



**SUMMIT ENGINEERING, INC.**  
CIVIL ENGINEERING

# HAROLD SEWER PROJECT

Harold, Kentucky  
(7503.006/05-451)

**SX21195121/SX21071218**

- Contract 1: Wastewater Treatment Plant
- Contract 2: Collection System

## PRELIMINARY ENGINEERING REPORT

Revised March, 2012

### Owner:

**Southern Water and Sewer District**

245 Kentucky Route 680  
McDowell, Kentucky 41647

### Prepared By:

**Summit Engineering, Inc.**

120 Prosperous Place, Suite 101  
Lexington, Kentucky 40509

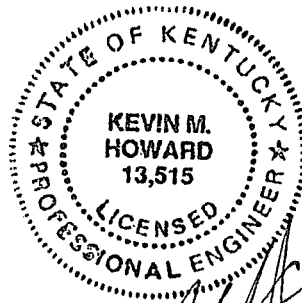


CIVIL ENGINEERING    MINING ENGINEERING    ENVIRONMENTAL  
ENGINEERING    ARCHITECTURE    SURVEYING

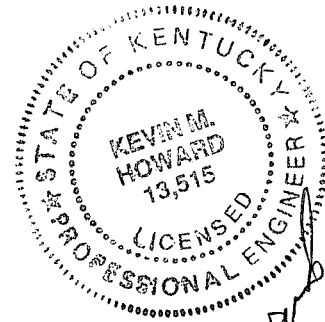
Harold Sewer Project (SX21195121/SX21071218)  
Preliminary Engineering Report

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*Kevin M. Howard*  
9/3/12



*Kevin M. Howard*  
9/18/12

**Harold Sewer Project (SX21195121/SX21071218)**  
Preliminary Engineering Report

**ITEM 1 – GENERAL**

Currently no public wastewater service is available along the US23 corridor in Southern Floyd County. The Harold Sewer Project is an effort by Southern Water and Sewer District to provide public sanitary sewer service to Southern Floyd County along the US23 corridor. The Harold 201 facilities plan service area extends from Harold to Tom's Creek and includes the areas of Mud Creek, Harold, Coldwater Branch, Betsy Layne, Pike Floyd Hollow, Justell, Stanville, Mare Creek, and Tom's Creek. The ultimate service area includes approximately 1,500 potential customers and consists of personal residences, small businesses, and various commercial entities.

Multiple attempts have been made in the past to assemble a project to construct public sewers in the Harold area, but none have been successful in obtaining funding. Therefore, a smaller, more economical project was developed. It is being referred to as the Harold Sewer Project, Contracts 1 and 2. The "Project" will serve portions of Stanville, Betsy Layne, and Pike Floyd Hollow.

Detailed descriptions of the project Contracts are as follows:

**Contract 1** - Consists of the construction of a new 100,000 gpd regional wastewater treatment plant in Pike/Floyd Hollow in southeastern Floyd County with the initial project funds. The plant will be expandable as new customers are added to the sewer system through future sewer line extensions. The plant will discharge to the Levisa Fork of the Big Sandy River and be of the extended aeration type.

**Contract 2** – The collection system will be primarily a pressure sewer system. The project consists of the construction of +/- 26,150 linear feet of sanitary sewer trunk force mains. Sewer lines will range from 1.25 inches to twelve (12) inches in diameter. A small section (+/- 1430 LF) of gravity sewer line will be constructed along Bobcat Boulevard along with a conventional lift station. The top five water users in the project include two public schools (Betsy Layne High School and Elementary School), a large commercial strip center, Huddle House Restaurant, and a car wash.

There are +/- 300 potential customers in close proximity to the trunk force mains to be constructed by the project. Based on funds available and current customer signups, it is likely that only +/- 135 of these customers will be able to be served by the initial project.

A general project location map depicting the Project area is provided as **Exhibit A** at the end of this report. The funding plan is attached as **Exhibit B**. The Engineer's Opinions of Probable Project Costs follow as **Exhibit C**.

