

City of Marco Island Isles of Capri: Sewer Service Area

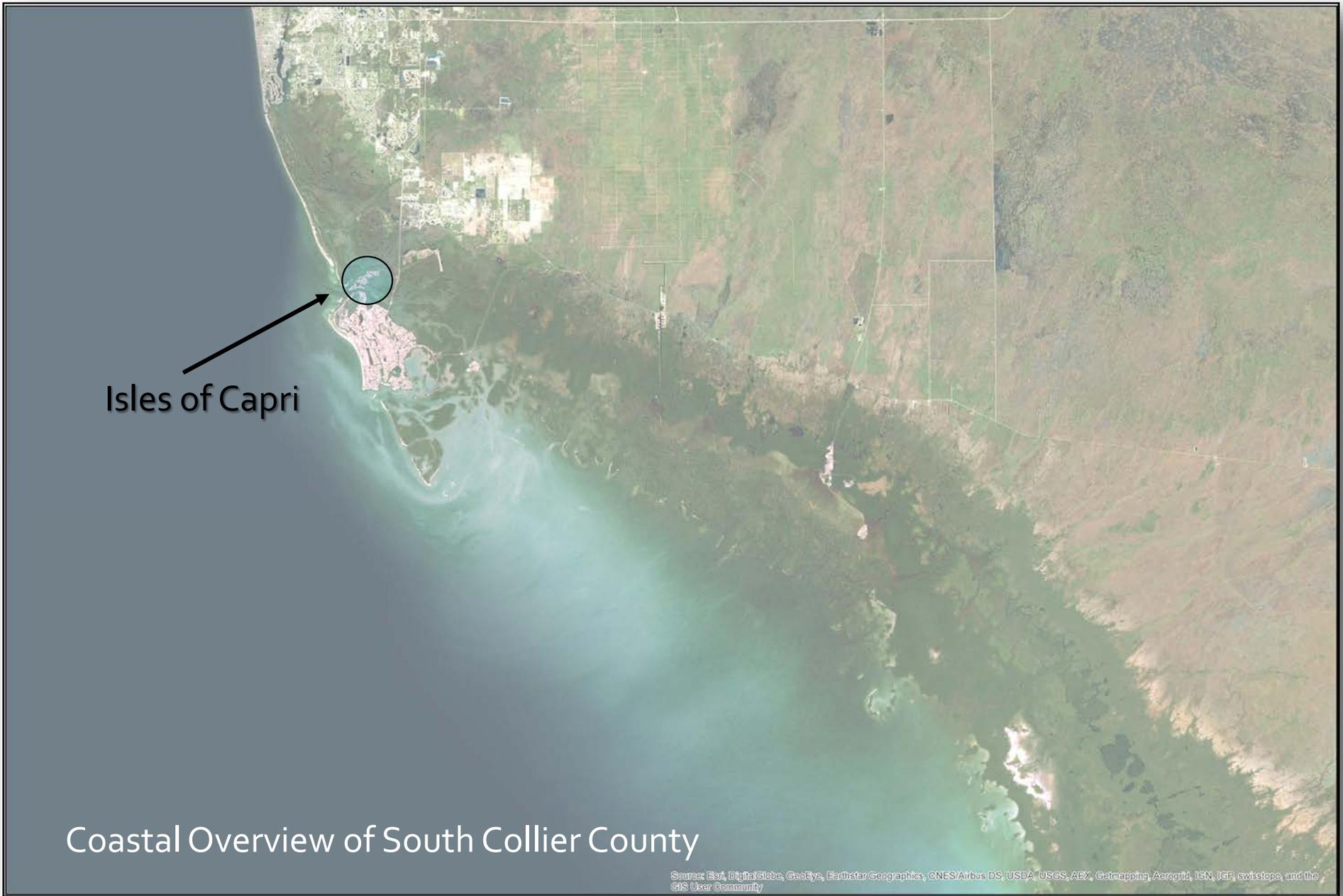
SFWMD: Big Cypress Basin Board Meeting
April 25, 2019



Objective:

Replace existing septic systems in a Barrier Island Community that are known to cause negative water quality impacts with a wastewater collection system for transmission to and treatment at the Marco Island Reclaimed Water Production Facility.

This will improve local water quality and eliminate public health concerns associated with septic systems.



