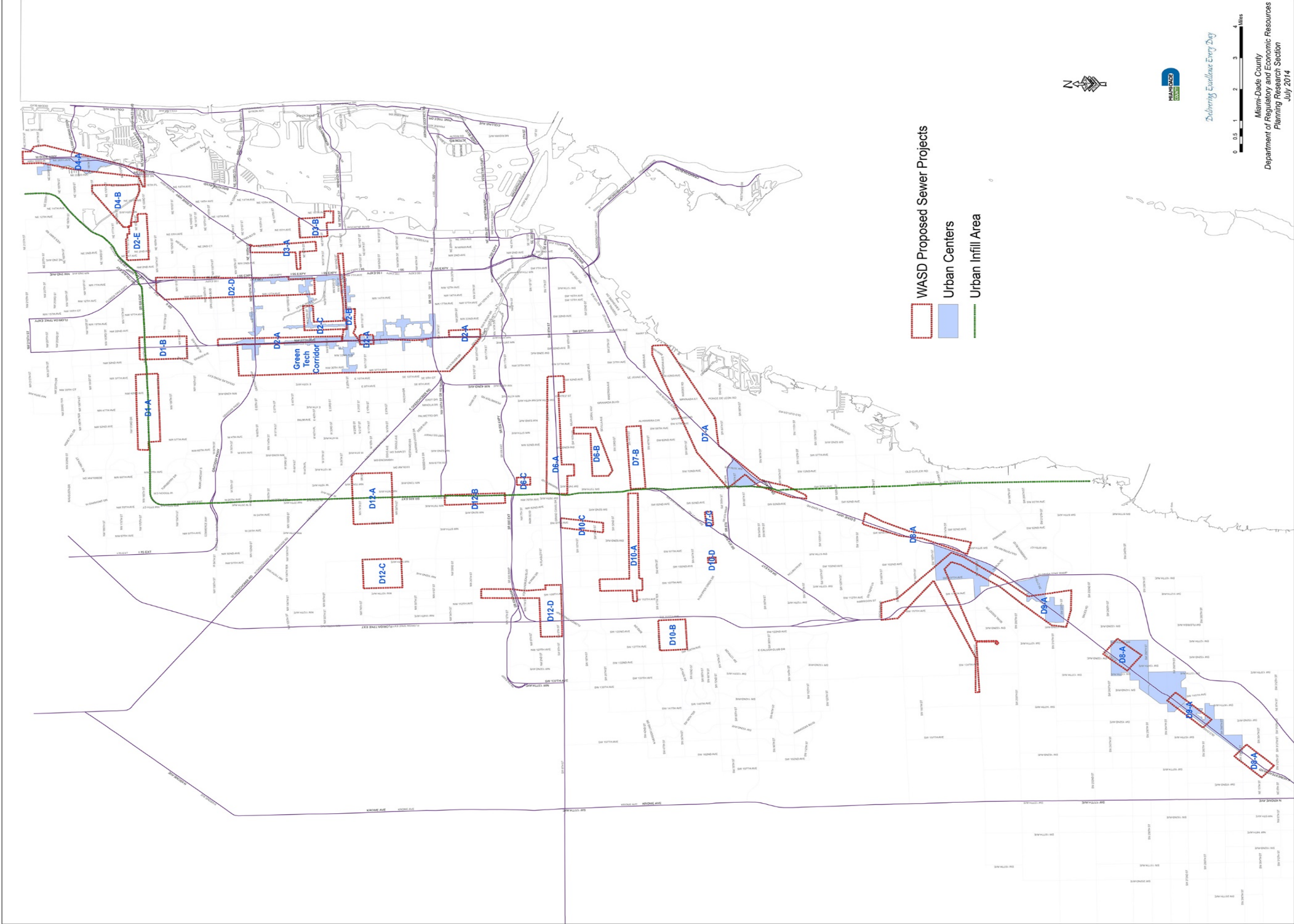
Appendix A

Maps

Proposed Sewer Projects by Commission District

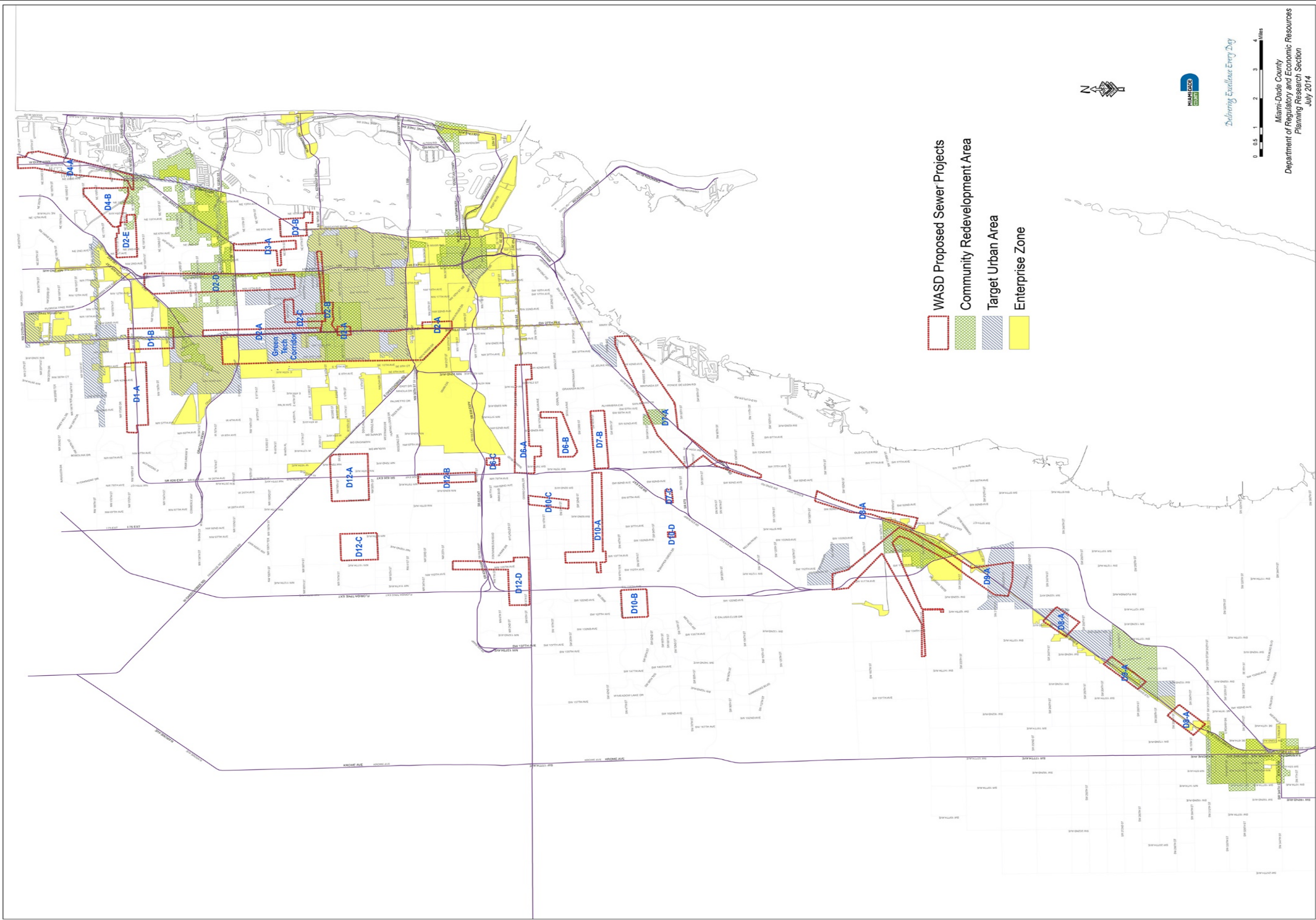


Proposed Sewer Projects



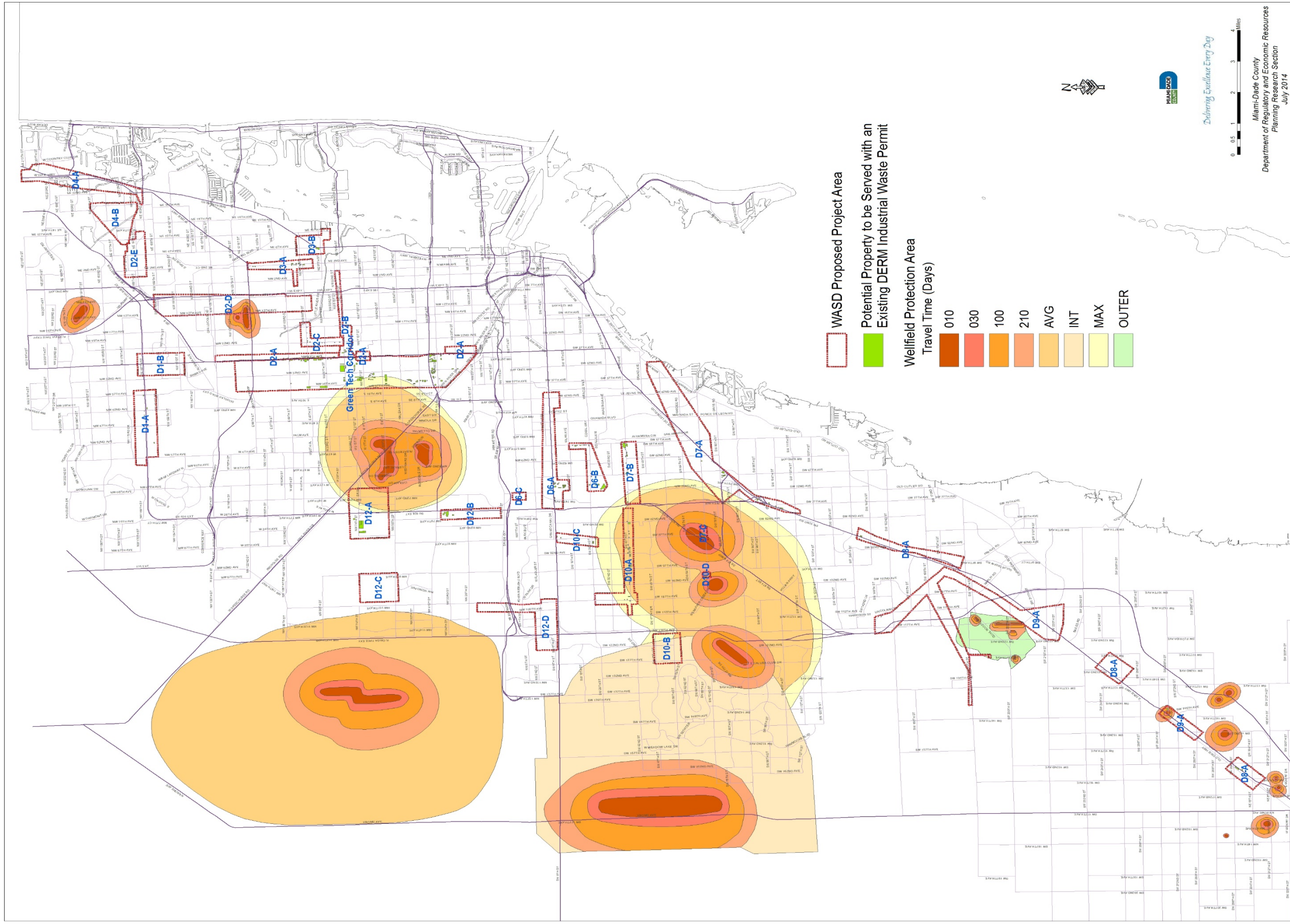
Map 2

Proposed Sewer Projects, Community Redevelopment Areas, Targeted Urban Areas and Enterprise Zone



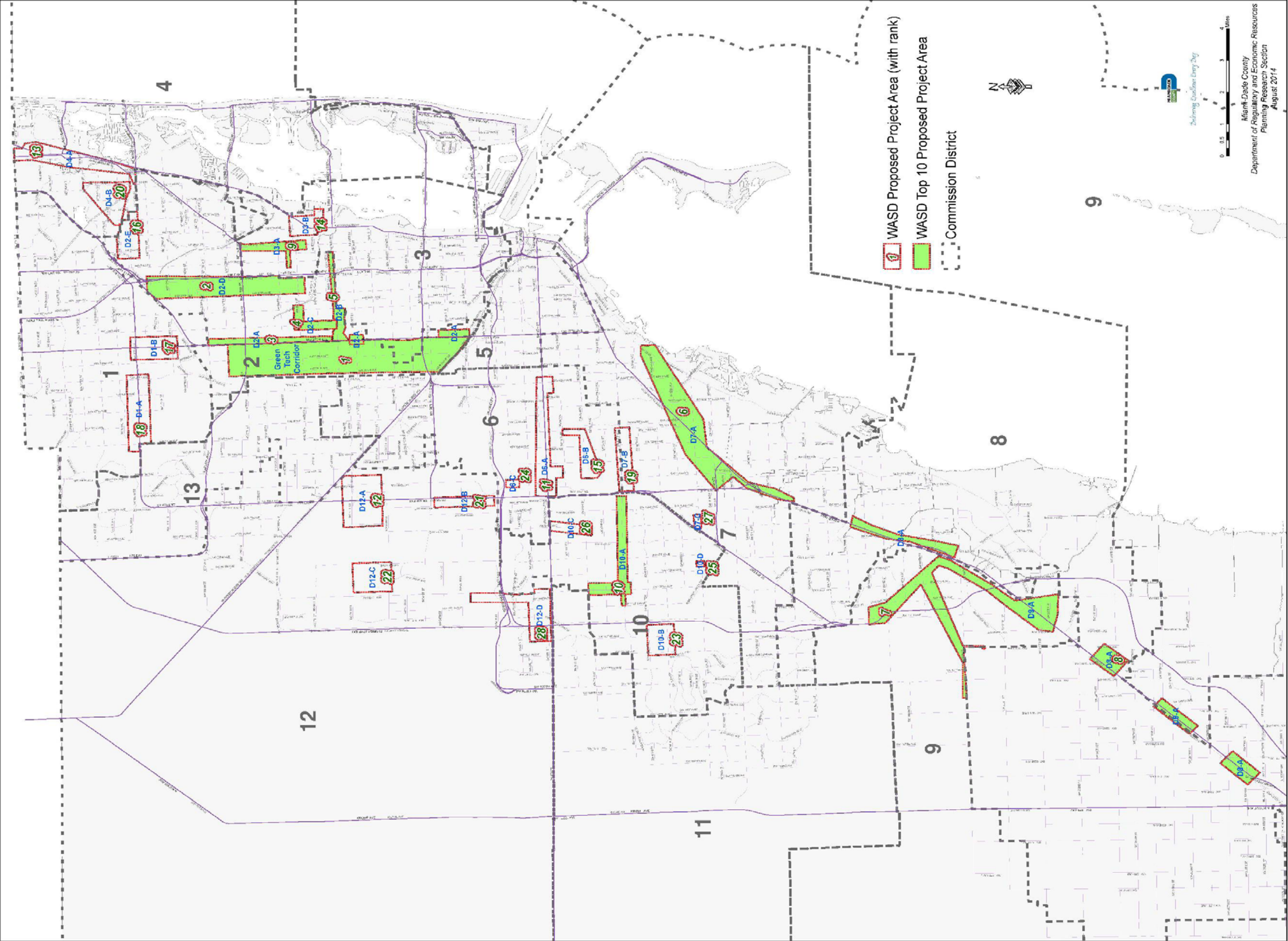
Map 3

Proposed Sewer Projects, Wellfield Protection Areas, and DERM Industrial Waste Permits (IW & IW5)



Map 4

Top 10 Ranked Proposed Sewer Projects



Appendix B

Methodology

Proposed Sewer Projects Methodology

In order to make a recommendation on the prioritization of proposed sewer installation projects around the county a wealth of information about the proposed areas and projects was combined into one final ranking, titled “Priorities Rank”.

The Priorities Rank seeks to order the projects according to a blend of current realities and planning objectives. The Priorities Rank is a composite rank derived from six broad “Priority Areas”. These areas are: Planning Considerations, Environmental Considerations, Special Economic Areas, Current Business Environment and Existing Socio-Economic Conditions. The points each project received in each category as well as the total points resulting from adding the points from every category by project and associated rank is shown in Table B1.

The points assigned to each of the “Priority Areas” reflect the stated intent of the Ordinance passed by the Board of County Commissioners on July 2, 2013 together with the professional judgment of staff. The total points assigned to each Priority Area were as follows:

1. Current Business Environment	720
2. Existing Socio-economic Conditions	600
3. Environmental Considerations	600
4. Land Use Considerations	350
5. Special Economic Areas	250
6. Planning Considerations	<u>250</u>
Total:	2,770

As previously mentioned, the stated intent as reflected in the BCC’s resolution is to promote economic development and job creation specifically in distressed areas. For this reason, it was decided to give the **“Current Business Environment Priority Area”** the highest number of points. Variables contained in this category are: Average sales per business (70 points), Number of commercial properties (250 points), Number of Employees (200 points), Commercial/Industrial Buildings built since 2000 (100 points), and Median Age of Properties (100 points). The variables included measure the economic vibrancy of the corridors. Areas ranked high in this category provide the greatest potential for an increase in business and job creation.

The next two priority areas (**“Existing Socio-Economic Conditions”** and **“Environmental Considerations”**) were each allotted 600 points. In the case of **“Existing Socio-Economic Conditions”**, the decision was made to include those variables that would provide a measurement of distress in the area, specifically poverty and unemployment. The variables included in this priority area, in order of

points allotted, were: Individual poverty rate (200 points), Unemployment (150 points), Median Household Income (150 points), and Home Ownership rate (100 points).

The third major priority area is **“Environmental Considerations.”** A total of 600 points were allotted to this priority area. It is of utmost importance not only for the economic well-being of the county, but also for the general welfare of its citizens that our environment be protected. The two variables included in this category are: Non-Conforming DERM permits (400 points), and Wellfield Protection Areas (200 points). The presence of non-conforming permits is an important indication of the need for sewers as they are issued to those businesses that lack sewers for the disposal of waste. The second variable Wellfield Protection Areas indicates whether the parcel lies within the cone of existing wellfields. The construction of sewers will eliminate any potential contamination of our water supply.

The next three priority areas included in our analysis: **“Land Use Considerations”** (350 points); **“Special Economic Areas”** (250 points); and **“Planning Considerations”** (250 points) complement the main three priority areas. In total they consist of a maximum of 850 points, approximately 31% percent of the total points awarded.

The first of these additional priority areas **“Land Use Considerations”** (350 points), addresses the existing zoning (110 points), vacant land (100 points), and the average (80 points) and median size of parcels (60 points). These variables provide a gauge as to the potential for development, a factor that should be considered when addressing the potential construction of sewers.

The next priority area is **“Special Economic Areas”** (250 points). The variables included are: the location in an Enterprise Zone (90 points), Community Redevelopment Areas (70 points), Targeted Urban Areas (90 points). All three of these variables represent existing programs designed to encourage economic development. As such, the improvement of infrastructure, in this specific case, sewers will be an added incentive for job creation, retention and expansion of business in these areas.

The last, priority area included in our ranking analysis is **“Planning Considerations”** (250 points). This category reflects long-standing policies that have been part of our Comprehensive Development Master Plan. They encourage infill-development, and the redevelopment of Urban-Centers to prevent sprawl and promote smart growth. The variables under consideration in this priority area are: location in Urban Centers (125 points), and the Urban Infill Area (125 points).

When taken as a whole, in our professional judgment, these priority areas address the need and concerns as expressed by the Board of County Commissioners and provide a replicable objective methodology for the ranking of the proposed sewer projects.

TABLE B1 - Priorities Rank by Components

Corridor	Categories (Maximum Points)						TOTAL POINTS (2770)	RANK
	PLANNING	ENVIRONMENTAL CONSIDERATIONS (600)	SPECIAL	LAND USE	CURRENT	EXISTING		
	CONSIDERATIONS (250)		ECONOMIC AREAS (250)	CONSIDERATIONS (350)	BUSINESS ENVIRONMENT (720)	SOCIO ECONOMIC CONDITIONS (600)		
D1-A	125	243	90	117	353	316	1244	18
D1-B	125	129	250	200	240	316	1260	17
D2-A	250	371	250	234	527	546	2179	3
D2-B	250	271	250	158	379	546	1854	5
D2-C	250	300	250	163	395	546	1904	4
D2-D	250	329	250	256	586	546	2217	2
D2-E	125	129	70	136	387	546	1393	16
GreenTech	250	600	250	286	634	546	2567	1
D3-A	125	300	0	144	407	600	1576	9
D3-B	125	186	0	166	329	600	1406	14
D4-A	250	143	70	180	604	213	1459	13
D4-B	125	329	70	126	335	213	1197	20
D6-A	125	357	0	97	494	427	1500	11
D6-B	125	329	0	121	403	427	1404	15
D6-C	125	129	0	126	85	427	891	24
D7-A	250	529	160	205	567	104	1814	6
D7-B	125	343	0	125	545	104	1242	19
D7-C	0	371	0	149	190	104	814	27
D8-A	125	414	180	248	489	171	1627	8
D9-A	125	371	250	255	344	352	1698	7
D10-A	0	586	0	204	555	196	1540	10
D10-B	0	329	0	263	203	196	991	23
D10-C	0	271	0	124	280	196	872	26
D10-D	0	329	0	153	203	196	881	25
D12-A	125	443	0	267	374	263	1471	12
D12-B	0	214	0	232	466	263	1175	21
D12-C	0	129	0	328	309	263	1028	22
D12-D	0	129	0	143	227	263	761	28

The top 10 ranked projects are highlighted.

Significant Observations:

- Of the nine projects Included in the original Board of County Commissioners Resolution R-597-13 (D1-B, D2-A, D2-B, D2-C, D2-D, D3-B, D4-A, D7-A, D7-B) five fall into the top ten ranked projects (D2-A, D2-B, D2-C, D2-D, D7-A)
- Of the ten qualifying projects, five are located in Commission Districts 2, and one in each of Commission Districts 3, 7, 8, 9 and 10.
- The investment by Commission District with qualifying projects ranges from \$75.8 million in Commission District 2 to \$6.8 million in Commission District 8. (See Table B2)

- Of the 2,227 properties in all project areas 1,489 are located in qualifying areas.
- Of the 1,136 acres covered by all the projects 719 are within qualifying areas.
- Of the 379 Non-Conforming DERM permits targeted by all the projects 275 belong to the qualifying areas, a coverage of 73 percent.

TABLE B2 – Qualifying Projects (under “Gravity Sewers” implementation) by Commission District

CD	Projects			Investment*		
	Qualifying	Total	Percent Qualifying	Qualifying	Total	Percent Qualifying
1	0	2	0%	-	12,737,221	0%
2	5	6	83%	75,798,727	96,752,522	78%
3	1	2	50%	8,820,269	16,148,107	55%
4	0	2	0%	-	26,466,768	0%
5	0	0	-	-	-	-
6	0	3	0%	-	17,983,099	0%
7	1	3	33%	10,943,445	26,438,932	41%
8	1	1	100%	6,842,031	8,634,447	79%
9	1	1	100%	10,251,829	12,134,923	84%
10	1	4	25%	11,749,478	20,580,685	57%
11	0	0	-	-	-	-
12	0	4	0%	-	22,435,538	0%
13	0	0	-	-	-	-
Total	10	28	36%	124,405,779	260,312,242	48%

* Investment amount for one project in Commission District 10 is not available and not included here.