**ITEM 2 – PROJECT PLANNING AREA**

The locations of the major elements of the work are illustrated on **Exhibit A**.

**ITEM 3 – EXISTING FACILITIES**

There are currently no existing public wastewater collection or treatment facilities in the project area. Large water users such as the Betsy Lane High School and Elementary School own and operate their own package wastewater treatment plants, but most other residences and small businesses utilize septic systems and straight pipe discharges. Many of these septic systems are failing due to poor geological composition of soils and lack of adequate area for sufficiently sized leech bed systems.

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Based on our research of the EPA database for existing KPDES discharge permits in the area, this project will have the potential to eliminate the need for +/- 20 documented KPDES permits. This assumes all customers with documented KPDES discharge permits choose to sign up for service at this time.

**ITEM 4 – NEED FOR THE PROJECT (BENEFICIARIES)**

The project area currently has no public sewer system. The quality of living and surface water quality in the Levisa Fork will be improved by this by providing an alternative for wastewater disposal to those people who currently rely on other disposal methods such as privately owned package plants, septic tanks, or straight pipe discharges. While privately owned package plants and septic tanks can provide adequate treatment, it is often the case that owners tend to neglect their treatment systems overtime. This tendency increases the likelihood that these facilities eventually directly discharge untreated wastewaters to the environment. When released into the environment, wastewater can become a public health hazard and a detriment to water bodies such as lakes and rivers, making them unsafe from contact recreation.

The selected project alternative (see item #5) will provide new sewer collection service to +/-135 existing customers, many of whom currently have straight pipe discharges or failing septic systems. The sewerage of the project area will directly affect the quality of water in the watershed by removing point discharges and failing localized treatment facilities. The Harold Sewer Project is the first step to making this a reality.

**ITEM 5 – SELECTION OF DESIGN ALTERNATIVE**

**Design Alternatives Considered**

- **Harold Sewer Project**

The preferred action alternative for the Harold Sewer Project consists of the construction of a new regional wastewater treatment plant and the installation of approximately 26,150 linear feet of sanitary sewer trunk force mains, +/- 125 residential grinder pumping stations and 10 gravity connections to serve a total of +/- 135 existing customers.

- **On Site Treatment**

This option consists of constructing package treatment plants and new septic systems. Most of the properties within this area do not have soils and space suitable for an on-site treatment system. This option is not viable and does not allow for future options for regional growth of the area.

- **No Action**

The No Action alternative would result in continued failing septic systems and straight pipes causing an unsafe and hazardous condition to the environment and public health. Furthermore delayed action by the Sponsor will deter growth and development within the area.

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**ITEM 6 – PROPOSED PROJECT**

See descriptions in ITEM 1.

**ITEM 7 – LIFE EXPECTANCY**

The design lives of the major components of the project are as follows:

Pumps	5-10 Years
Wet Wells	20-25 Years
Force Mains	50 Years

**ITEM 8 – PERMITS AND EASEMENTS**

Easements shall be acquired for all line construction falling outside of established public right of way. “Surface rights” must be acquired for permanent structures. At this time, surface right of way acquisition is only anticipated for the wastewater treatment plant site.

The major construction permits required for this project include:

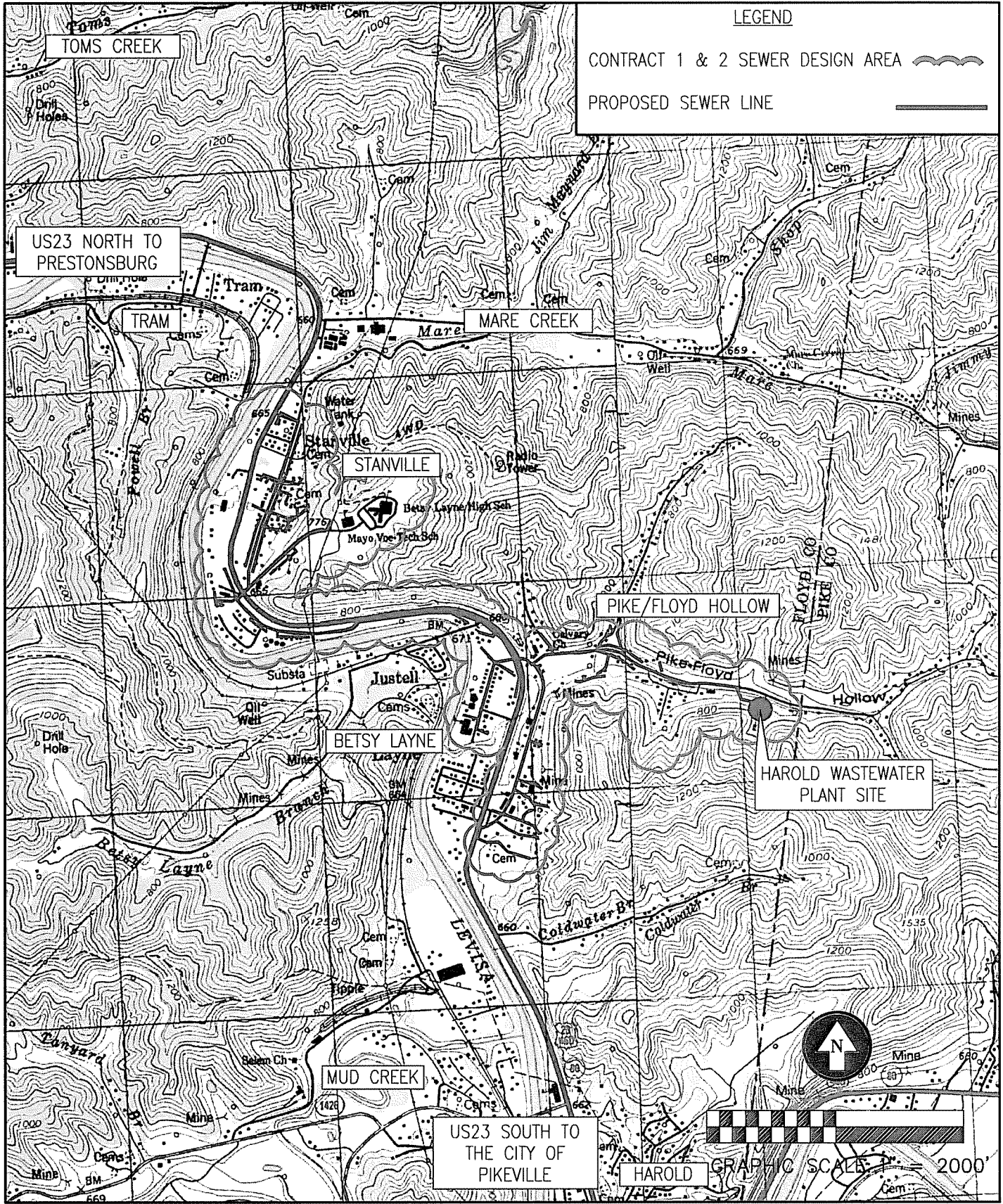
- KYDOH Encroachment Permit
- KYDOW Permit to Construct Along or Across a Stream Course  
and Water Quality Certification
- KYDOW Facilities Construction Permit
- KYDOW KPDES Permit (NPDES)
- SECTION 404 Permit to Construct Along or Across a Stream Course
- HERITAGE COUNCIL Approval

**ITEM 9 - CONSTRUCTION COST ESTIMATE AND FUNDING**

The funding plan is attached as **Exhibit B**. The Engineer’s opinions of Probable Project Costs are provided as **Exhibit C**.

**ITEM 10 – SCHEDULE**

The Engineer’s preliminary project schedule for the project is provided as **Exhibit D**.



