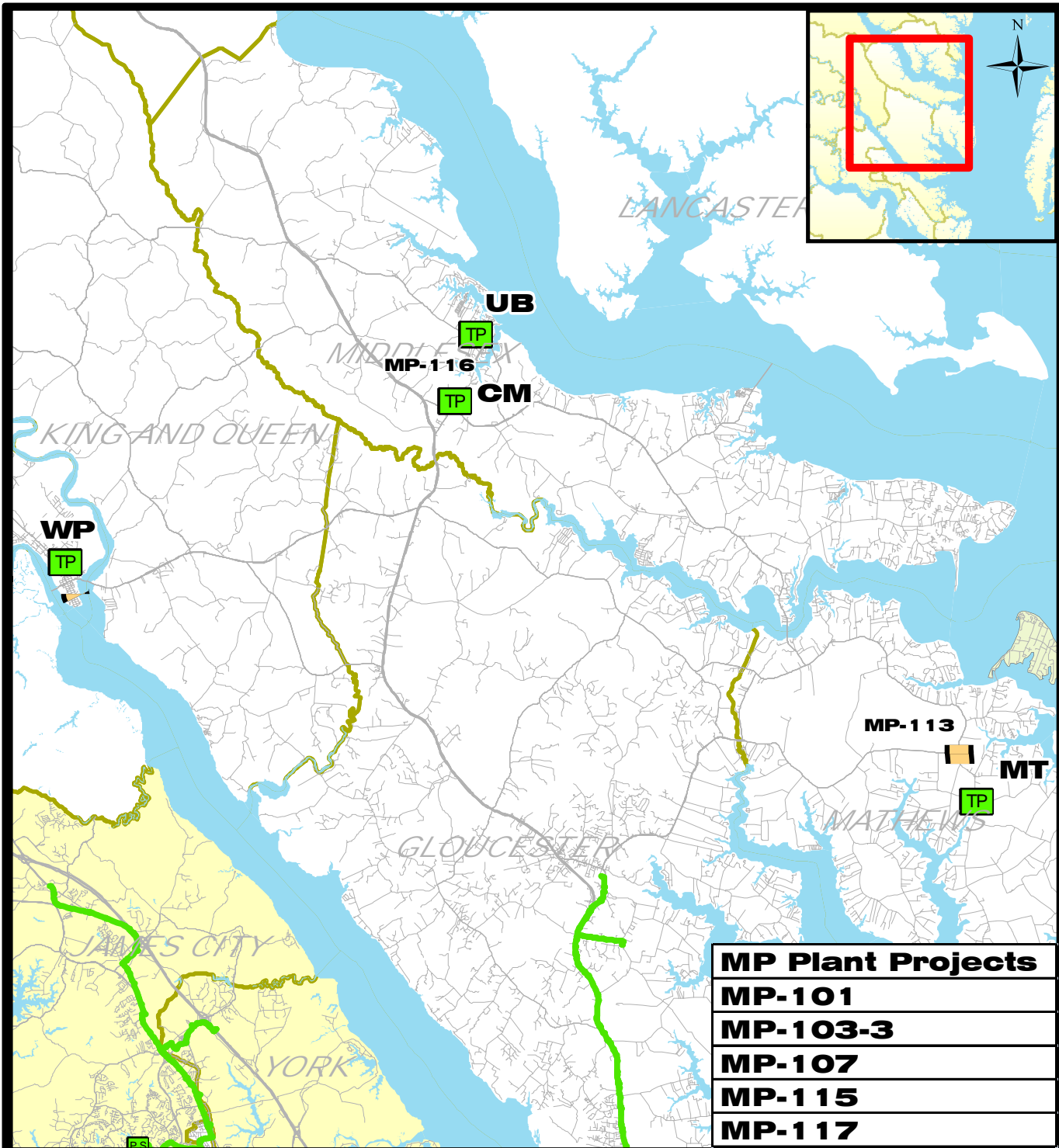









Middle Peninsula

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MP Plant Projects
MP-101
MP-103-3
MP-107
MP-115
MP-117

Legend

-  HRSD Treatment Plant
-  HRSD Pressure Reducing Station
-  HRSD Pump Station
-  HRSD Interceptor Force Main
-  HRSD Interceptor Gravity Main
-  HRSD CIP - Project Location
-  HRSD CIP - Interceptor Limits

**MIDDLE PENINSULA
TREATMENT PLANTS
SERVICE AREA FY
2012 TO 2021 CIP
PROJECTS**



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SYSTEM Middle Peninsula CATEGORY Treatment Plant
 TYPE Expansion/New PROJ STATUS Proposed

PROGRAM CASH FLOW PROJECTION (\$,000)

Prog Cost	Exp to FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21
\$3,348	\$0	\$0	\$0	\$0	\$0	\$0	\$14	\$968	\$2,365	\$0	\$0

PROJECT DESCRIPTION

This project will expand the capacity of the existing King William Treatment Plant from 0.100 MGD to 0.200 MGD to meet the required capacity to serve planned development. The project will be designed to match existing equipment.