Coastal Overview of South Collier County

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



Isles of Capri – Sewer Service Area

Current Sewer & Septic Systems on Isles of Capri

525 Residential Lots

- 489 on Septic Systems
- 36 Vacant

86 Commercially Zoned Lots

- 67 Undeveloped
- 19 Developed
 - 14 on Septic Systems
 - 5 connected to City Forcemain

6 Multi-Family Developments (Condominiums)

- 3 on Septic Systems - 94 Units
- 3 connected to City Forcemain – 247 Units

Issues with Septic Systems in Barrier Island Communities

- High Water Table 2-3 Feet below Grade
- Porous Soils and Sands
- No Nutrient Removal
- Less Effective when used Seasonally
- Insufficient Regulatory Monitoring, Compliance, and Enforcement
- Drainfields subject to Overflow in Storm Events
- Considered a Major Pollution Problem in Coastal Florida

Septic System Disadvantages to Property Owners

- Limits Land Use (Drainfield)
- Limits Property Renovations
- Potential High Long-Term Cost
- Uncertain Reliability
- Pending Regulations
- Susceptible to Power Outages, Storm Surge, and Sea Level Rise

Implementing Gravity Sewer Collection System

Requirements:

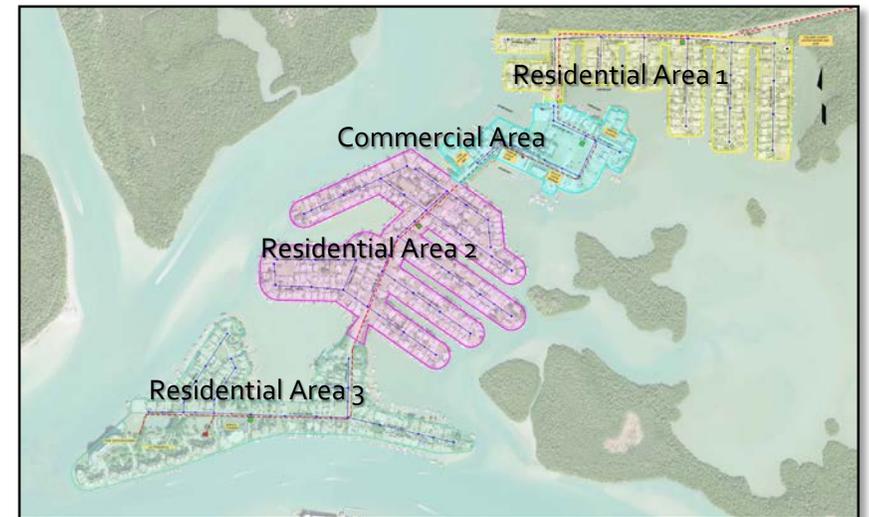
- Funding
- Interlocal Agreement between Collier County and the City of Marco Island
- Design, Permitting, and Construction of a Sanitary Sewer Collection System connecting to the Master Pumping Station

Gravity Sewer Collection System Requirements

- Marco Island has Capacity for Treating all of the Isle of Capri Wastewater at Build-Out (an Additional 240,000 gpd AADF)
- Master Pumping Station has the Capacity for both Isles of Capri and Marco Shores Service Areas
- Isles of Capri Collection System would Need:
 - 26,600 ft of Gravity Collection Lines
 - 82 Manholes
 - 4 Lift Stations