**SUMMIT ENGINEERING, INC.**

LEXINGTON, KY  
 HAZARD, KY  
 CHARLESTON, WV  
 LOGAN, WV  
 GRUNDY, VA

**Southern Water and Sewer District**  
 Floyd County, Kentucky

**Harold Sewer Project – Contracts 1 and 2**  
 General Project Location Map

DATE: 2/15/12  
 SCALE: 1" = 2000'  
 DRAWN BY: BDF  
 CHECKED BY: KH  
 PROJECT NO: 05-45  
 SHEET:  
**Exhibit 'A'**  
 OF:

**EXHIBIT 'B'**  
**COST & FUNDING PLAN**  
**HAROLD SEWER PROJECT**  
**CONTRACTS 1 AND 2 COMBINED**  
**SOUTHERN WATER AND SEWER DISTRICT**  
**2/14/2012**

**PROJECT COSTS**

<b>ITEM</b>	<b>SX #</b>	<b>AMOUNT</b>
Total Project Cost - Contracts 1 and 2 Combined	<b>SX21071218/SX21195121</b>	\$ 3,750,087.00
<b>TOTAL PROJECT COST PHASES I-IV</b>		<b>\$ 3,750,087.00</b>

**PROJECT FUNDING**

<b>SOURCE</b>	<b>STATUS</b>	<b>AMOUNT</b>
<b>CONTRACTS 1 AND 2</b>		
Coal Severance	Committed	\$ 600,000.00
Coal Severance	Committed	\$ 1,000,000.00
RD Grant	Committed	\$ 200,000.00
RD Loan (Note 1)	N/A	\$ -
ARC	Committed	\$ 500,000.00
SRF - Principal Forgiveness (Note 1)	Pending	\$ 328,243.00
SRF - Loan (Note 1)	Pending	\$ 765,900.00
LGEDF	Committed	\$ 300,000.00
Coal Severance - Old Remnant	Committed	\$ 55,944.00
<b>TOTAL FUNDING</b>		<b>\$ 3,750,087.00</b>

EXHIBIT 'C'  
SOUTHERN WATER AND SEWER DISTRICT  
ENGINEERS OPINION OF PROBABLE CONSTRUCTION COST - REDUCED NUMBER OF CUSTOMERS FOR BID  
HAROLD SEWER PROJECT - CONTRACTS 1 AND 2 COMBINED  
2/14/2012