PROJECT JUSTIFICATION

This project will provide additional capacity at the King William Treatment Plant. King William County has established a wastewater service area around the Central Garage area of the County. They require that all commercial establishments and residences in the service area be connected to both the sewer system and their new water system. Several developers are moving forward with developments in the service area that will utilize the remaining capacity of the existing treatment plant and require further expansion.

FUNDING TYPE	REQUIRED SERVICES	CONTACTS
Revenue Bonds State Grant VRLF Acct No _____ VRLF No _____	Outside Design Build	Requesting Dept: <u>Operations - Treatment</u> Dept Contact: <u>Jim Pyne</u> Managing Dept: <u>Operations - Treatment</u>

PROPOSED SCHEDULE

Pre-Planning	Sep-16
PER	Jan-17
Design	Jul-17
Pre Construction	Jan-18
Construction	Apr-18
Close Out	Mar-19
Project Completion	Apr-19

COST ESTIMATE

PER	\$14,175
Design	\$80,325
Pre Construction	\$945
Construction	\$3,252,555
Est. Program Cost	\$3,348,000
Contingency 19%	\$632,000
Est. Project Cost	\$3,980,000

RELATED INFRASTRUCTURE

RELATED PROJECTS

MP-115 King William Equalization Tank Addition

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SYSTEM Middle Peninsula CATEGORY Treatment Plant
 TYPE Abandonment PROJ STATUS Proposed

PROGRAM CASH FLOW PROJECTION (\$,000)

Prog Cost	Exp to FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21
\$139	\$37	\$103	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

PROJECT DESCRIPTION

This project will close the existing Mathews Treatment Plant once the Mathews Transmission Force Main and Pump Stations are in operation. The Closure Plan will be submitted to Virginia Department of Environmental Quality for their review and approval. The funding estimate includes the development of the closure plan, design, and demolition of the existing plant. The potential need for standby power generation for the pump station will be addressed in the design phase.

PROJECT JUSTIFICATION

The existing Mathews Wastewater Treatment Plant is being replaced by the transmission force main and pump stations that are currently under construction. The closure plan is a regulatory requirement.

FUNDING TYPE	REQUIRED SERVICES	CONTACTS
State Grant Revenue Bonds Acct No _____ VRLF No _____	Outside Study Outside Design Outside Construction	Requesting Dept: <u>Operations - Treatment</u> Dept Contact: <u>Ann Copeland</u> Managing Dept: <u>Engineering</u>

PROPOSED SCHEDULE

Pre-Planning	Jan-11
Design	May-11
Pre Construction	Jul-11
Construction	Aug-11
Project Completion	Sep-11

COST ESTIMATE

Pre-Planning	\$11,700
Design	\$25,000
Pre Construction	\$2,500
Construction	\$100,000
Est. Program Cost	\$139,200
Contingency 20%	\$20,000
Est. Project Cost	\$159,200

RELATED INFRASTRUCTURE

RELATED PROJECTS

- MP-103-1 Mathews Transmission Force Main and Pump Stations Contract A- Pipeline
- MP-103-2 Mathews Transmission Force Main and Pump Stations Contract B- Pump Stations
- YR-113 York - Gloucester Pressure and Operating Study

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SYSTEM Middle Peninsula CATEGORY Treatment Plant
 TYPE Evaluation/Study PROJ STATUS Study

PROGRAM CASH FLOW PROJECTION (\$,000)

Prog Cost	Exp to FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21
\$230	\$186	\$44	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

PROJECT DESCRIPTION

This project will include a study of mixing and other site conditions to determine their suitability for an outfall and recommend the proper outfall configuration. A comparison of the outfall alternatives can then be made to determine the appropriate outfall site and how that impacts the selection of the treatment plant site for the future expansion. Combined MP-109 into this project.

