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**EXHIBIT D. HYDRAULIC SEWER MODEL CAPACITY ANALYSIS**

## EXHIBIT D

### TECHNICAL MEMORANDUM HYDRAULIC SEWER MODEL CAPACITY ANALYSIS

This Technical Memorandum describes the software and methods used for the Comprehensive Sewer Plan hydraulic capacity analysis.

#### 1. HYDRAULIC MODELING SOFTWARE

InfoSewer for ArcGIS by MWHSoft was used for modeling select portions of Lake Whatcom Water and Sewer District's (District) sanitary sewer system infrastructure to evaluate capacity. InfoSewer is operated within a GIS platform (ArcGIS 10.0 in the case of this analysis). InfoSewer is capable of steady-state or extended period simulations. This capacity analysis for the District sewer system is done using steady-state simulation at peak flow conditions.

#### 2. MODEL NETWORK CONSTRUCTION AND OPERATION

The District constructed the model network based on their data sources. The model is on the District (a.k.a. Old City of Bellingham) vertical datum. The model was obtained from the District and minor refinements, flow loading, and analyses were performed by Wilson Engineering.

Gravity pipes were modeled using Manning's friction loss coefficient value of  $n=0.013$ . Force main pipes were modeled using Hazen-Williams friction loss coefficient value of  $C=100$ . However, the North Shore Agate Bay pump station force main C value was adjusted to 90 so that simulated discharge better matched the design duty point of the pump curve. All gravity loading manholes were assigned a headloss coefficient value of 0.75. These values are used to represent pipes that are older and have more friction than new pipes.

#### South Shore

The South Shore model physical network can be used to represent the low energy (formerly dry season) operating scenario, in which the Sudden Valley (SV) Pump Station is routed to Lake Whatcom Boulevard Interceptor (LWBI) (see Exhibit E-1, Sewer Comprehensive Plan), or the high energy (formerly wet season) operating scenario, in which SV pump station is routed to Lake Louise Road Interceptor (LLRI) (see Exhibit E-2, Sewer Comprehensive Plan). The LLRI is not simulated in the model, but effects of its use on LWBI can be evaluated by simply removing the Sudden Valley Pump Station loads from the model. The effects of the SV Detention Basin, which is located just upstream of the SV Pump Station and captures Ranch House, Louise Park, and Afternoon Beach, can

be evaluated in the model by reducing the flow loading into SV Pump Station. The South Shore model is comprised of SV Pump Station, LWBI force main to near Strawberry Point, and the LWBI gravity main from Strawberry Point to Cable Street (CAB) Pump Station. SV and CAB pump stations are simulated as fixed capacity pumps with the design flow rate of one pump in operation. The LWBI force main is segmented with nodes at the contributing pump stations that pump directly into the force main; North Point, Airport, Plum, and Boulevard. These contributing pump station nodes are simulated as gravity loading manholes with an artificially high rim elevation (actual elevation plus 1,000 feet) in order to contain the hydraulic grade line and keep the force main pressurized. Due to operational issues with flow continuity, loading, and simulating pressurized force main, junction chambers were not used to simulate these locations.

Figure D-1 (Attachment D-1) shows the South Shore model network. South Shore network data is included as Attachment D-3a.

#### North Shore

The North Shore model is comprised of Agate Bay Pump Station, and the force main and gravity main collector to the North Shore meter. The Agate Bay Pump Station is simulated as a 3-point curve based on the actual pump curve for one pump running. The North Shore model network consists of standard loading manholes and standard force main and gravity pipes (Exhibit F, Sewer Comprehensive Plan). There are no varying operational scenarios.

The North Shore meter (magnetic flow meter) is simulated as a representative length of reduced diameter 4 inch pipe through the meter vault with an assumed Manning's roughness coefficient  $n=0.013$ . The head losses through the simulated meter and piping at peak flows are in line with calculated head loss through the actual reduced piping arrangement and meter.

Figure D-2 (Attachment D-2) shows the North Shore model network. North Shore network data is included as Attachment D-4a.

### **3. MODEL SEWER LOADING**

Model sewer loading was calculated using data provided by a compilation of GIS shapefiles. Whatcom County parcel data containing District parcel/customer information was provided by the District and was later updated and further refined by the District and Wilson Engineering to estimate existing ERUs. Future ERUs were estimated by removing additional parcels that were either undevelopable or restricted by the District (25-yr ULID restriction), Sudden Valley Community Association (dedicated open space), or City Watershed Protected Parcel program coupled with estimating future growth based on parcel size and zoning.

Average daily flows for each sewer basin were calculated based on 2010 U.S. Census Bureau data and an assumed 100 gallons per capita day (gpcd) as follows:

South Shore

- Geneva; average household size =  $2.67 \times 100 \text{ gpcd} = 267$ , use **270 gpd/ERU**
- Sudden Valley; average household size =  $2.52 \times 100 \text{ gpcd} = 252$ , use **255 gpd/ERU**

North Shore

- Whatcom County; average household size =  $2.43 \times 100 \text{ gpcd} = 243$ , use **245 gpd/ERU**

Peak flows (peak hourly) for each sewer basin were calculated applying a peaking factor based on the following criteria:

- # ERU < 500; Peaking Factor = 4
- $500 < \# \text{ ERU} < 2000$ ; Peaking Factor = 3
- $2000 < \# \text{ ERU}$ ; Peaking Factor = 2.5

Simulations were operated without 'Pumped Flow Conservation', which more closely simulates average peak hourly flow instead of instantaneous peaks caused by pumping. Calculated peak flow loading into pumping stations is translated through the station and downstream without any flow adjustments due to pumping.

Loads for each sewer basin were applied at the most appropriate representative node in the model. For areas of dispersed gravity connections, loads were lumped and typically applied at a manhole in the upstream 2/3 of the pipe segment within the area. Each manhole with a load was assigned two loads. Load 1 represents the peaked load for that individual basin. Because each load contributing basin individually has a smaller population and number of ERUs it has a higher peaking factor. The cumulative effect of the resulting higher peak load on the downstream end of the collection system is corrected by adding a negative load (Load 2) to each loading manhole. The correction is applied proportionally to its contributing load.

South Shore

The Lake Whatcom Boulevard (LWB) gravity connections sewer basin is large and spans a long segment of the gravity main portion of the LWBI. Because of this it was divided into 6 sub-basins to better simulate the distribution of flow loading.

Hourly data at Cable St Pump Station meter for the time periods February 2012 – June 2012 and October 2012-February 2013 were used to check calculated peak loads. The high flow (hourly average) from this data appears to be 1,083 gpm (November 19, 2012) and there are several readings in the 700-850 gpm range. There is one flow data point of 1,450 gpm on Nov 19, 2012, but it appears this flow is high because of meter totalizer reading errors. The high flow of 1,083 gpm was cross checked and verified with the

pump run time data. During this time period, and for the last several years, the District has operated with Sudden Valley Pump Station discharging to the LLRI at all times because of the lack of capacity in the LWBI. The detention vault was not in use during this time period.

Calculated peak flow for current operating conditions (high energy) is 879 gpm, which is less than the observed peak flow data of 1,083 gpm. The cumulative flow of each sewer basin without the overall correction factor (1,078 gpm) as described previously matches the observed peak flow more closely. For the model simulations the correction Load 2 was removed, and an additional conservative factor of 1.02 was applied to the model loading to better match actual flow conditions. Model peak flow for existing conditions is 1,100 gpm. This same flow calibration logic was applied to all simulated South Shore model scenarios.

Calculated South Shore peak loading at Cable St Pump Station for the simulated model scenarios (with flow calibration adjustments) are as follows:

○

	Calculated Load (based on ERUs)	Adjusted Model Values (based on observed flows)	Contributing ERUs
<b>Low Energy:</b>			
Existing w/out Basin	1,175 gpm	1,611 gpm	2,507
Existing w/ Basin	“	1,285 gpm	2,507
Future w/out Basin	1,418 gpm	1,952 gpm	3,025
Future w/ Basin	“	1,560 gpm	3,025
<b>High Energy:</b>			
Existing	879 gpm	1,100 gpm	1,562
Future	1,066 gpm	1,339 gpm	1,895

### North Shore

The NSG sewer basin consisting of gravity connections is large and spans a long segment of gravity main. Because of this it was divided into 5 sub-basins to better simulate the distribution of flow loading.

Hourly data at North Shore meter for the time periods February 2012 – June 2012 and October 2012-February 2013 were used to check calculated peak loads. The high flows (hourly average) from this data appear to be approximately 240 gpm (November 6-7, 2012) and there are several readings in the 200-240 gpm range. There are two higher data points in March 2012 of approximately 310 and 280 gpm, but it appears these flows are high because of meter totalizer reading errors.

The calculated existing conditions peak flow is 249 gpm for 366 ERU to the North Shore meter. Calculated peak flow and available observed peak flow data are very close and no adjustments are made to the model loading for this analysis.

Calculated future conditions peak flow is 278 gpm for 545 ERU to the North Shore meter. It is important to note that for future conditions a lower peaking factor is used (3.0 for >500 ERU, instead of 4). Thus, a relatively minor increase in peak flow is calculated for the anticipated growth in ERUs.

#### **4. CAPACITY ANALYSIS**

The capacity analysis was conducted using steady-state conditions during the wet weather peak hourly flow event. As noted previously, this analysis simulates the average peak hourly flow and not the instantaneous peak flow effects from short-term pumping rates.

##### South Shore

South Shore modeling results for the following scenarios are included as Attachments D-3b (simulation reports) and D-3c (output reports).

##### **Sudden Valley PS to LWBI ('Low Energy')**

###### *Existing conditions*

Model simulations confirm that LWBI does not have sufficient capacity for this operating scenario. There are many pipes (12-11 to 30-29 all but one) flowing above capacity and flooding manholes (GT-20 to GT-30) from Strawberry Point west to Wellington Ave.

###### *Existing conditions w/ Sudden Valley Detention Basin active*

With the Detention Basin removing full inflow to Sudden Valley pump station (approximate 333 gpm), LWBI capacity is still insufficient. There are 3 flooding manholes (GT-25, GT-26, GT29STP) and still several pipes flowing above capacity. The three manholes identified are shallow; 4.1, 4.0, and 4.6 feet, respectively, deep from rim to invert.

##### **Sudden Valley PS to LLRI (current operating scenario year-round, 'High Energy')**

###### *Existing conditions*

Model simulations indicate no flooding manholes for this scenario (highest filled manhole is GT-25 at 1.8 feet below rim). However, there are several pipes flowing near or above capacity.

###### *Future (ultimate build-out) conditions*

Model simulations indicate that LWBI does not have sufficient capacity for these conditions. There are 3 flooding manholes (GT-25, GT-26, GT-29STP) and many pipes flowing at or above capacity. Further model simulations indicate that manhole flooding occurs at 1,190 gpm, or approximately 1,700 ERU (at current 0.7 gpm/ERU). This is 138 ERU more than existing ERU. Capacity of LWBI should be monitored as development occurs and infrastructure continues to age to evaluate actual capacity.

When the LWBI reaches capacity, the flows from North Point PS, and the pump stations upstream, will be redirected away from LWBI and towards the Sudden Valley PS, and pumped to the LLRI (see Exhibit E-3, Sewer Comprehensive Plan).

### North Shore

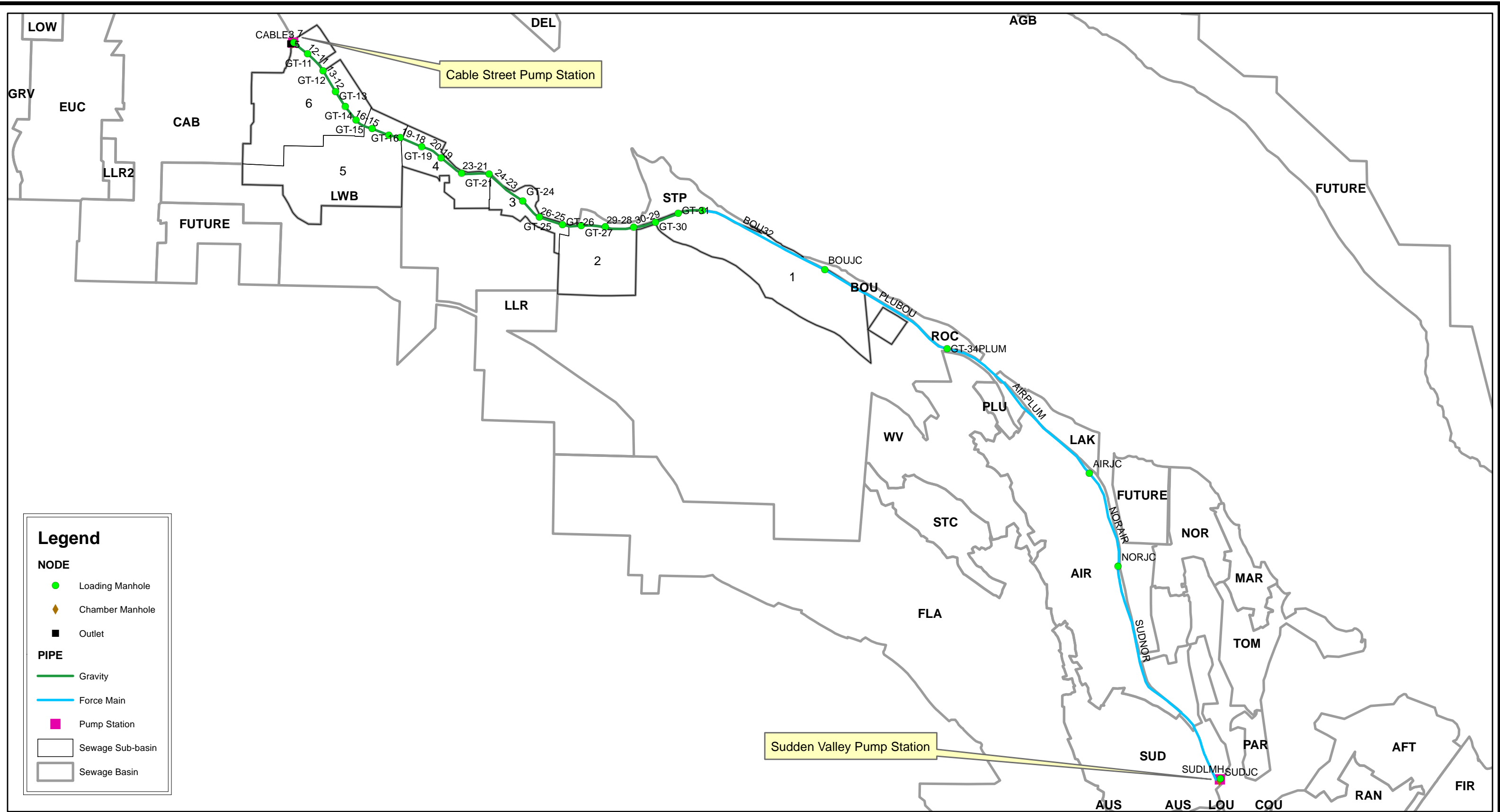
Simulations were performed to evaluate existing and future (ultimate build-out) conditions in the North Shore collection system. Model simulations indicate the North Shore trunk main has adequate capacity for existing conditions.