TABLE B4 - Priorities Rank Source Values

Corridor	PLANNING CONSIDERATIONS		ENVIRONMENTAL CONSIDERATIONS		SPECIAL ECONOMIC AREAS			LAND USE CONSIDERATIONS				CURRENT BUSINESS ENVIRONMENT					EXISTING SOCIO ECONOMIC CONDITIONS			
	Urban Centers 2014	Inside Urban Infill Area?	Total Non-Conforming Permits	DERM Wellfield Protection Area	Enterprise Zone	Community Redevelopment Area	Targeted Urban Areas	Commercial ... Industrial (Acres)	Undeveloped (Acres)	Average Parcel Size (Acres)	Median Parcel size (Acres)	Average Sales per Business (Millions of Dollars)	Commercial Properties	Number of Employees	Com/Ind Buildings constructed since	Median Age of Properties	Individual Poverty Rate	Median Household Income	Home Ownership Rate	Unemployment Rate
D1-A		Y	7		Y			14.01	3.24	0.30	0.27	4.64	47	68	1	1970	19.6%	\$43,432	66.3%	14.0%
D1-B		Y	0		Y		Y	17.25	3.81	0.72	0.51	0.41	24	86	1	1960	19.6%	\$43,432	66.3%	14.0%
D2-A	Y	Y	27		Y	Y	Y	57.91	15.52	0.38	0.26	2.48	151	339	11	1960	26.6%	\$34,089	52.4%	16.2%
D2-B	Y	Y	8		Y	Y	Y	30.31	10.08	0.32	0.14	1.05	94	205	4	1950	26.6%	\$34,089	52.4%	16.2%
D2-C	Y	Y	11		Y	Y	Y	38.41	9.64	0.25	0.16	0.53	155	126	3	1950	26.6%	\$34,089	52.4%	16.2%
D2-D	Y	Y	0		Y	Y	Y	75.94	4.32	0.52	0.33	1.85	146	1343	10	1960	26.6%	\$34,089	52.4%	16.2%
D2-E		Y	0			Y		23.19	-	0.42	0.26	0.80	55	481	9	1950	26.6%	\$34,089	52.4%	16.2%
GreenTech	Y	Y	146	Y	Y	Y	Y	319.29	50.48	0.61	0.28	3.38	520	1874	27	1950	26.6%	\$34,089	52.4%	16.2%
D3-A		Y	11					31.97	1.15	0.34	0.26	0.81	94	736	1	1950	34.4%	\$28,274	32.9%	17.3%
D3-B		Y	4					26.41	1.02	0.66	0.29	0.73	40	253	3	1960	34.4%	\$28,274	32.9%	17.3%
D4-A	Y	Y	1			Y		44.73	12.16	0.25	0.14	1.45	179	892	18	1960	15.2%	\$49,224	56.5%	8.6%
D4-B		Y	0			Y		13.81	7.84	0.32	0.20	1.04	43	264	1	1960	15.2%	\$49,224	56.5%	8.6%
D6-A		Y	25					21.12	-	0.31	0.22	2.76	68	549	12	1960	20.0%	\$35,187	48.5%	13.1%
D6-B		Y	20					28.05	-	0.40	0.21	1.38	70	353	5	1950	20.0%	\$35,187	48.5%	13.1%
D6-C		Y	0					1.25	0.71	0.42	0.42	-	3	0	2	1950	20.0%	\$35,187	48.5%	13.1%
D7-A	Y	Y	20	Y				42.72	3.00	0.40	0.29	2.12	106	1093	33	1950	12.0%	\$62,960	60.6%	8.4%
D7-B		Y	24	Y				31.64	2.61	0.31	0.18	1.25	102	1090	12	1960	12.0%	\$62,960	60.6%	8.4%
D7-C			3	Y				6.30	-	0.90	0.34	0.55	7	41	3	1960	12.0%	\$62,960	60.6%	8.4%
D8-A	Y		5		Y		Y	36.13	7.60	0.80	0.54	2.25	45	364	28	1970	16.2%	\$60,960	70.3%	9.5%
D9-A	Y		3	Y	Y	Y	Y	34.74	17.37	0.67	0.42	0.57	52	100	31	1950	22.1%	\$44,800	60.1%	13.4%
D10-A			44	Y				52.00	1.21	0.41	0.27	1.07	126	1050	13	1960	14.2%	\$48,534	70.3%	10.2%
D10-B			0	Y				46.55	-	3.88	4.27	0.18	12	77	0	1970	14.2%	\$48,534	70.3%	10.2%
D10-C			8	Y				6.43	-	0.40	0.39	1.05	16	197	3	1960	14.2%	\$48,534	70.3%	10.2%
D10-D			0	Y				1.00	-	1.00	1.00	1.71	1	68	0	1970	14.2%	\$48,534	70.3%	10.2%
D12-A		Y	7	Y				38.48	3.28	2.14	1.12	4.01	18	107	16	1970	14.5%	\$40,658	61.2%	9.9%
D12-B			5					38.36	-	1.42	1.27	7.73	27	806	9	1970	14.5%	\$40,658	61.2%	9.9%
D12-C			0					52.55	48.86	2.39	1.24	1.22	22	6	20	2000	14.5%	\$40,658	61.2%	9.9%
D12-D			0					5.05	-	1.26	0.29	0.37	4	32	15	1970	14.5%	\$40,658	61.2%	9.9%

FINAL

SEWER SERVICE TO COMMERCIAL PROPERTIES IN MIAMI-DADE COUNTY

B&V PROJECT NO. 181014

PREPARED FOR

Miami-Dade Water & Sewer Department

FINAL REPORT - UPDATED

2 JANUARY 2014



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1.0 Introduction

Black & Veatch Corporation (Black & Veatch) has been tasked to assist the Miami-Dade Water & Sewer Department (MDWASD) with developing a plan, including planning level cost estimates and project schedules, for the addition of sewer infrastructure to commercial and industrial properties within MDWASD's service area currently not connected to these systems. The plan and cost estimates will be utilized by MDWASD to comply with the requirements of the Miami-Dade County Board of County Commissioners' Resolution R-597-13, adopted on July 2, 2012, directing the County Mayor or Mayor's Designee to provide a plan to extend sewer service to commercial areas and industrial areas within the County. The recommended improvements identified in the plan and respective cost estimates may be included in the MDWASD's Capital Improvement Plan (CIP). The major commercial corridors (where significant clusters of commercial and industrial zoned property lack access to sewer infrastructure) included in the project are listed below:

- NW 7th Avenue
- NW 22nd Avenue
- NW 27th Avenue
- NW 79th Street
- NE 2nd Avenue
- Biscayne Boulevard
- SW 40th Street
- South Dixie Highway

Additional commercial corridors were identified during the development of the plan. These corridors were also analyzed, improvements were identified and costs estimates were developed.

Section 6 of this report includes the final list of project areas included in the plan.

1.1 PROJECT SUMMARY

In April of 2013, MDWASD issued an estimate of the costs to extend water and sewer infrastructure to various commercial properties within its service area not connected to the MDWASD water and sewer systems. This report's purpose is to validate and update the previous estimates performed by MDWASD and develop a plan for providing sewer service to the major commercial and industrial corridors within Miami-Dade County. The updated estimates incorporated additional detail including land acquisition for pump stations and downstream sewer improvements. The methodology for the costing used a Class 5 Opinion of Probable Cost, which includes a 40% contingency and a +/- 40% accuracy appropriate for planning level projects. Based on the results of this report, Black & Veatch will identify the schedule and potential financing approaches for funding the improvements so they can be incorporated into MDWASD's CIP. Maps of the major commercial corridors, where significant clusters of commercial and industrial zoned property lack access to sewer infrastructure,

evaluated as part of this project are included in Appendix A. Project schedules are included in Appendix C.

Other commercial properties have previously been studied by MDWASD. The estimated costs for the proposed improvements resulting from these previous studies have been incorporated with the improvements presented in this Report. The previous studies performed by MDWASD included the following:

- Miami-Dade Green Technological Corridor Water and Sewer Study (April 2012): The Study included the area bordered by NW 127th Street on the north, NW 27th Avenue on the east, the Miami River on the south, and Northwest 37th Avenue.
- Miami-Dade East Bird Road Corridor Sewer Improvement Study (May 2012): One mile strip of commercial properties adjacent to Bird Road between SW 57th Avenue (Red Road) and SW 67th Avenue (Ludlum Road) east of State Road 826 (Palmetto Expressway).
- Industrial Park Study: Assessed the feasibility to connect to the sewer system the Industrial Park located on SW 81st Street between SW 67 and 69 Ave.
- Cost Estimate of Water and Sewer Improvements for the Bird Corridor Area (May 2010): This Study addressed the incorporated areas bounded by SW 32 Street to the north, SW 48 Street to the south, the Florida Turnpike to the west and the State Road 826 (Palmetto Expressway) to the east.

1.2 SECTION SUMMARIES

The following is a summary of each of the major tasks performed under this project.

Site Loadings: The site loading is based on a unit factor per acres for each business to be served. Data provided by MDWASD was used to determine the peak weather flow for each property and to determine the pump station peak flows. This information was used to determine the sewer pipe size.

Sewer Extensions: GIS data showing existing sewer lines and roadways was used to determine the best location for new infrastructure and where to tie into existing infrastructure. New pump station locations were determined based on general elevations changes.

Pump Station Basin Capacity Assessments: water consumption data and various weather-loading data were used in system models. These models identified areas where existing infrastructure needed to be updated based on existing loading, and updated further for the future loading.

Manifolded Pressure System Capacity Assessments: an analysis was performed by MDWASD to assess if the manifolded pump stations had sufficient capacity to accept the additional sewer flow from the proposed connections.

Improvements: different project areas (commercial districts) identified for extension of sewer service. The projects were grouped by major commercial corridors along a main avenue or street.

Opinion of Probable Construction Cost: the cost opinion is based on the improvements developed by this Project in addition to previous recommended improvements. The figures included in the appendix show the proposed improvements. Each of the district area improvements were reviewed and costs assigned based on assumptions detailed in the section.

2.0 Site Loadings

Site loadings included dry weather wastewater flows, wet weather flows and corresponding peaking factors. The commercial properties identified by MDWASD are included in Appendix A.

The average dry weather wastewater loadings for each commercial property were determined by applying a unit factor of 1,500 gpd/acre to the property area being evaluated. This factor was determined jointly in coordination with MDWASD staff.

The peak weather flow from each property was determined by utilizing the MDWASD's pump station flow database (Flow by PS April 8 2013 Draft.xlsm). This database contains the dry weather flows, wet weather flow hydrographs, and peaking factors for the existing and future loadings conditions for the collection system. The respective commercial property's peaking factor was assigned by looking up the connecting pump station's basin peaking factor.

The pump station flow database contained separate peaking factors for the existing and future loading conditions for each pump station basin. Accordingly, separate peak wet weather loads were determined for each planning year. These wet-weather loads were the basis for determining the diameters of the sewer extensions to serve these properties.

3.0 Sewer Extensions

MDWASD provided a GIS shape file of the approximately 3,000 commercial properties, which were under consideration for being connected to the existing sewer system. MDWASD provided a GIS layer for all of the approximate 3,000 commercial properties to be considered for sewer extensions; however, the department developed mapping that reduced the properties being considered. The properties that were removed by this analysis are classified as “Properties Not Served” in the attached figures. MDWASD also highlighted several specific corridors in individual commissioner districts and identified whether there had been previous CIP costing efforts performed.

To evaluate the feasibility and relative cost of connecting each commercial property, GIS databases and satellite imagery were reviewed to locate the nearest existing manhole and available roadways and routes for sewer system extension. In order to focus on the most cost-effective solutions, preference was given to connecting properties to existing gravity lines and avoiding the addition of pump stations unless necessary. The crossing of major highways, railroad tracks, and canals was also avoided unless it was required to serve a high priority area. Single, isolated properties that could not be easily or cost-effectively connected to gravity lines were excluded from the improvements. The new sewer extensions were drawn in a separate GIS layer following the most direct path along the roadways. It was assumed that sufficient space and clearance from other utilities within the roadway was available to construct the sewer extensions; this assumption will need to be verified during detailed design.

In several locations, the sewer extension would likely connect below the invert of the existing collection system. In these cases, a pump station was recommended to pump the flow to the closest force main. The pump stations were sized to have sufficient firm capacity (capacity with the largest pump out of service) to convey the peak wet weather flow.

MDWASD provided the rim and invert elevations at the connection points for subsequent review to verify if sewer extension could connect directly or would require a pump station. It was determined that 45 proposed MDWASD pump stations would be required. There are also some areas that could potentially be served by 24 private pump stations. The potential private pump stations have been identified in the attached figures. Even though the private stations are shown for reference in the figures, these stations are not included in the cost evaluation, as these costs would be borne by the individual property owners. All MDWASD proposed pump stations force mains were routed to manifold with the nearest force main. There were some areas that would require stations where an existing force main was not close, so these properties will not be connected. The figures included in Appendix A illustrate the locations of all the sewer extensions and pump stations grouped by district.

The wet weather loads contributing to each sewer extension were summed to determine the peak wet weather flow in each sewer. It was assumed that the sewer extension should be able to convey the peak flow without surcharging the sewer above its crown. In addition, it was assumed that the sewers would be installed at minimum slope based on MDWASD’s design standards. To determine the required diameter, Manning’s formula was used with a roughness coefficient of 0.013 to determine the capacity for the pipe when flowing full, under gravity flow, at the required minimum slope. Table 3-1 lists the maximum capacity available for each sewer

diameter given the above assumptions. The results of the analysis showed that the peak flows in the sewer extensions would be less than 0.50 MGD; therefore, every gravity sewer extension identified will be an eight inches in diameter.

Table 3-1 – Maximum Sewer Capacity

DIAMETER (IN)	SLOPE (%)	MANNING ROUGHNESS COEFFICIENT	MAXIMUM CAPACITY (MGD)
8	0.40%	0.013	0.50
10	0.28%	0.013	0.75
12	0.22%	0.013	1.08
15	0.15%	0.013	1.62

4.0 Pump Station Basin Capacity Assessment

4.1 EXTRACTION OF SUB-BASINS

The “all pipe” modeling database was supplied by MDWASD for analysis of the impact of the proposed commercial property’s additional loadings on the collection system. The pump station basins, where the commercial property extensions connected, were extracted to establish smaller sub-models to facilitate analysis. Any pump station basins discharging into the extracted basin were also extracted and placed into the sub-model. Similarly, basins downstream of the extracted basin were also placed into the sub-model. The connecting pump stations and force mains were also incorporated into the sub-model. Basins were extracted into the sub-model until the connection with the pressure network that conveys wastewater to the wastewater treatment plants was made.

4.2 UPDATED DRY WEATHER LOADINGS

The dry weather loadings in the “all pipe” modeling database were updated. The existing loadings were first deleted, and then updated using the following two data sources:

- Geo-coded water consumption data
- Pump station basin dry weather loads (from the pump station flow spreadsheet supplied by MDWASD)

MDWASD has a geo-coded water consumption GIS layer for all of its sewer customers. This database was joined to the manhole database in the sub-model to determine the water consumption records for the contributing customer for each manhole. The pump station flow spreadsheet supplied by MDWASD (Flow by PS April 8 2013 Draft.xlsm) contained the dry weather loads the basins for each planning year. This dry weather loading was then allocated spatially on a geo-coded water consumption weighted-average basis.

4.3 WET WEATHER FLOW PATTERNS

The pump station flow database also contained the wet weather flow hydrographs for each pump station basin corresponding to a two-year storm event. A wet weather flow pattern was developed by dividing the wet weather flow hydrograph to the dry weather flow for the basin. This pattern was then applied to the allocated dry weather loadings in the pump station basin.

4.4 BASELINE IMPROVEMENTS

A baseline model was developed for the existing loading conditions without the commercial property loads. The flow path from the connection points downstream was analyzed under wet weather conditions. If a sewer was surcharged and the hydraulic grade line (HGL) rose to be within four feet of grade elevation, a sewer improvement was recommended. These improvements are necessary without any of the additional commercial property loadings; therefore, they represent existing system capacity issues.

It should be noted that the sewer inverts and rim elevations were not updated from the as-built/record drawing database. The inverts in the “all-pipe” model (and therefore the sub-model) were assumed. It is recommended that the inverts and rim elevations in these basins be reviewed and updated in the future to verify if these sewer improvements are required.

Similarly, additional improvement may be identified if the other basin's attribute information is updated.

4.5 EXTENSIONS IMPROVEMENTS

The baseline model with the improvements was updated with the commercial property loadings. The existing planning year was used for this analysis. Similar to the baseline improvements, if any sewer along the flow path from the proposed developments surcharged within four feet of grade elevation, an improvement was recommended. Additionally, locations with a baseline improvement were reviewed to determine if the additional loading caused the sewer to be surcharged above the crown of the pipe. If any surcharging was observed, an additional improvement was recommended to avoid installing an improvement that would cause surcharging conditions. In cases where surcharging was observed that resulted from capacity limited pump stations, the station was expanded within the model to convey the peak flow. These station improvements are noted in the attached figures in the appendix.

4.6 FUTURE PLANNING YEAR IMPROVEMENTS

The extensions model with the improvement was updated for the future planning year conditions. The update includes both the dry weather flows as well as the wet weather flow patterns. Similar to the extension improvement, any surcharged conditions within four feet of grade elevation initiated an improvement to relieve the surcharging to be below the crown of the pipe. Also, any surcharged condition at an improvement identified in the baseline or the extension improvement models was relieved to eliminate the surcharging.

5.0 Manifolded Pressure System Capacity Assessment

Design flows were developed and simulated in the MDWASD model where proposed pump stations were identified. The analysis indicated that no major upgrades to the manifolded pressure system are required to accommodate the proposed improvements to connect the commercial properties included in this evaluation.

6.0 Improvements

This section includes the different project areas (commercial districts) identified for extension of sewer service. The projects were grouped by major commercial corridors along a main avenue or street and included the infrastructure needs of nearby commercial areas that were not located directly on the main avenue/street, but were close enough that it was practical to include them in a single construction project.

Table 6-1 – List of Projects by Commission District

DISTRICT	PROJECT CODE	PROJECT NAME
District 1	District 1-A (D1-A)	NW 167th Avenue
	District 1-B (D1-B) ⁽¹⁾	NW 27th Avenue
District 2	District 2-A (D2-A)	NW 27th Avenue
	District 2-B (D2-B)	NW 79th Street
	District 2-C (D2-C)	NW 22nd Avenue
	District 2-D (D2-D)	NW 7th Avenue
	District 2-E (D2-E)	NE 2nd Ave and NE 6th Avenue
District 3	District 3-A (D3-A)	NE 2nd Avenue
	District 3-B (D3-B)	Biscayne Boulevard
District 4	District 4-A (D4-A)	Biscayne Boulevard
	District 4-B (D4-B)	NE 19th Avenue
District 6	District 6-A (D6-A)	SW 8th Street
	District 6-B (D6-B)	Red Road and SW 24th Avenue
	District 6-C (D6-C)	Smaller Properties
District 7	District 7-A (D7-A)	South Dixie Highway
	District 7-B (D7-B)	SW 40th Street
	District 7-C (D7-C)	SW 46th Street
District 8	District 8-A (D8-A)	South Dixie Highway
District 9	District 9-A (D9-A)	South Dixie Highway
District 10	District 10-A (D10-A)	SW 40th Street
	District 10-B (D10-B)	SW 56th Street
	District 10-C (D10-C)	SW 24th Street
District 12	District 12-A (D12-A)	NW 74th Street
	District 12-B (D12-B)	NW 77th Court
	District 12-C (D12-C)	NW 97th Avenue
	District 12-D (D12-D)	Smaller Properties

Notes:

1. Bolded projects correspond to the commercial corridors listed on Resolution R-597-13.

The following tables (from Table 6-1 to Table 6-11) present a summary of the individual improvements that would be required to provide sewer connections to the commercial properties. Improvements are listed by Miami-Dade County Commission District encompassing

proposed gravity sewer pipe extensions, new pump stations, and new force mains in each project area. Also, some existing pump stations in the existing system would need to be increased in capacity. The pump stations requiring capacity expansion are included in Table 6-12.

Table 6-2 – District 1 Improvements

PROJECT NAME	PROPOSED GRAVITY PIPE		PROPOSED PUMP STATIONS	PROPOSED FORCEMAIN	
	SIZE	LENGTH		SIZE	LENGTH
D1-A	8-inch	7,451 lf	BV-2, BV-39	8-inch	1,851 lf
D1-B	8-inch	6,381 lf	BV-3	8-inch	3,104 lf

Table 6-3 – District 2 Improvements

PROJECT NAME	PROPOSED GRAVITY PIPE		PROPOSED PUMP STATIONS	PROPOSED FORCEMAIN	
	SIZE	LENGTH		SIZE	LENGTH
D2-A	8-inch	36,151 lf	BV-6 , BV-22	8-inch	6,879 lf
D2-B	8-inch	26,169 lf	BV-11, BV-48, BV-112	8-inch	1,553 lf
D2-C	8-inch	16,944 lf	BV-8	8-inch	410 lf
D2-D	8-inch	23,588 lf	BV-4, BV-5	8-inch	4,068 lf
D2-E	8-inch	10,956 lf	BV-314	8-inch	1,230 lf

Table 6-4 – District 3 Improvements

PROJECT NAME	PROPOSED GRAVITY PIPE		PROPOSED PUMP STATIONS	PROPOSED FORCEMAIN	
	SIZE	LENGTH		SIZE	LENGTH
D3-A	8-inch	13,613 lf	BV-12, BV-101	8-inch	4,807 lf
D3-B	8-inch	7,725 lf	BV-13	8-inch	796 lf

Table 6-5 – District 4 Improvements

PROJECT NAME	PROPOSED GRAVITY PIPE		PROPOSED PUMP STATIONS	PROPOSED FORCEMAIN	
	SIZE	LENGTH		SIZE	LENGTH
D4-A	8-inch	16,059 lf	BV-1, BV-23, BV-25, BV-32, BV-40	8-inch	3,966 lf
D4-B	8-inch	7,805 lf	BV-29, BV-33, BV-35	8-inch	4,879 lf

Table 6-6 – District 6 Improvements

PROJECT NAME	PROPOSED GRAVITY PIPE		PROPOSED PUMP STATIONS	PROPOSED FORCEMAIN	
	SIZE	LENGTH		SIZE	LENGTH
D6-A	8-inch	13,242 lf	BV-69	8-inch	1,203 lf
D6-B	8-inch	7,683 lf	BV-18, BV-105	8-inch	6,985 lf
D6-C	8-inch	1,136 lf			

Table 6-7 – District 7 Improvements

PROJECT NAME	PROPOSED GRAVITY PIPE		PROPOSED PUMP STATIONS	PROPOSED FORCEMAIN	
	SIZE	LENGTH		SIZE	LENGTH
D7-A	8-inch	14,238 lf	BV-85, BV-86, BV-89	8-inch	4,544 lf
D7-B	8-inch	2,887 lf	BV-106	8-inch	14,317 lf
D7-C	8-inch	1,377 lf	BV-110	8-inch	1,231 lf
D7-Future ⁽¹⁾	12-inch	702 lf			

Notes:

1. Sewer replacement required for planning year 2035. Project not required for initial connection.

Table 6-8 – District 8 Improvements

PROJECT NAME	PROPOSED GRAVITY PIPE		PROPOSED PUMP STATIONS	PROPOSED FORCEMAIN	
	SIZE	LENGTH		SIZE	LENGTH
D8-A	8-inch	8,649 lf	BV-21, BV-109	8-inch	3,815 lf

Table 6-9 – District 9 Improvements

PROJECT NAME	PROPOSED GRAVITY PIPE		PROPOSED PUMP STATIONS	PROPOSED FORCEMAIN	
	SIZE	LENGTH		SIZE	LENGTH
D9-A	8-inch	6,629 lf	BV-20, BV-99, BV-114	8-inch	4,008 lf

Table 6-10 – District 10 Improvements

PROJECT NAME	PROPOSED GRAVITY PIPE		PROPOSED PUMP STATIONS	PROPOSED FORCEMAIN	
	SIZE	LENGTH		SIZE	LENGTH
D10-A	8-inch	784 lf			
D10-B	8-inch	2,016 lf	BV-108	8-inch	787 lf
D10-C	8-inch	3,045 lf	BV-71, BV-74	8-inch	1,817 lf
D10-D/Future ⁽¹⁾	12-inch	607 lf			

Notes:

1. Area not feasible to connect, unless private pump station is installed.
2. Sewer replacement required for planning year 2035, if private pump station is installed. Project not required for initial connection.

Table 6-11 – District 12 Improvements

PROJECT NAME	PROPOSED GRAVITY PIPE		PROPOSED PUMP STATIONS	PROPOSED FORCEMAIN	
	SIZE	LENGTH		SIZE	LENGTH
D12-A	8-inch	6,026 lf	BV-52, BV-102	8-inch	1,717 lf
D12-B	8-inch	3,523 lf	BV-15	8-inch	625 lf
D12-C	8-inch	6,342 lf	BV-14, BV-55, BV-104	8-inch	3,792 lf
D12-D	8-inch	5, 086 lf			

Table 6-12 – Improvements to Existing Pump Stations

PROJECT NAME	EXISTING MDWASD PUMP STATION	CAPACITY	
		EXISTING	PROPOSED
D9-A	MD 661	0.06 MGD	0.2 MGD
D10-A	MD 612	0.7 MGD	1.13 MGD
D10-A	MD 632	0.75 MGD	0.91 MGD

The improvements proposed would provide sewer service to a total of 2,194 commercial properties, covering an area of 1,189 acres within Miami-Dade County. The properties that are proposed to be served are shown in the Appendix A figures, indicating a sewer extension to connect to the existing gravity system or a proposed pump station to connect to the closest forcemain. Improvements have not been proposed for the properties listed in the figures as “Not Feasible to Serve” due to the properties being outside of a major corridor and the cost of connection being excessive.