Gravity Sewer Collection System Concept

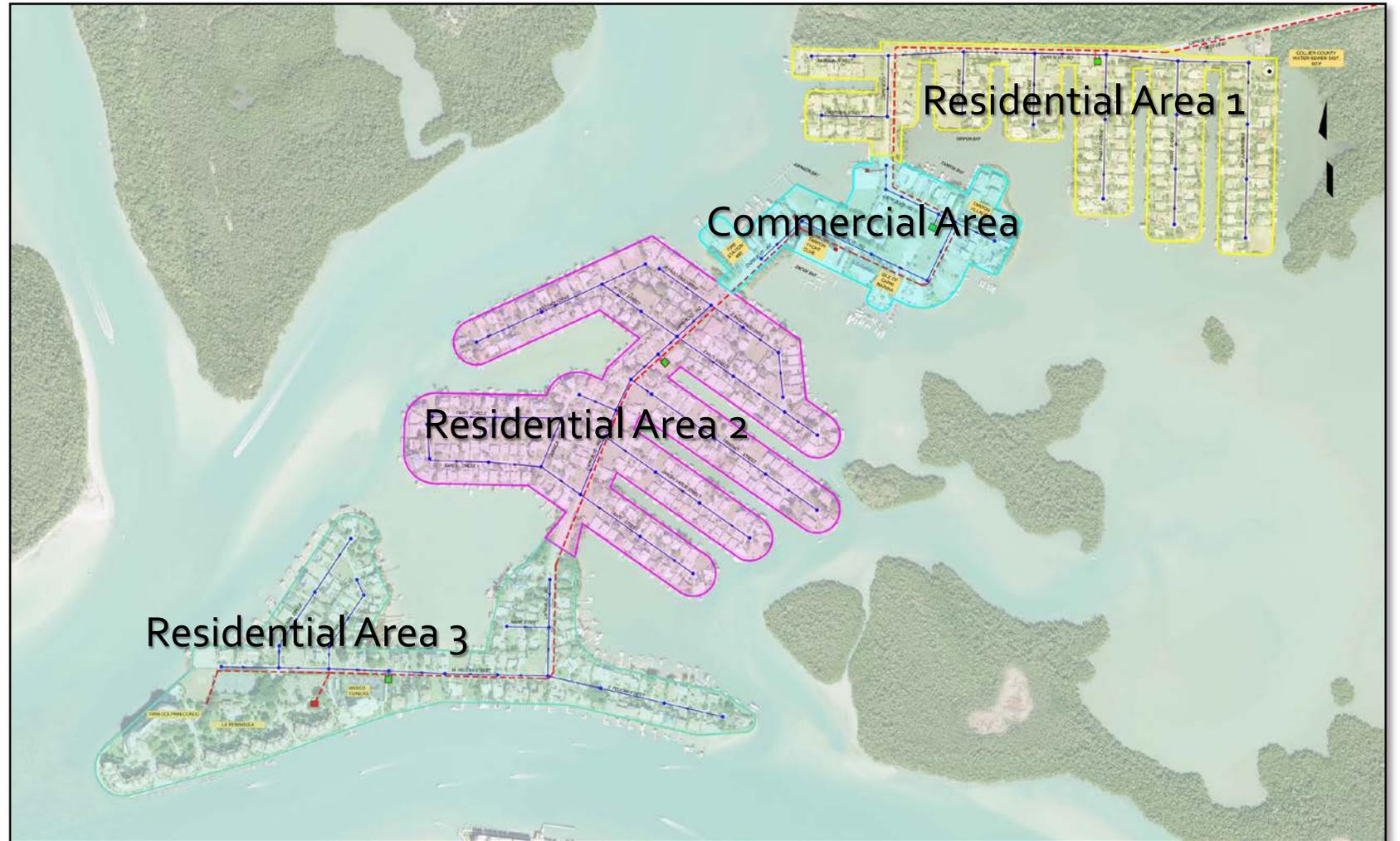
- Four Service Areas Constructed in Phases
 - Residential Area 1
 - Commercial Area
 - Residential Area 2
 - Residential Area 3