Modeling of future conditions indicates that the trunk main has sufficient capacity. The 4-inch North Shore flow meter could become a restriction in the trunk main at some point in the future. Two manholes upstream 600-1,000 LF of the meter are shallow manholes (NT-3 = 4.01 ft rim to invert, NT-4 = 2.92 ft rim to invert) and are most at risk of flooding due to meter caused backwater at high flows. Model simulations indicate flooding at manhole NT-4 could occur as flows through the meter approach 350 gpm. Future conditions assume full build-out, 'normal' infiltration, and typical peaking factor criteria. Shallow manhole flooding and flow meter sizing should be monitored as potential issues as future flow increases with development and as infrastructure continues to age.

North Shore modeling results for all scenarios are included as Attachments D-4b (simulation reports) and D-4c (output reports).

### **Exhibit D - Attachments**

- Attachment D-1 - Figure D-1: South Shore Model Network
- Attachment D-2 - Figure D-2: North Shore Model Network
- Attachment D-3 - South Shore modeling reports:
  - D-3a - Modeling network data
  - D-3b - Modeling simulation reports
  - D-3c - Modeling output reports
- Attachment D-4 – North Shore modeling reports:
  - D-4a - Modeling network data
  - D-4b - Modeling simulation reports
  - D-4c - Modeling output reports



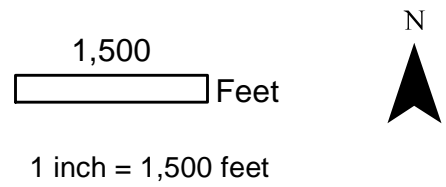
**Legend**

**NODE**

- Loading Manhole
- ◆ Chamber Manhole
- Outlet

**PIPE**

- Gravity
- Force Main
- Pump Station
- Sewage Sub-basin
- Sewage Basin



**Wilson**  
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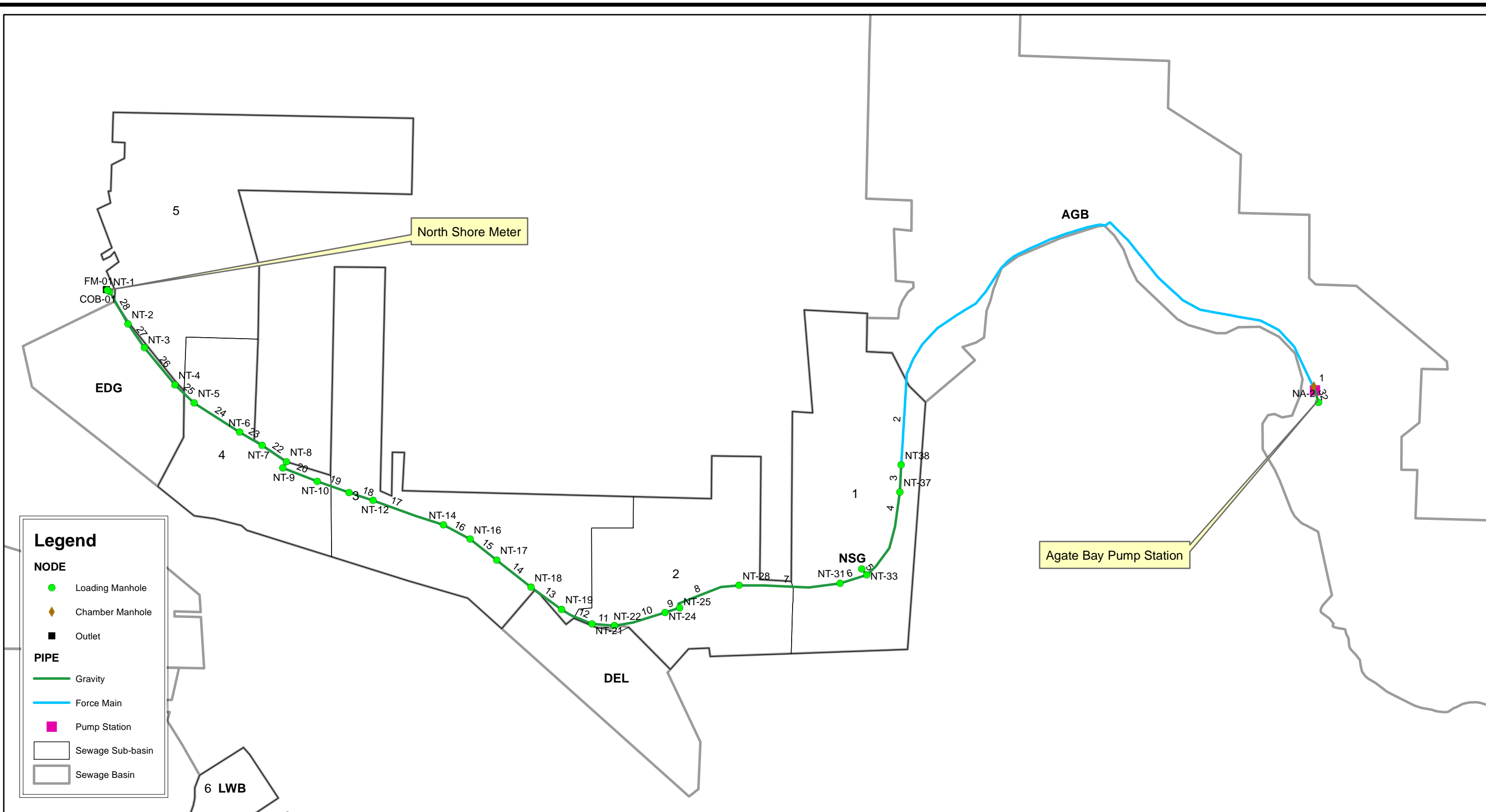
DATE JULY 2013	SHEET 1
SCALE 1:18,000	
JOB NUMBER 2013-014	OF 1

LAKE WHATCOM WATER & SEWER DISTRICT  
WHATCOM COUNTY WASHINGTON

**FIGURE D-1**  
**SOUTH SHORE MODEL NETWORK**







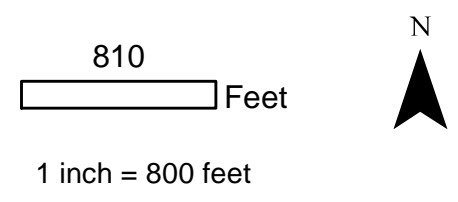
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- Loading Manhole
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**PIPE**

- Gravity
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DATE JULY 2013	SHEET 1
SCALE 1:9,600	
JOB NUMBER 2013-014	OF 1

LAKE WHATCOM WATER & SEWER DISTRICT  
WHATCOM COUNTY WASHINGTON

**FIGURE D-2**  
**NORTH SHORE MODEL NETWORK**



		ID (Char)	DIAMETER (Num)	RIM_ELEV (Num)	HEADLOSS (Num)
1		SUDJC	4.000	367.940	0.000
2		SUDLMH	4.000	368.000	0.000
3		NORJC	4.000	386.980	0.000
4		AIRJC	4.000	388.000	0.000
5		GT-34PLUM	4.000	422.500	0.000
6		BOUJC	4.000	326.000	0.000
7		GT-32	4.000	381.730	0.750
8		GT-29STP	4.000	329.780	0.750
9		GT-31	4.000	361.520	0.750
10		GT-30	4.000	334.390	0.750
11		GT-28	4.000	329.160	0.750
12		GT-27	4.000	324.460	0.750
13		GT-26	4.000	321.400	0.750
14		GT-25	4.000	319.390	0.750
15		GT-24	4.000	319.800	0.750
16		GT-23	4.000	319.200	0.750
17		GT-21	4.000	319.140	0.750
18		GT-20	4.000	320.040	0.750
19		GT-19	4.000	319.980	0.750
20		GT-18	4.000	319.630	0.750
21		GT-17	4.000	319.380	0.750
22		GT-16	4.000	319.600	0.750
23		GT-15	4.000	319.890	0.750
24		GT-14	4.000	320.100	0.750
25		GT-13	4.000	319.700	0.750
26		GT-12	4.000	320.020	0.750
27		GT-11	4.000	318.770	0.750
28		CABLE	4.000	319.000	0.000
29		3	4.000	319.000	0.000
30		5	4.000	319.000	0.000
31		7	4.000	319.000	0.750

South Shore model - DB Table - 'Manhole'

	ID (Char)	DESCRIPT (Char)	TYPE (Num)	ELEVATION (Num)	YR_INST (Num)	YR_RETIRE (Num)	ZONE (Char)	PHASE (Num)
1	SUDJC	Sudden Valley Junction Chamber	1: Chamber	352.540				
2	SUDLMH	SUD Loading Manhole	0: Loading	355.130				
3	NORJC	North Point Junction Chamber	0: Loading	376.190				
4	AIRJC	Alirport Junction Chamber	0: Loading	381.500				
5	GT-34PLUM	Plum Juction Chamber	0: Loading	415.930				
6	BOUJC	Boulevard Junction Chamber	0: Loading	322.000				
7	GT-32	Begin Gavity Main	0: Loading	376.590				
8	GT-29STP	Strawberry Point Loading MH	0: Loading	325.180				
9	GT-31	Gravity Manhole	0: Loading	357.100				
10	GT-30	Gravity Manhole	0: Loading	329.170				
11	GT-28	Gravity Manhole	0: Loading	322.110				
12	GT-27	Gravity Manhole	0: Loading	319.590				
13	GT-26	Gravity Manhole	0: Loading	317.390				
14	GT-25	Gravity Manhole	0: Loading	315.280				
15	GT-24	Gravity Manhole	0: Loading	314.490				
16	GT-23	Gravity Manhole	0: Loading	314.210				
17	GT-21	Gravity Manhole	0: Loading	313.190				
18	GT-20	Gravity Manhole	0: Loading	312.300				
19	GT-19	Gravity Manhole	0: Loading	311.690				
20	GT-18	Gravity Manhole	0: Loading	311.320				
21	GT-17	Gravity Manhole	0: Loading	310.440				
22	GT-16	Gravity Manhole	0: Loading	310.330				
23	GT-15	Gravity Manhole	0: Loading	310.060				
24	GT-14	Gravity Manhole	0: Loading	309.720				
25	GT-13	Gravity Manhole	0: Loading	309.290				
26	GT-12	Gravity Manhole	0: Loading	308.740				
27	GT-11	Gravity Manhole	0: Loading	308.670				
28	CABLE	Cable St Junction Chamber	1: Chamber	307.000				
29	3	Cable Disch Out	0: Loading	307.000				
30	5	Cable Outlet	2: Outlet	305.000				
31	7	Cable PS loading manhole	0: Loading	307.380				

South Shore model - DB Table - 'Pipe Modeling Data'

	ID (Char)	FROM_INV (Num)	TO_INV (Num)	LENGTH (Num)	DIAMETER (Num)	COEFF (Num)	PARALLEL (Num)
1	SUDLGP	355.130	354.600	100.000	10.000	0.013	
2	SUDNOR	352.540	376.190	3,931.040	10.000	100.000	
3	NORAIR	376.190	381.500	1,519.450	10.000	100.000	
4	AIRPLUM	381.500	415.930	3,235.040	10.000	100.000	
5	PLUBOU	415.930	322.000	2,444.120	10.000	100.000	
6	BOU32	322.000	376.590	2,262.940	10.000	100.000	
7	32-31	376.590	357.100	412.100	10.000	0.013	
8	31-30	357.100	329.170	398.770	10.000	0.013	
9	30-29	329.170	325.180	372.870	10.000	0.013	
10	29-28	325.180	322.110	479.630	10.000	0.013	
11	28-27	322.110	319.590	385.850	10.000	0.013	
12	27-26	319.590	317.390	313.420	10.000	0.013	
13	26-25	317.390	315.280	385.400	10.000	0.013	
14	25-24	315.280	314.490	401.940	10.000	0.013	
15	24-23	314.490	314.210	437.990	14.000	0.013	
16	23-21	314.210	313.190	654.890	14.000	0.013	
17	21-20	313.190	312.300	472.110	14.000	0.013	
18	20-19	312.300	311.690	372.650	14.000	0.013	
19	19-18	311.690	311.320	384.240	14.000	0.013	
20	18-17	311.320	310.440	195.760	14.000	0.013	
21	17-16	310.440	310.330	292.200	14.000	0.013	
22	16-15	310.330	310.060	321.460	14.000	0.013	
23	15-14	310.060	309.720	267.680	14.000	0.013	
24	14-13	309.720	309.290	305.940	14.000	0.013	
25	13-12	309.290	308.740	409.600	14.000	0.013	
26	12-11	308.740	308.670	374.280	14.000	0.013	
27	11-SPCAB	308.670	307.380	299.120	14.000	0.013	
28	499	307.000	307.000	100.000	12.000	100.000	
29	501	307.000	305.000	20.000	12.000	0.013	
30	503	307.380	307.000	20.000	14.000	0.013	