#	ITEM	TOTAL PROJECT QTY	UNITS	UNIT PRICE	AMOUNT
<b>1</b>	<b>FORCE MAINS</b>				
a	1.25" SDR11 HDPE Green Stripe Sewer Pipe, Complete In-Place (Note 1)	22,480	LF	\$ 6.00	\$ 134,880.00
b	2" SDR11 HDPE Green Stripe Sewer Pipe, Complete In-Place (Note 1)	6,375	LF	\$ 7.00	\$ 44,625.00
c	3" SDR11 HDPE Green Stripe Sewer Pipe, Complete In-Place (Note 1)	3,995	LF	\$ 9.00	\$ 35,955.00
d	4" SDR11 HDPE Green Stripe Sewer Pipe, Complete In-Place (Note 1)	125	LF	\$ 13.00	\$ 1,625.00
e	6" SDR11 HDPE Green Stripe Sewer Pipe, Complete In-Place (Note 1)	6,830	LF	\$ 15.00	\$ 102,450.00
f	8" SDR11 HDPE Green Stripe Sewer Pipe, Complete In-Place (Note 1)	20	LF	\$ 18.00	\$ 360.00
g	10" SDR11 HDPE Green Stripe Sewer Pipe, Complete In-Place (Note 1)	4,010	LF	\$ 23.00	\$ 92,230.00
h	12" SDR11 HDPE Green Stripe Sewer Pipe, Complete In-Place (Note 1 and Note 5)	4,800	LF	\$ 26.00	\$ 124,800.00
i	Sloped and Flared Pipe Headwall with Grate for 12" SDR11 HDPE Pipe	1	EA	\$ 2,500.00	\$ 2,500.00
<b>2</b>	<b>GRAVITY SEWERS</b>				
a	8" PVC Gravity Sanitary Sewer, ASTM D3034, SDR 35	1,450	LF	\$ 35.00	\$ 50,750.00
b	4" Sanitary Sewer Lateral Stub and Cleanout Assembly, Complete In-Place (Note 3)	9	EA	\$ 2,000.00	\$ 18,000.00
c	Sanitary Sewer Manhole Type B (Flat Slab)	9	EA	\$ 1,500.00	\$ 13,500.00
<b>3</b>	<b>ENCASEMENTS</b>				
a	Bore and Encasement for 3" or 4" Pipe	0	LF	\$ 100.00	\$ -
b	Bore and Encasement for 6" Pipe	160	LF	\$ 125.00	\$ 20,000.00
b	Bore and Encasement for 10" Pipe	125	LF	\$ 150.00	\$ 18,750.00
c	Bore and Encasement for 12" Pipe	125	LF	\$ 175.00	\$ 21,875.00
d	Open Cut and Encase for 3" or 4" Pipe	0	LF	\$ 40.00	\$ -
e	Open Cut and Encase for 6" Pipe	180	LF	\$ 50.00	\$ 9,000.00
f	Open Cut and Encase for 8" Pipe	75	LF	\$ 60.00	\$ 4,500.00
g	Open Cut and Encase for 10" Pipe	185	LF	\$ 70.00	\$ 12,950.00
<b>4</b>	<b>VALVES</b>				
a	2-Inch Resilient Wedge Gate Valve for HDPE Force Main Complete w/ Valve Box, Cover, and Marker	15	EA	\$ 750.00	\$ 11,250.00
b	3-Inch Resilient Wedge Gate Valve for HDPE Force Main Complete w/ Valve Box, Cover, and Marker	4	EA	\$ 1,000.00	\$ 4,000.00
c	4-Inch Resilient Wedge Gate Valve for HDPE Force Main Complete w/ Valve Box, Cover, and Marker	2	EA	\$ 1,250.00	\$ 2,500.00
d	6-Inch Resilient Wedge Gate Valve for HDPE Force Main Complete w/ Valve Box, Cover, and Marker	5	EA	\$ 1,500.00	\$ 7,500.00
e	8-Inch Resilient Wedge Gate Valve for HDPE Force Main Complete w/ Valve Box, Cover, and Marker	1	EA	\$ 1,750.00	\$ 1,750.00
f	10-Inch Resilient Wedge Gate Valve for HDPE Force Main Complete w/ Valve Box, Cover, and Marker	1	EA	\$ 2,250.00	\$ 2,250.00
g	Combination Air and Vacuum Release Valve and Pit, Complete In-Place	3	EA	\$ 3,000.00	\$ 9,000.00
<b>5</b>	<b>PAVEMENT REPLACEMENT</b>				
a	Pavement Replacement	1	LS	\$ 20,000.00	\$ 20,000.00
<b>6</b>	<b>PUMP STATIONS AND APPURTENANCES</b>				
a	Full Service - Simplex Residential Grinder Pump Station, Complete In-Place Tested and In Service (Note 2)	117	EA	\$ 3,500.00	\$ 409,500.00
b	Full Service - Duplex Residential Grinder Pump Station, Complete In-Place Tested and In Service (Note 2)	7	EA	\$ 9,000.00	\$ 63,000.00
c	Full Service - Quadplex Residential Grinder Pump Station, Complete, In Place Tested and In Service	1	LS	\$ 17,500.00	\$ 17,500.00
d	Pressure Sewer Lateral Assembly	125	EA	\$ 300.00	\$ 37,500.00
e	Extra Vertical Height for Residential Grinder Pump Enclosure	8	VF	\$ 250.00	\$ 2,000.00
f	Spare Core Assembly and Controls for Residential Grinder Pump Station - Suitably Stored	8	EA	\$ 2,000.00	\$ 16,000.00
g	Bobcat Boulevard Lift Station, Complete In-Place Tested and Ready for Service	1	LS	\$ 75,000.00	\$ 75,000.00
h	Furnish and Install Liquid Odor Control System Complete with all Necessary Controls and Accessories	2	LS	\$ 17,500.00	\$ 35,000.00
<b>7</b>	<b>WASTEWATER TREATMENT PLANTS</b>				
a	100,000 gpd Extended Aeration Package Wastewater Treatment Plant with Discharge Line to the Levisa Fork, Complete In-Place Tested and Ready	1	LS	\$ 1,644,650.00	\$ 1,644,650.00
<b>8</b>	<b>GENERAL</b>				
a	Seeding & Clean Up	1	LS	\$ 10,000.00	\$ 10,000.00
b	Remove Existing Septic Tanks "unavoidably" damaged by construction	5	EA	\$ 1,500.00	\$ 7,500.00
c	Landscape Allowance - replace damaged shrubs as actual cost reimbursable -- receipts required	1	LS	\$ 4,000.00	\$ 4,000.00
d	Pre-Construction Video presented to OWNER (2 copies on DVD)	1	LS	\$ 1,500.00	\$ 1,500.00
e	Mobilization/Demobilization (Note 4)	1	LS	3% or less	\$ 15,000.00
	<b>SUBTOTAL PROBABLE CONSTRUCTION COST</b>				<b>\$ 3,105,150.00</b>
<b>9</b>	<b>NON-CONSTRUCTION COSTS</b>				
a	Construction Contingency	1	LS	5.00%	\$ 155,264.00
b	Basic Engineering	1	LS	Fixed by Contract	\$ 187,936.00
c	Resident Inspection	1	LS	Fixed by Contract	\$ 171,543.00
d	Additional Engineering Services				\$ -
e	Environmental	1	LS		\$ 7,500.00
f	Prelim/Final Engineering Report	1	LS		\$ 10,000.00
g	Upset Engineering Contingency	1	LS		\$ 6,750.00
h	Geotechnical	1	LS		\$ 7,500.00
i	Right of Way & Permit Fees (& Purchase Plant Site)	1	LS		\$ 8,250.00
j	Archaeological	1	LS		\$ -
k	BSADD Funding Administration	1	LS	Fixed by Contract	\$ 55,785.00
l	Legal (Advertisements, Bond Council, Closings)	1	LS		\$ 21,300.00
m	Interim Interest for Construction Financing, KIA admin fees, etc.	1	LS		\$ 13,109.00
	<b>PROBABLE PROJECT COST</b>				<b>\$ 3,750,087.00</b>