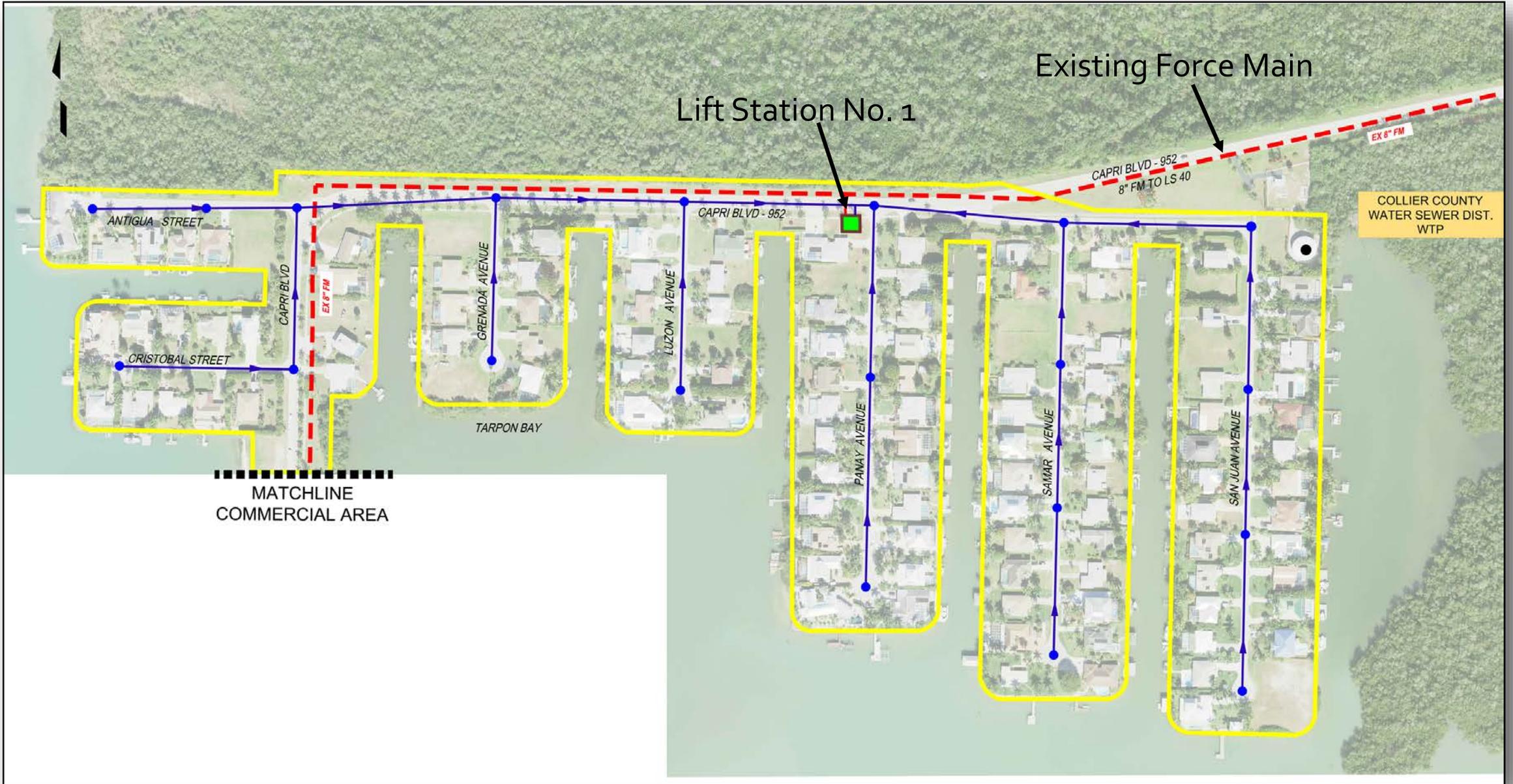
Isles of Capri – Collection System
Proposed Project Phases