South Shore model - DB Table - 'Pipe'

	ID (Char)	DESCRIPT (Char)	TYPE (Num)	YR_INST (Num)	YR_RETIRE (Num)	ZONE (Char)	PHASE (Num)	MATERIAL (Char)	LINING (Char)	COST_ID (Char)
1	SUDLGP	Gravity Loading Pipe	0: Gravity							
2	SUDNOR	Force Main	1: Force	1974				Ductile Iron		
3	NORAIR	NORAIR Force Main	1: Force	1974				Ductile Iron		
4	AIRPLUM	AIRPLUM Force Main	1: Force	1974				Ductile Iron		
5	PLUBOU	PLUBOU Force Main	1: Force	1974				Ductile Iron		
6	BOU32	BOU32 Force Main	1: Force	1974				Ductile Iron		
7	32-31	Gravity Main	0: Gravity							
8	31-30	Gravity Main	0: Gravity							
9	30-29	Gravity Main	0: Gravity							
10	29-28	Gravity Main	0: Gravity							
11	28-27	Gravity Main	0: Gravity							
12	27-26	Gravity Main	0: Gravity							
13	26-25		0: Gravity							
14	25-24		0: Gravity							
15	24-23		0: Gravity							
16	23-21		0: Gravity							
17	21-20		0: Gravity							
18	20-19		0: Gravity							
19	19-18		0: Gravity							
20	18-17		0: Gravity							
21	17-16		0: Gravity							
22	16-15		0: Gravity							
23	15-14		0: Gravity							
24	14-13		0: Gravity							
25	13-12		0: Gravity							
26	12-11		0: Gravity							
27	11-SPCAB		0: Gravity							
28	499	Cable Disch Out Pipe - arbitrat	1: Force							
29	501	Cable Outlet pipe	0: Gravity							
30	503	CAB load MH to WW	0: Gravity							

South Shore model - DB Table - 'Pump Modeling Data'

	ID (Char)	TYPE (Num)	PARALLEL (Num)	CAPACITY (Num)	SHUT HEAD (Num)	DSGN HEAD (Num)	DSGN FLOW (Num)	HIGH HEAD (Num)	HIGH FLOW (Num)
1	SUDPUMP	0: Constant Capacity		500.000	0.000	0.000	0.000	0.000	0.000
2	CAB	0: Constant Capacity		1,000.000	0.000	0.000	0.000	0.000	0.000



South Shore model - DB Table - 'Pump'

	ID (Char)	DESCRIPT (Char)	YR_INST (Num)	YR_RETIRE (Num)	ZONE (Char)	RATED_PWR (Num)	COST_ID (Char)	PHASE (Num)
1	SUDPUMP	2 dry pit S&L, 2 submersible (cap=900gpr	1971			40.000		
2	CAB	triplex submersible pumps	2011			55.000		

South Shore model - DB Table - 'Wet Well'

	ID (Char)	DESCRIPT (Char)	YR_INST (Num)	YR_RETIRE (Num)	ZONE (Char)	PHASE (Num)	COST_ID (Char)
1	SPSUD	Sudden Valley PS Wet Well	0				
2	SPCAB	Cable St PS Wet Well	0				

South Shore model - DB Table - 'Wetwell Modeling Data'

	ID (Char)	TYPE (Num)	BTM_ELEV (Num)	HEADLOSS (Num)	MIN_LEVEL (Num)	MAX_LEVEL (Num)	INIT_LEVEL (Num)	DIAMETER (Num)	CURVE (Char)
1	SPSUD	0: Cylindrical	352.540	0.750	1.800	7.400	5.500	10.000	
2	SPCAB	0: Cylindrical	307.000	0.750	0.380	3.830	3.330	10.000	

\*\*\*\*\*  
 \* Computer Modeling for Design and Planning \*  
 \* of Sani tary Sewer Systems \*  
 \* Innovvye, Inc. \*  
 \*\*\*\*\*

[Title]  
 [Summary]  
 Number of loading manholes : 28  
 Number of outlets : 1  
 Number of junction chambers : 2  
 Number of wet wells : 24  
 Number of pipes : 6  
 Number of force-mains : 6  
 Number of pumps : 2

[Loading Manholes]

Manhole ID	Base Flow	Storm Load	Total Flow
7	256.0000	0.0000	261.1200
AI RJC	183.0000	0.0000	186.6600
BOUJC	26.0000	0.0000	26.5200
GT-13	72.0000	0.0000	73.4400
GT-17	86.0000	0.0000	87.7200
GT-21	15.0000	0.0000	15.3000
GT-24	14.0000	0.0000	14.2800
GT-28	6.0000	0.0000	6.1200
GT-29STP	37.0000	0.0000	37.7400
GT-32	3.0000	0.0000	3.0600
GT-34PLUM	138.0000	0.0000	140.7600
NORJC	244.0000	0.0000	248.8800
3	0.0000	0.0000	0.0000
GT-11	0.0000	0.0000	0.0000
GT-12	0.0000	0.0000	0.0000
GT-14	0.0000	0.0000	0.0000
GT-15	0.0000	0.0000	0.0000
GT-16	0.0000	0.0000	0.0000
GT-18	0.0000	0.0000	0.0000
GT-19	0.0000	0.0000	0.0000
GT-20	0.0000	0.0000	0.0000
GT-23	0.0000	0.0000	0.0000

STEADY. RPT

GT-25 0.0000  
 GT-26 0.0000  
 GT-27 0.0000  
 GT-30 0.0000  
 GT-31 0.0000  
 SUDLMH 0.0000

[Pipes]

Pipe ID	Peak Flow	From Cover ID	I/I	Flow	To Actual ID	d/D	Flow Depth	Froude Number	Pipe Count	Pipe Crit Slope	Pipe Full Diam	Total Cover Flow	Storm Load
11-SPCAB													
840.48	0.00	GT-11	0.00	3.36	7	0.52	0.60	0.86	1	0.004	14.00	840.48	0.00
12-11													
840.48	0.00	GT-12	0.00	1.75	GT-11	1.00	1.17	0.29	1	0.000	14.00	840.48	0.00
13-12													
840.48	0.00	GT-13	0.00	2.10	GT-12	0.78	0.91	0.39	1	0.001	14.00	840.48	0.00
14-13													
767.04	0.00	GT-14	0.00	2.12	GT-13	0.71	0.82	0.43	1	0.001	14.00	767.04	0.00
15-14													
767.04	0.00	GT-15	0.00	2.03	GT-14	0.73	0.86	0.40	1	0.001	14.00	767.04	0.00
16-15													
767.04	0.00	GT-16	0.00	1.60	GT-15	1.00	1.17	0.26	1	0.001	14.00	767.04	0.00
17-16													
767.04	0.00	GT-17	0.00	1.60	GT-16	1.00	1.17	0.26	1	0.000	14.00	767.04	0.00
18-17													
679.32	0.00	GT-18	0.00	3.23	GT-17	0.45	0.53	0.90	1	0.004	14.00	679.32	0.00
19-18													
679.32	0.00	GT-19	0.00	1.77	GT-18	0.75	0.87	0.34	1	0.001	14.00	679.32	0.00
20-19													
679.32	0.00	GT-20	0.00	2.20	GT-19	0.61	0.72	0.50	1	0.002	14.00	679.32	0.00
21-20													
679.32	0.00	GT-21	0.00	2.33	GT-20	0.59	0.68	0.55	1	0.002	14.00	679.32	0.00
23-21													
664.02	0.00	GT-23	0.00	2.15	GT-21	0.61	0.72	0.49	1	0.002	14.00	664.02	0.00
24-23													
664.02	0.00	GT-24	0.00	1.38	GT-23	1.00	1.17	0.23	1	0.001	14.00	664.02	0.00
25-24													
649.74	0.00	GT-25	0.00	2.65	GT-24	1.00	0.83	0.51	1	0.002	10.00	649.74	0.00
26-25													
649.74	0.00	GT-26	0.00	3.37	GT-25	0.74	0.61	0.78	1	0.005	10.00	649.74	0.00
27-26													
649.74	0.00	GT-27	0.00	3.74	GT-26	0.67	0.56	0.94	1	0.007	10.00	649.74	0.00
28-27													
		GT-28	0.00		GT-27	0.67			1	0.007	10.00	649.74	0.00

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Pipe ID	From ID	To ID	Pipe Diam	Pipe Flow	Pipe Vel.	Pipe Loss	Pump Count	Pump Flow	Pump Head
649.74	0.00	0.00	0.54	796.82	0.00	0.00	0.00	0.00	0.00
29-28	GT-29STP	GT-28	1	0.006	10.00	643.62			
643.62	0.00	0.00	0.54	788.83	0.00	0.00			
30-29	GT-30	GT-29STP	1	0.011	10.00	605.88			
605.88	0.00	0.00	0.52	1019.95	0.00	0.00			
31-30	GT-31	GT-30	1	0.070	10.00	605.88			
605.88	0.00	0.00	0.52	2609.42	0.00	0.00			
32-31	GT-32	GT-31	1	0.047	10.00	605.88			
605.88	0.00	0.00	0.52	2144.24	0.00	0.00			
501	3	5	1	0.100	12.00	1101.60			
1101.60	0.00	0.00	0.67	5070.16	0.00	0.00			
503	7	SPCAB	1	0.019	14.00	1101.60			
1101.60	0.00	0.00	0.64	3333.69	0.00	0.00			
SUDLGP	SUDLMH	SPSUD	1	0.005	10.00	0.00			
0.00	0.00	0.00	0.00	717.81	0.00	0.00			

[Force Mains]

Pipe ID	From ID	To ID	Pipe Diam	Pipe Flow	Pipe Vel.	Pipe Loss
499	CABLE	3	12.00	1101.60	2.84	0.412
AI RPLUM	AI RJC	GT-34PLUM	10.00	435.54	1.78	6.950
BOU32	BOUJC	GT-32	10.00	602.82	2.46	8.876
NORAIR	NORJC	AIRJC	10.00	248.88	1.02	1.158
PLUBOU	GT-34PLUM	BOUJC	10.00	576.30	2.35	8.820
SUDNOR	SUDJC	NORJC	10.00	0.00	2.04	10.905

[Pumps]

Pump ID	Wet Well ID	Manhole ID	Pump Type	Fixed Capacity	Pump Count	Pump Flow	Pump Head
CAB	SPCAB	CABLE	Fixed Capacity	1	1000.00	0.00	
SUDPUMP	SPSUD	SUDJC	Fixed Capacity	1	500.00	29.89	

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 \* Computer Modeling for Design and Planning \*  
 \* of Sani tary Sewer Systems \*  
 \* Innovvyze, Inc. \*  
 \*\*\*\*\*

[Title]  
 [Summary]  
 Number of loading manholes : 28  
 Number of outlets : 1  
 Number of junction chambers : 2  
 Number of wet wells : 24  
 Number of pipes : 6  
 Number of force-mains : 2  
 Number of pumps : 2

Manhole ID	Base Flow	Storm Load	Total Flow
7	256.0000	0.0000	261.1200
AI RJC	183.0000	0.0000	186.6600
BOUJC	26.0000	0.0000	26.5200
GT-13	72.0000	0.0000	73.4400
GT-17	86.0000	0.0000	87.7200
GT-21	15.0000	0.0000	15.3000
GT-24	14.0000	0.0000	14.2800
GT-28	6.0000	0.0000	6.1200
GT-29STP	37.0000	0.0000	37.7400
GT-32	3.0000	0.0000	3.0600
GT-34PLUM	138.0000	0.0000	140.7600
NORJC	244.0000	0.0000	248.8800
SUDLMH	502.0000	0.0000	512.0400
3	0.0000	0.0000	0.0000
GT-11	0.0000	0.0000	0.0000
GT-12	0.0000	0.0000	0.0000
GT-14	0.0000	0.0000	0.0000
GT-15	0.0000	0.0000	0.0000
GT-16	0.0000	0.0000	0.0000
GT-18	0.0000	0.0000	0.0000
GT-19	0.0000	0.0000	0.0000
GT-20	0.0000	0.0000	0.0000

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GT-23 0.0000  
 GT-25 0.0000  
 GT-26 0.0000  
 GT-27 0.0000  
 GT-30 0.0000  
 GT-31 0.0000

[Pipes]