7.0 Opinion of Probable Construction Cost

The opinion of probable construction cost covers the improvements identified and includes the construction, engineering, and land acquisition costs as needed. The cost analysis covers each of the Commission Districts as illustrated in the figures included under Appendix A. Each Commission District cost is summarized in Table 7-1. The conceptual level estimates are based on the following assumptions:

- Traffic control – closing one lane of traffic and partial intersection closings
- Erosion Control – straw bales equivalents at storm inlets
- Stream and Roadway Crossings –jack and bore
- Pavement Removal and Replacement – one foot thick asphalt or concrete, includes sub-base
- Manholes – five to six feet deep, located at bends and intersections, with 350 linear feet max spacing
- Pipe – Ductile iron pipe, with three feet minimum cover
- Dewatering – average two feet water table throughout project
- Bypass Pumping – assumptions on average bypass pumping needs
- No clearing/grubbing and no seeding/sodding
- Connections at the beginning and end of project not included
- An allowance for land acquisition of \$ 200,000 is included per proposed pump station site
- Costs include engineering and construction phases
- Costs listed are in 2013 dollars with no sales tax or rental equipment
- Costs include a 40 percent contingency with +/- 40 percent accuracy

Table 7-1 – Opinion of Probable Construction Cost Summary

DISTRICT	PROJECT	PROJECT COST	FUNDED PROJECTS	UN-FUNDED PROJECTS
District 1	District 1-A	\$ 7,000,298		\$ 7,000,298
	District 1-B	\$ 5,736,923		\$ 5,736,923
	<i>District 1 Projects Sub-Total</i>	<i>\$ 12,737,222</i>	<i>-</i>	<i>\$ 12,737,222</i>
District 2	District 2-A⁽¹⁾	\$ 20,741,490		\$ 20,741,490
	District 2-B	\$15,626,982		\$15,626,982
	District 2-C	\$ 8,379,156		\$ 8,379,156
	District 2-D	\$14,482,652		\$14,482,652
	District 2-E	\$ 6,497,242		\$ 6,497,242
	Green Technological Corridor ⁽²⁾ – Phase 1	\$6,221,000	\$ 6,221,000	
	Green Technological Corridor ⁽²⁾ – Phase 2	\$24,804,000		\$24,804,000
	<i>District 2 Projects Sub-Total</i>	<i>\$ 96,752,522</i>	<i>\$ 6,221,000</i>	<i>\$90,531,522</i>
District 3	District 3-A	\$ 11,078,760		\$ 11,078,760
	District 3-B	\$ 5,069,347		\$ 5,069,347
	<i>District 3 Projects Sub-Total</i>	<i>\$ 16,148,107</i>	<i>-</i>	<i>\$ 16,148,107</i>
District 4	District 4-A	\$ 16,187,249		\$ 16,187,249
	District 4-B	\$ 10,279,519		\$ 10,279,519
	<i>District 4 Projects Sub-Total</i>	<i>\$ 26,466,768</i>	<i>-</i>	<i>\$ 26,466,768</i>
District 6	District 6-A	\$ 7,402,142		\$ 7,402,142
	District 6-B	\$10,014,688		\$10,014,688
	District 6-C	\$ 566,269		\$ 566,269
	East Bird Road ⁽³⁾	\$ 2,011,269	\$ 2,011,269	
	<i>District 6 Projects Sub-Total</i>	<i>\$ 19,994,369</i>	<i>\$ 2,011,269</i>	<i>\$ 17,983,100</i>
District 7	District 7-A	\$ 13,078,369		\$ 13,078,369
	District 7-B	\$ 10,682,222		\$ 10,682,222
	District 7-C	\$ 2,678,341		\$ 2,883,664
	East Bird Road ⁽³⁾	\$ 2,065,797	\$ 2,065,797	
	Industrial Park ⁽⁴⁾	\$ 991,249	\$ 991,249	
	<i>District 7 Projects Sub-Total</i>	<i>\$ 29,495,978</i>	<i>\$ 3,057,046</i>	<i>\$ 26,438,932</i>
District 8	District 8-A	\$ 8,634,447		\$ 8,634,447
	<i>District 8 Projects Sub-Total</i>	<i>\$ 8,634,447</i>	<i>-</i>	<i>\$ 8,634,447</i>
District 9	District 9-A	\$ 12,134,923		\$ 12,134,923
	<i>District 9 Projects Sub-Total</i>	<i>\$ 12,134,923</i>	<i>-</i>	<i>\$ 12,134,923</i>
District 10	District 10-A	\$ 11,749,478		\$ 11,749,478
	District 10-B	\$2,882,821		\$2,882,821
	District 10-C	\$ 5,948,386		\$ 5,948,386

DISTRICT	PROJECT	PROJECT COST	FUNDED PROJECTS	UN-FUNDED PROJECTS
	West Bird Road ⁽⁵⁾	\$ 19,510,000		\$ 19,510,000
	<i>District 10 Projects Sub-Total</i>	<i>\$ 40,090,686</i>	<i>-</i>	<i>\$ 40,090,686</i>
District 12	District 12-A	\$ 6,474,342		\$ 6,474,342
	District 12-B	\$ 3,369,286		\$ 3,369,286
	District 12-C	\$ 9,286,160		\$ 9,286,160
	District 12-D	\$ 3,305,750		\$ 3,305,750
	<i>District 12 Projects Sub-Total</i>	<i>\$ 22,435,538</i>	<i>-</i>	<i>\$ 22,435,538</i>
Totals		\$ 284,890,558	\$ 11,289,315	\$ 273,601,243

Notes:

1. Bolded projects correspond to the commercial corridors listed on Resolution R-597-13. Total Cost to provide connection to the projects bolded is \$ 104,247,468.
2. The results of the MDWASD previous Study proposed the following improvements: sewer extensions, three new pump stations (with associated gravity sewer, sewer force mains and applicable back-up power), and improvements to five existing pump stations to allow connection of the Green Technological Corridor commercial properties to the sewer system.
3. The results of the MDWASD previous Study indicated that the most cost effective solution to connect the East Bird Corridor commercial properties to the sewer system would include a Low Pressure Collection System.
4. The results of the MDWASD previous Study indicated that the most cost effective solution to connect this Industrial Park area to the sewer system would include a Low Pressure Collection System.
5. The results of the MDWASD previous Study proposed the following improvements: sewer extensions, four new pump stations (with associated gravity sewer and sewer force mains) to allow connection of the West Bird Corridor commercial properties to the sewer system.
6. Projects listed under the "Funded Projects" category have been allocated funding by the 2004 Building Better Communities General Obligation Bond Program and are currently in execution.

8.0 Schedule

The schedule was developed based on the conceptual information consistent with the project information described in the report herein. As such a Class 5 / Level 1 schedule was developed in accordance with the best practices described by American Association of Cost Engineering International (AACEi).

The schedule includes considerations for each of the components listed in Section 8.1 in order to construct the scope of work required to complete the CIP. To accomplish the work a conceptual contracting strategy was based on a general prioritization per discussions with the MDWASD. These assumptions plus the general duration assumptions provide the basis of the schedule development. Also, as required the schedule was cost loaded using the OPCC construction budget, as well as, using a 15% allocation for permitting, engineering and /or program management services. A cash-flow forecast was also developed. The purpose of this exercise is to provide MDWASD with estimated annual expenditures that can be utilized for potential decisions as the CIP is further developed.

The schedule presents an 8-year timeline as requested by MDWASD, after preliminary activities including land acquisition and architectural/engineering selection are performed. This includes the start of the project through final construction completion and contract closeout. Refer to the schedule attachments for additional detail.

8.1 BASIS OF SCHEDULE

Based on discussions with MDWASD staff, it was determined that schedule would include the following components. The schedule was developed by grouping the projects according to their District and sub-dividing the work into major street corridors. Each of these subdivided work areas was then assigned summary schedule activities according to the following components. And, the schedule was cost loaded in order to generate an estimated cash-flow.

- A/E's(s) selection
- Design
- Dry Run / Permitting
- Contractor(s) selection
- Construction (Multiple contracts assumed)
- Closeout

Schedule assumptions are as follows:

- A/E Selection - Procurement of engineering firm(s) and/or program manager assumed duration of 9-months.
- Design: In general, depending on complexity and distribution of the improvements, project design periods have been estimated to be between 7-18 months. For smaller projects, less than 3 miles, a 7 month design period has been used. For larger and more complex projects, it

has been assumed that multiple design teams working in parallel will be used for maximum design duration of 18 months.

- Land acquisition: It is assumed that this activity will only be required for the pump stations. Duration of 9 months has been allocated for projects requiring land acquisition. This duration assumes a stipulated acquisition process and does not include time for a condemnation/order of taking process that could require additional time.
- Dry Run / Permitting: Duration of 3 months has been allocated for permitting approvals. It is assumed permitting will commence at the 90% design submittal and will need to be completed prior to the bid and award selection process starts.
- Procurement of contractor(s): Duration of 4 months has been allocated for contractor selection (including bid advertising, review and final selection) for contracts with a construction value of less than \$5,000,000. A duration of 9 months has been allocated for projects with a construction value of \$5,000,000 and greater.
- Construction (multiple contracts assumed): It has been assumed that most projects can commence early in the planning period, to attempt to complete all of the improvements in an overall 8-year period. Table 8-1 provides a summary of the installation assumptions by corridor in each District area. Refer to the master schedule for more information.
- Assumed pipeline installation will be approximately 100-linear feet a day.
- Assumed each construction contract will have 2-months for mobilization, submittals, prior to construction work commencing.
- Assumed 1-month for contract closeout for punch-list and close-out documentation required to achieve final completion.
- Time for unforeseen conditions such as weather impacts was not included.
- No time was included for overall Program schedule contingency. (Industry best practice would be to include approximately 1-month per year to mitigate schedule growth.)
- No consideration was made to coordinate between corridors that may otherwise have traffic closure or detour restrictions

Table 8-1 – Corridor Productivity / Duration Assumptions

DISTRICT/ CORRIDOR	NAME	CREW(S)	CONSTRUCTION (MONTHS) ⁽¹⁾
D1A	NW 167th Avenue	1	4
D1B	NW 27th Avenue	1	4
D2A	NW 27th Avenue	2	10
D2B	NW 36th Avenue	1	13
D2C	NW 22nd Avenue	1	8
D2D	NW 7th Avenue	1	13
D2E	NE 2nd Ave and NE 6th Avenue	1	6

DISTRICT/ CORRIDOR	NAME	CREW(S)	CONSTRUCTION (MONTHS) ⁽¹⁾
D3A	NE 2nd Avenue	1	8
D3B	Biscayne Boulevard	1	4
D4A	Biscayne Boulevard	1	9
D4B	NE 19th Avenue	1	6
D6A	SW 8th Street	1	7
D6B	Red Road and SW 24th Avenue	1	7
D6C	Smaller Properties	1	1
D7A	South Dixie Highway	1	9
D7B	SW 46th Street	1	8
D7C	SW 46th Street	1	1
D8A	South Dixie Highway	1	6
D9A	South Dixie Highway	1	5
D10A	SW 40th Street	1	7
D10B	SW 56th Street	1	1
D10C	SW 24th Street	1	3
D12A	NW 74th Street	1	4
D12B	NW 77th Court	1	2
D12C	NW 97th Avenue	1	5
D12D	Smaller Properties	1	3

Notes:

1. Construction duration does not include time for mobilization, submittals, material delivery, or project closeout. The detailed schedule does consider the aforementioned duration within the construction activity.
2. For the improvements proposed, the installation of 100LF/Day of sewer pipe was assumed.
3. East Bird Corridor Schedule taken from MDWASD – Early Bird Road Corridor Sewer Improvement Study.
4. Industrial Park Schedule taken from Previous MDWASD Study, Proposed Schedule dated July 2012
5. West Bird Corridor Schedule Assumptions: Installation of 200LF/Day utilizing 2 crews.
6. Green technological Corridor Schedule taken from Green Technological Corridor Water and Sewer Study Phasing Plan.

Capital improvements expenditures can be allocated as indicated on the following Table 8-2. Capital expenditures shown represent the forecasted cash-flow based on the early start schedule.

Table 8-2 – Capital Expenditures – Proposed Plan

	FY 13-14	FY 14-15	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	FY 20-21
Funded	\$1,575,968	\$2,589,728	\$7,123,619	-	-	-	-	-
Un-Funded	-	\$2,101,354	\$14,401,153	\$12,694,839	\$42,029,412	\$68,182,447	\$62,955,271	\$71,236,767
Total	\$1,575,968	\$4,691,082	\$21,524,772	\$12,694,839	\$42,029,412	\$68,182,447	\$62,955,271	\$71,236,767

9.0 Potential Financing Alternatives

The analysis identified a number of commercial properties along several major corridors that are not currently served by sanitary sewers and are using septic systems for wastewater disposal. The report also identifies the specific wastewater collection and transmission projects that would be needed to provide wastewater service to these corridors, based on current Department policies and engineering standards. This section summarizes the options available for financing wastewater system improvements, how these options could be applied for financing the projects, and the financial implications of developing these projects to both the potential new customers as well as the Department.

9.1 THE DEPARTMENT'S PROCEDURES FOR FINANCING WASTEWATER PROJECTS

The basic procedures for financing wastewater projects, as well as water projects, are described in the Department's Implementing Order No. 10-8. The financing procedures are different for wastewater collection facilities and wastewater transmission facilities.

Wastewater collection facilities are defined as those lines and pump stations that are needed to provide service only to retail customers, and are generally referred to as local facilities, or assets. Wastewater transmission facilities are those pump stations and lines that are needed to serve all customers, both retail and wholesale, and are often referred to as regional facilities, or assets. Details concerning the classification of lines and pump stations were spelled out in a May 6, 2009, analysis conducted as part of a cost allocation analysis for setting wholesale customer rates. That analysis defined wastewater transmission and collection facilities as follows:

"The Water and Sewer Department's definition of wastewater transmission facilities is all interceptor lines and all pump stations and force mains receiving wastewater flows that are pumped from wastewater collection systems. Transmission force mains convey wastewater that has been collected and pumped from more than one collection basin. Pump stations and lines that connect to these facilities are classified as wastewater collection."

The minimum size of a force main for purposes of defining regional facilities was listed at 8-inches.

The essential provision of the procedures as they apply to new sewer service, either to existing or new developments, is provided in section 3.02(3). This rule stipulates that the Customer is responsible for the expense of installing any new laterals, or collection lines required for providing the wastewater service. For new developments, the new collection lines are generally installed by the developer following specifications established by the Department, and turned over to the Department upon completion of the development. For existing developments where collection facilities must be installed, the rule requires the new customers to fund the cost of the new collection facilities either through the creation of a special taxing district or the establishment of fees and charges through which the Department recovers its costs of installing the collection system.

For wastewater transmission facilities (part of the regional system), the procedures stipulate in Section 3.04 that the Department may require the developer, or Customer, to also provide main,

or transmission, lines, or the Department may recover its investment in these facilities through connection fees, which are currently \$5.60 per average day gallon of wastewater expected to be produced by each new customer. By collecting this connection charge from each new customer, the Department is presumed to be able to provide the necessary wastewater transmission and treatment facilities needed to serve an average new customer, recognizing that the Department's actual cost of transmission facilities varies considerably from one part of the County to another. This section of the implementing order also stipulates that the extension of transmission facilities may be paid for through a special taxing district. The use of a special taxing district has rarely been used by the Department, but it is widely used in the County for other purposes. In general the establishment of a special taxing district requires the concurrence of a majority of the property owners within the district.

As described above, the concept of project financing is closely associated with the concept of recovering all costs of new service from the new customers themselves. Application of this concept necessitates consideration of County Ordinance 93-134, Section 613, part of the Department's bond ordinance known as No Free Service. This Section prohibits providing free services or preferential charges to any customer.

In evaluating the application of the Department's financing methods and financing alternatives, described below, it is recommended the No Free Service section of the Ordinance be evaluated by the appropriate legal authority to assess the impact it may have when utilizing any of the financing alternatives described in this report.

9.2 APPLICATION OF THE DEPARTMENT'S FINANCING METHODS TO THE PROJECTS IN THIS REPORT

Based on the guidance of the Department's bond ordinance, implementing orders, and supporting information, the projects in this report are classified as either wastewater collection or wastewater transmission facilities. The unfunded costs of the projects, in aggregate, estimated during the course of this study, are the following:

Local costs – wastewater collection facilities - \$232.9 million

Regional costs – wastewater transmission facilities - \$40.7 million

Total costs – \$273.6 million

The following Table 9-1 shows the estimated wastewater collection (Local) and wastewater transmission (Regional) costs by district.

Table 9-1: Local and Regional Costs by District

COMMISSION DISTRICT	TOTAL ESTIMATED PROJECT COST	LOCAL		REGIONAL
		Breakdown of Funded Allocation	Breakdown of Unfunded Allocation	Breakdown of Unfunded Allocation
District 1	\$12,738,222		\$10,409,196	\$2,328,026
District 2	\$96,752,520	\$6,221,000	\$81,718,073	\$8,813,449
District 3	\$16,148,107		\$13,515,629	\$2,632,478
District 4	\$26,466,768		\$22,311,089	\$4,155,679
District 6	\$19,994,369	\$2,011,269	\$14,136,101	\$3,846,999
District 7	\$29,495,978	\$3,057,046	\$16,999,032	\$9,439,899
District 8	\$8,634,447		\$6,842,031	\$1,792,416
District 9	\$12,134,923		\$10,251,829	\$1,883,094
District 10	\$40,090,686		\$37,197,239	\$2,893,447
District 12	\$22,435,538		\$19,553,578	\$2,881,960
TOTALS	\$284,890,558	\$11,289,315	\$232,933,796	\$40,667,447

The aggregate cost of providing these service extensions on a per gallon basis is very high due to the infill nature of the work and the fact that the economies of scale achieved with new developments is not present in these smaller, developed project areas. As additional refinement of planning and design is done, some cost reductions may be realized through the use of low pressure sewers or other non-standard design features. This report is therefore providing conservative cost estimates. These costs do not include the cost of wastewater transmission facilities already included in the Department's capital improvement plan. It is also important to note that the regional costs include only transmission costs, not additional costs or repayment of the Department's imbedded costs for wastewater treatment and disposal of treated effluent. The Department's connection charges are intended to address both wastewater transmission and wastewater treatment costs.

9.3 FINANCING OF WASTEWATER COLLECTION AND TRANSMISSION FACILITIES

As noted above, based on the Department's regulations, new Customers would be required to directly fund the local (collection) costs to reimburse the Department for the cost of installing wastewater collection lines and pump stations. Based on the information provided by the Department, new Customers would generate a total wastewater flow of approximately 1.64 million gallons per day, which is based on their current average daily water purchases. Customers are billed for wastewater service based on their metered water use. Based on this additional wastewater service, the new Customers would be required to pay an average of approximately \$25 per gallon of expected wastewater use to fund the new wastewater

transmission (regional) facilities. The calculation of this charge as well as the other figures referenced in the discussion below is shown in Table 9-2.

This amount would differ among corridors and, possibly within corridors, inasmuch as the charge is based on the cost of serving each new Customer or group of Customers. The information provided by the Department indicates that the average flow from the new Customers to be served by the projects evaluated in this analysis is about 800 gallons per day.

9.3.1 Financing Collection Facilities

The Department's standard practice for recovering the cost of new wastewater collection facilities is for the new customers to construct the facilities, as in the case of a new development, or reimburse the Department the full cost of the facilities. Based on the estimated \$140 average cost per gallon for wastewater collection facilities, the average new Customer would pay about \$111,000 for those additional collection facilities. This cost is far greater than typical for new connections in the Department's service area, and up-front payment of the connection cost would present a serious financial burden to new customers. To mitigate the high cost, the Department has several potential alternative methods for recovering the costs:

- Funding by the County using general obligation bonds
- Funding by the Department using revenue bonds
- Rate surcharge
- Special taxing district
- Tax increment financing

Each of these funding methods and their implications are described below.

9.3.1.1 General Obligation Bonds Issued by the County

The County has funded Department improvements, including local collection systems for new customers, with general obligation bond proceeds, and could do so to finance these sewer collection facilities. Funding for the local collection system component of the project from general obligation bonds would provide the greatest relief to property owners. Assignment of available general obligation bond funds for this purpose would require approval by the Board of County Commissioners.

9.3.1.2 Revenue Bonds Issued by the Department

The Department routinely issues revenue bonds to finance capital improvements to the water and wastewater systems. The proceeds from these bonds are generally used to fund projects benefitting all or a large number of customers, both retail and wholesale. The bonds are amortized through payments made by utility customers through water and sewer rates. While revenue bond proceeds have routinely been allocated to fund new wastewater transmission facilities, they historically have not been used to provide funding for local collection systems to service new customers. Pursuant to Implementing Order 10-8, the use of Department funds for the extension of local collection systems must be reimbursed to the Department through a special taxing district, fees and charges paid by the customers benefiting from the service, or from other non-Departmental revenues.

9.3.1.3 Rate Surcharge

The Department could recover the high cost of the wastewater collection improvements by imposing a surcharge on the new Customers. The Department has implemented such a program, but only in association with the acquisition of utility systems, most recently Miami Springs. However, in the case of the improvements considered in this study, implementing a surcharge would place the Department at risk of failing to recover the anticipated amount of revenue as a result of lower than expected water, and wastewater, sales. This risk would probably render this alternative unattractive compared to formation of a special taxing district, which would not incur this type of risk. A variation of the rate surcharge is the basin fee, recently utilized to increase collection system capacity in several areas with service that are re-developing and intensifying their uses. This is a per-gallon of capacity charge that is added to the regular connection charge to support expansion of the local collection system.

9.3.1.4 Special Taxing District

Funding and financing could be provided through a special taxing district. Under this method, the Department would fund the improvements with bond proceeds and recover the debt service through a recurring tax on the project's beneficiaries – the new Customers. The impact to each customer would vary according to how much of the total project cost was financed in this way, the size or frontage of the parcels comprising the special taxing district, and the interest rate and duration of the bonds, but the costs would be substantial based on the high cost of the collection and transmission system improvements.

9.3.1.5 Tax Increment Financing

Tax increment financing has been suggested as a method for financing these wastewater facilities. This financing method is used mainly to provide broad assistance to blighted areas through community redevelopment agencies. Bonds are sold to make improvements to a designated tax increment financing area, and the bonds are repaid from the increased property value and corresponding property tax revenues that result in part from the improvements that have been made. Because of the very high costs associated with bringing sewers to these areas, it appears to be unlikely that property values would increase sufficiently due to the presence of sewers to recover the cost of the sewers within any reasonable time period. Presumably separate financing districts would need to be established for each of the project areas to utilize this financing approach, and the process of qualifying and establishing these districts could be time-consuming. This financing alternative does not appear to be practical or applicable to this project.

9.3.2 Financing Transmission Facilities

The total cost for wastewater transmission facilities to serve the new Customers is estimated to be approximately \$40.7 million, which averages out to about \$25 per gallon of new wastewater service. It is important to note that this per gallon transmission cost is far greater than the Department's average cost for providing wastewater transmission services to its customers. The Department's current methods for recovering and financing wastewater transmission facilities include the methods described above as well as two other financing methods:

- Connection charges

■ Connection charge surcharge/basin charge

Each of these funding methods and their implications are described below:

9.3.2.1 Connection Charges

The Department has established connection charges for new wastewater customers of \$5.60 per gallon of expected average day water use. Based on this amount, the Department would recover about \$4,500 from the average new customer served by these projects. Connection charges are deposited into the Department's Plant Expansion Fund and can be used to support capacity improvements to the regional wastewater transmission system, so to the extent that Plant Expansion Funds are available, the regional system costs can be funded in that way.

9.3.2.2 Connection Charge Surcharge

The Department could impose a connection charge surcharge on each new customer as a condition of connection to recover system expansion costs for some or all of the regional and local collection systems. To recover the full cost of the transmission facilities not covered by standard connection charges, the typical new Customer would be assessed about \$15,000.

9.4 CONCLUSIONS

Using currently available financing methods, the Department's alternatives for financing the projects contemplated in this report are limited to the use of general obligation bonds and/or revenue bonds, the collection of the costs for wastewater collection lines from the new Customers, collection of the Department's standard connection charges from new Customers, establishment of a special taxing district or districts, and tax increment financing.. Tax increment financing does not appear to be a promising source of revenue, though such an approach might be applicable in some project areas. The availability of grant funds and State Revolving Loan Funds could be helpful in delivering these projects, but it is not possible to anticipate such availability now.

It is important to recognize that the difficulties in finding suitable financing methods for these projects is due to the fact that the cost of providing wastewater service to the contemplated new Customers is very high, measured on a per gallon or per customer basis. Recognizing these high costs, exploring alternative designs and technologies, and/or construction methods could be considered as alternatives for lowering the costs of these projects. Similarly, recognizing that the cost estimates presented in this report are conservatively high, more detailed analysis of individual projects may enable the Department to identify projects or corridors where the cost per gallon or per customer are closer to the Department's norm. Moreover, some of the individual projects can be expected to be substantially more cost-effective than others by virtue of their proximity to existing wastewater transmission lines or a larger concentration of new customers or near-term development potential. Selecting the more cost-effective projects for early implementation would facilitate financing as well as reduce the Department's financial burden. Based on these factors, it is recommended that the Department assess the individual projects and corridors addressed in this report and identify those that could be relatively cost-effectively implemented in an early timeframe. Cost-effective areas requiring only new collection facilities may be funded through a combination of direct payment by new customers to partially fund the cost of collection facilities, connection charges, a rate surcharge or special

taxing district, and currently available general obligation bond proceeds. Other economically attractive projects may be funded using these same methods, as well as by County-issued general obligation bonds or Department-issued revenue bonds.

Inasmuch as the use of Department-issued revenue bonds to fund new wastewater collection facilities would be a departure from established Department practices, it is important for the County to obtain a clear legal opinion on the use of this funding method.