Conceptual Collection System

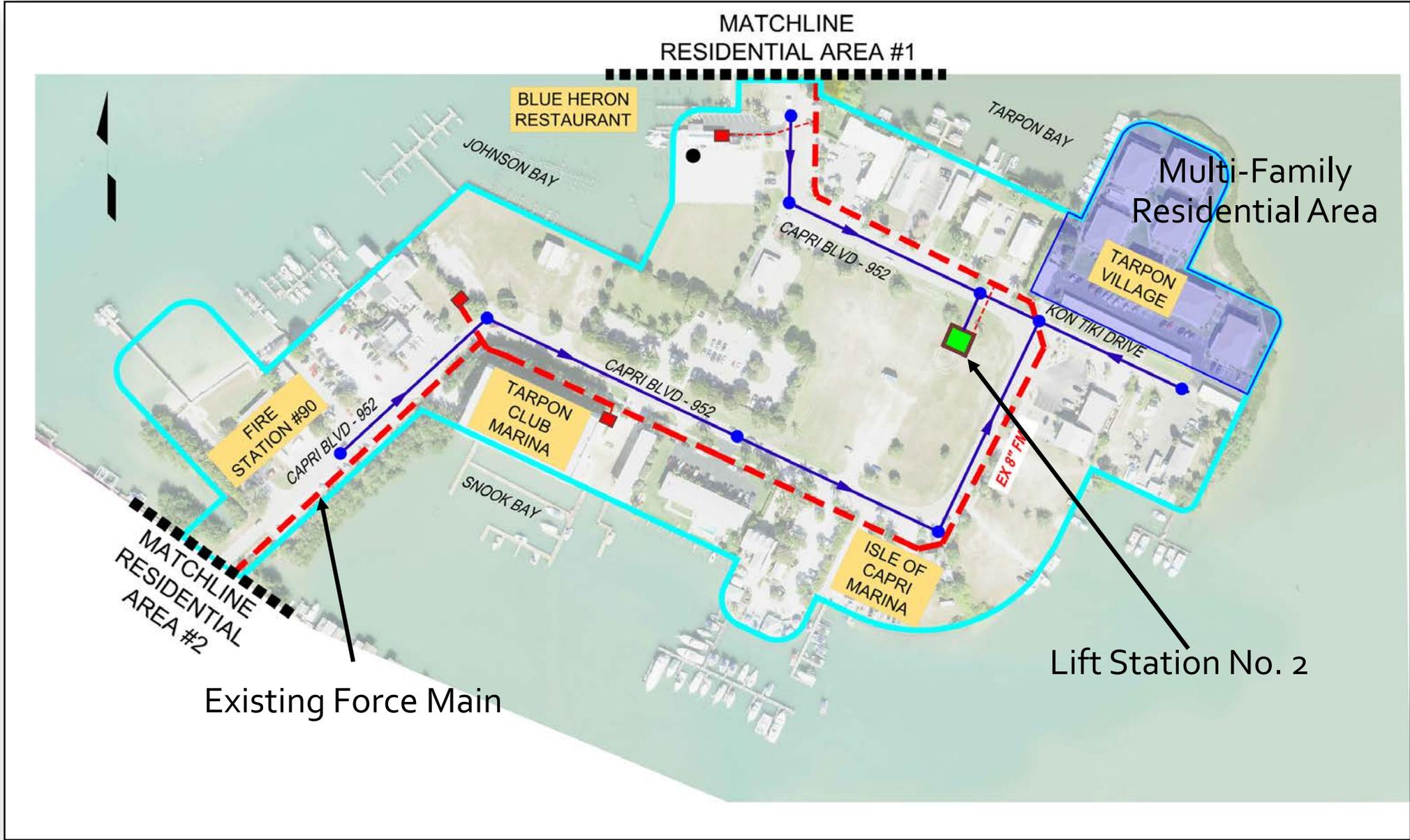
- Gravity Collection
- Local Lift Station to Reduce Depth
- Utilize Existing Forcemain