Pipe ID	UnPeak Flow	Peak Flow	From Cover ID	I/I Flow	Flow Veloc	To Actual ID	d/D	Flow Depth	Froude Number	Pipe Count	Pipe Crit slope	Pipe Full Diam	Total Cover Flow	Storm Load
11-SPCAB			GT-11			7				1	0.004	14.00	1352.52	0.00
1352.52	0.00	0.00	GT-11	0.00	3.72	GT-11	0.71	0.83	0.75	1	0.71	1588.26	0.00	0.00
12-11	0.00	0.00	GT-12	0.00	2.82	GT-12	1.00	1.17	0.46	1	0.000	14.00	1352.52	0.00
1352.52	0.00	0.00	GT-13	0.00	2.82	GT-13	1.00	1.17	0.46	1	0.001	14.00	1352.52	0.00
13-12	0.00	0.00	GT-14	0.00	2.67	GT-14	1.00	1.17	0.43	1	0.58	906.70	0.00	0.00
1352.52	0.00	0.00	GT-15	0.00	2.67	GT-15	1.00	1.17	0.43	1	0.001	14.00	1279.08	0.00
14-13	0.00	0.00	GT-16	0.00	2.67	GT-16	1.00	1.17	0.43	1	0.56	861.95	0.00	0.00
1279.08	0.00	0.00	GT-17	0.00	2.67	GT-17	1.00	1.17	0.43	1	0.000	14.00	1279.08	0.00
15-14	0.00	0.00	GT-18	0.00	3.69	GT-18	0.64	0.74	0.81	1	0.004	14.00	1191.36	0.00
1279.08	0.00	0.00	GT-19	0.00	2.48	GT-19	1.00	1.17	0.41	1	0.001	14.00	1191.36	0.00
16-15	0.00	0.00	GT-20	0.00	2.48	GT-20	1.00	1.17	0.41	1	0.52	750.50	0.00	0.00
1279.08	0.00	0.00	GT-21	0.00	2.48	GT-21	1.00	1.17	0.41	1	0.60	978.51	0.00	0.00
17-16	0.00	0.00	GT-22	0.00	2.48	GT-22	1.00	1.17	0.41	1	0.002	14.00	1191.36	0.00
1279.08	0.00	0.00	GT-23	0.00	2.45	GT-23	1.00	1.17	0.40	1	0.62	1050.08	0.00	0.00
18-17	0.00	0.00	GT-24	0.00	2.45	GT-24	1.00	1.17	0.40	1	0.59	954.48	0.00	0.00
1191.36	0.00	0.00	GT-25	0.00	4.75	GT-25	1.00	0.83	0.92	1	0.001	14.00	1176.06	0.00
19-18	0.00	0.00	GT-26	0.00	4.75	GT-26	1.00	0.83	0.92	1	0.47	611.50	0.00	0.00
1191.36	0.00	0.00	GT-27	0.00	4.75	GT-27	1.00	0.83	0.92	1	0.44	437.12	0.00	0.00
1191.36	0.00	0.00	GT-28	0.00	4.75	GT-28	1.00	0.83	0.92	1	0.005	10.00	1161.78	0.00
20-19	0.00	0.00		0.00	4.75		1.00	0.83	0.92	1	0.57	729.55	0.00	0.00
1191.36	0.00	0.00		0.00	4.75		1.00	0.83	0.92	1	0.007	10.00	1161.78	0.00
21-20	0.00	0.00		0.00	4.75		1.00	0.83	0.92	1	0.61	826.07	0.00	0.00
1191.36	0.00	0.00		0.00	4.75		1.00	0.83	0.92	1	0.007	10.00	1161.78	0.00
23-21	0.00	0.00		0.00	4.75		1.00	0.83	0.92	1	0.007	10.00	1161.78	0.00
1176.06	0.00	0.00		0.00	4.75		1.00	0.83	0.92	1	0.007	10.00	1161.78	0.00
1176.06	0.00	0.00		0.00	4.75		1.00	0.83	0.92	1	0.007	10.00	1161.78	0.00
24-23	0.00	0.00		0.00	4.75		1.00	0.83	0.92	1	0.007	10.00	1161.78	0.00
1176.06	0.00	0.00		0.00	4.75		1.00	0.83	0.92	1	0.007	10.00	1161.78	0.00
25-24	0.00	0.00		0.00	4.75		1.00	0.83	0.92	1	0.007	10.00	1161.78	0.00
1161.78	0.00	0.00		0.00	4.75		1.00	0.83	0.92	1	0.007	10.00	1161.78	0.00
26-25	0.00	0.00		0.00	4.75		1.00	0.83	0.92	1	0.007	10.00	1161.78	0.00
1161.78	0.00	0.00		0.00	4.75		1.00	0.83	0.92	1	0.007	10.00	1161.78	0.00
27-26	0.00	0.00		0.00	4.75		1.00	0.83	0.92	1	0.007	10.00	1161.78	0.00
1161.78	0.00	0.00		0.00	4.75		1.00	0.83	0.92	1	0.007	10.00	1161.78	0.00
28-27	0.00	0.00		0.00	4.75		1.00	0.83	0.92	1	0.007	10.00	1161.78	0.00





\*\*\*\*\*  
 \* Computer Modeling for Design and Planning \*  
 \* of Sanitary Sewer Systems \*  
 \* Innovyze, Inc. \*  
 \*\*\*\*\*

[Title]  
 [Summary]  
 Number of loading manholes : 28  
 Number of outlets : 1  
 Number of junction chambers : 2  
 Number of wet wells : 24  
 Number of pipes : 6  
 Number of force-mains : 2  
 Number of pumps : 2

[Loading Manholes] Manhole ID	Base Flow	Storm Load	Total Flow
7	256.0000	0.0000	261.1200
AI RJC	183.0000	0.0000	186.6600
BOUJC	26.0000	0.0000	26.5200
GT-13	72.0000	0.0000	73.4400
GT-17	86.0000	0.0000	87.7200
GT-21	15.0000	0.0000	15.3000
GT-24	14.0000	0.0000	14.2800
GT-28	6.0000	0.0000	6.1200
GT-29STP	37.0000	0.0000	37.7400
GT-32	3.0000	0.0000	3.0600
GT-34PLUM	138.0000	0.0000	140.7600
NORJC	244.0000	0.0000	248.8800
SUDLMH	176.0000	0.0000	179.5200
3	0.0000	0.0000	0.0000
GT-11	0.0000	0.0000	0.0000
GT-12	0.0000	0.0000	0.0000
GT-14	0.0000	0.0000	0.0000
GT-15	0.0000	0.0000	0.0000
GT-16	0.0000	0.0000	0.0000
GT-18	0.0000	0.0000	0.0000
GT-19	0.0000	0.0000	0.0000
GT-20	0.0000	0.0000	0.0000

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GT-23 0.0000  
 GT-25 0.0000  
 GT-26 0.0000  
 GT-27 0.0000  
 GT-30 0.0000  
 GT-31 0.0000

[Pipes]

Pipe ID	UnPeak Flow	Peak Flow	From Cover ID	I/I Flow	Flow Veloc	To Actual ID	d/D	Flow Depth	Froude Number	Pipe Count	Pipe Crit slope	Pipe Full Diam	Total Cover Flow	Storm Load
11-SPCAB														
1020.00	0.00	0.00	GT-11	0.00	3.51	7	0.58	0.68	0.83	1	0.004	14.00	1020.00	0.00
12-11			GT-12	0.00	2.13	GT-11	1.00	1.17	0.35	1	0.000	14.00	1020.00	0.00
1020.00	0.00	0.00	GT-13	0.00	2.13	GT-12	1.00	1.17	0.35	1	0.001	14.00	1020.00	0.00
13-12			GT-14	0.00	1.97	GT-13	1.00	1.17	0.32	1	0.001	14.00	946.56	0.00
1020.00	0.00	0.00	GT-15	0.00	1.97	GT-14	1.00	1.17	0.32	1	0.001	14.00	946.56	0.00
946.56	0.00	0.00	GT-16	0.00	1.97	GT-15	1.00	1.17	0.32	1	0.001	14.00	946.56	0.00
15-14			GT-17	0.00	1.97	GT-16	1.00	1.17	0.32	1	0.000	14.00	946.56	0.00
946.56	0.00	0.00	GT-18	0.00	3.43	GT-17	0.52	0.60	0.87	1	0.004	14.00	858.84	0.00
16-15			GT-19	0.00	1.79	GT-18	1.00	1.17	0.29	1	0.001	14.00	858.84	0.00
946.56	0.00	0.00	GT-20	0.00	1.79	GT-19	1.00	1.17	0.29	1	0.002	14.00	858.84	0.00
17-16			GT-21	0.00	2.30	GT-20	0.73	0.85	0.45	1	0.002	14.00	858.84	0.00
946.56	0.00	0.00	GT-22	0.00	2.44	GT-21	0.69	0.80	0.51	1	0.002	14.00	858.84	0.00
18-17			GT-23	0.00	2.25	GT-22	0.73	0.85	0.44	1	0.002	14.00	843.54	0.00
858.84	0.00	0.00	GT-24	0.00	1.76	GT-23	1.00	1.17	0.29	1	0.001	14.00	843.54	0.00
19-18			GT-25	0.00	3.39	GT-24	1.00	0.83	0.65	1	0.002	10.00	829.26	0.00
858.84	0.00	0.00	GT-26	0.00	3.39	GT-25	1.00	0.83	0.65	1	0.005	10.00	829.26	0.00
858.84	0.00	0.00	GT-27	0.00	3.39	GT-26	1.00	0.83	0.65	1	0.007	10.00	829.26	0.00
20-19			GT-28	0.00	3.39	GT-27	1.00	0.83	0.65	1	0.007	10.00	829.26	0.00
858.84	0.00	0.00				GT-28								

STEADY. RPT

Pipe ID	From ID	To ID	Flow	Loss	Vel.	Count	Flow	Head
829.26	0.00	1.00	0.83	0.65	0.60	796.82	0.00	0.00
29-28	GT-29STP	GT-28	1.00	0.65	0.006	10.00	823.14	0.00
823.14	0.00	1.00	0.83	0.65	0.59	788.83	0.00	0.00
30-29	GT-30	GT-29STP	1.00	0.65	0.011	10.00	785.40	0.00
785.40	0.00	0.66	0.55	1.17	0.59	1019.95	0.00	0.00
31-30	GT-31	GT-30	0.31	3.41	0.070	10.00	785.40	0.00
785.40	0.00	0.38	0.31	3.41	0.59	2609.42	0.00	0.00
32-31	GT-32	GT-31	0.42	2.78	0.047	10.00	785.40	0.00
785.40	0.00	0.42	0.35	2.78	0.59	2144.24	0.00	0.00
501	3	5	0.34	4.22	0.100	12.00	1281.12	0.00
1281.12	0.00	0.34	0.34	4.22	0.72	5070.16	0.00	0.00
503	7	SPCAB	0.50	1.85	0.019	14.00	1281.12	0.00
1281.12	0.00	0.43	0.50	1.85	0.69	3333.69	0.00	0.00
SUDLGP	SUDLMH	SPSUD	0.28	0.94	0.005	10.00	179.52	0.00
179.52	0.00	0.34	0.28	0.94	0.28	717.81	0.00	0.00

[Force Mains]

Pipe ID	From ID	To ID	Pipe Diam	Pipe Flow	Pipe Vel.	Pipe Loss
499	CABLE	3	12.00	1281.12	2.84	0.412
AI RPLUM	AI RJC	GT-34PLUM	10.00	615.06	2.51	13.170
BOU32	BOUJC	GT-32	10.00	782.34	3.20	14.383
NORAIR	NORJC	AIRJC	10.00	428.40	1.75	3.166
PLUBOU	GT-34PLUM	BOUJC	10.00	755.82	3.09	14.574
SUDNOR	SUDJC	NORJC	10.00	179.52	2.04	10.905

[Pumps]

Pump ID	Wet Well ID	Manhole ID	Pump Type	Pump Count	Pump Flow	Pump Head
CAB	SPCAB	CABLE	Fixed Capacity	1	1000.00	0.00
SUDPUMP	SPSUD	SUDJC	Fixed Capacity	1	500.00	29.89

\*\*\*\*\*  
 \* Computer Modeling for Design and Planning \*  
 \* of Sanitary Sewer Systems \*  
 \* Innovyze, Inc. \*  
 \*\*\*\*\*

[Title]

[Summary]

Number of loading manholes : 28  
 Number of outlets : 1  
 Number of junction chambers : 2  
 Number of wet wells : 24  
 Number of pipes : 6  
 Number of force-mains : 6  
 Number of pumps : 2

Manhole ID	Base Flow	Storm Load	Total Flow
7	277.0000	0.0000	282.5400
AI RJC	257.0000	0.0000	262.1400
BOUJC	31.0000	0.0000	31.6200
GT-13	80.0000	0.0000	81.6000
GT-17	101.0000	0.0000	103.0200
GT-21	17.0000	0.0000	17.3400
GT-24	19.0000	0.0000	19.3800
GT-28	10.0000	0.0000	10.2000
GT-29STP	37.0000	0.0000	37.7400
GT-32	17.0000	0.0000	17.3400
GT-34PLUM	187.0000	0.0000	190.7400
NORJC	282.0000	0.0000	287.6400
3	0.0000	0.0000	0.0000
GT-11	0.0000	0.0000	0.0000
GT-12	0.0000	0.0000	0.0000
GT-14	0.0000	0.0000	0.0000
GT-15	0.0000	0.0000	0.0000
GT-16	0.0000	0.0000	0.0000
GT-18	0.0000	0.0000	0.0000
GT-19	0.0000	0.0000	0.0000
GT-20	0.0000	0.0000	0.0000
GT-23	0.0000	0.0000	0.0000

STEADY . RPT

GT-25 0.0000  
 GT-26 0.0000  
 GT-27 0.0000  
 GT-30 0.0000  
 GT-31 0.0000  
 SUDLMH 0.0000

[Pipes]