Table 9-2 – Calculation of Estimated Costs and Charges to Commercial Properties

CALCULATION OF ESTIMATED COSTS AND CHARGES TO COMMERCIAL PROPERTIES	
Recovery of Collection- Local Costs	
Collection Costs for Average new Customer	
Collection facilities estimated cost	\$232,900,000
Gallons per day new service	1,640,000
Average cost per gallon for collection facilities	\$142.10
Average gallons per day used by new customer	800
Collection cost for average new customer	\$113,610
Financing of Collection Costs	
Annual interest rate	6%
Number of years of financing	30
Total annual cost	\$16,919,931
Annual cost per gallon	\$10.32
Annual cost for typical new customer	\$8,253.63
Recovery of Transmission-Regional Costs	
Estimated Connection Costs for average new customer	
Connection charge per gallon	\$5.60
Connection charge for typical new customer	\$4,480
Transmission - Regional Costs	
Transmission facilities estimated cost - excludes projects already in WASD capital improvement plan	\$40,700,000
Average cost per gallon for regional projects	\$24.82

CALCULATION OF ESTIMATED COSTS AND CHARGES TO COMMERCIAL PROPERTIES

Regional Costs Not Recovered through Connection Charge per Gallon	
Average cost per gallon for regional projects less \$5.60	\$19.22
Regional costs not recovered through connection charges	\$31,516,000
Amount per typical new customer	\$15,374
Financing of Regional Costs Not Recovered through Connection Charges	
Annual interest rate	6%
Number of years of financing	30
Total annual cost	\$2,289,603
Annual cost per gallon	\$1.40
Annual cost for typical new customer	\$1,116.88

Appendix A

Project Figures

Overview Figures

Figure D1.1 – Commission District 1 – Overview

Figure D2.1 – Commission District 2 – Overview

Figure D3.1 – Commission District 3 – Overview

Figure D4.1 – Commission District 4 – Overview

Figure D6.1 – Commission District 6 – Overview

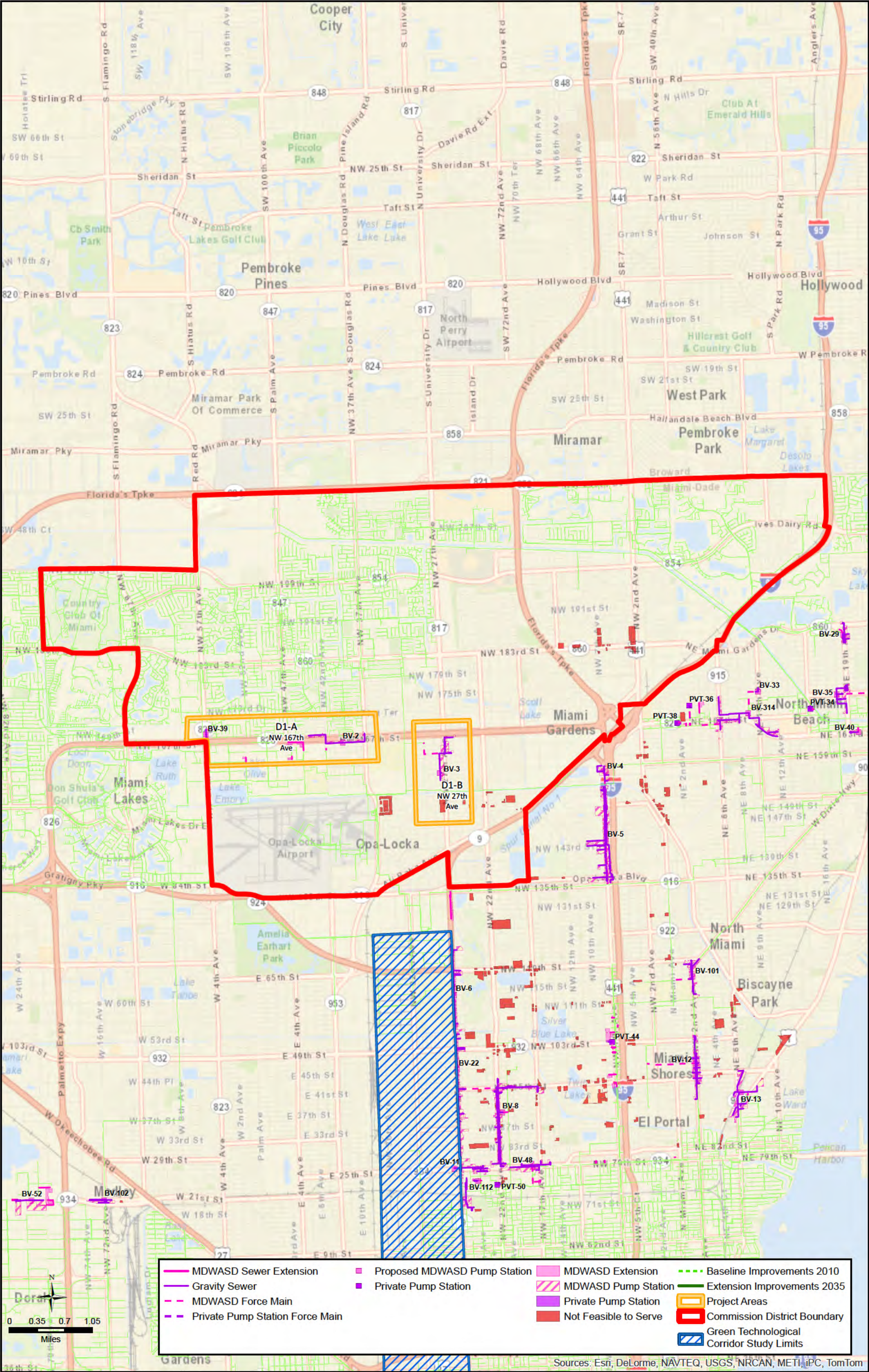
Figure D7.1 – Commission District 7 – Overview

Figure D8.1 – Commission District 8 – Overview

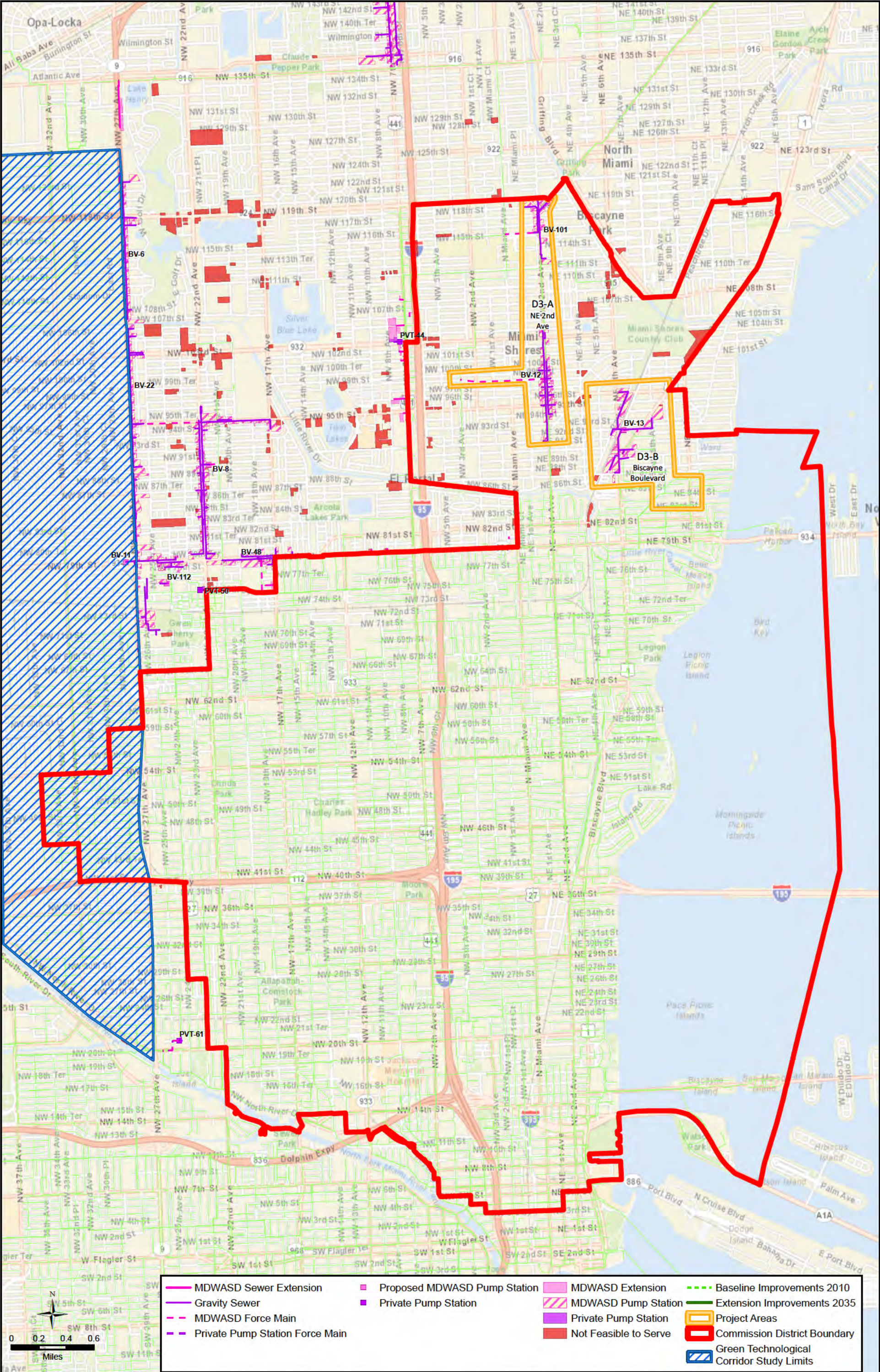
Figure D9.1 – Commission District 9 – Overview

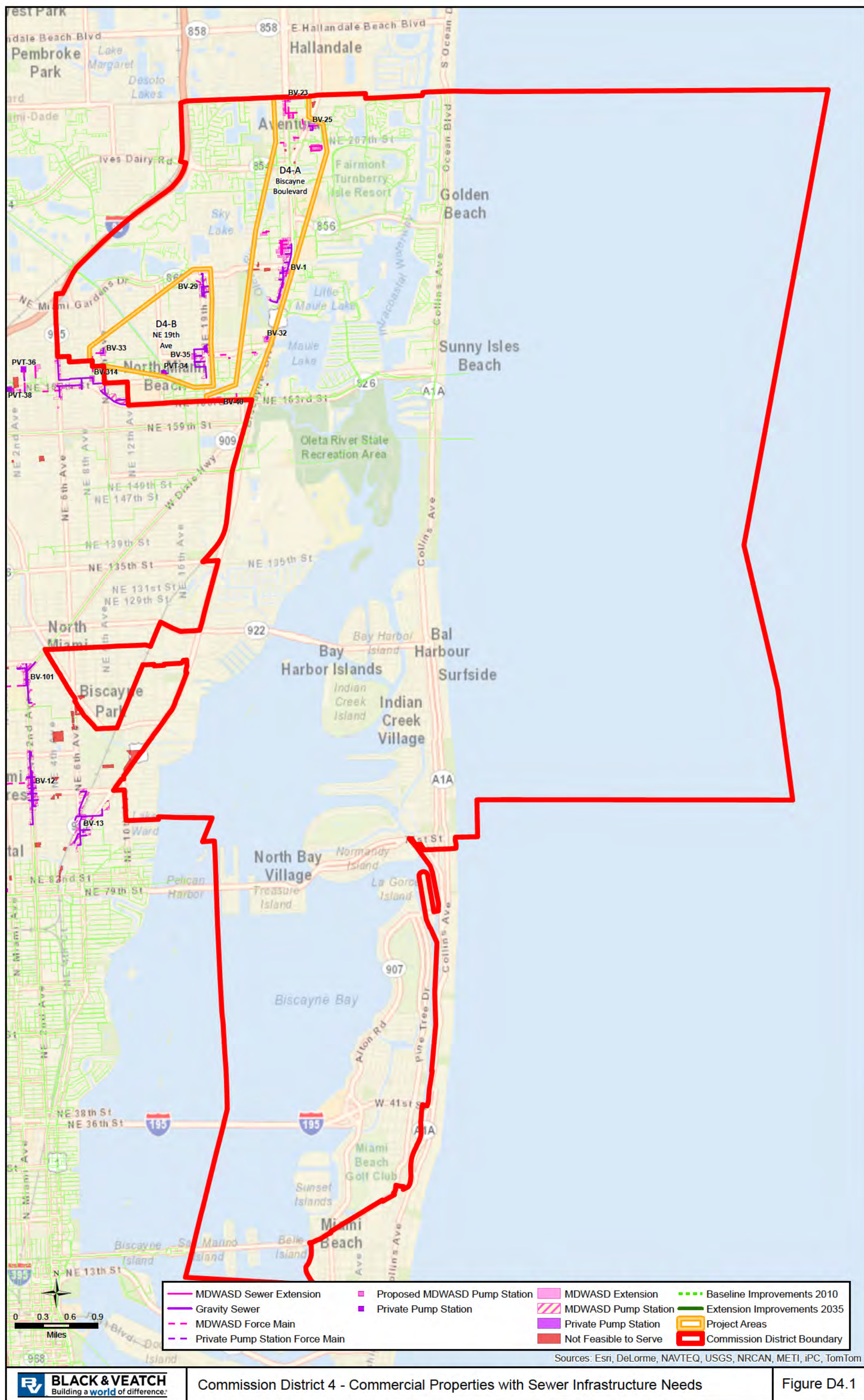
Figure D10.1 – Commission District 10 – Overview

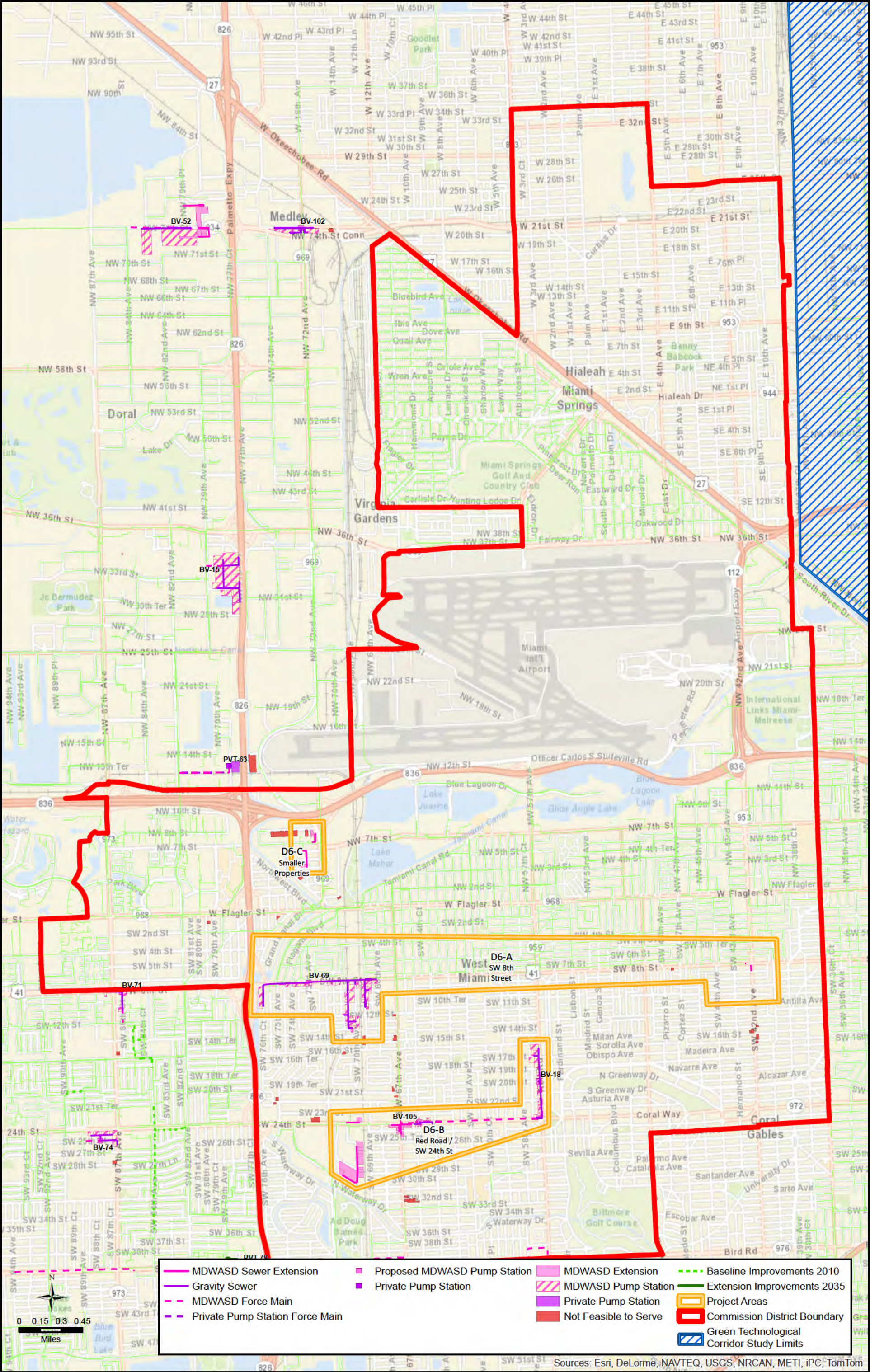
Figure D12.1 – Commission District 12 – Overview