PROJECT JUSTIFICATION

This project will facilitate the expansion of both the King William and West Point treatment facilities to serve the future expanded service areas to include King William and King & Queen Counties and the Town of West Point. This project is per the recommendations in the Middle Peninsula Nutrient Removal Program PER. The King William Treatment Plant Expansion Phase III and the West Point Treatment Plant Expansion and Upgrade Phase I may require outfall relocations. These projects will, in all probability, not take place until after 2011. However, the long lead times to perform the outfall analysis and the permitting process make necessary to begin the outfall studies in FY 09. The revised cost is based on performing studies at two possible outfall sites for each treatment plant.

FUNDING TYPE	REQUIRED SERVICES	CONTACTS
Cash	Outside Study	Requesting Dept: <u>Operations - Treatment</u> Dept Contact: <u>Jim Pyne</u> Managing Dept: <u>Operations - Treatment</u>
Acct No <u>3-4705-XXXXX-4820</u>		
VRLF No _____		

PROPOSED SCHEDULE

Pre-Planning	Nov-09
PER	Mar-10
Project Completion	Sep-11

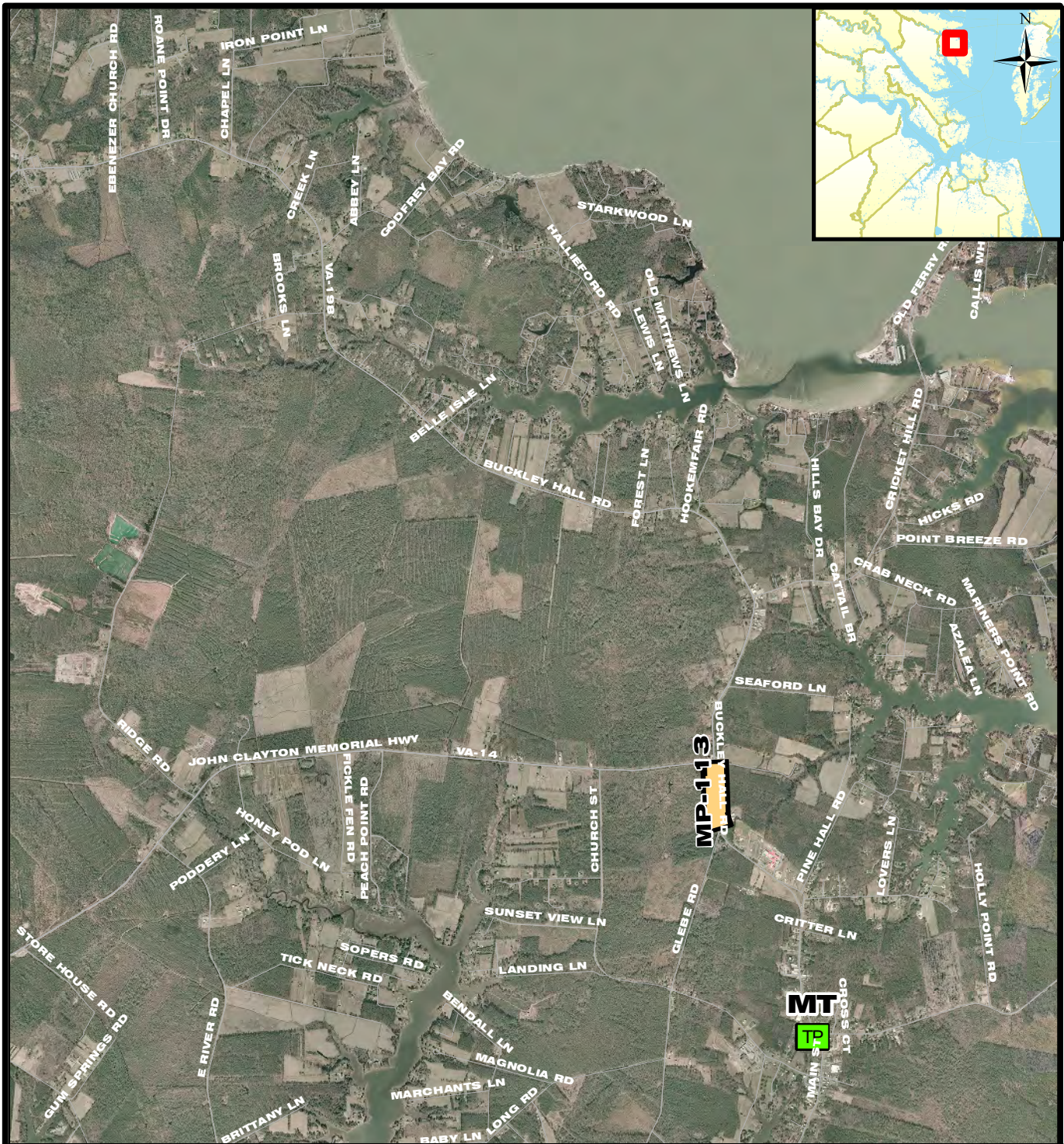
COST ESTIMATE

PER	\$230,000
Est. Program Cost	\$230,000
Contingency	\$7,000
Est. Project Cost	\$237,000