Pipe UnPeak ID	Peak Flow	From Cover ID	I/I	Flow	To Actual ID	d/D	Flow Depth	Froude Number	Pipe Count	Pipe Crit slope	Pipe Full Diam	Total Cover Flow	Storm Load
Flow	Flow	Flow	Flow	Veloc	d/D	Depth	Number	Depth	Count	Depth	Flow	Count	Load
11-SPCAB					7				1	0.004	14.00	1058.76	0.00
1058.76	0.00	GT-11	0.00	3.54	0.60	0.70	0.82	0.70	1	0.63	1588.26	0.00	0.00
12-11		GT-12	0.00		GT-11	1.00			1	0.000	14.00	1058.76	0.00
1058.76	0.00	GT-13	0.00	2.21	1.00	1.17	0.36	1.17	1	0.34	330.75	0.00	0.00
13-12		GT-14	0.00		GT-12	1.00			1	0.001	14.00	1058.76	0.00
1058.76	0.00	GT-15	0.00	2.21	1.00	1.17	0.36	1.17	1	0.57	886.24	0.00	0.00
14-13		GT-16	0.00		GT-13	1.00			1	0.001	14.00	977.16	0.00
977.16	0.00	GT-17	0.00	2.04	1.00	1.17	0.33	1.17	1	0.58	906.70	0.00	0.00
15-14		GT-18	0.00		GT-14	1.00			1	0.001	14.00	977.16	0.00
977.16	0.00	GT-19	0.00	2.04	1.00	1.17	0.33	1.17	1	0.56	861.95	0.00	0.00
16-15		GT-20	0.00		GT-15	1.00			1	0.001	14.00	977.16	0.00
977.16	0.00	GT-21	0.00	2.04	1.00	1.17	0.33	1.17	1	0.51	700.92	0.00	0.00
17-16		GT-22	0.00		GT-16	1.00			1	0.000	14.00	977.16	0.00
977.16	0.00	GT-23	0.00	2.04	1.00	1.17	0.33	1.17	1	0.41	469.25	0.00	0.00
18-17		GT-24	0.00		GT-17	1.00			1	0.004	14.00	874.14	0.00
874.14	0.00	GT-25	0.00	3.44	0.52	0.61	0.87	0.61	1	0.57	1621.54	0.00	0.00
19-18		GT-26	0.00		GT-18	1.00			1	0.001	14.00	874.14	0.00
874.14	0.00	GT-27	0.00	1.82	1.00	1.17	0.30	1.17	1	0.52	750.50	0.00	0.00
20-19		GT-28	0.00		GT-19	1.00			1	0.002	14.00	874.14	0.00
874.14	0.00	GT-29	0.00	2.31	0.74	0.86	0.45	0.86	1	0.57	978.51	0.00	0.00
21-20		GT-30	0.00		GT-20	1.00			1	0.002	14.00	874.14	0.00
874.14	0.00	GT-31	0.00	2.45	0.70	0.81	0.50	0.81	1	0.57	1050.08	0.00	0.00
23-21		GT-32	0.00		GT-21	1.00			1	0.002	14.00	856.80	0.00
856.80	0.00	GT-33	0.00	2.25	0.74	0.86	0.44	0.86	1	0.56	954.48	0.00	0.00
24-23		GT-34	0.00		GT-22	1.00			1	0.001	14.00	856.80	0.00
856.80	0.00	GT-35	0.00	1.79	1.00	1.17	0.29	1.17	1	0.47	611.50	0.00	0.00
25-24		GT-36	0.00		GT-23	1.00			1	0.002	10.00	837.42	0.00
837.42	0.00	GT-37	0.00	3.42	1.00	0.83	0.66	0.83	1	0.44	437.12	0.00	0.00
26-25		GT-38	0.00		GT-24	1.00			1	0.005	10.00	837.42	0.00
837.42	0.00	GT-39	0.00	3.42	1.00	0.83	0.66	0.83	1	0.57	729.55	0.00	0.00
27-26		GT-40	0.00		GT-25	1.00			1	0.007	10.00	837.42	0.00
837.42	0.00	GT-41	0.00	3.42	1.00	0.83	0.66	0.83	1	0.61	826.07	0.00	0.00
28-27		GT-42	0.00		GT-26	1.00			1	0.007	10.00	837.42	0.00
837.42	0.00	GT-43	0.00	3.42	1.00	0.83	0.66	0.83	1	0.007	10.00	837.42	0.00

STEADY. RPT

Pipe ID	From ID	To ID	Flow	Loss	Vel.	Count	Flow	Head
837.42	0.00	1.00	0.83	0.66	0.60	796.82	0.00	0.00
29-28	GT-29STP	GT-28	1.00	0.66	0.006	10.00	827.22	0.00
827.22	0.00	1.00	0.83	0.65	0.59	788.83	0.00	0.00
30-29	GT-30	GT-29STP	1.00	0.65	0.011	10.00	789.48	0.00
789.48	0.00	0.66	0.55	1.16	0.60	1019.95	0.00	0.00
31-30	GT-31	GT-30	0.31	3.41	0.070	10.00	789.48	0.00
789.48	0.00	0.38	0.31	3.41	0.60	2609.42	0.00	0.00
32-31	GT-32	GT-31	0.35	2.77	0.047	10.00	789.48	0.00
789.48	0.00	0.42	0.35	2.77	0.60	2144.24	0.00	0.00
501	3	5	0.35	4.22	0.100	12.00	1341.30	0.00
1341.30	0.00	0.35	0.35	4.22	0.74	5070.16	0.00	0.00
503	7	SPCAB	0.44	1.85	0.019	14.00	1341.30	0.00
1341.30	0.00	0.44	0.51	1.85	0.71	3333.69	0.00	0.00
SUDLGP	SUDLMH	SPSUD	0.00	0.00	0.005	10.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	717.81	0.00	0.00

[Force Mains]

Pipe ID	From ID	To ID	Pipe Diam	Pipe Flow	Pipe Vel.	Pipe Loss
499	CABLE	3	12.00	1341.30	2.84	0.412
AI RPLUM	AI RJC	GT-34PLUM	10.00	549.78	2.25	10.699
BOU32	BOUJC	GT-32	10.00	772.14	3.15	14.038
NORAIR	NORJC	AIRJC	10.00	287.64	1.18	1.514
PLUBOU	GT-34PLUM	BOUJC	10.00	740.52	3.03	14.032
SUDNOR	SUDJC	NORJC	10.00	0.00	2.04	10.905

[Pumps]

Pump ID	Wet Well ID	Manhole ID	Pump Type	Pump Count	Pump Flow	Pump Head
CAB	SPCAB	CABLE	Fixed Capacity	1	1000.00	0.00
SUDPUMP	SPSUD	SUDJC	Fixed Capacity	1	500.00	29.89

	ID	Grade (ft)
1	CABLE	310.330
2	SUDJC	352.540



South Shore model - Existing SV to LLRI - Force Main Report

	ID	From ID	To ID	Diameter (in)	Length (ft)	Total Flow (gpm)	Unpeakable Flow (gpm)	Peakable Flow (gpm)	Coverage Flow (gpm)	Infiltration Flow (gpm)	Storm Flow (gpm)	Velocity (ft/s)	Headloss (ft)
1	499	CABLE	3	12.000	100.000	1,101.600	1,101.600	0.000	0.000	0.000	0.000	2.837	0.412
2	AIRPLUM	AIRJC	T-34PL	10.000	3,235.040	435.540	435.540	0.000	0.000	0.000	0.000	1.779	6.950
3	BOU32	BOUJC	GT-32	10.000	2,262.940	602.820	602.820	0.000	0.000	0.000	0.000	2.463	8.876
4	NORAIR	NORJC	AIRJC	10.000	1,519.450	248.880	248.880	0.000	0.000	0.000	0.000	1.017	1.158
5	PLUBOU	T-34PL	BOUJC	10.000	2,444.120	576.300	576.300	0.000	0.000	0.000	0.000	2.354	8.820
6	SUDNOR	SUDJC	NORJC	10.000	3,931.040	0.000	0.000	0.000	0.000	0.000	0.000	2.042	10.905

South Shore model - Existing SV to LLRI - Loading Manhole Report

	ID	Rim Elevation (ft)	Base Flow (cfs)	Total Flow (cfs)	Storm Flow (cfs)	Grade (ft)	Status	Hydraulic Jump	Unfilled Depth (ft)	Surcharge Depth (ft)
1	3	319.000	0.000	0.000	0.000	309.837	Not Full	No	9.163	1.837
2	7	319.000	0.570	0.582	0.000	310.433	Not Full	No	8.567	1.886
3	AIRJC	1,388.000	0.408	0.416	0.000	423.713	Not Full	No	964.287	41.380
4	BOUJC	1,326.000	0.058	0.059	0.000	385.840	Not Full	No	940.160	63.007
5	GT-11	318.770	0.000	0.000	0.000	310.832	Not Full	No	7.938	0.995
6	GT-12	320.020	0.000	0.000	0.000	311.322	Not Full	No	8.698	1.416
7	GT-13	319.700	0.160	0.164	0.000	311.856	Not Full	No	7.844	1.399
8	GT-14	320.100	0.000	0.000	0.000	312.195	Not Full	No	7.905	1.308
9	GT-15	319.890	0.000	0.000	0.000	312.495	Not Full	No	7.395	1.269
10	GT-16	319.600	0.000	0.000	0.000	312.850	Not Full	No	6.750	1.354
11	GT-17	319.380	0.192	0.195	0.000	313.176	Not Full	No	6.204	1.569
12	GT-18	319.630	0.000	0.000	0.000	313.354	Not Full	No	6.276	0.868
13	GT-19	319.980	0.000	0.000	0.000	313.682	Not Full	No	6.298	0.826
14	GT-20	320.040	0.000	0.000	0.000	314.001	Not Full	No	6.039	0.535
15	GT-21	319.140	0.033	0.034	0.000	314.399	Not Full	No	4.741	0.043
16	GT-23	319.200	0.000	0.000	0.000	314.949	Not Full	No	4.251	-0.428
17	GT-24	319.800	0.031	0.032	0.000	315.731	Not Full	No	4.069	0.074
18	GT-25	319.390	0.000	0.000	0.000	317.566	Not Full	No	1.824	1.453
19	GT-26	321.400	0.000	0.000	0.000	318.085	Not Full	No	3.315	-0.139
20	GT-27	324.460	0.000	0.000	0.000	320.229	Not Full	No	4.231	-0.194
21	GT-28	329.160	0.013	0.014	0.000	322.764	Not Full	No	6.396	-0.179
22	GT-29STP	329.780	0.082	0.084	0.000	325.833	Not Full	Yes	3.947	-0.181
23	GT-30	334.390	0.000	0.000	0.000	329.704	Not Full	No	4.686	-0.300
24	GT-31	361.520	0.000	0.000	0.000	357.445	Not Full	No	4.075	-0.489
25	GT-32	381.730	0.007	0.007	0.000	376.964	Not Full	No	4.766	-0.459
26	GT-34PLUM	1,422.500	0.307	0.314	0.000	416.763	Not Full	No	1,005.737	0.000
27	NORJC	1,386.980	0.544	0.555	0.000	424.871	Not Full	No	962.109	47.848
28	SUDLMH	368.000	0.000	0.000	0.000	358.040	Not Full	No	9.960	2.077

	ID	Flow (cfs)	Grade (ft)
1	5	2.454	305.317

South Shore model - Existing SV to LLRI - Pump Report

	ID	From ID	To ID	Flow (gpm)	Head Increase (ft)	Power (hp)	Usage Speed
1	CAB	SPCAB	CABLE	1,000.000	0.000	0.000	1,000 1,000
2	SUDPUMP	SPSUD	SUDJC	500.000	29.888	3.778	1,000 1,000

	ID	Grade (ft)
1	SPCAB	310.330
2	SPSUD	358.040

South Shore model - Existing SV to LLRI -Gravity Main Report

	ID	From ID	To ID	Diameter (in)	Length (ft)	Slope	Total Flow (gpm)	Unpeakable Flow (gpm)	Peakable Flow (gpm)	Coverage Flow (gpm)	Infiltration Flow (gpm)
1	11-SPCAB	GT-11	7	14.000	299.120	0.004	840.480	840.480	0.000	0.000	0.000
2	12-11	GT-12	GT-11	14.000	374.280	0.000	840.480	840.480	0.000	0.000	0.000
3	13-12	GT-13	GT-12	14.000	409.600	0.001	840.480	840.480	0.000	0.000	0.000
4	14-13	GT-14	GT-13	14.000	305.940	0.001	767.040	767.040	0.000	0.000	0.000
5	15-14	GT-15	GT-14	14.000	267.680	0.001	767.040	767.040	0.000	0.000	0.000
6	16-15	GT-16	GT-15	14.000	321.460	0.001	767.040	767.040	0.000	0.000	0.000
7	17-16	GT-17	GT-16	14.000	292.200	0.000	767.040	767.040	0.000	0.000	0.000
8	18-17	GT-18	GT-17	14.000	195.760	0.004	679.320	679.320	0.000	0.000	0.000
9	19-18	GT-19	GT-18	14.000	384.240	0.001	679.320	679.320	0.000	0.000	0.000
10	20-19	GT-20	GT-19	14.000	372.650	0.002	679.320	679.320	0.000	0.000	0.000
11	21-20	GT-21	GT-20	14.000	472.110	0.002	679.320	679.320	0.000	0.000	0.000
12	23-21	GT-23	GT-21	14.000	654.890	0.002	664.020	664.020	0.000	0.000	0.000
13	24-23	GT-24	GT-23	14.000	437.990	0.001	664.020	664.020	0.000	0.000	0.000
14	25-24	GT-25	GT-24	10.000	401.940	0.002	649.740	649.740	0.000	0.000	0.000
15	26-25	GT-26	GT-25	10.000	385.400	0.005	649.740	649.740	0.000	0.000	0.000
16	27-26	GT-27	GT-26	10.000	313.420	0.007	649.740	649.740	0.000	0.000	0.000
17	28-27	GT-28	GT-27	10.000	385.850	0.007	649.740	649.740	0.000	0.000	0.000
18	29-28	GT-29	GT-28	10.000	479.630	0.006	643.620	643.620	0.000	0.000	0.000
19	30-29	GT-30	GT-29	10.000	372.870	0.011	605.880	605.880	0.000	0.000	0.000
20	31-30	GT-31	GT-30	10.000	398.770	0.070	605.880	605.880	0.000	0.000	0.000
21	32-31	GT-32	GT-31	10.000	412.100	0.047	605.880	605.880	0.000	0.000	0.000
22	501	3	5	12.000	20.000	0.100	1,101.600	1,101.600	0.000	0.000	0.000
23	503	7	SPCAE	14.000	20.000	0.019	1,101.600	1,101.600	0.000	0.000	0.000
24	SUDLGP	SUDLMP	SPSUJ	10.000	100.000	0.005	0.000	0.000	0.000	0.000	0.000