Sources: Esri, DeLorme, NAVTEQ, USGS, NRCAN, METI, IPC, TomTom

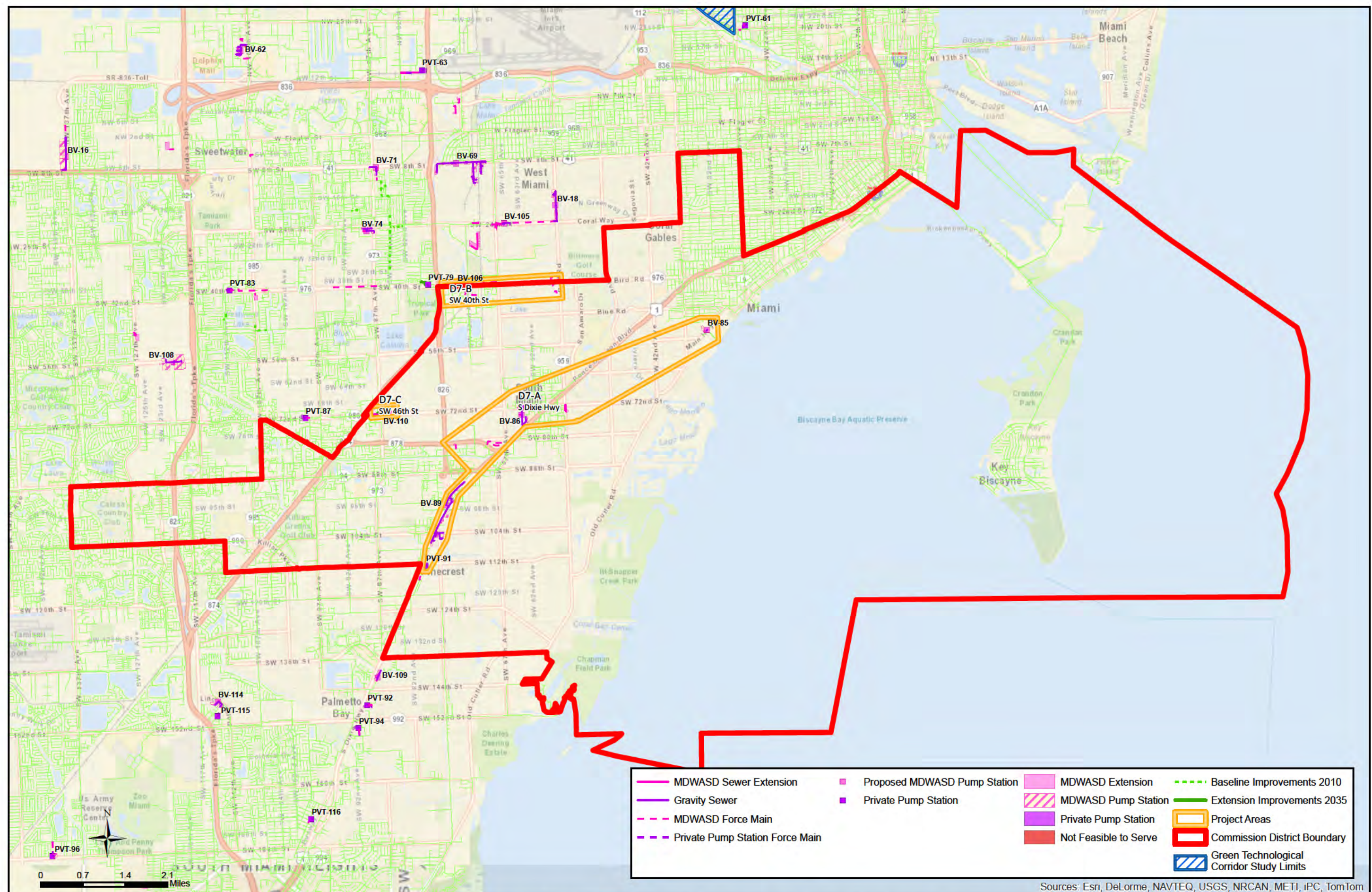


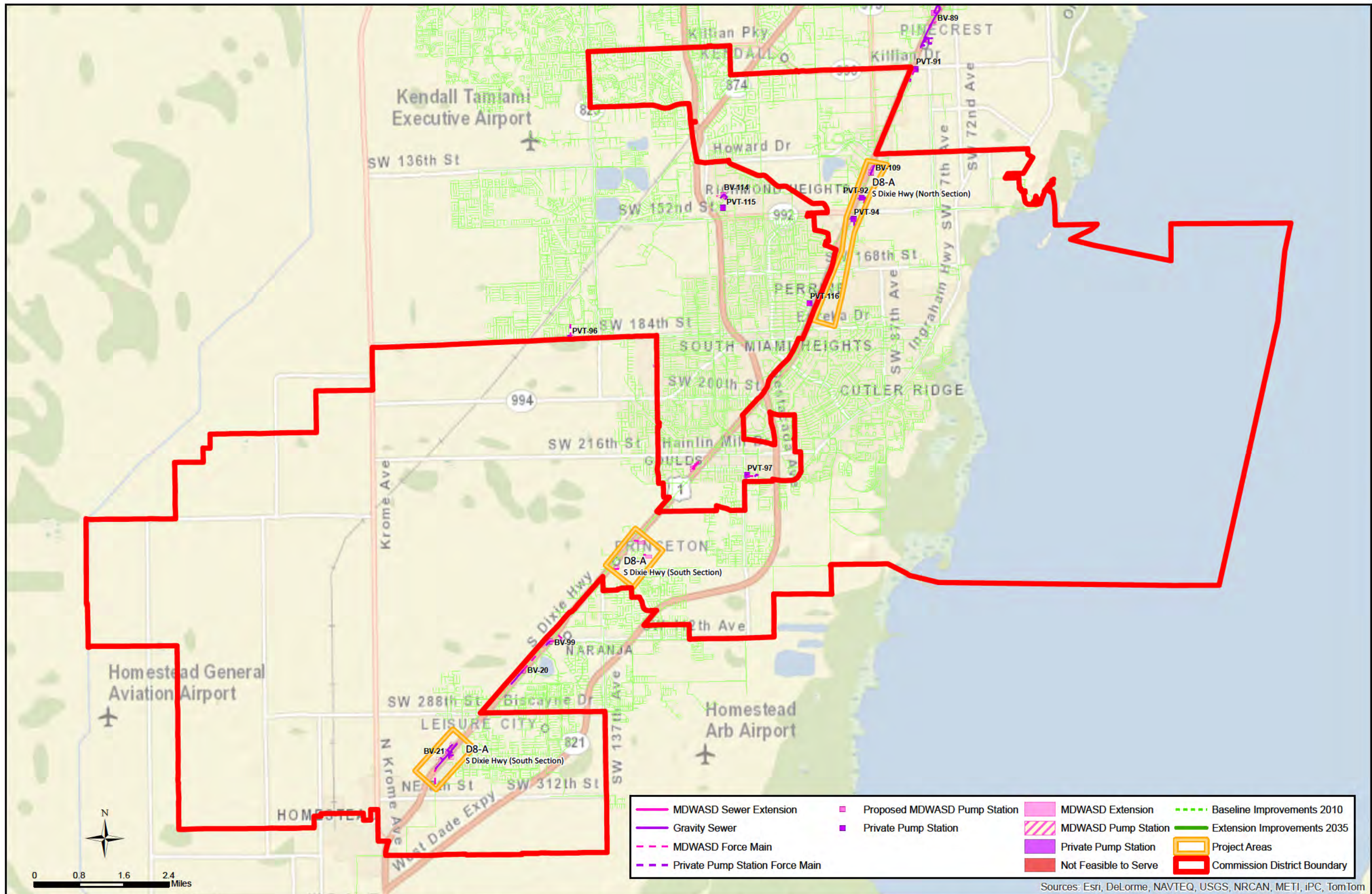


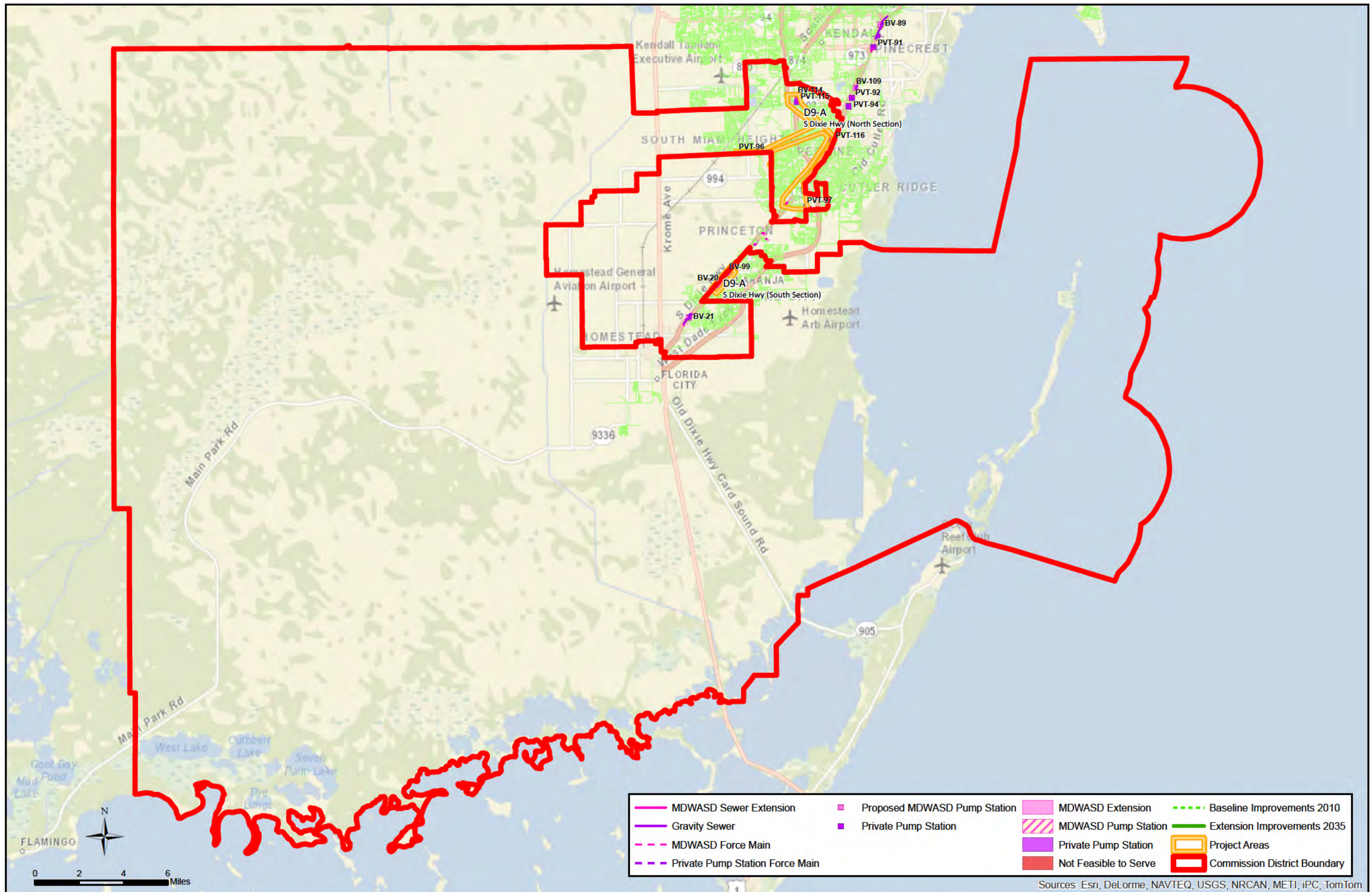


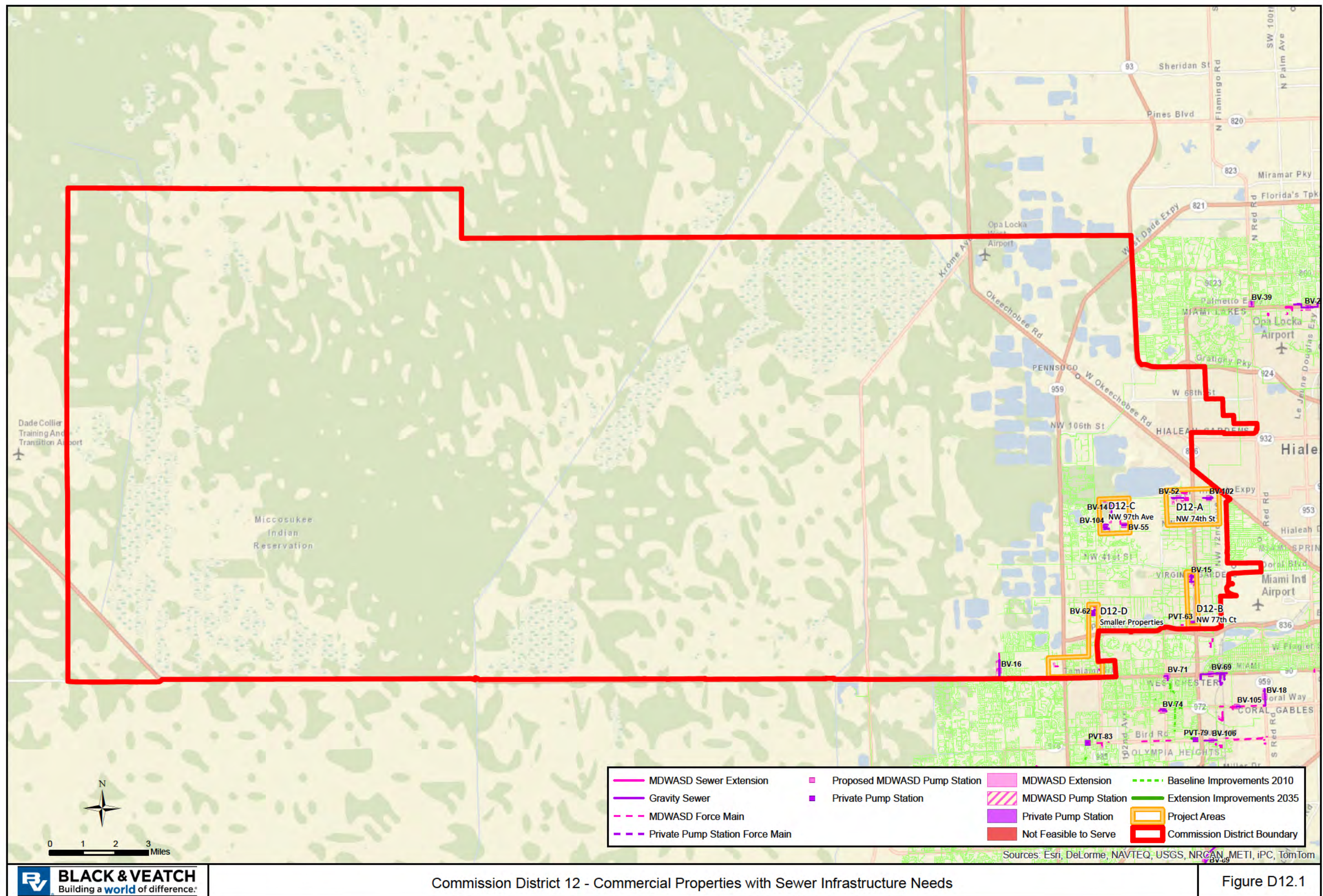
Commission District 6 - Commercial Properties with Sewer Infrastructure Needs

Figure D6.1





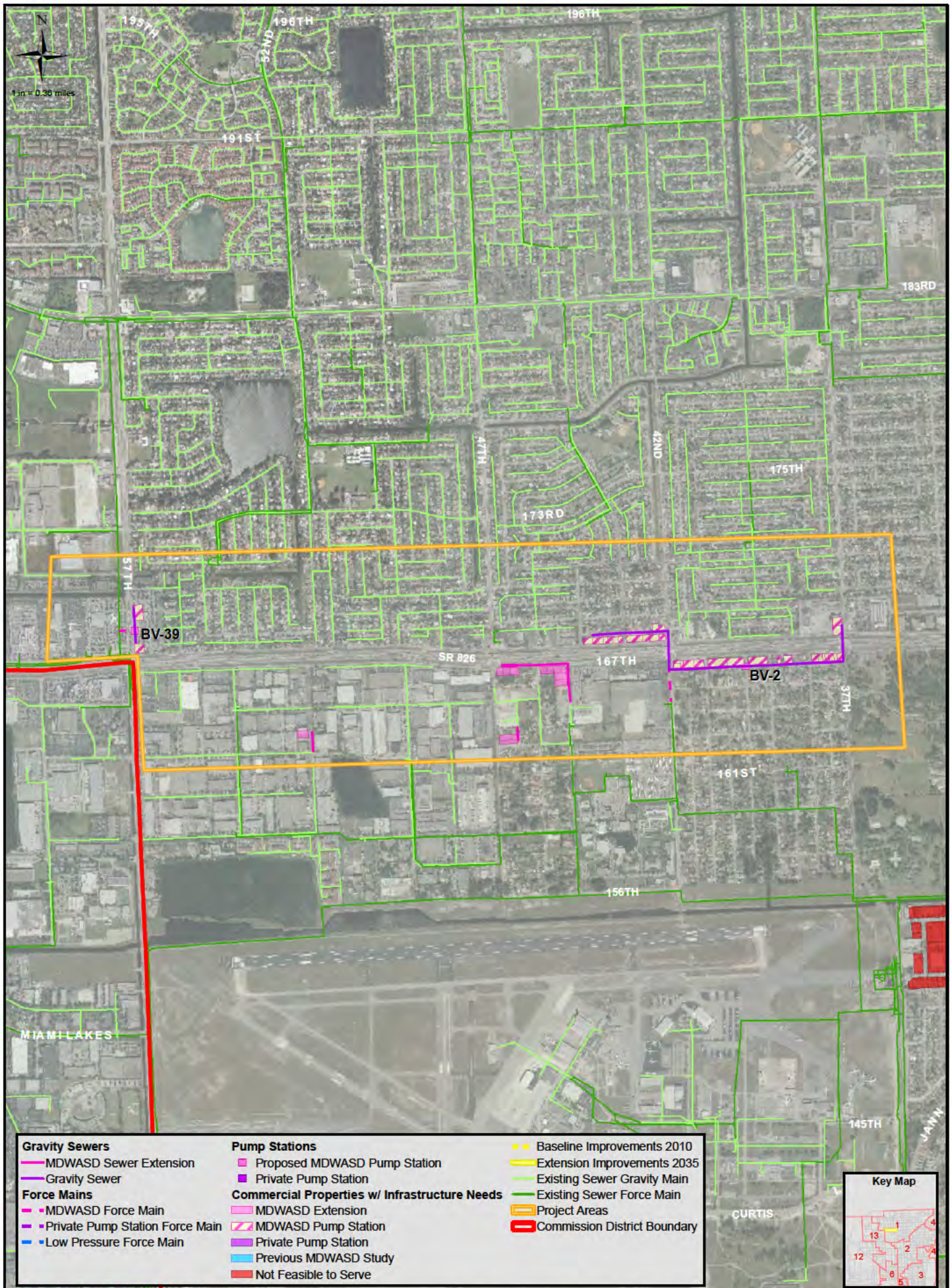




District 1 Figures

Figure D1.2 – Project Area: D1-A NW 167th Ave

Figure D1.3 – Project Area: D1-B NW 27th Ave



Project Area: D1-A NW 167th Ave
Commission District 1

Figure D1.2

District 2 Figures

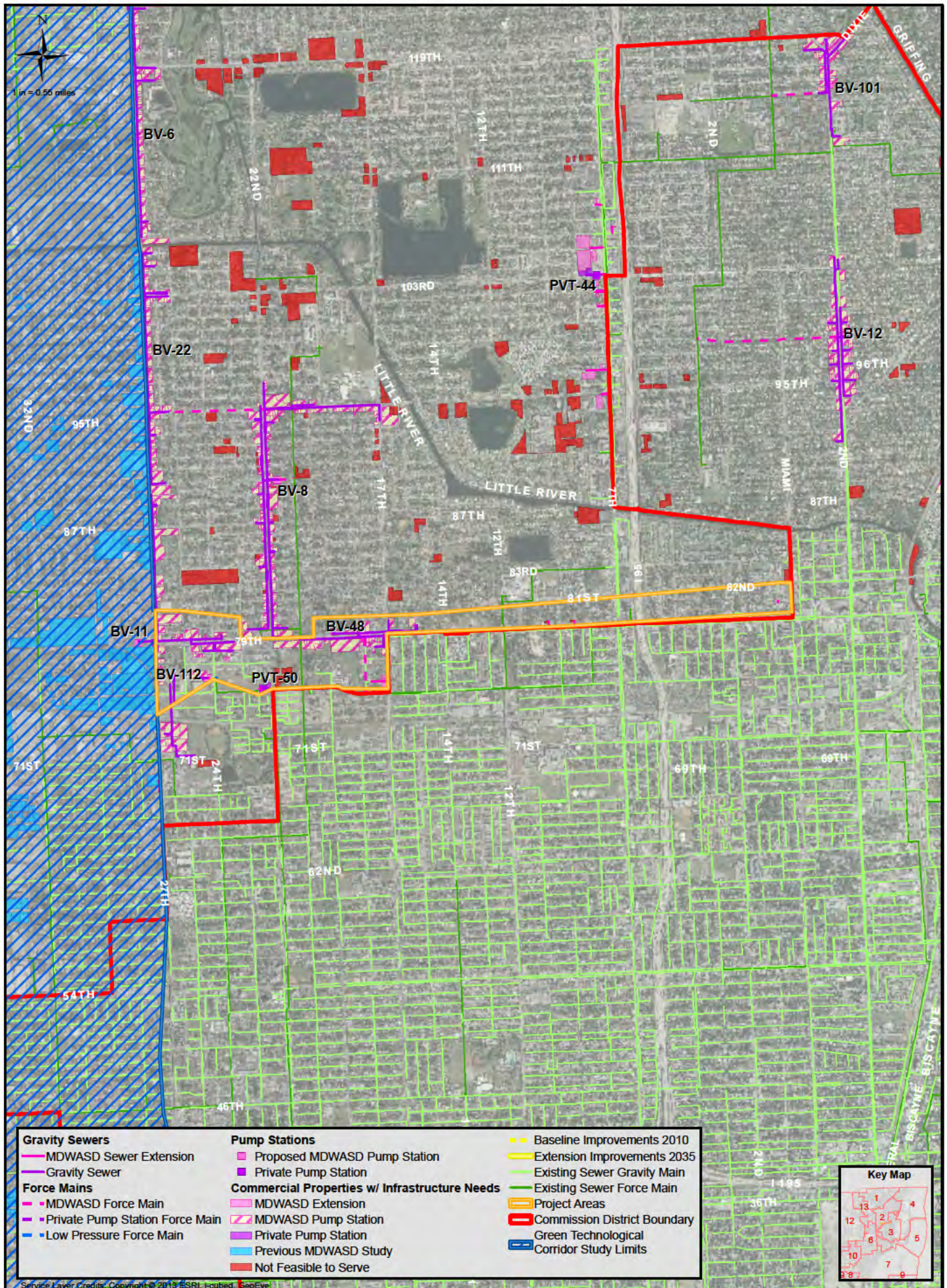
Figure D2.2 – Project Area: D2-A NW 27th Ave

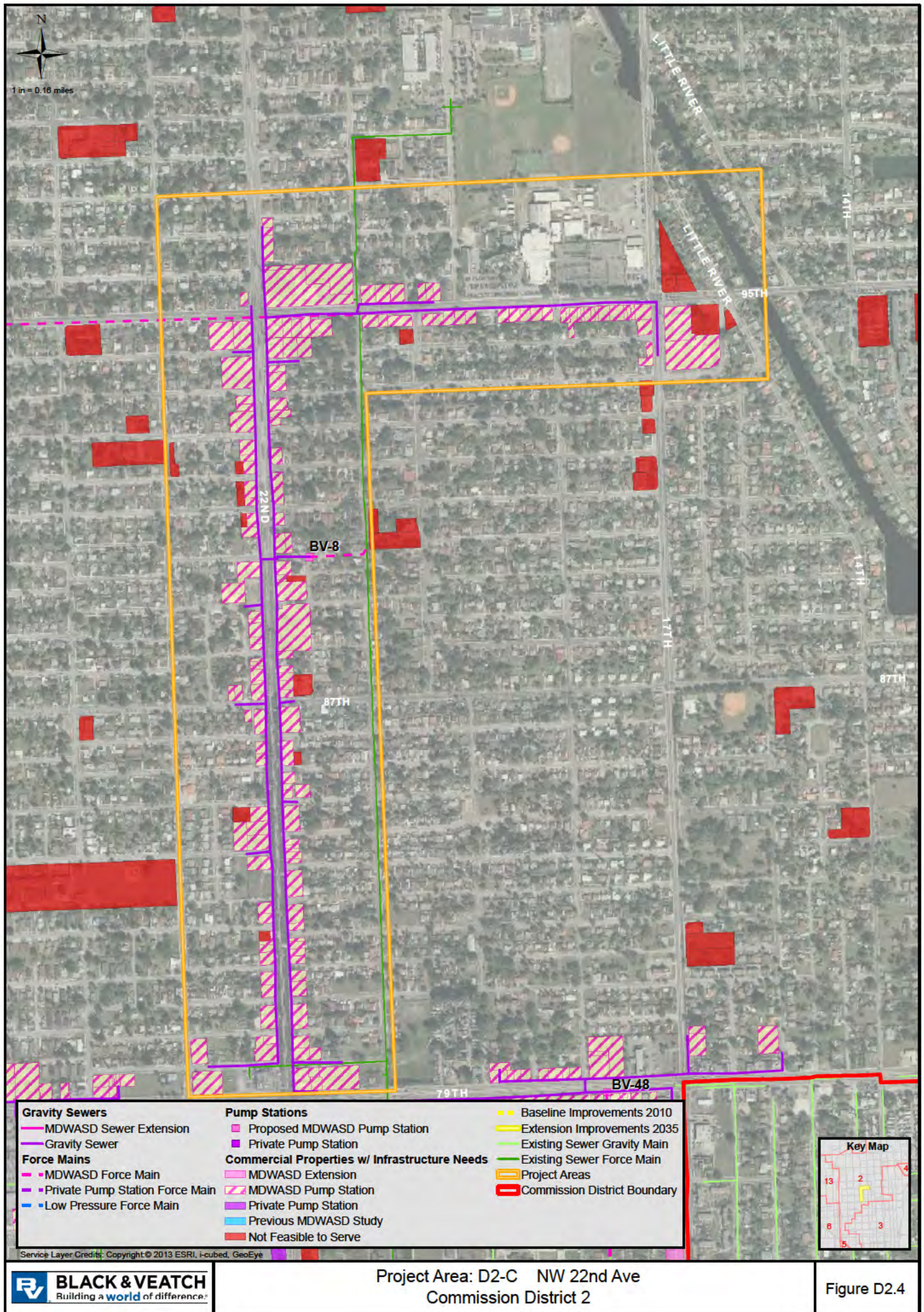
Figure D2.3 – Project Area: D2-B NW 79th St

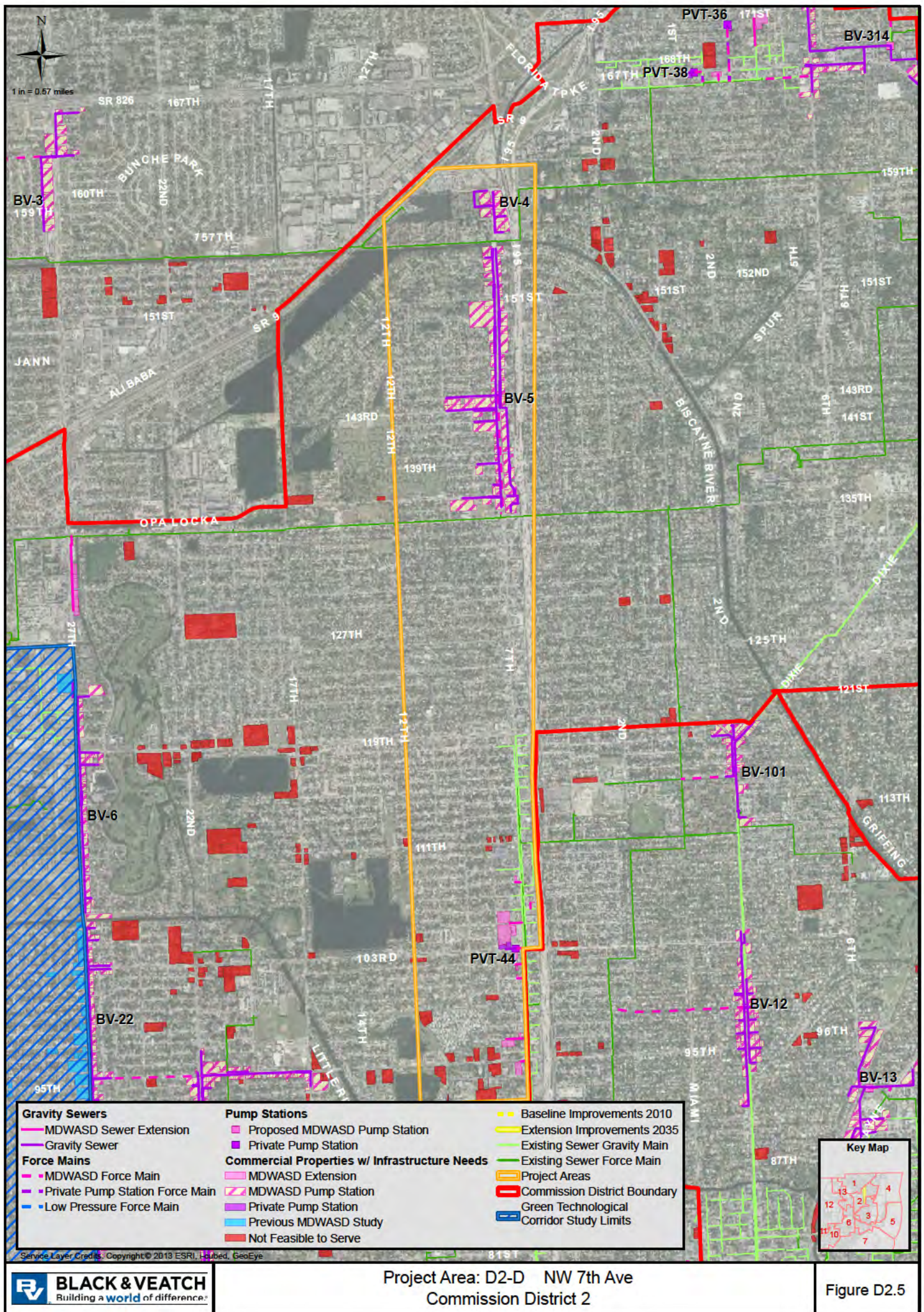
Figure D2.4 – Project Area: D2-C NW 22nd Ave

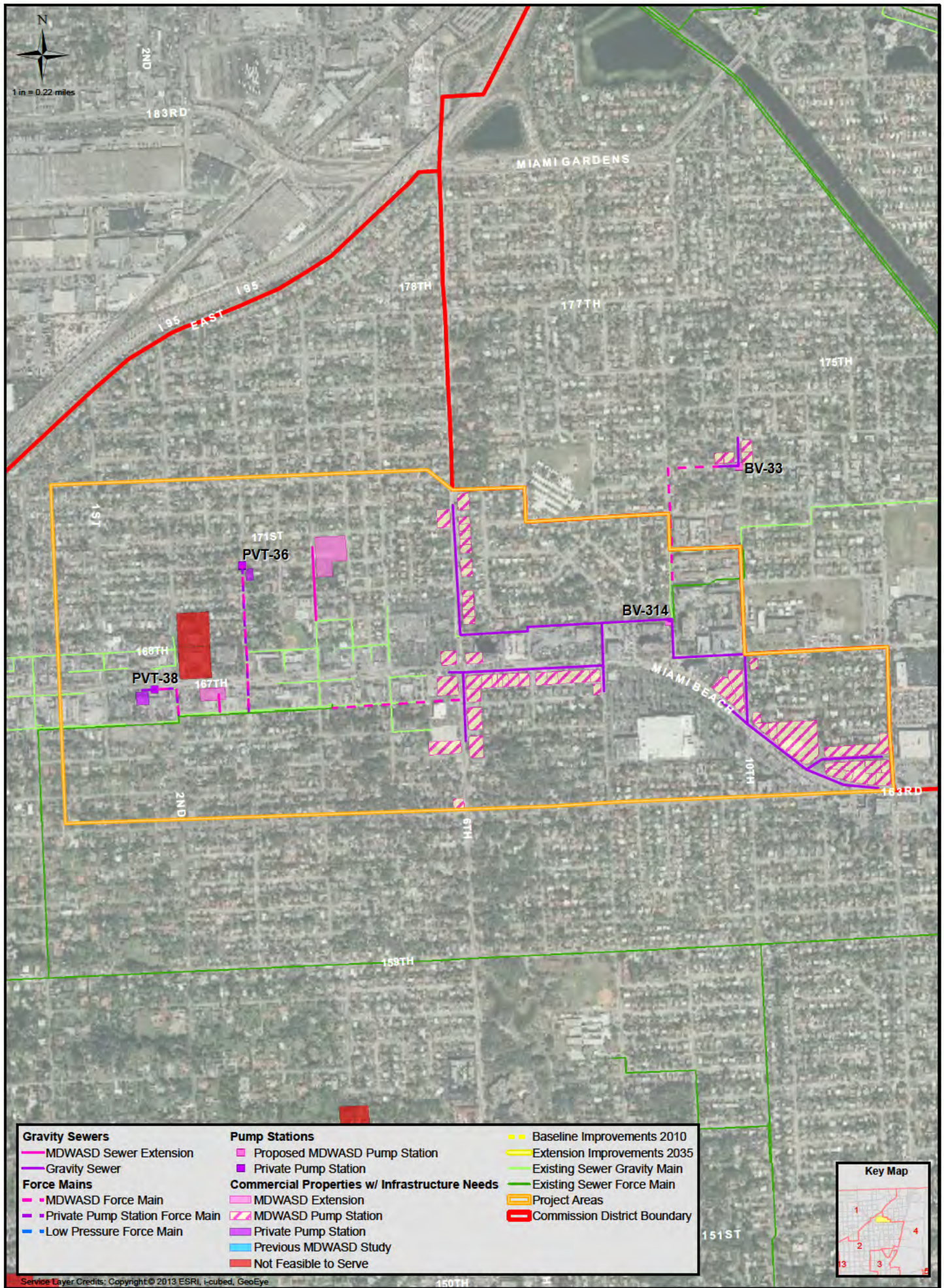
Figure D2.5 – Project Area: D2-D NW 7th Ave

Figure D2.6 – Project Area: D2-E NW 2nd Ave/ 6th Ave

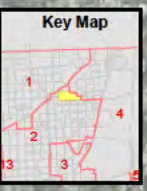








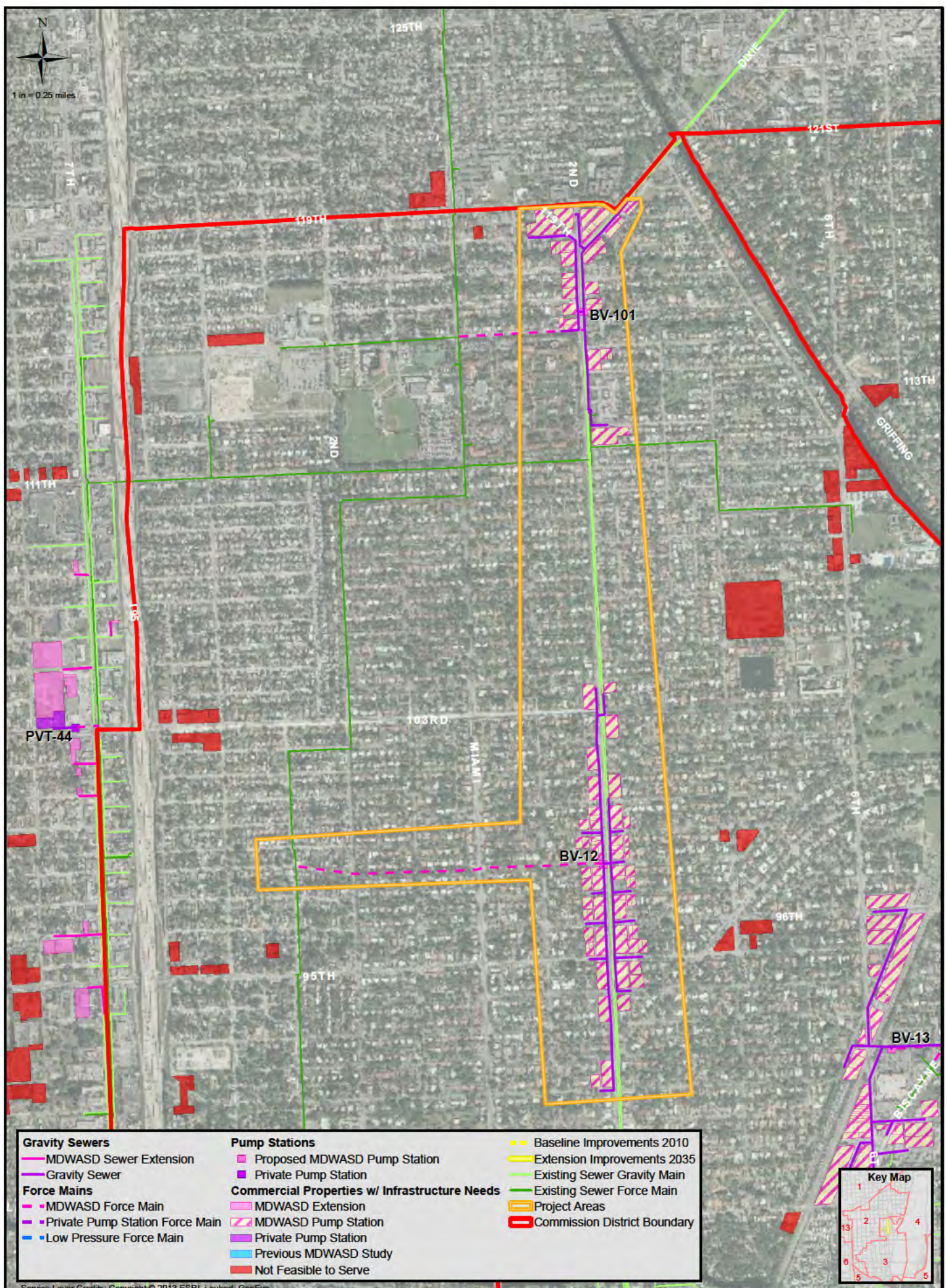
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District 3 Figures