**NOTES**

- There shall be no distinction made between "cut and cover" and "trenchless" pipe construction techniques required by the project  
Contractor shall review the plans and prepare his bid accordingly
- Item to include all necessary 4" PVC pipe for connection of gravity sewer laterals to pump station Contractor shall prepare his bid accordingly!  
No separate measurement and payment will be made for sewer lateral piping for grinder pump station installations See technical specifications
- Sanitary Sewer Cleanout and Tap Assembly includes 8x8x4 Tee Wye, 20 linear foot of 4-inch ASTM D3034 SDR 35 PVC lateral stub, 4-Inch Sewer Cleanout as per details on plans (all parts required), 4-inch lateral stub cap and marker post
- Mobilization / demobilization may not exceed three (3) percent of the base bid total



**EXHIBIT 'D'**  
**PRELIMINARY PROJECT SCHEDULE - HAROLD SEWER PROJECT (SX21195121 & SX21071218) - CONTRACTS 1 AND 2 COMBINED**

TASK	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	
APPLICATION FOR FUNDING	CRITICAL PATH (COMPLETED)																								
PLANS & SPECS		CRITICAL PATH (COMPLETED)																							
PERMITS						CRITICAL PATH (COMPLETED)		CRITICAL PATH (COMPLETED)																	
E-CLEARINGHOUSE						CRITICAL PATH (COMPLETED)																			
ENVIRONMENTAL						CRITICAL PATH (COMPLETED)																			
BIDDING & AWARD								CRITICAL PATH (COMPLETED)																	
CONSTRUCTION													CRITICAL PATH (COMPLETED)												
PROJECT CLOSEOUT																					CRITICAL PATH (COMPLETED)				

<b>LEGEND</b>	
	CRITICAL PATH (COMPLETED)
	CRITICAL PATH (PLANNED)