South Shore model - Existing SV to LLRI -Gravity Main Report

	ID	Storm Flow (gpm)	Flow Type	Velocity (ft/s)	d/D	q/Q	Water Depth (ft)	Critical Depth (ft)	Froude Number	Full Flow (gpm)	Coverage Count
1	11-SPCAB	0.000	Pressurized	3.357	0.517	0.529	0.603	0.556	0.855	1,588.257	0.000
2	12-11	0.000	Pressurized	1.752	1.000	2.541	1.167	0.342	0.286	330.750	0.000
3	13-12	0.000	Pressurized	2.101	0.777	0.948	0.906	0.556	0.387	886.237	0.000
4	14-13	0.000	Pressurized	2.120	0.706	0.846	0.823	0.530	0.429	906.702	0.000
5	15-14	0.000	Pressurized	2.030	0.735	0.890	0.857	0.530	0.396	861.946	0.000
6	16-15	0.000	Pressurized	1.599	1.000	1.094	1.167	0.506	0.261	700.918	0.000
7	17-16	0.000	Pressurized	1.599	1.000	1.635	1.167	0.410	0.261	469.251	0.000
8	18-17	0.000	Pressurized	3.230	0.451	0.419	0.527	0.497	0.896	1,621.541	0.000
9	19-18	0.000	Pressurized	1.771	0.745	0.905	0.869	0.497	0.341	750.496	0.000
10	20-19	0.000	Pressurized	2.203	0.613	0.694	0.715	0.497	0.499	978.505	0.000
11	21-20	0.000	Pressurized	2.327	0.586	0.647	0.683	0.497	0.545	1,050.079	0.000
12	23-21	0.000	Free Surface	2.150	0.614	0.696	0.716	0.492	0.487	954.475	0.000
13	24-23	0.000	Pressurized	1.384	1.000	1.086	1.167	0.471	0.226	611.499	0.000
14	25-24	0.000	Pressurized	2.654	1.000	1.486	0.833	0.438	0.512	437.121	0.000
15	26-25	0.000	Free Surface	3.368	0.735	0.891	0.613	0.539	0.776	729.549	0.000
16	27-26	0.000	Free Surface	3.737	0.668	0.787	0.557	0.539	0.937	826.070	0.000
17	28-27	0.000	Free Surface	3.629	0.686	0.815	0.572	0.539	0.890	796.820	0.000
18	29-28	0.000	Free Surface	3.592	0.687	0.816	0.572	0.536	0.881	788.833	0.000
19	30-29	0.000	Free Surface	4.345	0.555	0.594	0.462	0.520	1.250	1,019.945	0.000
20	31-30	0.000	Free Surface	8.680	0.328	0.232	0.273	0.520	3.431	2,609.415	0.000
21	32-31	0.000	Free Surface	7.532	0.364	0.283	0.303	0.520	2.807	2,144.241	0.000
22	501	0.000	Free Surface	11.495	0.317	0.217	0.317	0.671	4.228	5,070.159	0.000
23	503	0.000	Pressurized	6.235	0.396	0.330	0.462	0.641	1.871	3,333.691	0.000
24	SUDLGP	0.000	Pressurized	0.000	0.000		0.000	0.000	0.000	717.806	0.000

South Shore model - Existing SV to LLRI -Gravity Main Report

	ID	Backwater Adjustment	Adjusted Depth (ft)	Adjusted Velocity (ft/s)
1	11-SPCAB	Yes	1.167	1.752
2	12-11	Yes	1.167	1.752
3	13-12	Yes	1.167	1.752
4	14-13	Yes	1.167	1.599
5	15-14	Yes	1.167	1.599
6	16-15	Yes	1.167	1.599
7	17-16	Yes	1.167	1.599
8	18-17	Yes	1.167	1.416
9	19-18	Yes	1.167	1.416
10	20-19	Yes	1.167	1.416
11	21-20	Yes	1.167	1.416
12	23-21	Yes	0.974	1.552
13	24-23	No	1.167	1.384
14	25-24	Yes	0.833	2.654
15	26-25	Yes	0.833	2.654
16	27-26	Yes	0.667	3.094
17	28-27	Yes	0.646	3.189
18	29-28	Yes	0.653	3.126
19	30-29	Yes	0.593	3.250
20	31-30	Yes	0.439	4.632
21	32-31	Yes	0.360	5.994
22	501	No	0.317	11.495
23	503	Yes	1.167	2.296
24	SUDLGP	Yes	0.833	0.000



South Shore model - Existing SV to LWBI (no Det) - Chamber Manhole Report

	ID	Grade (ft)
1	CABLE	310.330
2	SUDJC	483.499

	ID	From ID	To ID	Diameter (in)	Length (ft)	Total Flow (gpm)	Unpeakable Flow (gpm)	Peakable Flow (gpm)	Coverage Flow (gpm)	Infiltration Flow (gpm)	Storm Flow (gpm)	Velocity (ft/s)	Headloss (ft)
1	499	CABLE	3	12.000	100.000	1,613.639	1,613.639	0.000	0.000	0.000	0.000	2.837	0.412
2	AIRPLUM	AIRJC	GT-34PLUM	10.000	3,235.040	947.580	947.580	0.000	0.000	0.000	0.000	3.871	29.322
3	BOU32	BOUJC	GT-32	10.000	2,262.940	1,114.860	1,114.860	0.000	0.000	0.000	0.000	4.554	27.717
4	NORAIR	NORJC	AIRJC	10.000	1,519.450	760.920	760.920	0.000	0.000	0.000	0.000	3.108	9.174
5	PLUBOU	GT-34PLUM	BOUJC	10.000	2,444.120	1,088.340	1,088.340	0.000	0.000	0.000	0.000	4.446	28.631
6	SUDNOR	SUDJC	NORJC	10.000	3,931.040	512.040	512.040	0.000	0.000	0.000	0.000	2.042	10.905

South Shore model - Existing SV to LWBI (no Det) - Gravity Main Report

	ID	From ID	To ID	Diameter (in)	Length (ft)	Slope	Total Flow (gpm)	Unpeakable Flow (gpm)	Peakable Flow (gpm)	Coverage Flow (gpm)
1	11-SPCAB	GT-11	7	14.000	299.120	0.004	1,352.519	1,352.519	0.000	0.000
2	12-11	GT-12	GT-11	14.000	374.280	0.000	1,352.519	1,352.519	0.000	0.000
3	13-12	GT-13	GT-12	14.000	409.600	0.001	1,352.519	1,352.519	0.000	0.000
4	14-13	GT-14	GT-13	14.000	305.940	0.001	1,279.080	1,279.080	0.000	0.000
5	15-14	GT-15	GT-14	14.000	267.680	0.001	1,279.080	1,279.080	0.000	0.000
6	16-15	GT-16	GT-15	14.000	321.460	0.001	1,279.080	1,279.080	0.000	0.000
7	17-16	GT-17	GT-16	14.000	292.200	0.000	1,279.080	1,279.080	0.000	0.000
8	18-17	GT-18	GT-17	14.000	195.760	0.004	1,191.360	1,191.360	0.000	0.000
9	19-18	GT-19	GT-18	14.000	384.240	0.001	1,191.360	1,191.360	0.000	0.000
10	20-19	GT-20	GT-19	14.000	372.650	0.002	1,191.360	1,191.360	0.000	0.000
11	21-20	GT-21	GT-20	14.000	472.110	0.002	1,191.360	1,191.360	0.000	0.000
12	23-21	GT-23	GT-21	14.000	654.890	0.002	1,176.060	1,176.060	0.000	0.000
13	24-23	GT-24	GT-23	14.000	437.990	0.001	1,176.060	1,176.060	0.000	0.000
14	25-24	GT-25	GT-24	10.000	401.940	0.002	1,161.780	1,161.780	0.000	0.000
15	26-25	GT-26	GT-25	10.000	385.400	0.005	1,161.780	1,161.780	0.000	0.000
16	27-26	GT-27	GT-26	10.000	313.420	0.007	1,161.780	1,161.780	0.000	0.000
17	28-27	GT-28	GT-27	10.000	385.850	0.007	1,161.780	1,161.780	0.000	0.000
18	29-28	GT-29STP	GT-28	10.000	479.630	0.006	1,155.660	1,155.660	0.000	0.000
19	30-29	GT-30	GT-29STP	10.000	372.870	0.011	1,117.920	1,117.920	0.000	0.000
20	31-30	GT-31	GT-30	10.000	398.770	0.070	1,117.920	1,117.920	0.000	0.000
21	32-31	GT-32	GT-31	10.000	412.100	0.047	1,117.920	1,117.920	0.000	0.000
22	501	3	5	12.000	20.000	0.100	1,613.639	1,613.639	0.000	0.000
23	503	7	SPCAB	14.000	20.000	0.019	1,613.639	1,613.639	0.000	0.000
24	SUDLGP	SUDLMH	SPSUD	10.000	100.000	0.005	512.040	512.040	0.000	0.000

South Shore model - Existing SV to LWBI (no Det) - Gravity Main Report

	ID	Infiltration Flow (gpm)	Storm Flow (gpm)	Flow Type	Velocity (ft/s)	d/D	q/Q	Water Depth (ft)	Critical Depth (ft)	Froude Number	Full Flow (gpm)
1	11-SPCAB	0.000	0.000	Pressurized	3.717	0.709	0.852	0.827	0.713	0.749	1,588.257
2	12-11	0.000	0.000	Pressurized	2.819	1.000	4.089	1.167	0.342	0.460	330.750
3	13-12	0.000	0.000	Pressurized	2.819	1.000	1.526	1.167	0.572	0.460	886.237
4	14-13	0.000	0.000	Pressurized	2.666	1.000	1.411	1.167	0.578	0.435	906.702
5	15-14	0.000	0.000	Pressurized	2.666	1.000	1.484	1.167	0.563	0.435	861.946
6	16-15	0.000	0.000	Pressurized	2.666	1.000	1.825	1.167	0.506	0.435	700.918
7	17-16	0.000	0.000	Pressurized	2.666	1.000	2.726	1.167	0.410	0.435	469.251
8	18-17	0.000	0.000	Pressurized	3.694	0.637	0.735	0.743	0.667	0.813	1,621.541
9	19-18	0.000	0.000	Pressurized	2.483	1.000	1.587	1.167	0.524	0.405	750.496
10	20-19	0.000	0.000	Pressurized	2.483	1.000	1.218	1.167	0.602	0.405	978.505
11	21-20	0.000	0.000	Pressurized	2.483	1.000	1.135	1.167	0.625	0.405	1,050.079
12	23-21	0.000	0.000	Pressurized	2.451	1.000	1.232	1.167	0.594	0.400	954.475
13	24-23	0.000	0.000	Pressurized	2.451	1.000	1.923	1.167	0.471	0.400	611.499
14	25-24	0.000	0.000	Pressurized	4.746	1.000	2.658	0.833	0.438	0.916	437.121
15	26-25	0.000	0.000	Pressurized	4.746	1.000	1.592	0.833	0.572	0.916	729.549
16	27-26	0.000	0.000	Pressurized	4.746	1.000	1.406	0.833	0.609	0.916	826.070
17	28-27	0.000	0.000	Pressurized	4.746	1.000	1.458	0.833	0.598	0.916	796.820
18	29-28	0.000	0.000	Pressurized	4.721	1.000	1.465	0.833	0.595	0.911	788.833
19	30-29	0.000	0.000	Pressurized	4.567	1.000	1.096	0.833	0.673	0.882	1,019.945
20	31-30	0.000	0.000	Free Surface	10.248	0.457	0.428	0.381	0.701	3.338	2,609.415
21	32-31	0.000	0.000	Free Surface	8.851	0.513	0.521	0.427	0.701	2.684	2,144.241
22	501	0.000	0.000	Free Surface	12.777	0.388	0.318	0.388	0.809	4.190	5,070.159
23	503	0.000	0.000	Pressurized	6.892	0.491	0.484	0.572	0.781	1.816	3,333.691
24	SUDLGP	0.000	0.000	Pressurized	3.185	0.624	0.713	0.520	0.476	0.843	717.806

South Shore model - Existing SV to LWBI (no Det) - Gravity Main Report

	ID	Coverage Count	Backwater Adjustment	Adjusted Depth (ft)	Adjusted Velocity (ft/s)
1	11-SPCAB	0.000	Yes	1.167	2.819
2	12-11	0.000	Yes	1.167	2.819
3	13-12	0.000	Yes	1.167	2.819
4	14-13	0.000	Yes	1.167	2.666
5	15-14	0.000	Yes	1.167	2.666
6	16-15	0.000	Yes	1.167	2.666
7	17-16	0.000	Yes	1.167	2.666
8	18-17	0.000	Yes	1.167	2.483
9	19-18	0.000	Yes	1.167	2.483
10	20-19	0.000	Yes	1.167	2.483
11	21-20	0.000	Yes	1.167	2.483
12	23-21	0.000	Yes	1.167	2.451
13	24-23	0.000	Yes	1.167	2.451
14	25-24	0.000	Yes	0.833	4.746
15	26-25	0.000	Yes	0.833	4.746
16	27-26	0.000	Yes	0.833	4.746
17	28-27	0.000	Yes	0.833	4.746
18	29-28	0.000	Yes	0.833	4.721
19	30-29	0.000	Yes	0.833	4.567
20	31-30	0.000	Yes	0.833	4.567
21	32-31	0.000	Yes	0.647	5.481
22	501	0.000	No	0.388	12.777
23	503	0.000	Yes	1.167	3.363
24	SUDLGP	0.000	Yes	0.833	2.092