RELATED INFRASTRUCTURE

RELATED PROJECTS

MP-102 King William Treatment Plant Expansion Phase III



Legend

-  HRSD Treatment Plant
-  HRSD Pressure Reducing Station
-  HRSD Pump Station
-  HRSD Interceptor Force Main
-  HRSD Interceptor Gravity Main
-  HRSD CIP - Project Location
-  HRSD CIP - Interceptor Limits

MP-113

Mathews Davidson Corner Pump Station and Collection System





SYSTEM Middle Peninsula CATEGORY Pump Station
 TYPE Expansion/New PROJ STATUS Proposed

PROGRAM CASH FLOW PROJECTION (\$,000)

Prog Cost	Exp to FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21
\$1,802	\$0	\$0	\$0	\$0	\$0	\$0	\$408	\$1,394	\$0	\$0	\$0

PROJECT DESCRIPTION

This project includes the construction of a pump station near the intersection of Glebe Road and Buckley Hall Road (Davidson Corner) in Mathews County. The pump station and collection system will serve commercial establishments and development in the vicinities of both Davidson and Wards Corners. The project will also include a pump station and collection system near the intersection of Buckley Hall Road and Twiggs Ferry Road (Dixie) to serve commercial development in that area. The current concept for the collection system is to install a low pressure sewer system (LPSS) with grinder pumps either at individual establishments or shared among multiple establishments where practical. A future project will convert the Mathews Vacuum Booster Station to a terminal vacuum station and construct a force main to discharge into the Davidson Corner Pump Station. That project will remove some of the load from the Mathews Main Vacuum station to increase its reliability and allow some expansion of service in the immediate courthouse area. Funding for this project will include cost recovery utilizing an interest participation agreement (IPA).

PROJECT JUSTIFICATION

To extend wastewater service to unsewered areas as requested by the locality.

FUNDING TYPE	REQUIRED SERVICES	CONTACTS
Revenue Bonds	Outside Design	Requesting Dept: <u>Operations - Treatment</u>
Cost Recovery	Outside Construction	Dept Contact: <u>Jim Pyne</u>
Acct No _____		Managing Dept: <u>Operations - Treatment</u>
VRLF No _____		

PROPOSED SCHEDULE

Pre-Planning	Mar-16
PER	Jul-16
Design	Oct-16
Pre Construction	Apr-17
Construction	May-17
Close Out	Apr-18
Project Completion	May-18

COST ESTIMATE

PER	\$14,550
Design	\$82,450
Pre Construction	\$970
Construction	\$1,704,030
Est. Program Cost	\$1,802,000
Contingency 20%	\$340,806
Est. Project Cost	\$2,142,806

RELATED INFRASTRUCTURE

RELATED PROJECTS

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SYSTEM Middle Peninsula CATEGORY Interceptor System
TYPE Rehab/Replacement PROJ STATUS Construction

PROGRAM CASH FLOW PROJECTION (\$,000)

Table with 12 columns: Prog Cost, Exp to FY11, FY12, FY13, FY14, FY15, FY16, FY17, FY18, FY19, FY20, FY21. Values range from \$0 to \$1,296.

PROJECT DESCRIPTION

The project will replace 36 failing vacuum valve chambers and sumps per year over 5 years for a total of 180 units. The contractor will excavate and remove both the existing orangeburg valve chambers and the existing unreinforced concrete sumps and replace them with new single piece plastic valve chamber and sump systems with internal controller vent. The project will require sole source procurement of the systems from Airvac.

PROJECT JUSTIFICATION

Replace aging vacuum valves to restore system reliability and reduce after hour service calls.

Table with 3 columns: FUNDING TYPE, REQUIRED SERVICES, CONTACTS. Includes details for Revenue Bonds, Acct No, VRLF No, In-house Design, Outside Construction, and contact information for Operations - Treatment.