Figure D3.2 – Project Area: D3-A NE 2nd Ave

Figure D3.3 – Project Area: D3-B Biscayne Boulevard



- | | | |
|---|---|--|
| Gravity Sewers
MDWASD Sewer Extension
Gravity Sewer
Force Mains
MDWASD Force Main
Private Pump Station Force Main
Low Pressure Force Main | Pump Stations
Proposed MDWASD Pump Station
Private Pump Station
Commercial Properties w/ Infrastructure Needs
MDWASD Extension
MDWASD Pump Station
Private Pump Station
Previous MDWASD Study
Not Feasible to Serve | Baseline Improvements 2010
Extension Improvements 2035
Existing Sewer Gravity Main
Existing Sewer Force Main
Project Areas
Commission District Boundary |
|---|---|--|

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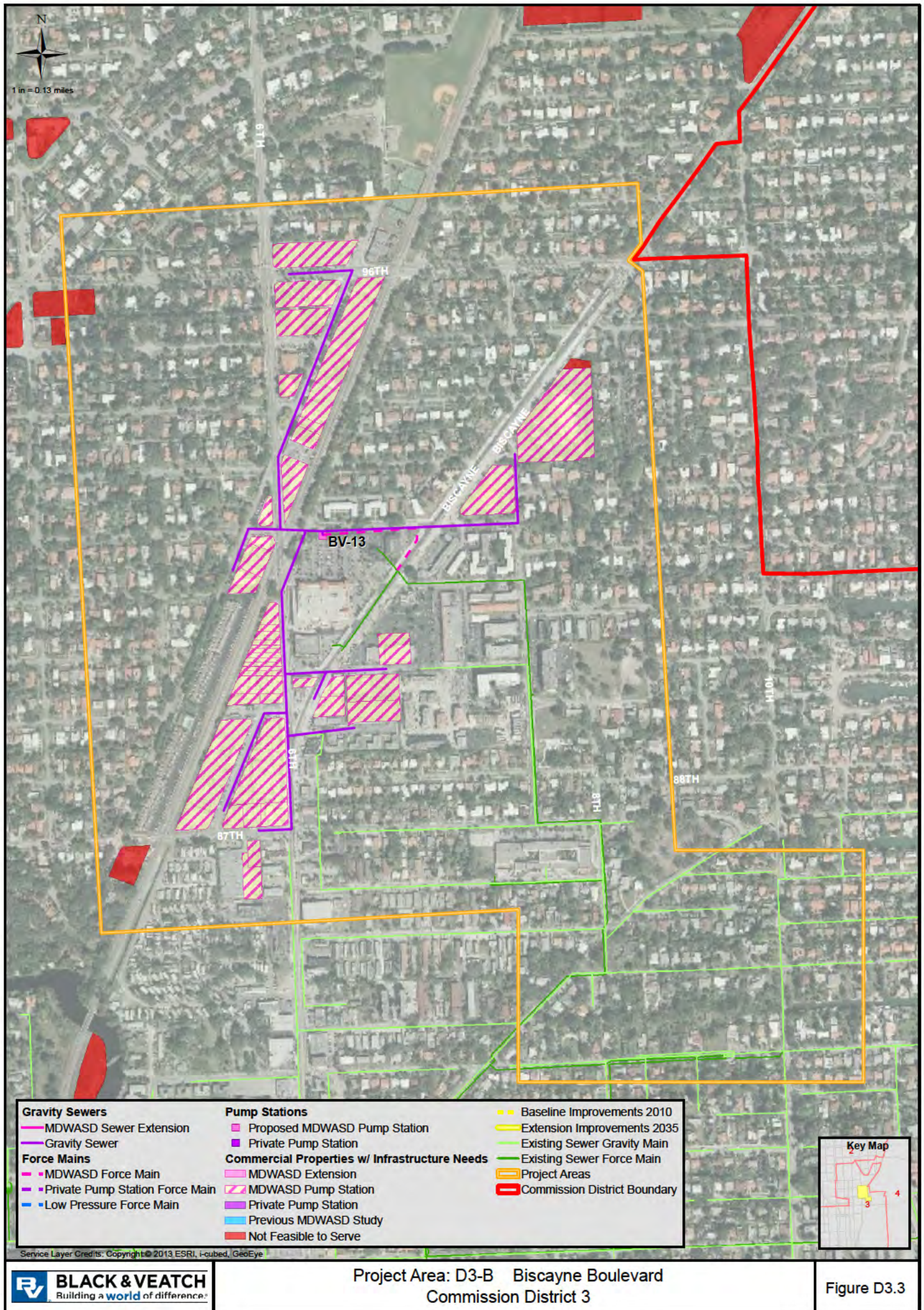
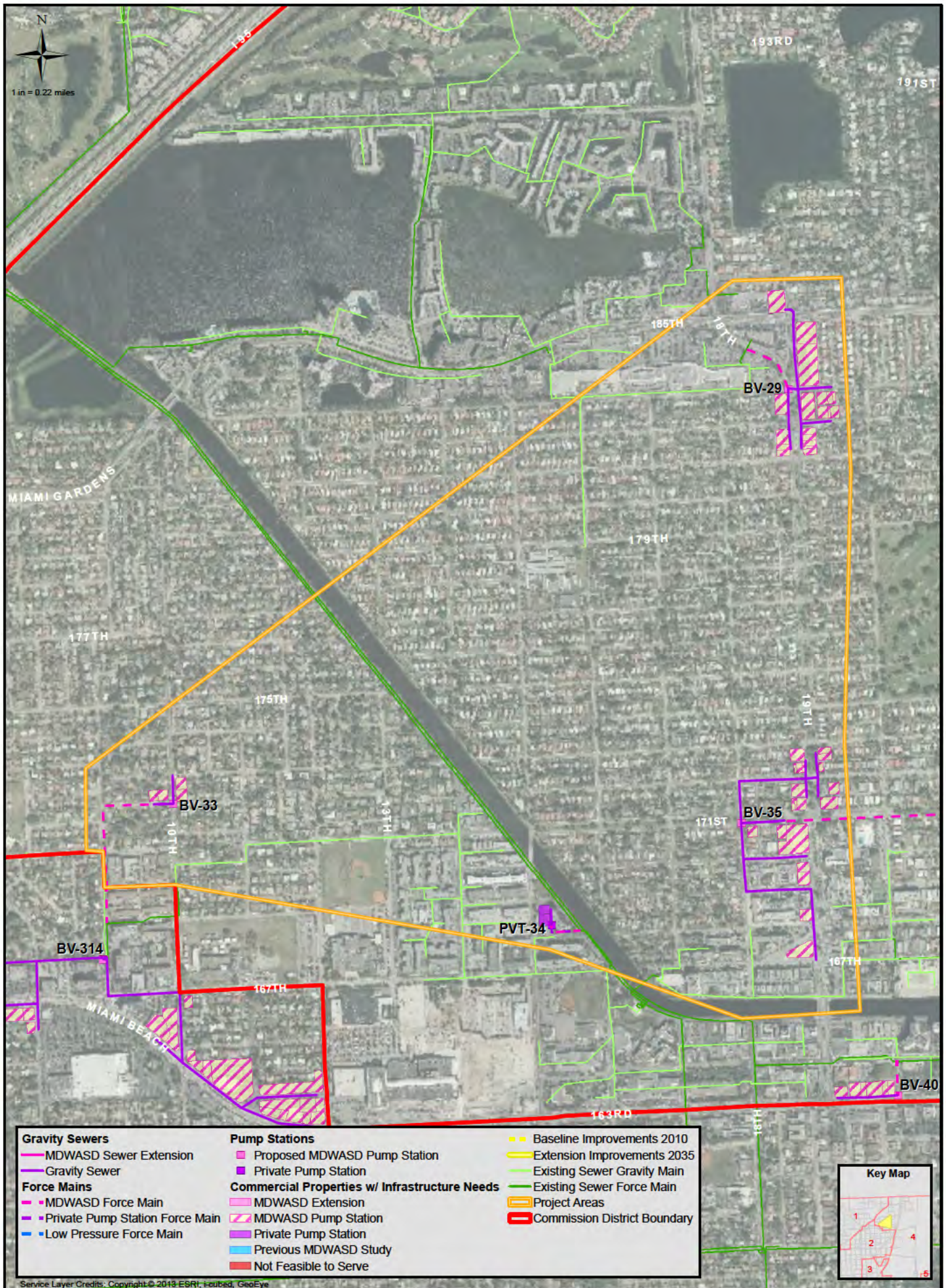


Figure D3.3

District 4 Figures

Figure D4.2 – Project Area: D4-A Biscayne Boulevard

Figure D4.3 – Project Area: D4-B NE 19th Avenue



Project Area: D4-B NE 19th Ave
Commission District 4

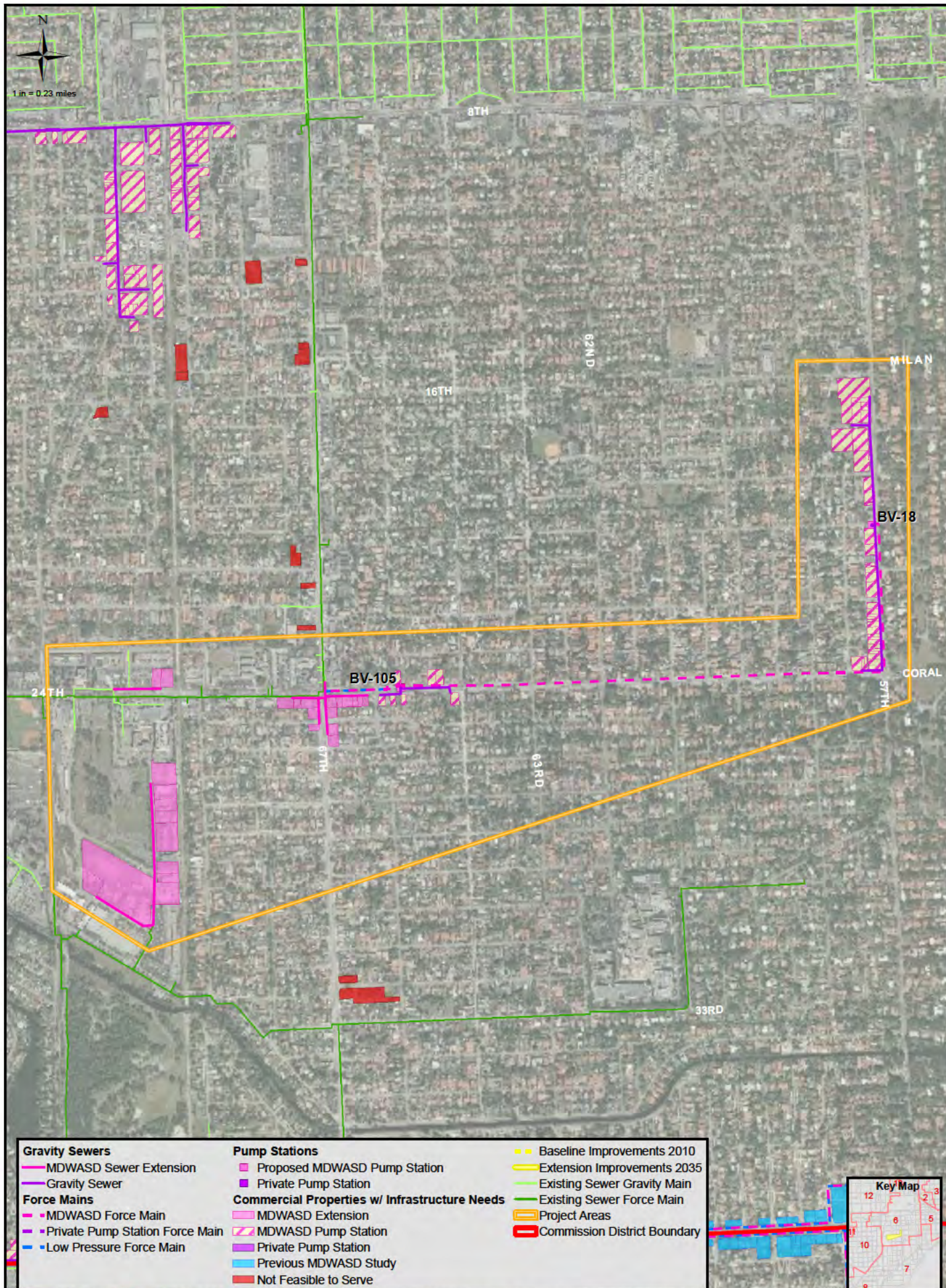
Figure D4.3

District 6 Figures

Figure D6.2 – Project Area: D6-A SW 8th Street

Figure D6.3 – Project Area: D6-B Red Road/SW 24th Street

Figure D6.4 – Project Area: D6-C Smaller Properties



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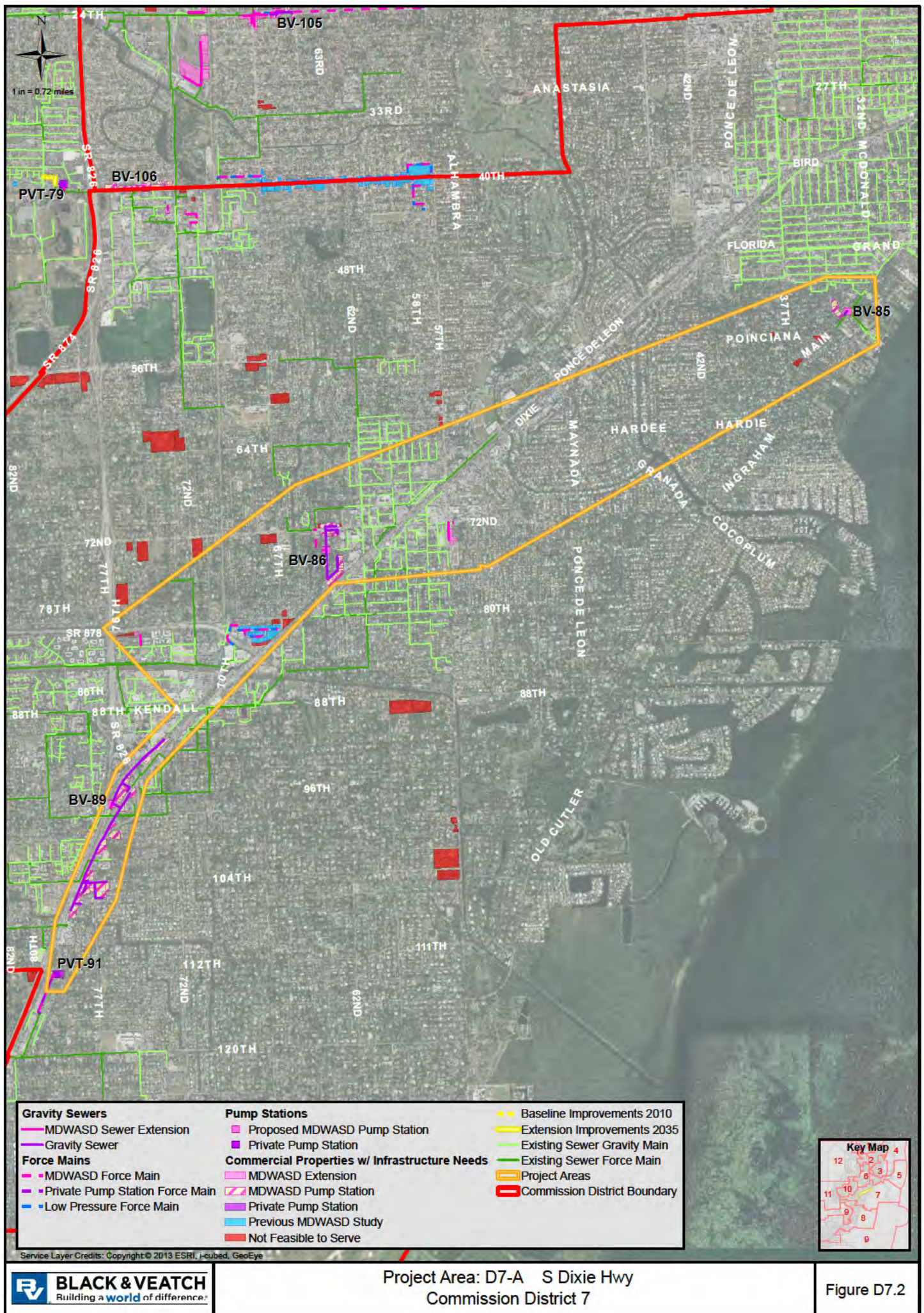


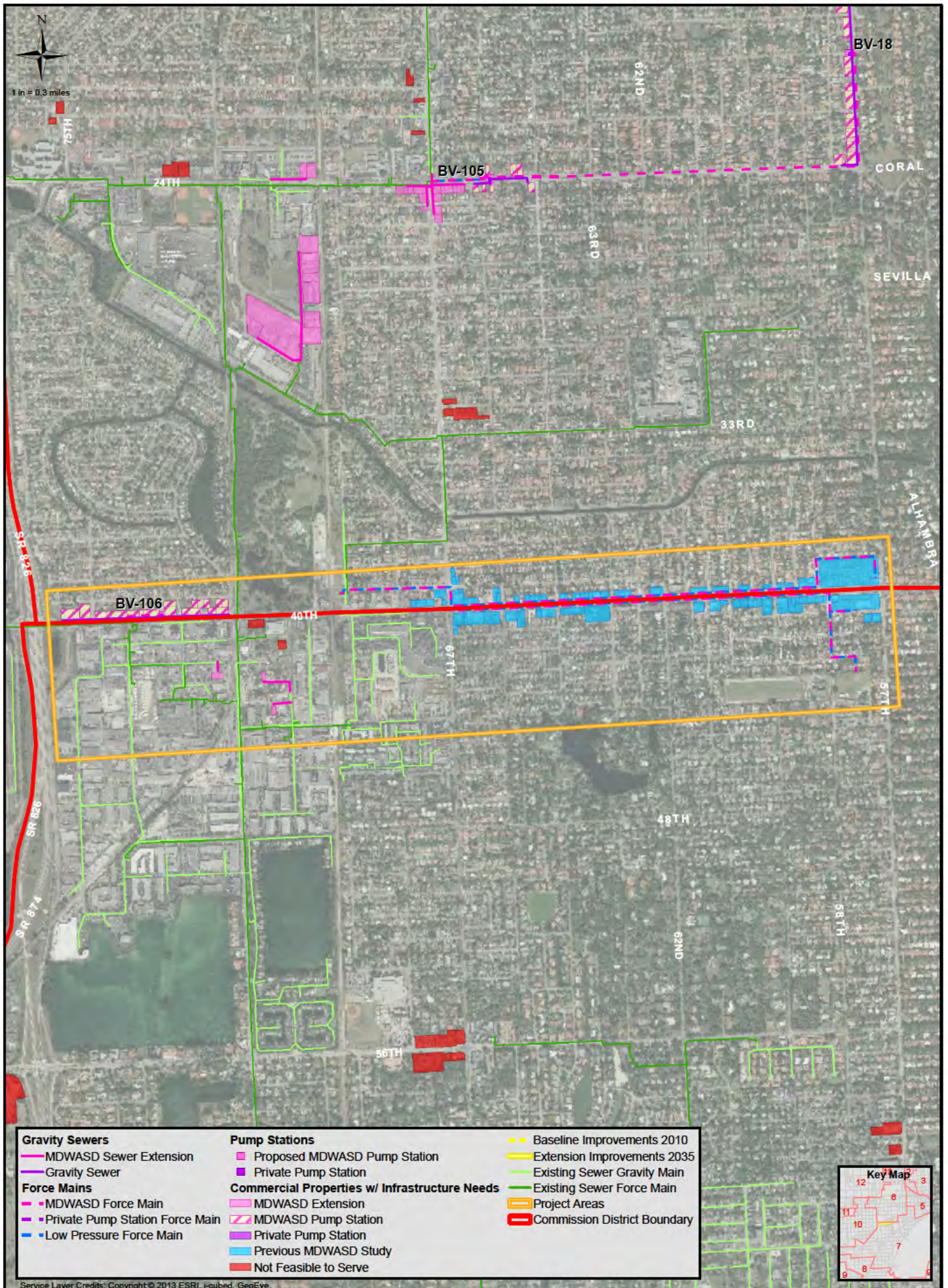
District 7 Figures

Figure D7.2 – Project Area: D7-A South Dixie Highway

Figure D7.3 – Project Area: D7-B SW 40th Street

Figure D7.4 – Project Area: D7-C SW 46th Street





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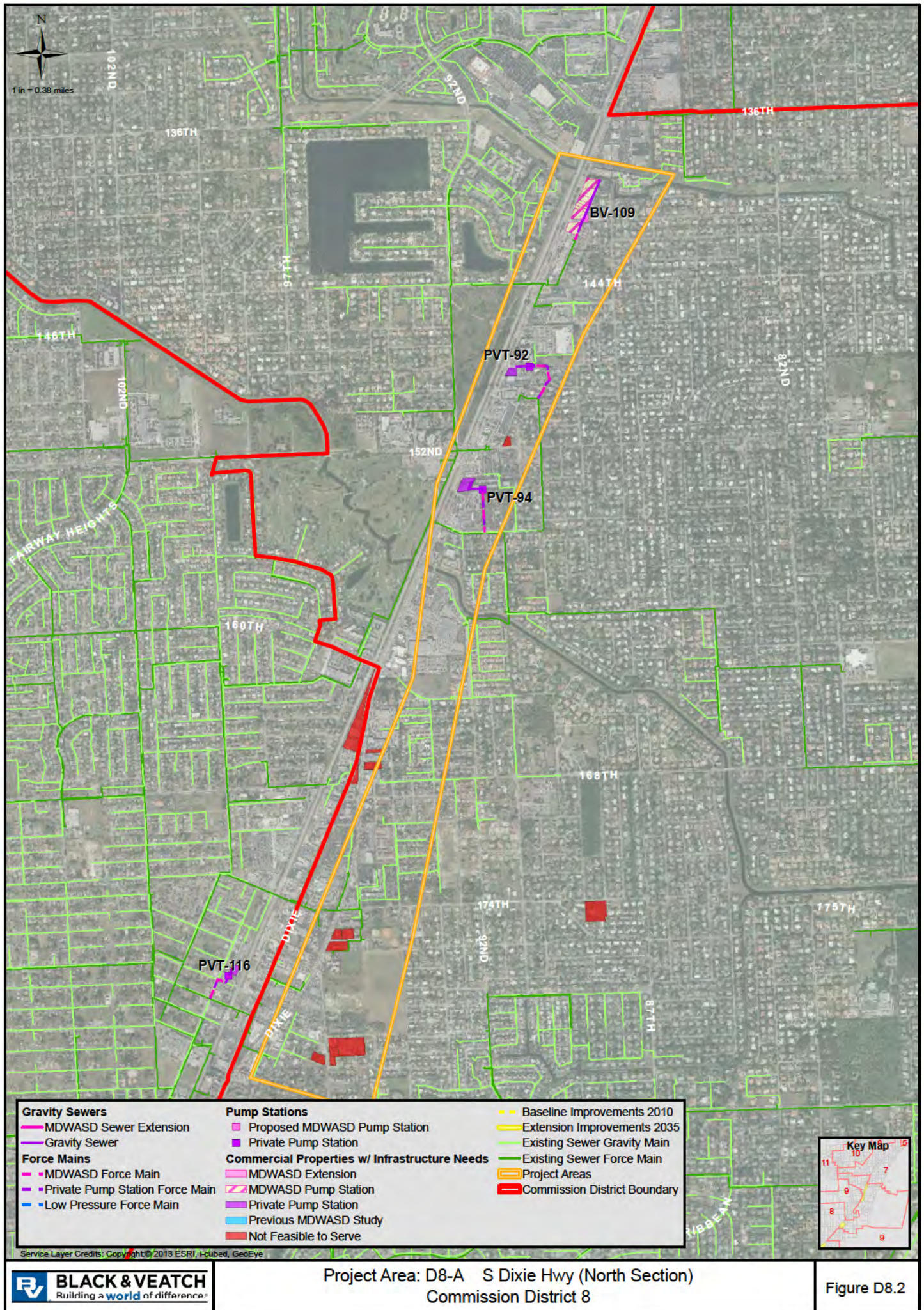
Project Area: D7-C SW 46th St
Commission District 7