South Shore model - Existing SV to LWBI (no Det) - Loading Manhole Report

	ID	Rim Elevation (ft)	Base Flow (cfs)	Total Flow (cfs)	Storm Flow (cfs)	Grade (ft)	Status	Hydraulic Jump	Unfilled Depth (ft)	Surcharge Depth (ft)
1	3	319.000	0.000	0.000	0.000	309.330	Not Full	No	9.670	1.330
2	7	319.000	0.570	0.582	0.000	310.551	Not Full	No	8.449	2.005
3	AIRJC	1,388.000	0.408	0.416	0.000	462.930	Not Full	No	925.070	80.596
4	BOUJC	1,326.000	0.058	0.059	0.000	404.977	Not Full	No	921.023	82.144
5	GT-11	318.770	0.000	0.000	0.000	311.585	Not Full	No	7.185	1.748
6	GT-12	320.020	0.000	0.000	0.000	312.854	Not Full	No	7.166	2.947
7	GT-13	319.700	0.160	0.164	0.000	314.235	Not Full	No	5.465	3.778
8	GT-14	320.100	0.000	0.000	0.000	315.178	Not Full	No	4.922	4.291
9	GT-15	319.890	0.000	0.000	0.000	316.014	Not Full	No	3.876	4.787
10	GT-16	319.600	0.000	0.000	0.000	317.001	Not Full	No	2.599	5.504
11	GT-17	319.380	0.192	0.195	0.000	317.905	Not Full	No	1.475	6.299
12	GT-18	319.630	0.000	0.000	0.000	318.455	Not Full	No	1.175	5.968
13	GT-19	319.980	0.000	0.000	0.000	319.464	Not Full	No	0.516	6.607
14	GT-20	320.040	0.000	0.000	0.000	320.040	Full	No	0.000	6.573
15	GT-21	319.140	0.033	0.034	0.000	319.140	Full	No	0.000	4.783
16	GT-23	319.200	0.000	0.000	0.000	319.200	Full	No	0.000	3.823
17	GT-24	319.800	0.031	0.032	0.000	319.800	Full	No	0.000	4.143
18	GT-25	319.390	0.000	0.000	0.000	319.390	Full	No	0.000	3.277
19	GT-26	321.400	0.000	0.000	0.000	321.400	Full	No	0.000	3.177
20	GT-27	324.460	0.000	0.000	0.000	324.460	Full	No	0.000	4.037
21	GT-28	329.160	0.013	0.014	0.000	329.160	Full	No	0.000	6.217
22	GT-29STP	329.780	0.082	0.084	0.000	329.780	Full	No	0.000	3.767
23	GT-30	334.390	0.000	0.000	0.000	334.390	Full	Yes	0.000	4.387
24	GT-31	361.520	0.000	0.000	0.000	357.724	Not Full	No	3.796	-0.209
25	GT-32	381.730	0.007	0.007	0.000	377.260	Not Full	No	4.470	-0.163
26	GT-34PLUM	1,422.500	0.307	0.314	0.000	433.608	Not Full	No	988.892	16.844
27	NORJC	1,386.980	0.544	0.555	0.000	472.103	Not Full	No	914.877	95.080
28	SUDLMH	368.000	1.118	1.141	0.000	358.311	Not Full	No	9.689	2.348

South Shore model - Existing SV to LWBI (no Det) - Outlet Report

	ID	Flow (cfs)	Grade (ft)
1	5	3.595	305.388

South Shore model - Existing SV to LWBI (no Det) - Pump Report

	ID	From ID	To ID	Flow (gpm)	Head Increase (ft)	Power (hp)	Usage	Speed
1	CAB	SPCAB	CABLE	1,000.000	0.000	0.000	1.000	1.000
2	SUDPUMP	SPSUD	SUDJC	500.000	29.888	3.778	1.000	1.000



	ID	Grade (ft)
1	SPCAB	310.330
2	SPSUD	358.040

	ID	Grade (ft)
1	CABLE	310.330
2	SUDJC	434.735

South Shore model - Existing SV to LWBI (w Det) - Force Main Report

	ID	From ID	To ID	Diameter (in)	Length (ft)	Total Flow (gpm)	Unpeakable Flow (gpm)	Peakable Flow (gpm)	Coverage Flow (gpm)	Infiltration Flow (gpm)	Storm Flow (gpm)	Velocity (ft/s)	Headloss (ft)
1	499	CABLE	3	12.000	100.000	1,281.120	1,281.120	0.000	0.000	0.000	0.000	2.837	0.412
2	AIRPLUM	AIRJC	T-34PL	10.000	3,235.040	615.060	615.060	0.000	0.000	0.000	0.000	2.513	13.170
3	BOU32	BOUJC	GT-32	10.000	2,262.940	782.340	782.340	0.000	0.000	0.000	0.000	3.196	14.383
4	NORAIR	NORJC	AIRJC	10.000	1,519.450	428.400	428.400	0.000	0.000	0.000	0.000	1.750	3.166
5	PLUBOU	T-34PL	BOUJC	10.000	2,444.120	755.820	755.820	0.000	0.000	0.000	0.000	3.088	14.574
6	SUDNOR	SUDJC	NORJC	10.000	3,931.040	179.520	179.520	0.000	0.000	0.000	0.000	2.042	10.905

South Shore model - Existing SV to LWBI (w Det) - Gravity Main Report

	ID	From ID	To ID	Diameter (in)	Length (ft)	Slope	Total Flow (gpm)	Unpeakable Flow (gpm)	Peakable Flow (gpm)	Coverage Flow (gpm)	Infiltration Flow (gpm)
1	11-SPCAB	GT-11	7	14.000	299.120	0.004	1,020.000	1,020.000	0.000	0.000	0.000
2	12-11	GT-12	GT-11	14.000	374.280	0.000	1,020.000	1,020.000	0.000	0.000	0.000
3	13-12	GT-13	GT-12	14.000	409.600	0.001	1,020.000	1,020.000	0.000	0.000	0.000
4	14-13	GT-14	GT-13	14.000	305.940	0.001	946.560	946.560	0.000	0.000	0.000
5	15-14	GT-15	GT-14	14.000	267.680	0.001	946.560	946.560	0.000	0.000	0.000
6	16-15	GT-16	GT-15	14.000	321.460	0.001	946.560	946.560	0.000	0.000	0.000
7	17-16	GT-17	GT-16	14.000	292.200	0.000	946.560	946.560	0.000	0.000	0.000
8	18-17	GT-18	GT-17	14.000	195.760	0.004	858.840	858.840	0.000	0.000	0.000
9	19-18	GT-19	GT-18	14.000	384.240	0.001	858.840	858.840	0.000	0.000	0.000
10	20-19	GT-20	GT-19	14.000	372.650	0.002	858.840	858.840	0.000	0.000	0.000
11	21-20	GT-21	GT-20	14.000	472.110	0.002	858.840	858.840	0.000	0.000	0.000
12	23-21	GT-23	GT-21	14.000	654.890	0.002	843.540	843.540	0.000	0.000	0.000
13	24-23	GT-24	GT-23	14.000	437.990	0.001	843.540	843.540	0.000	0.000	0.000
14	25-24	GT-25	GT-24	10.000	401.940	0.002	829.260	829.260	0.000	0.000	0.000
15	26-25	GT-26	GT-25	10.000	385.400	0.005	829.260	829.260	0.000	0.000	0.000
16	27-26	GT-27	GT-26	10.000	313.420	0.007	829.260	829.260	0.000	0.000	0.000
17	28-27	GT-28	GT-27	10.000	385.850	0.007	829.260	829.260	0.000	0.000	0.000
18	29-28	GT-29	GT-28	10.000	479.630	0.006	823.140	823.140	0.000	0.000	0.000
19	30-29	GT-30	GT-29	10.000	372.870	0.011	785.400	785.400	0.000	0.000	0.000
20	31-30	GT-31	GT-30	10.000	398.770	0.070	785.400	785.400	0.000	0.000	0.000
21	32-31	GT-32	GT-31	10.000	412.100	0.047	785.400	785.400	0.000	0.000	0.000
22	501	3	5	12.000	20.000	0.100	1,281.120	1,281.120	0.000	0.000	0.000
23	503	7	SPCAE	14.000	20.000	0.019	1,281.120	1,281.120	0.000	0.000	0.000
24	SUDLGP	SUDLMP	SPSUJ	10.000	100.000	0.005	179.520	179.520	0.000	0.000	0.000

South Shore model - Existing SV to LWBI (w Det) - Gravity Main Report

	ID	Storm Flow (gpm)	Flow Type	Velocity (ft/s)	d/D	q/Q	Water Depth (ft)	Critical Depth (ft)	Froude Number	Full Flow (gpm)	Coverage Count
1	11-SPCAB	0.000	Pressurized	3.514	0.583	0.642	0.680	0.615	0.826	1,588.257	0.000
2	12-11	0.000	Pressurized	2.126	1.000	3.084	1.167	0.342	0.347	330.750	0.000
3	13-12	0.000	Pressurized	2.126	1.000	1.151	1.167	0.572	0.347	886.237	0.000
4	14-13	0.000	Pressurized	1.973	1.000	1.044	1.167	0.578	0.322	906.702	0.000
5	15-14	0.000	Pressurized	1.973	1.000	1.098	1.167	0.563	0.322	861.946	0.000
6	16-15	0.000	Pressurized	1.973	1.000	1.350	1.167	0.506	0.322	700.918	0.000
7	17-16	0.000	Pressurized	1.973	1.000	2.017	1.167	0.410	0.322	469.251	0.000
8	18-17	0.000	Pressurized	3.428	0.517	0.530	0.604	0.562	0.873	1,621.541	0.000
9	19-18	0.000	Pressurized	1.790	1.000	1.144	1.167	0.524	0.292	750.496	0.000
10	20-19	0.000	Pressurized	2.300	0.726	0.878	0.848	0.562	0.453	978.505	0.000
11	21-20	0.000	Pressurized	2.441	0.688	0.818	0.802	0.562	0.505	1,050.079	0.000
12	23-21	0.000	Pressurized	2.246	0.731	0.884	0.852	0.557	0.440	954.475	0.000
13	24-23	0.000	Pressurized	1.758	1.000	1.379	1.167	0.471	0.287	611.499	0.000
14	25-24	0.000	Pressurized	3.388	1.000	1.897	0.833	0.438	0.654	437.121	0.000
15	26-25	0.000	Pressurized	3.388	1.000	1.137	0.833	0.572	0.654	729.549	0.000
16	27-26	0.000	Pressurized	3.388	1.000	1.004	0.833	0.609	0.654	826.070	0.000
17	28-27	0.000	Pressurized	3.388	1.000	1.041	0.833	0.598	0.654	796.820	0.000
18	29-28	0.000	Pressurized	3.363	1.000	1.043	0.833	0.595	0.649	788.833	0.000
19	30-29	0.000	Pressurized	4.596	0.658	0.770	0.549	0.594	1.167	1,019.945	0.000
20	31-30	0.000	Free Surface	9.326	0.376	0.301	0.314	0.594	3.409	2,609.415	0.000
21	32-31	0.000	Free Surface	8.081	0.416	0.366	0.349	0.594	2.775	2,144.241	0.000
22	501	0.000	Free Surface	11.991	0.343	0.253	0.343	0.724	4.220	5,070.159	0.000
23	503	0.000	Pressurized	6.492	0.430	0.384	0.502	0.693	1.855	3,333.691	0.000
24	SUDLGP	0.000	Pressurized	2.438	0.341	0.250	0.284	0.276	0.943	717.806	0.000

South Shore model - Existing SV to LWBI (w Det) - Gravity Main Report

	ID	Backwater Adjustment	Adjusted Depth (ft)	Adjusted Velocity (ft/s)
1	11-SPCAB	Yes	1.167	2.126
2	12-11	Yes	1.167	2.126
3	13-12	Yes	1.167	2.126
4	14-13	Yes	1.167	1.973
5	15-14	Yes	1.167	1.973
6	16-15	Yes	1.167	1.973
7	17-16	Yes	1.167	1.973
8	18-17	Yes	1.167	1.790
9	19-18	Yes	1.167	1.790
10	20-19	Yes	1.167	1.790
11	21-20	Yes	1.167	1.790
12	23-21	Yes	1.167	1.758
13	24-23	Yes	1.167	1.758
14	25-24	Yes	0.833	3.388
15	26-25	Yes	0.833	3.388
16	27-26	Yes	0.833	3.388
17	28-27	Yes	0.833	3.388
18	29-28	Yes	0.833	3.363
19	30-29	Yes	0.833	3.208
20	31-30	Yes	0.833	3.208
21	32-31	Yes	0.451	5.805
22	501	No	0.343	11.991
23	503	Yes	1.167	2.670
24	SUDLGP	Yes	0.833	0.733