Isles of Capri – Collection System
Proposed Project Phases



Residential Area 1



Existing Force Main

Lift Station No. 2

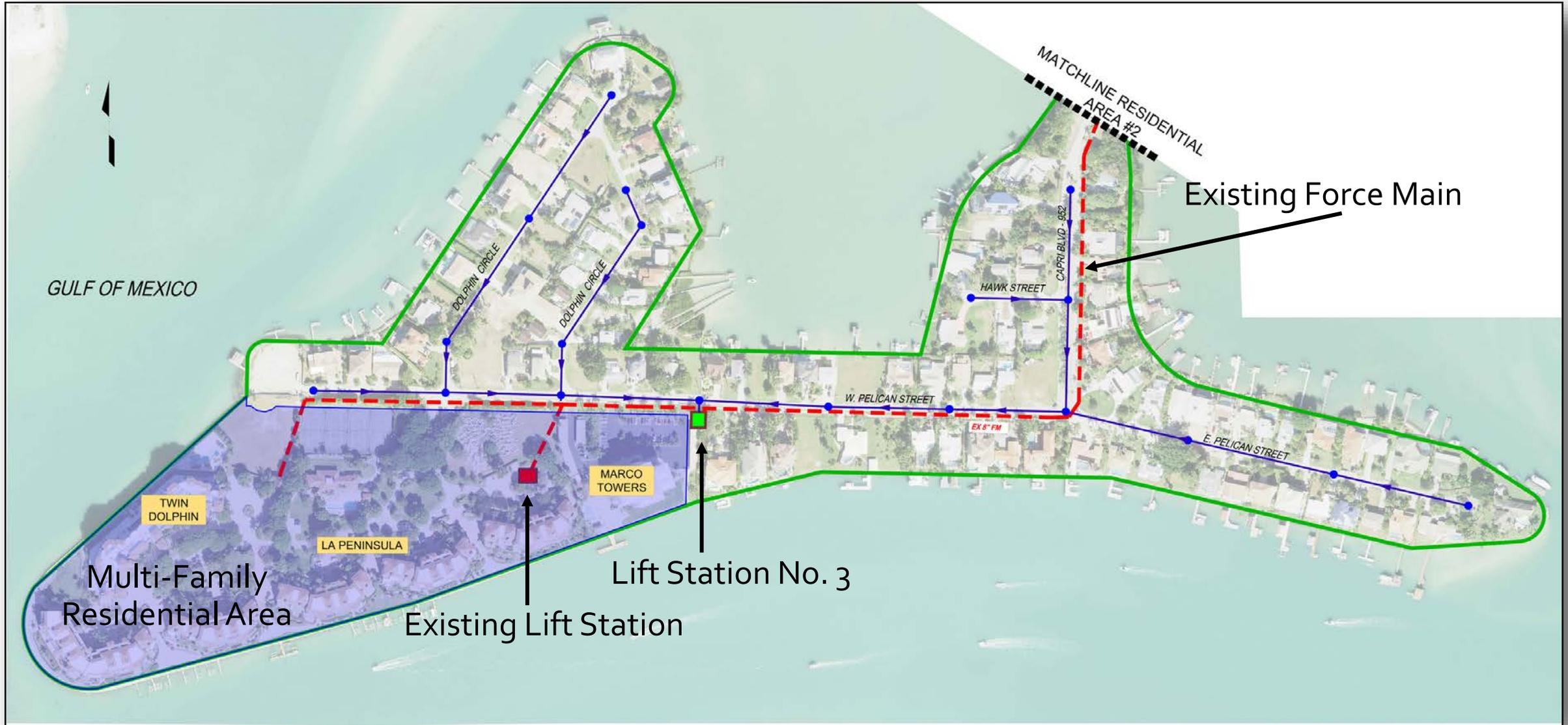
Commercial Area



Existing Force Main

Lift Station No. 3

Residential Area 2



Residential Area 3

Projected Cost for Wastewater Collection System

- Residential 1 - \$1,700,000
- Commercial - \$700,000
- Residential 2 - \$2,800,000
- Residential 3 - \$1,500,000
- Total \$6,700,000
- Total ERC (Equivalent Residential Connections) served by Septic Systems = 691
- Cost per ERC approximately \$9,700

Total Cost per ERC to Property Owners

Residential Owner Cost of Sewer Service

- Collection System Construction \$9,700
- Sewer Lateral by Property Owner \$5,000
- Septic Tank Abandonment Cost \$2,000
- Capacity Charge \$4,680
- Connection Fee \$480
- Total Initial Cost = \$21,860
 - Annual Sewer Billing Residential – about \$800

Benefit of Funding Isles of Capri Sewer Service Program

- Resolves Environmental Concerns for Nutrient Pollution of Near-Shore Water
- Protects Public Health
- Increases Resource Recovery (Water Reclamation)
- Consistent with Marco Island's Water Quality Goals
 - Eliminate High Nitrogen Levels found in Canals and Near-Shore Water
 - Eliminate Fecal Bacteria found in Canals and Near-Shore Water
 - Provide Flexibility for Property Development
 - Provide Resiliency against Tidal Interaction and Flooding
 - Allow Reclamation and Reuse of Wastewater



Questions & Discussion

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Overview of Septic Existing Technology

FDOH Regulated Effluent Maximum Limit in mg/L (ppm)	Conventional Septic System (75% Removal TSS/BOD)	Aerobic Treatment Unit (85% Removal TSS/BOD)	Secondary Performance Based Treatment System (90% Removal TSS/BOD)	<u>EXPENSIVE</u> Advanced Secondary Performance Treatment System (95% Removal of TSS/BOD, 50% N, 0% P)	Advanced Wastewater Treatment (AWT) PBTS Florida Keys Model
TSS	50 mg/L assumed	30 mg/L	20 mg/L	10 mg/L	10 mg/L
BOD	50 mg/L assumed	30 mg/L	20 mg/L	10 mg/L	10 mg/L
TN	No removal	No limit	No limit	20 mg/L	10 mg/L
TP	No removal	No limit	No limit	10 mg/L	1 mg/L