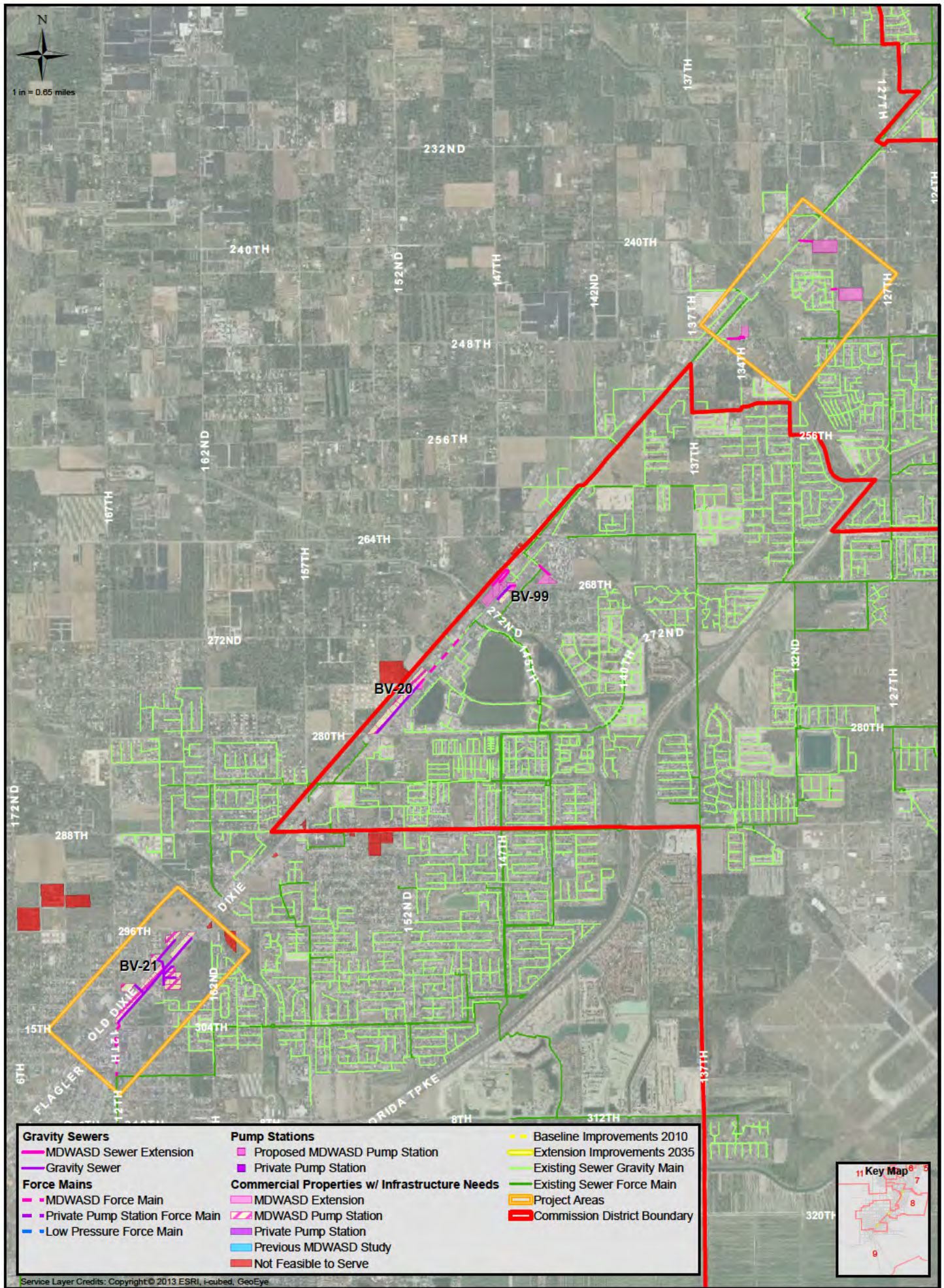
Figure D7.4

District 8 Figures

Figure D8.2 – Project Area: D8-A South Dixie Highway (North Section)

Figure D8.3 – Project Area: D8-A South Dixie Highway (South Section)





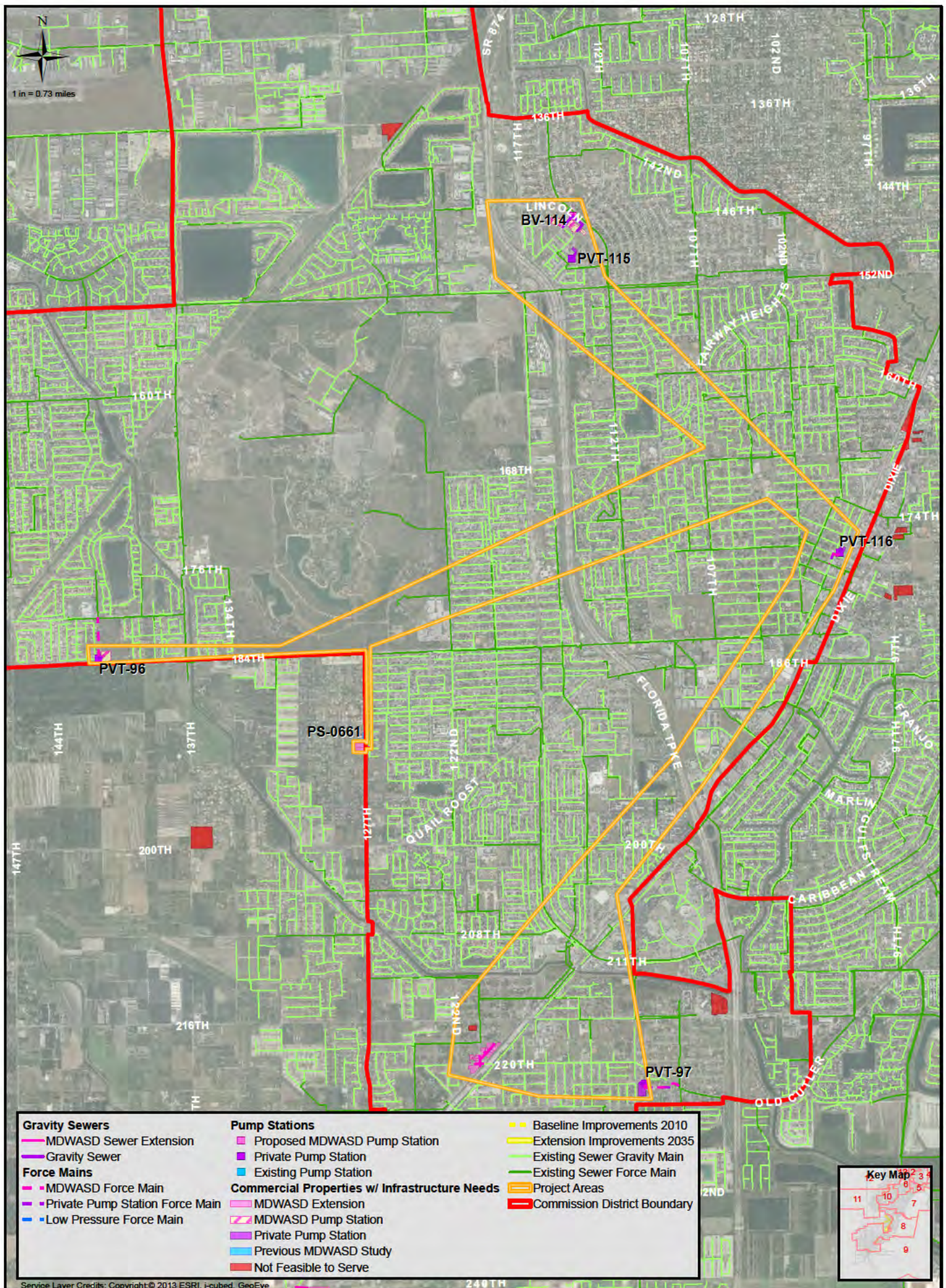
Project Area: D8-A S Dixie Hwy (South Section)
Commission District 8

Figure D8.3

District 9 Figures

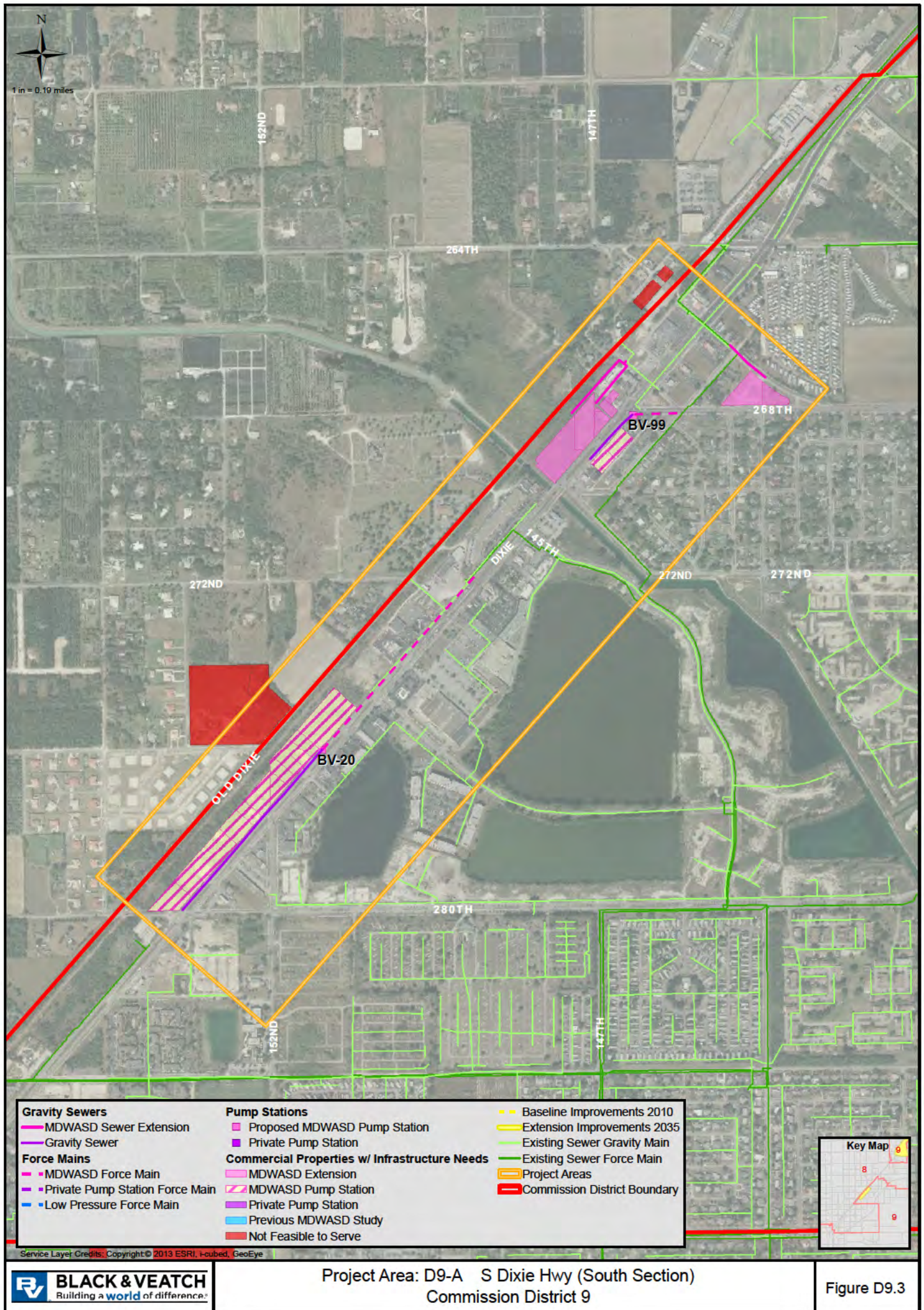
Figure D9.2 – Project Area: D9-A South Dixie Highway (North Section)

Figure D9.3 – Project Area: D9-A South Dixie Highway (South Section)



Project Area: D9-A S Dixie Hwy (North Section)
Commission District 9

Figure D9.2



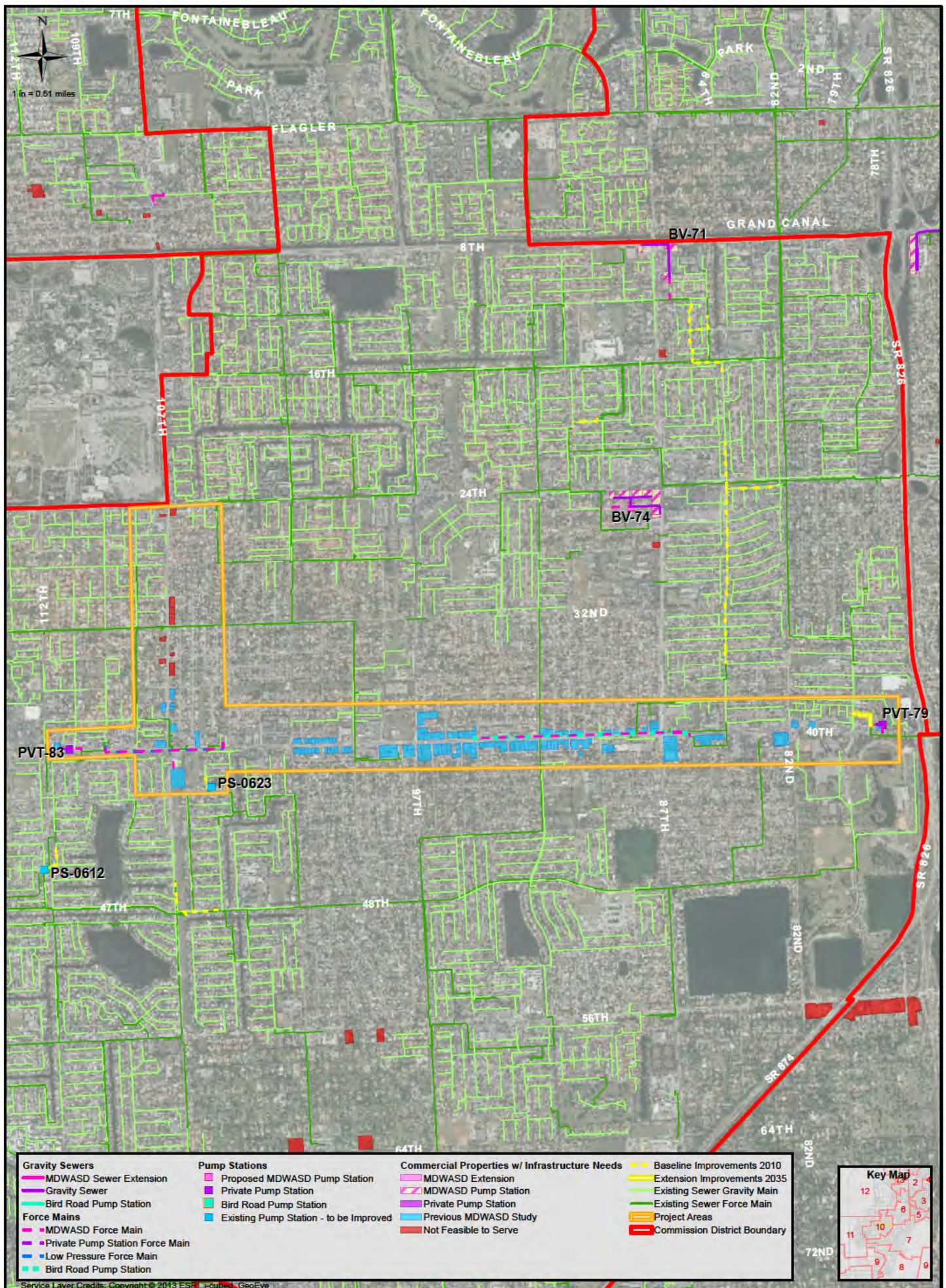
District 10 Figures

Figure D10.2 – Project Area: D10-A SW 40th Street

Figure D10.3 – Project Area: D10-B SW 56th Street

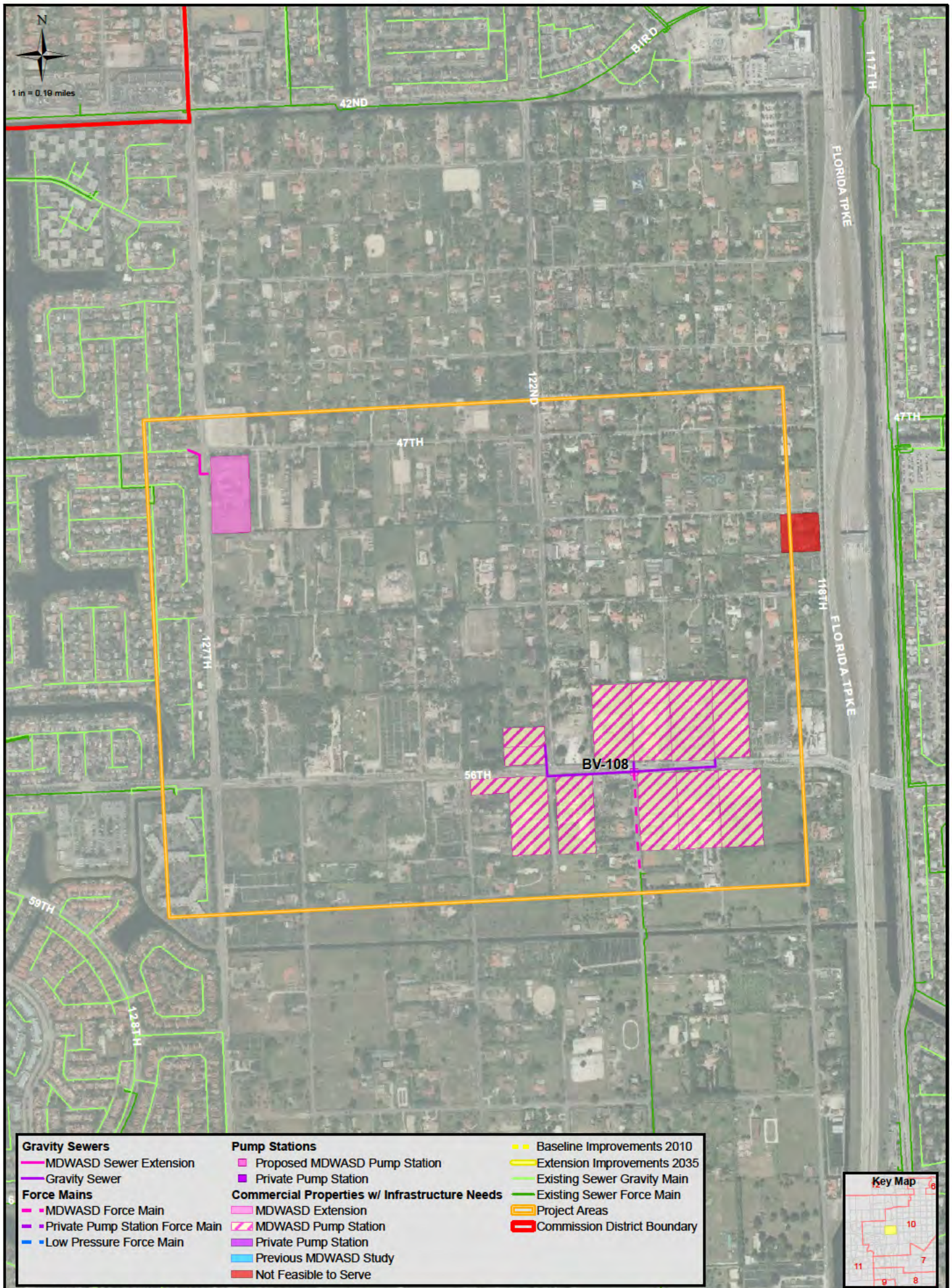
Figure D10.4 – Project Area: D10-C SW 24th Street

Figure D10.5 – Project Area: D10-D Small Properties

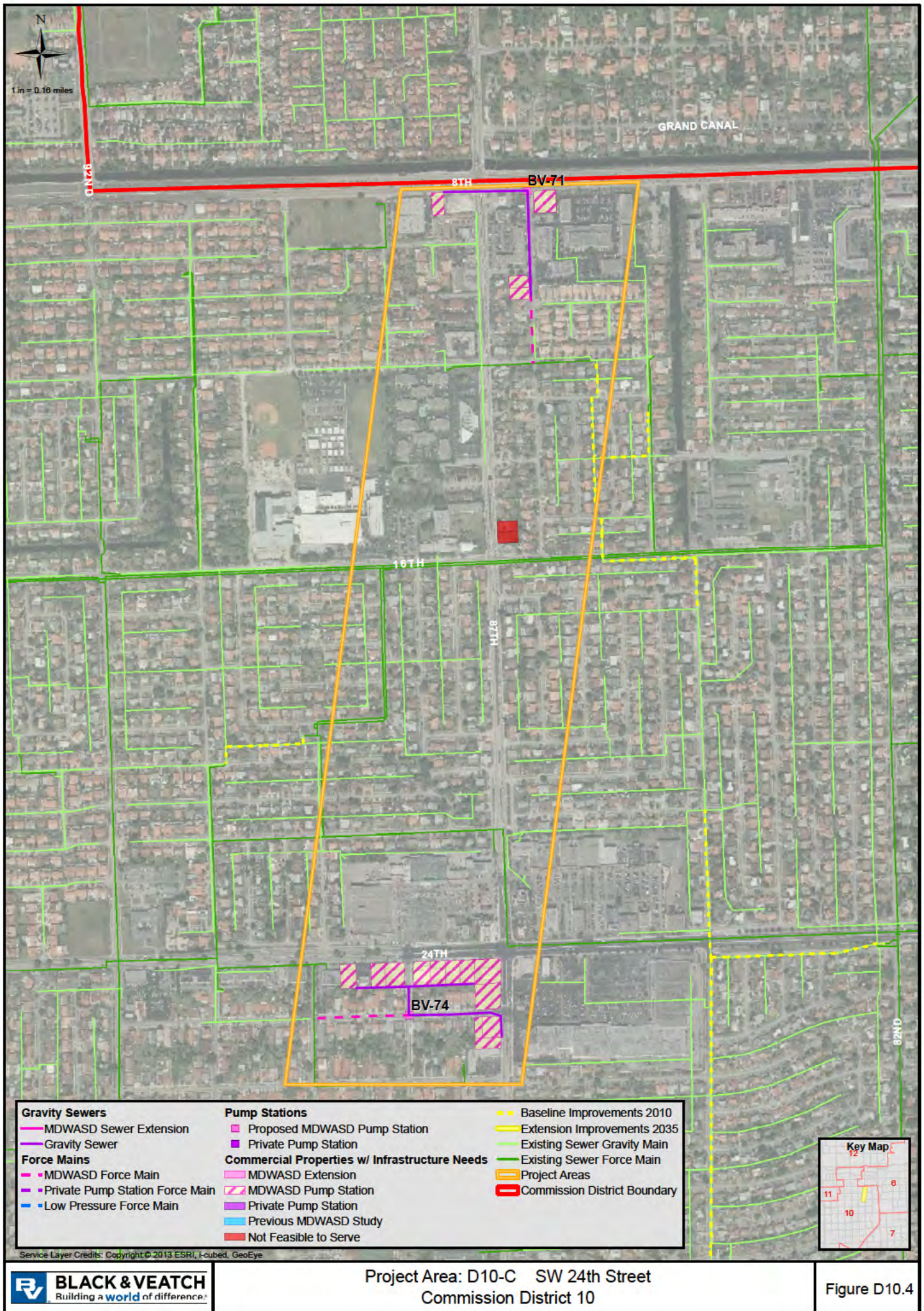


Project Area: D10-A SW 40th St
Commission District 10

Figure D10.2



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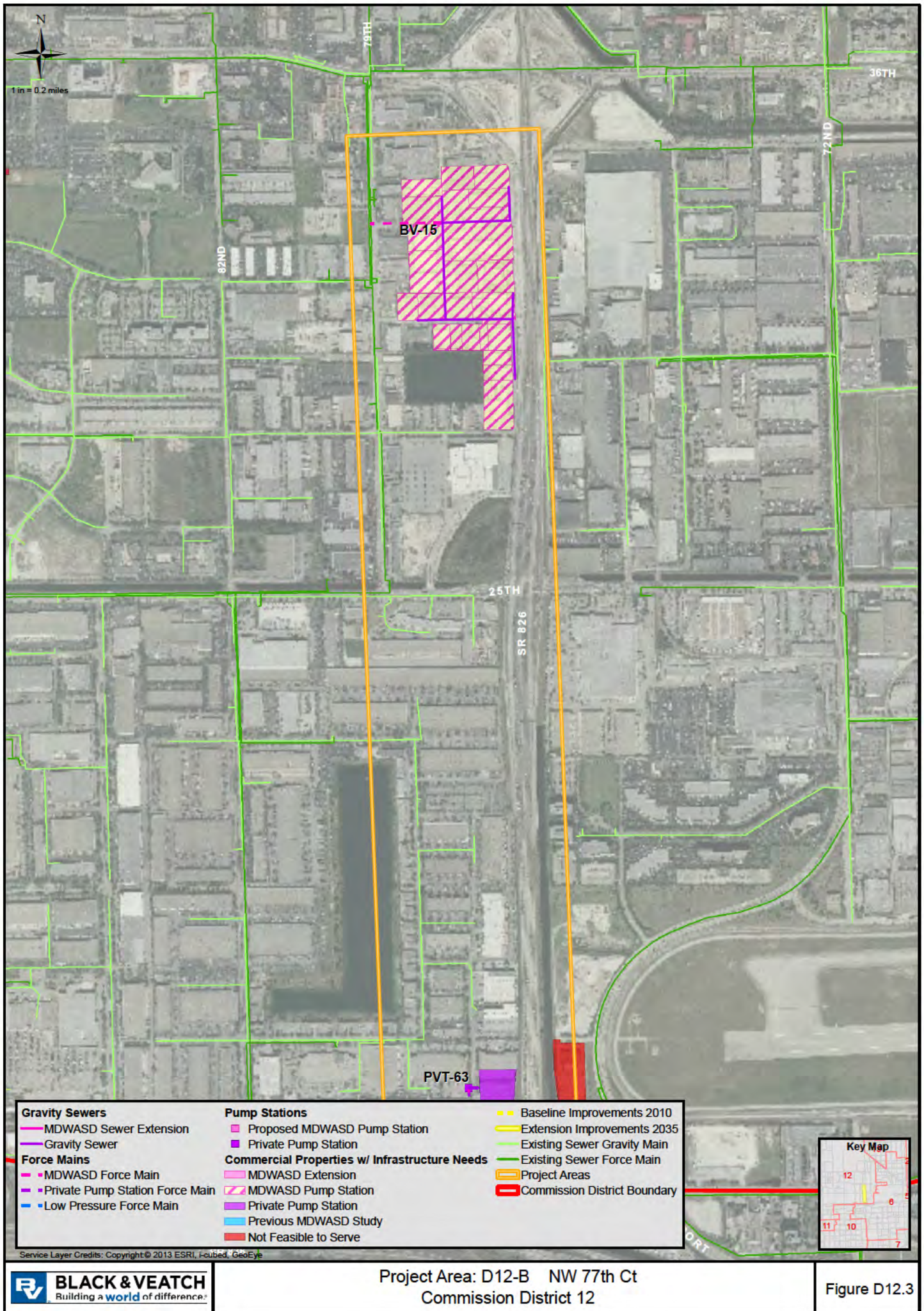
District 12 Figures