PROPOSED SCHEDULE

Table with 2 columns: Phase (I-VI), Completion Date (Jul-10 to Jul-18).

COST ESTIMATE

Table with 3 columns: Category, Percentage, Amount. Includes Construction (\$1,295,613), Est. Program Cost (\$1,295,613), Contingency (4%, \$52,431), and Est. Project Cost (\$1,348,044).

RELATED INFRASTRUCTURE

RELATED PROJECTS

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SYSTEM Middle Peninsula CATEGORY Treatment Plant
 TYPE Improvement PROJ STATUS Design

PROGRAM CASH FLOW PROJECTION (\$,000)

Prog Cost	Exp to FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21
\$554	\$153	\$402	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

PROJECT DESCRIPTION

The project includes the design and construction of an additional 60,000 gallon cylindrical tank to increase equalization capacity in order to more fully utilize the existing treatment facilities. The project will also increase on site filtrate storage by renovation of existing facilities that will allow the necessary capacity for full cleaning of the existing MBR tanks. The engineering will require development of a comprehensive site plan in consideration of future expansions.

PROJECT JUSTIFICATION

The project will construct part of the facilities that are proposed for the King William Treatment Plant Phase II project. The addition of equalization capacity will improve the reliability of the existing treatment facilities and alleviate the urgency to expand the treatment facilities as the influent flow increases.

FUNDING TYPE	REQUIRED SERVICES	CONTACTS
Revenue Bonds	Outside Design Outside Construction	Requesting Dept: <u>Operations - Treatment</u> Dept Contact: <u>Santino Granato</u> Managing Dept: <u>Engineering</u>
Acct No <u>3-4705-XXXXXX-5190</u>		
VRLF No _____		

PROPOSED SCHEDULE

Pre-Planning	Jul-10
PER	Aug-10
Design	Nov-10
Pre Construction	Mar-11
Construction	Jun-11
Close Out	Jan-12
Project Completion	Mar-12

COST ESTIMATE

PER	\$17,000
Design	\$54,200
Pre Construction	\$14,600
Construction	\$468,521
Est. Program Cost	\$554,321
Contingency 20%	\$93,704
Est. Project Cost	\$648,025

RELATED INFRASTRUCTURE

RELATED PROJECTS

MP-101 King William Treatment Plant Expansion Phase II



Legend

-  **TP** HRSD Treatment Plant
-  **PRS** HRSD Pressure Reducing Station
-  **PS** HRSD Pump Station
-  **HRSD Interceptor Force Main**
-  **HRSD Interceptor Gravity Main**
-  **HRSD CIP - Project Location**
-  **HRSD CIP - Interceptor Limits**

MP-116

**West Point Lee Street Sanitary
Sewer 5th to 7th Replacement**





SYSTEM Middle Peninsula CATEGORY Interceptor System
 TYPE Rehab/Replacement PROJ STATUS Design

PROGRAM CASH FLOW PROJECTION (\$,000)

Prog Cost	Exp to FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21
\$231	\$138	\$93	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

PROJECT DESCRIPTION

This project will rehabilitate approximately 800 feet of 10-inch non-reinforced concrete gravity sewer with CIPP installations along with the rehabilitation of three manholes from the 5th and Lee Street intersection to HRSD Pump Station No. 2 in West Point.

PROJECT JUSTIFICATION

CCTV inspection of the existing pipe revealed moderate deterioration from 5th Street to 7th Street. Additional CCTV inspection of the gravity sewer on 7th street revealed deterioration as well as heavy sediment build up and 'break-in' type lateral inserts. Multiple defects have been encountered along both segments of CCTV inspection allowing continuous infiltration into the system.

FUNDING TYPE	REQUIRED SERVICES	CONTACTS
Revenue Bonds	Outside Design Outside Construction	Requesting Dept: <u>Operations - Treatment</u> Dept Contact: <u>Santino Granato</u> Managing Dept: <u>Engineering</u>
Acct No <u>3-4705-XXXXXX-5270</u>		
VRLF No _____		

PROPOSED SCHEDULE

Pre-Planning	Jun-10
PER	Aug-10
Design	Oct-10
Pre Construction	Jan-11
Construction	Apr-11
Close Out	Oct-11
Project Completion	Dec-11

COST ESTIMATE

PER	\$5,500
Design	\$37,492
Pre Construction	\$2,650
Construction	\$185,595
Est. Program Cost	\$231,237
Contingency 15%	\$27,839
Est. Project Cost	\$259,076

RELATED INFRASTRUCTURE

RELATED PROJECTS

MP-N6 West Point Lee Street Sanitary Sewer Emergency Replacement

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**Middle Peninsula Interceptor Systems Pump Station Control and SCADA
Upgrades and Enhancements**

MP-117

SYSTEM Middle Peninsula CATEGORY Interceptor System
 TYPE SSO Reduction PROJ STATUS Proposed

PROGRAM CASH FLOW PROJECTION (\$,000)

Prog Cost	Exp to FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21
\$2,621	\$0	\$250	\$750	\$500	\$500	\$621	\$0	\$0	\$0	\$0	\$0

PROJECT DESCRIPTION

This project will replace and improve components of the SCADA system to ensure that compliance with regulatory requirements is maintained and that supervisory control is provided. Components of the system that will be evaluated for replacement and/or improvements include: PLC control, differential pressure cells/other wet well level monitoring, CCTV security, panel gauge upgrades (digital display of WW levels), pressure switch abandonment, telemetry equipment, computer software and hardware.

The upgrades include: An extension of the North Shore SCADA system to include the Middle Peninsula sites; Pumping station improvements at all Middle Peninsula sites; An extension of the HRSD SCADA WAN to include the Middle Peninsula; Upgraded remote site telemetry communications; and Construction Phase services.

During the preliminary design phase of the Interceptor System SCADA project, the QST looked to expand the SCADA final design to the Middle Peninsula (MP). The SCADA Preliminary Engineering Report gave the costs for expansion to the MP at \$3.3 million.

This CIP is for the construction portion of this project. The design is being performed with the Interceptor Systems Pump Station Control and SCADA Upgrades and Enhancements GN-128.

PROJECT JUSTIFICATION

Local control and SCADA equipment is in need of assessment and replacement for operational improvements. The current system utilizes various control scenarios from advanced VFD with PLC control to maintain wet well levels and pressures to the reliable but dated technology of pressure switches for on/off stations. These systems need to be assessed and updated to meet future capacity optimization control regimes, including RTC (real time control) and/or predictive measures. The current design and operation of the pump station controls and SCADA system do not promote proper data acquisition, supervisory control, or emerging control technologies.

There are multiple benefits to expanding the SCADA project to encompass the Middle Peninsula: Future trends for small communities appear to be decentralized/distributed wastewater treatment systems that will require SCADA for remote diagnosis and operational control; As time goes on, the cost of personnel and the cost of transportation will drive HRSD towards more supervisory control at both the treatment plants and pump stations, starting with the Mathews TFM pump stations; A major portion of the existing system is obsolete and needs replacement; There are Operational and Maintenance benefits to having the same SCADA system throughout the HRSD system: South Shore, North Shore, and the Middle Peninsula; The WAN microwave ring provides a reliable communication link and the existing communication lines could possibly function as a back-up; and if the MP is added to the Consent Decree in the future, then the MP SCADA system would be upgraded to handle the reporting requirements.

If the MP is not added to the SCADA project, then: HRSD will be responsible for two independent systems which will require additional instrumentation and operational manpower; the MP would be an "orphaned system"; the existing system software has to be upgraded and annual licensing agreements maintained; Facilities Support will need two FTE's to handle the system requirements and maintain the instrumentation; and HRSD will probably need a maintenance agreement with the existing SW system providers.

Ultimately, the MP system is not capable of meeting the goals decided by the QST for SCADA. HRSD is investing in a state-of-the-art system for North and South Shores. It makes sense to expand the SCADA system to the MP.

FUNDING TYPE	REQUIRED SERVICES	CONTACTS
Cash	Outside Program Mgt	Requesting Dept: <u>Operations - Interceptors</u>
	Outside Study	Dept Contact: <u>Jim Pyne</u>
	Outside Design	Managing Dept: <u>Operations - Treatment</u>
Acct No _____	Outside Construction	
VRLF No _____		

PROPOSED SCHEDULE		COST ESTIMATE	
Pre Construction	Jun-11	Construction	\$2,620,884
Construction	Jul-11	Est. Program Cost	\$2,620,884
Close Out	Jun-16	Contingency	18% \$477,960
Project Completion	Jul-16	Est. Project Cost	\$3,098,844

RELATED INFRASTRUCTURE	RELATED PROJECTS
	GN-128 Interceptor Systems Pump Station Control and SCADA Upgrades and Enhancements

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