Figure D12.2 – Project Area: D12-A NW 74th Street

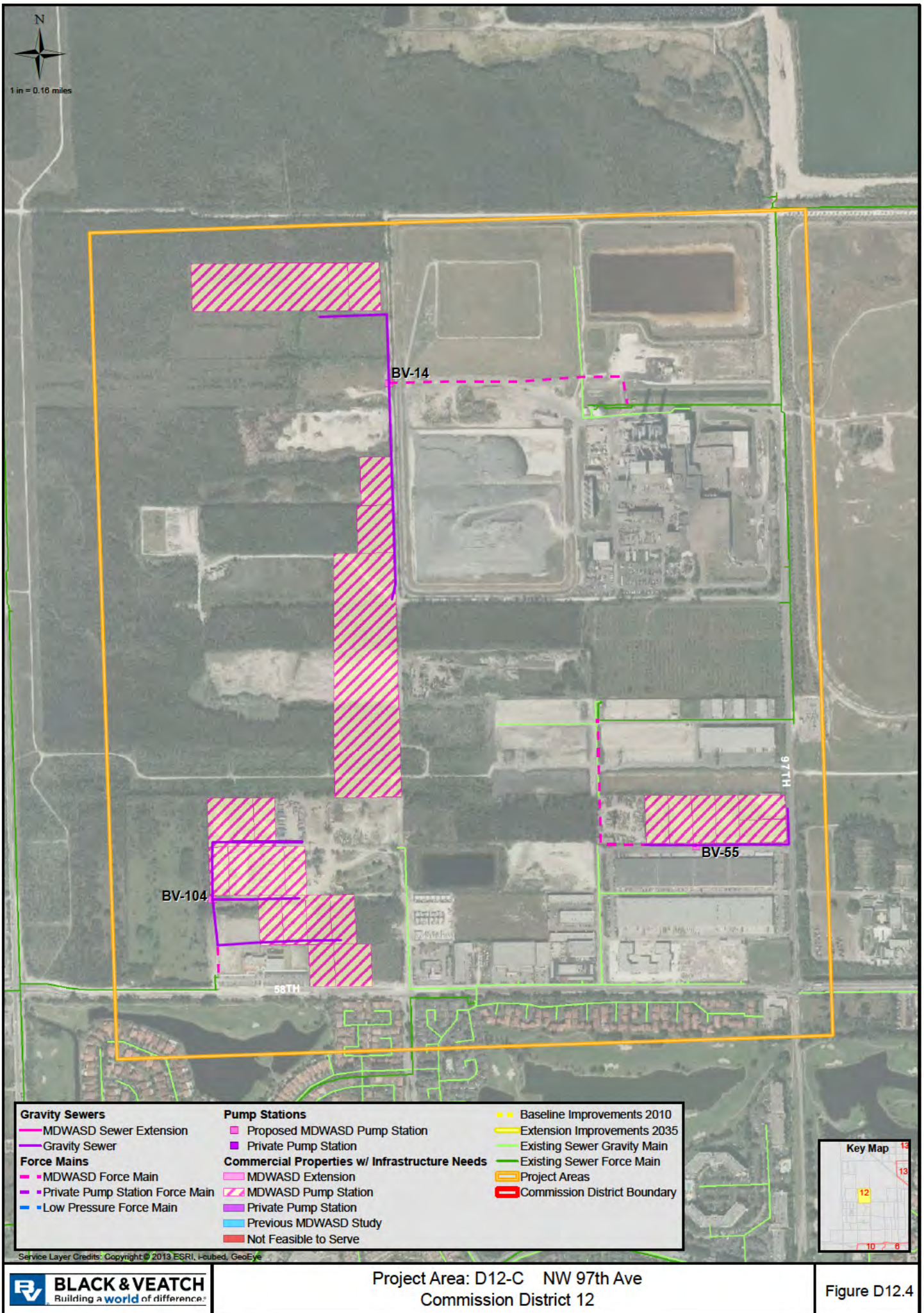
Figure D12.3 – Project Area: D12-B NW 77th Court

Figure D12.4 – Project Area: D12-C NW 97th Avenue

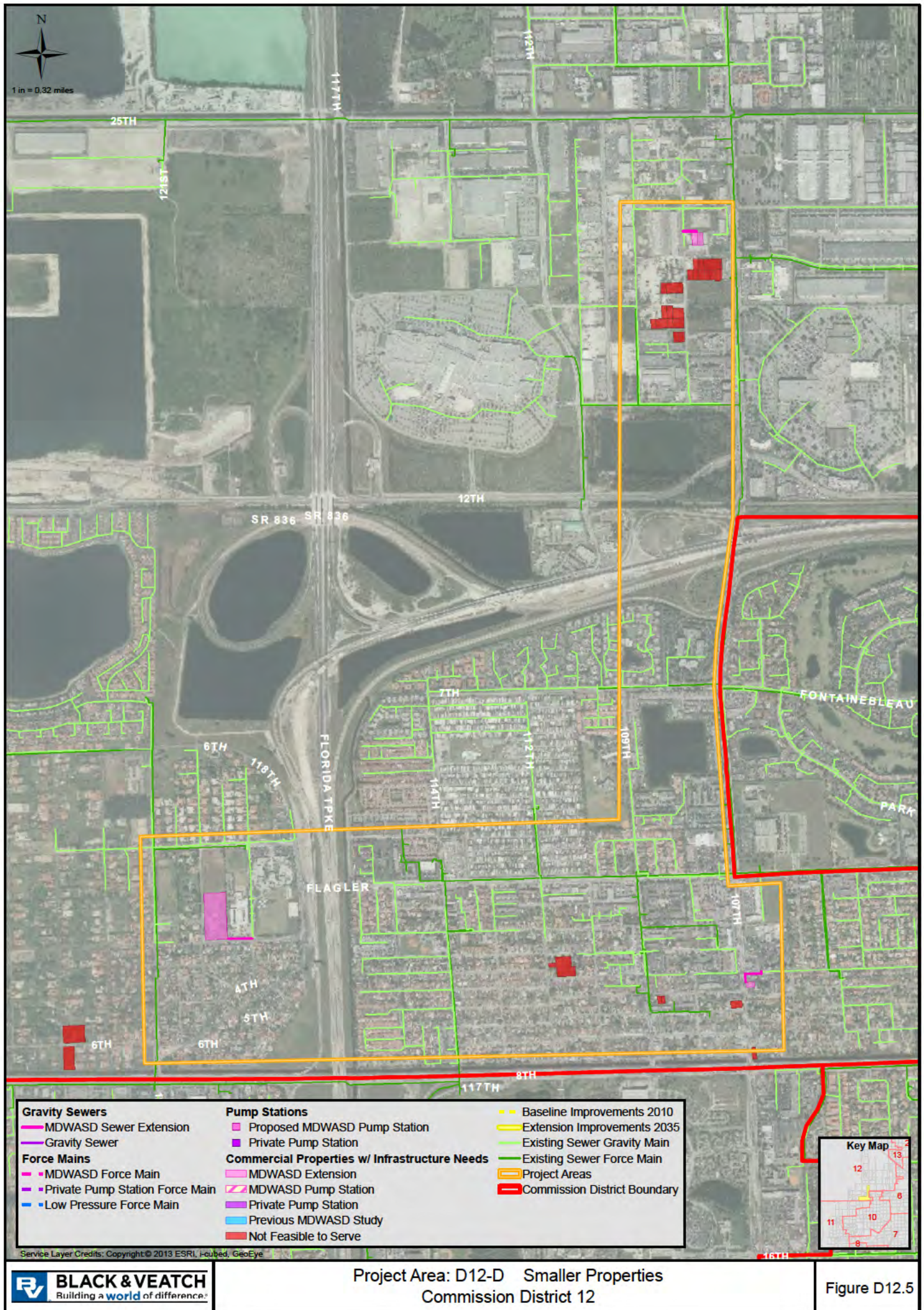
Figure D12.5 – Project Area: D12-D Smaller Properties



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Appendix B

Resolution R-597-13

Appendix C

Schedules

MDWASD COMMERCIAL PROPERTIES

Unfunded



Activity Name	Original Duration	Start	Finish	Budgeted Total Cost	Sewer Service to Commercial Properties																																																																																																					
Sewer Service to Commercial Properties	1839	01-Jul-15	18-Jul-22	\$273,601,240.00																																																																																																						
Unfunded Land Acquisition and A&E Selection	261	01-Jul-15	29-Jun-16	\$13,411,743.00																																																																																																						
Land Acquisition	195	01-Jul-15*	29-Mar-16	\$9,800,000.00																																																																																																						
A&E Selection	194	01-Oct-15*	29-Jun-16	\$3,611,743.00																																																																																																						
District 1	571	30-Jun-16	06-Sep-18	\$11,952,660.00																																																																																																						
D1-A NW 167th Avenue	571	30-Jun-16	06-Sep-18	\$6,498,864.00																																																																																																						
Design	152	30-Jun-16	27-Jan-17	\$867,428.00																																																																																																						
Dry Run/Permit	64	30-Jan-17	27-Apr-17	\$27,392.00																																																																																																						
Contractor Selection	197	28-Apr-17	29-Jan-18	\$18,262.00																																																																																																						
Construction	158	30-Jan-18	06-Sep-18	\$5,585,782.00																																																																																																						
D1-B NW 27th Avenue	464	30-Jun-16	10-Apr-18	\$5,453,796.00																																																																																																						
Design	152	30-Jun-16	27-Jan-17	\$710,880.00																																																																																																						
Dry Run/Permit	64	30-Jan-17	27-Apr-17	\$22,449.00																																																																																																						
Contractor Selection	88	28-Apr-17	29-Aug-17	\$14,966.00																																																																																																						
Construction	160	30-Aug-17	10-Apr-18	\$4,705,501.00																																																																																																						
District 2	1309	30-Jun-16	06-Jul-21	\$87,765,861.00																																																																																																						
D2-A NW 27th Avenue	900	30-Jun-16	11-Dec-19	\$20,040,947.00																																																																																																						
Design	391	30-Jun-16	28-Dec-17	\$2,570,141.00																																																																																																						
Dry Run/Permit	64	29-Dec-17	28-Mar-18	\$81,162.00																																																																																																						
Contractor Selection	197	29-Mar-18	28-Dec-18	\$54,108.00																																																																																																						
Construction	248	31-Dec-18	11-Dec-19	\$17,335,536.00																																																																																																						
D2-B NW 36th Avenue	929	30-Jun-16	21-Jan-20	\$14,800,549.00																																																																																																						
Design	326	30-Jun-16	28-Sep-17	\$1,936,387.00																																																																																																						
Dry Run/Permit	64	29-Sep-17	27-Dec-17	\$61,149.00																																																																																																						
Contractor Selection	197	28-Dec-17	28-Sep-18	\$40,766.00																																																																																																						
Construction	342	01-Oct-18*	21-Jan-20	\$12,762,247.00																																																																																																						
D2-C NW 22nd Avenue	761	30-Jun-16	30-May-19	\$8,057,744.00																																																																																																						
Design	261	30-Jun-16	29-Jun-17	\$1,038,287.00																																																																																																						
Dry Run/Permit	64	30-Jun-17	27-Sep-17	\$32,788.00																																																																																																						
Contractor Selection	197	28-Sep-17	29-Jun-18	\$21,859.00																																																																																																						
Construction	239	02-Jul-18	30-May-19	\$6,964,810.00																																																																																																						
D2-D NW 7th Avenue	929	03-Jul-17	21-Jan-21	\$13,872,799.00																																																																																																						
Design	326	03-Jul-17*	01-Oct-18	\$1,794,589.00																																																																																																						
Dry Run/Permit	64	02-Oct-18	28-Dec-18	\$56,671.00																																																																																																						
Contractor Selection	197	31-Dec-18	01-Oct-19	\$37,781.00																																																																																																						
Construction	342	02-Oct-19	21-Jan-21	\$11,983,758.00																																																																																																						
D2-E NE 2nd Ave and NE 6th Avenue	709	01-Sep-17	20-May-20	\$6,203,097.00																																																																																																						
Design	261	01-Sep-17*	31-Aug-18	\$805,093.00																																																																																																						
Dry Run/Permit	64	03-Sep-18	29-Nov-18	\$25,424.00																																																																																																						
Contractor Selection	197	30-Nov-18	02-Sep-19	\$16,949.00																																																																																																						
Construction	187	03-Sep-19	20-May-20	\$5,355,631.00																																																																																																						
GTC Green Technological Corridor Phase 2	894	01-Feb-18	06-Jul-21	\$24,790,725.00																																																																																																						
Design	174	01-Feb-18*	02-Oct-18	\$1,255,006.00																																																																																																						
Dry Run/Permit	132	03-Oct-18	04-Apr-19	\$251,001.00																																																																																																						
Contractor Selection	197	05-Apr-19	06-Jan-20	\$26,551.00																																																																																																						
Construction	391	07-Jan-20	06-Jul-21	\$23,258,167.00																																																																																																						
District 3	1098	30-Jun-16	14-Sep-20	\$15,314,122.00																																																																																																						
D3-A NE 2nd Avenue	771	02-Oct-17	14-Sep-20	\$10,518,230.00																																																																																																						
Design	261	02-Oct-17*	01-Oct-18	\$1,372,803.00																																																																																																						
Dry Run/Permit	64	02-Oct-18	28-Dec-18	\$43,352.00																																																																																																						
Contractor Selection	197	31-Dec-18	01-Oct-19	\$28,901.00																																																																																																						
Construction	249	02-Oct-19	14-Sep-20	\$9,073,174.00																																																																																																						
D3-B Biscayne Boulevard	454	30-Jun-16	27-Mar-18	\$4,795,892.00																																																																																																						
Design	152	30-Jun-16*	27-Jan-17	\$628,158.00																																																																																																						
Dry Run/Permit	64	30-Jan-17	27-Apr-17	\$19,837.00																																																																																																						
Contractor Selection	88	28-Apr-17	29-Aug-17	\$13,224.00																																																																																																						

MDWASD COMMERCIAL PROPERTIES

Unfunded

[illegible]

MDWASD COMMERCIAL PROPERTIES

Unfunded



Design
 Contractor Selection
 Land Acquisition
 Summary

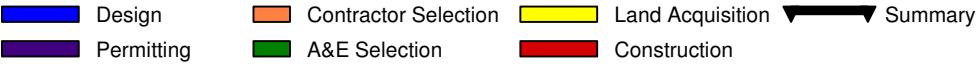
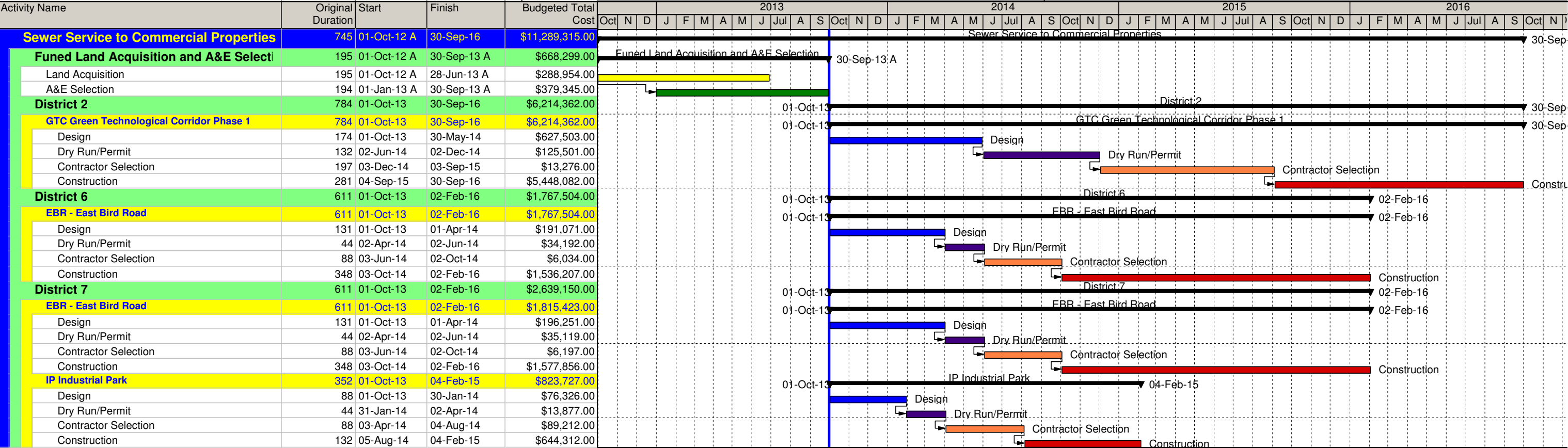
Permitting
 A&E Selection
 Construction



MDWASD COMMERCIAL PROPERTIES

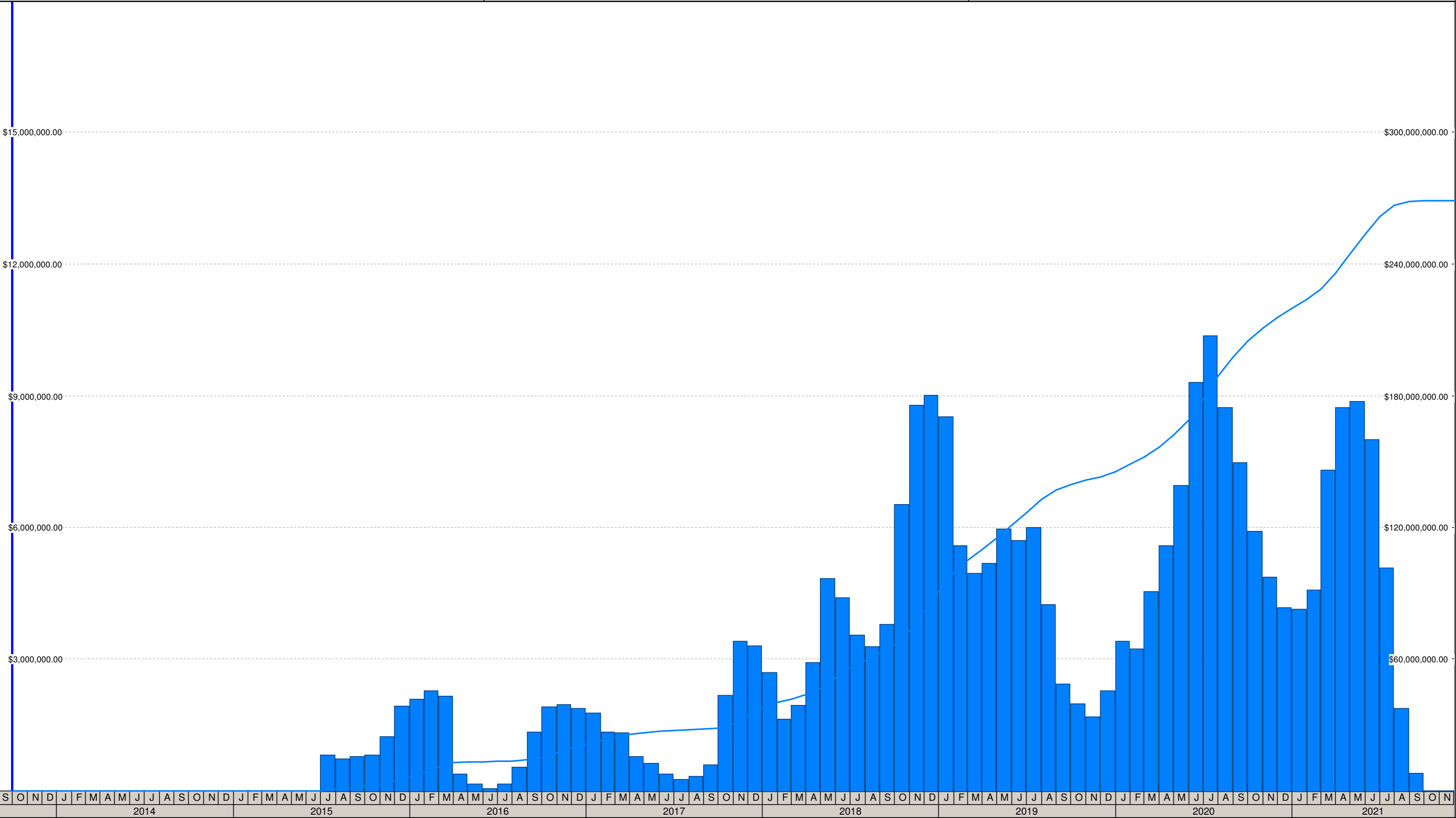


Funded



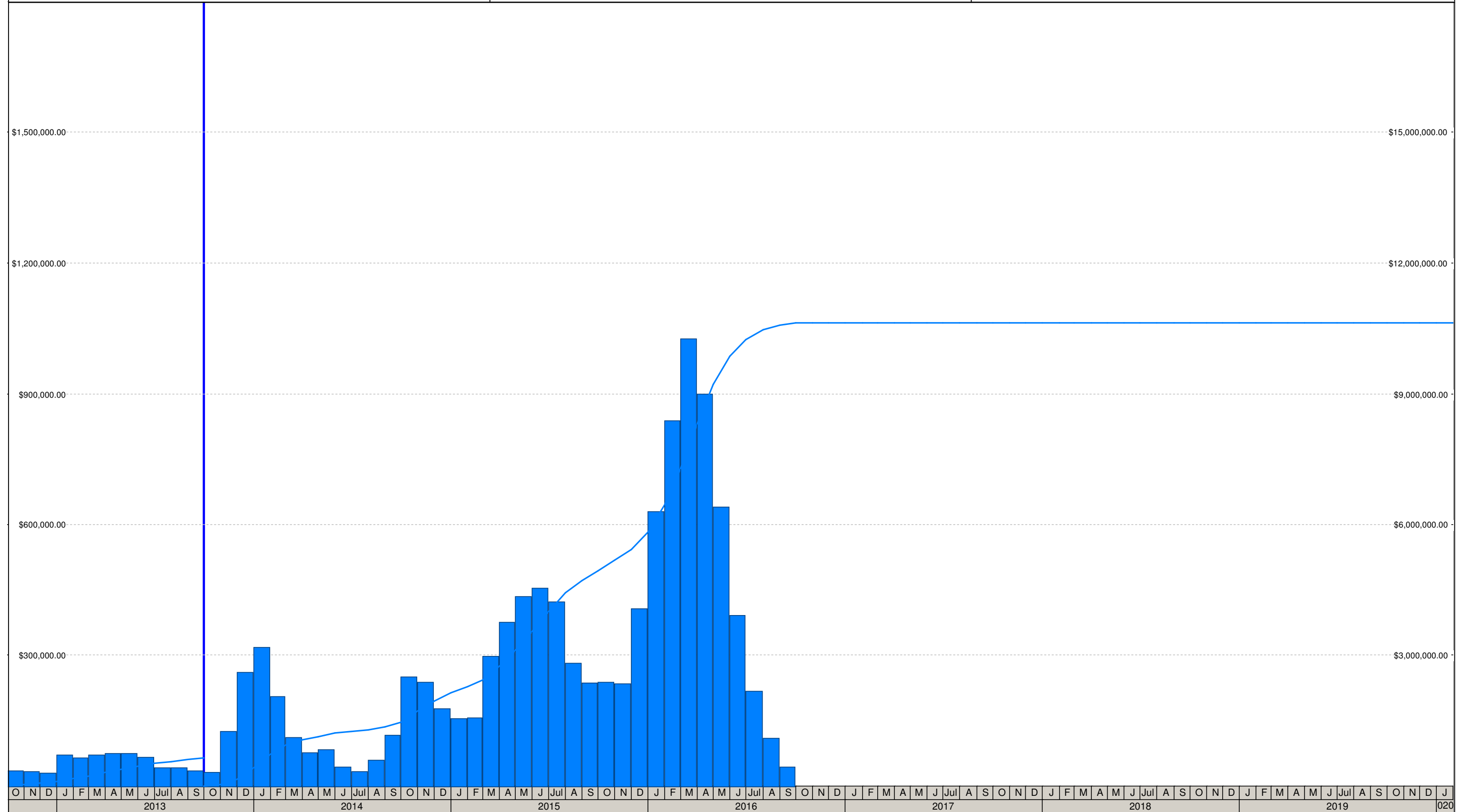
MDWASD COMMERCIAL PROPERTIES

Unfunded



■ Remaining Total Cost

02-Jan-14 10:58

MDWASD COMMERCIAL PROPERTIES***Funded***

Actual Total Remaining Total

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