South Shore model - Existing SV to LWBI (w Det) - Loading Manhole Report

	ID	Rim Elevation (ft)	Base Flow (cfs)	Total Flow (cfs)	Storm Flow (cfs)	Grade (ft)	Status	Hydraulic Jump	Unfilled Depth (ft)	Surcharge Depth (ft)
1	3	319.000	0.000	0.000	0.000	309.678	Not Full	No	9.322	1.678
2	7	319.000	0.570	0.582	0.000	310.470	Not Full	No	8.530	1.923
3	AIRJC	1,388.000	0.408	0.416	0.000	429.933	Not Full	No	958.067	47.600
4	BOUJC	1,326.000	0.058	0.059	0.000	391.442	Not Full	No	934.558	68.609
5	GT-11	318.770	0.000	0.000	0.000	311.057	Not Full	No	7.713	1.220
6	GT-12	320.020	0.000	0.000	0.000	311.779	Not Full	No	8.241	1.873
7	GT-13	319.700	0.160	0.164	0.000	312.564	Not Full	No	7.136	2.108
8	GT-14	320.100	0.000	0.000	0.000	313.081	Not Full	No	7.019	2.194
9	GT-15	319.890	0.000	0.000	0.000	313.539	Not Full	No	6.351	2.312
10	GT-16	319.600	0.000	0.000	0.000	314.079	Not Full	No	5.521	2.582
11	GT-17	319.380	0.192	0.195	0.000	314.575	Not Full	No	4.805	2.968
12	GT-18	319.630	0.000	0.000	0.000	314.860	Not Full	No	4.770	2.373
13	GT-19	319.980	0.000	0.000	0.000	315.385	Not Full	No	4.595	2.528
14	GT-20	320.040	0.000	0.000	0.000	315.894	Not Full	No	4.146	2.428
15	GT-21	319.140	0.033	0.034	0.000	316.530	Not Full	No	2.610	2.174
16	GT-23	319.200	0.000	0.000	0.000	317.368	Not Full	No	1.832	1.991
17	GT-24	319.800	0.031	0.032	0.000	317.939	Not Full	No	1.861	2.283
18	GT-25	319.390	0.000	0.000	0.000	319.390	Full	No	0.000	3.277
19	GT-26	321.400	0.000	0.000	0.000	321.400	Full	No	0.000	3.177
20	GT-27	324.460	0.000	0.000	0.000	323.760	Not Full	No	0.700	3.337
21	GT-28	329.160	0.013	0.014	0.000	326.635	Not Full	No	2.525	3.692
22	GT-29STP	329.780	0.082	0.084	0.000	329.780	Full	Yes	0.000	3.767
23	GT-30	334.390	0.000	0.000	0.000	332.276	Not Full	No	2.114	2.273
24	GT-31	361.520	0.000	0.000	0.000	357.533	Not Full	No	3.987	-0.400
25	GT-32	381.730	0.007	0.007	0.000	377.059	Not Full	No	4.671	-0.364
26	GT-34PLUM	1,422.500	0.307	0.314	0.000	416.763	Not Full	No	1,005.737	0.000
27	NORJC	1,386.980	0.544	0.555	0.000	433.099	Not Full	No	953.881	56.076
28	SUDLMH	368.000	0.392	0.400	0.000	358.073	Not Full	No	9.927	2.110

South Shore model - Existing SV to LWBI (w Det) - Outlet Report

	ID	Flow (cfs)	Grade (ft)
1	5	2.854	305.343



South Shore model - Existing SV to LWBI (w Det) - Pump Report

	ID	From ID	To ID	Flow (gpm)	Head Increase (ft)	Power (hp)	Usage	Speed
1	CAB	SPCAB	CABLE	1,000.000	0.000	0.000	1.000	1.000
2	SUDPUMP	SPSUD	SUDJC	500.000	29.888	3.778	1.000	1.000

	ID	Grade (ft)
1	SPCAB	310.330
2	SPSUD	358.040

South Shore model - Future SV to LLRI - Force Main

	ID	From ID	To ID	Diameter (in)	Length (ft)	Total Flow (gpm)	Unpeakable Flow (gpm)	Peakable Flow (gpm)	Coverage Flow (gpm)	Infiltration Flow (gpm)	Storm Flow (gpm)	Velocity (ft/s)	Headloss (ft)
1	499	CABLE	3	12.000	100.000	1,341.299	1,341.299	0.000	0.000	0.000	0.000	2.837	0.412
2	AIRPLUM	AIRJC	T-34PL	10.000	3,235.040	549.780	549.780	0.000	0.000	0.000	0.000	2.246	10.699
3	BOU32	BOUJC	GT-32	10.000	2,262.940	772.140	772.140	0.000	0.000	0.000	0.000	3.154	14.038
4	NORAIR	NORJC	AIRJC	10.000	1,519.450	287.640	287.640	0.000	0.000	0.000	0.000	1.175	1.514
5	PLUBOU	T-34PL	BOUJC	10.000	2,444.120	740.520	740.520	0.000	0.000	0.000	0.000	3.025	14.032
6	SUDNOR	SUDJC	NORJC	10.000	3,931.040	0.000	0.000	0.000	0.000	0.000	0.000	2.042	10.905

	ID	Grade (ft)
1	CABLE	310.330
2	SUDJC	352.540

South Shore model - Future SV to LLRI - Gravity Main Report

	ID	From ID	To ID	Diameter (in)	Length (ft)	Slope	Total Flow (gpm)	Unpeakable Flow (gpm)	Peakable Flow (gpm)	Coverage Flow (gpm)	Infiltration Flow (gpm)
1	11-SPCAB	GT-11	7	14.000	299.120	0.004	1,058.760	1,058.760	0.000	0.000	0.000
2	12-11	GT-12	GT-11	14.000	374.280	0.000	1,058.760	1,058.760	0.000	0.000	0.000
3	13-12	GT-13	GT-12	14.000	409.600	0.001	1,058.760	1,058.760	0.000	0.000	0.000
4	14-13	GT-14	GT-13	14.000	395.940	0.001	977.160	977.160	0.000	0.000	0.000
5	15-14	GT-15	GT-14	14.000	267.680	0.001	977.160	977.160	0.000	0.000	0.000
6	16-15	GT-16	GT-15	14.000	321.460	0.001	977.160	977.160	0.000	0.000	0.000
7	17-16	GT-17	GT-16	14.000	292.200	0.000	977.160	977.160	0.000	0.000	0.000
8	18-17	GT-18	GT-17	14.000	195.760	0.004	874.140	874.140	0.000	0.000	0.000
9	19-18	GT-19	GT-18	14.000	384.240	0.001	874.140	874.140	0.000	0.000	0.000
10	20-19	GT-20	GT-19	14.000	372.650	0.002	874.140	874.140	0.000	0.000	0.000
11	21-20	GT-21	GT-20	14.000	472.110	0.002	874.140	874.140	0.000	0.000	0.000
12	23-21	GT-23	GT-21	14.000	654.890	0.002	856.800	856.800	0.000	0.000	0.000
13	24-23	GT-24	GT-23	14.000	437.990	0.001	856.800	856.800	0.000	0.000	0.000
14	25-24	GT-25	GT-24	10.000	401.940	0.002	837.420	837.420	0.000	0.000	0.000
15	26-25	GT-26	GT-25	10.000	385.400	0.005	837.420	837.420	0.000	0.000	0.000
16	27-26	GT-27	GT-26	10.000	313.420	0.007	837.420	837.420	0.000	0.000	0.000
17	28-27	GT-28	GT-27	10.000	385.850	0.007	837.420	837.420	0.000	0.000	0.000
18	29-28	GT-29	GT-28	10.000	479.630	0.006	827.220	827.220	0.000	0.000	0.000
19	30-29	GT-30	GT-29	10.000	372.870	0.011	789.480	789.480	0.000	0.000	0.000
20	31-30	GT-31	GT-30	10.000	398.770	0.070	789.480	789.480	0.000	0.000	0.000
21	32-31	GT-32	GT-31	10.000	412.100	0.047	789.480	789.480	0.000	0.000	0.000
22	501	3	5	12.000	20.000	0.100	1,341.299	1,341.299	0.000	0.000	0.000
23	503	7	SPCAE	14.000	20.000	0.019	1,341.299	1,341.299	0.000	0.000	0.000
24	SUDLGP	SUDLMI	SPSUJ	10.000	100.000	0.005	0.000	0.000	0.000	0.000	0.000

South Shore model - Future SV to LLRI - Gravity Main Report

	ID	Storm Flow (gpm)	Flow Type	Velocity (ft/s)	d/D	q/Q	Water Depth (ft)	Critical Depth (ft)	Froude Number	Full Flow (gpm)	Coverage Count
1	11-SPCAB	0.000	Pressurized	3.544	0.597	0.667	0.696	0.627	0.819	1,588.257	0.000
2	12-11	0.000	Pressurized	2.207	1.000	3.201	1.167	0.342	0.360	330.750	0.000
3	13-12	0.000	Pressurized	2.207	1.000	1.195	1.167	0.572	0.360	886.237	0.000
4	14-13	0.000	Pressurized	2.037	1.000	1.078	1.167	0.578	0.332	906.702	0.000
5	15-14	0.000	Pressurized	2.037	1.000	1.134	1.167	0.563	0.332	861.946	0.000
6	16-15	0.000	Pressurized	2.037	1.000	1.394	1.167	0.506	0.332	700.918	0.000
7	17-16	0.000	Pressurized	2.037	1.000	2.082	1.167	0.410	0.332	469.251	0.000
8	18-17	0.000	Pressurized	3.443	0.523	0.539	0.610	0.568	0.871	1,621.541	0.000
9	19-18	0.000	Pressurized	1.822	1.000	1.165	1.167	0.524	0.297	750.496	0.000
10	20-19	0.000	Pressurized	2.306	0.737	0.893	0.860	0.568	0.448	978.505	0.000
11	21-20	0.000	Pressurized	2.449	0.697	0.832	0.813	0.568	0.501	1,050.079	0.000
12	23-21	0.000	Pressurized	2.250	0.740	0.898	0.863	0.562	0.436	954.475	0.000
13	24-23	0.000	Pressurized	1.786	1.000	1.401	1.167	0.471	0.291	611.499	0.000
14	25-24	0.000	Pressurized	3.421	1.000	1.916	0.833	0.438	0.660	437.121	0.000
15	26-25	0.000	Pressurized	3.421	1.000	1.148	0.833	0.572	0.660	729.549	0.000
16	27-26	0.000	Pressurized	3.421	1.000	1.014	0.833	0.609	0.660	826.070	0.000
17	28-27	0.000	Pressurized	3.421	1.000	1.051	0.833	0.598	0.660	796.820	0.000
18	29-28	0.000	Pressurized	3.379	1.000	1.049	0.833	0.595	0.652	788.833	0.000
19	30-29	0.000	Pressurized	4.601	0.661	0.774	0.551	0.595	1.165	1,019.945	0.000
20	31-30	0.000	Free Surface	9.339	0.377	0.303	0.314	0.595	3.409	2,609.415	0.000
21	32-31	0.000	Free Surface	8.092	0.420	0.368	0.350	0.595	2.774	2,144.241	0.000
22	501	0.000	Free Surface	12.145	0.351	0.265	0.351	0.741	4.216	5,070.159	0.000
23	503	0.000	Pressurized	6.571	0.441	0.402	0.515	0.710	1.848	3,333.691	0.000
24	SUDLGP	0.000	Pressurized	0.000	0.000		0.000	0.000	0.000	717.806	0.000

South Shore model - Future SV to LLRI - Gravity Main Report

	ID	Backwater Adjustment	Adjusted Depth (ft)	Adjusted Velocity (ft/s)
1	11-SPCAB	Yes	1.167	2.207
2	12-11	Yes	1.167	2.207
3	13-12	Yes	1.167	2.207
4	14-13	Yes	1.167	2.037
5	15-14	Yes	1.167	2.037
6	16-15	Yes	1.167	2.037
7	17-16	Yes	1.167	2.037
8	18-17	Yes	1.167	1.822
9	19-18	Yes	1.167	1.822
10	20-19	Yes	1.167	1.822
11	21-20	Yes	1.167	1.822
12	23-21	Yes	1.167	1.786
13	24-23	Yes	1.167	1.786
14	25-24	Yes	0.833	3.421
15	26-25	Yes	0.833	3.421
16	27-26	Yes	0.833	3.421
17	28-27	Yes	0.833	3.421
18	29-28	Yes	0.833	3.379
19	30-29	Yes	0.833	3.225
20	31-30	Yes	0.833	3.225
21	32-31	Yes	0.453	5.800
22	501	No	0.351	12.145
23	503	Yes	1.167	2.796
24	SUDLGP	Yes	0.833	0.000

South Shore model - Future SV to LLRI - Loading Manhole Report

	ID	Rim Elevation (ft)	Base Flow (cfs)	Total Flow (cfs)	Storm Flow (cfs)	Grade (ft)	Status	Hydraulic Jump	Unfilled Depth (ft)	Surcharge Depth (ft)
1	3	319.000	0.000	0.000	0.000	309.620	Not Full	No	9.380	1.620
2	7	319.000	0.617	0.630	0.000	310.483	Not Full	No	8.517	1.936
3	AIRJC	1,388.000	0.573	0.584	0.000	427.462	Not Full	No	960.538	45.129
4	BOUJC	1,326.000	0.069	0.070	0.000	391.099	Not Full	No	934.901	68.266
5	GT-11	318.770	0.000	0.000	0.000	311.116	Not Full	No	7.654	1.279
6	GT-12	320.020	0.000	0.000	0.000	311.894	Not Full	No	8.126	1.987
7	GT-13	319.700	0.178	0.182	0.000	312.740	Not Full	No	6.960	2.283
8	GT-14	320.100	0.000	0.000	0.000	313.291	Not Full	No	6.809	2.404
9	GT-15	319.890	0.000	0.000	0.000	313.778	Not Full	No	6.112	2.552
10	GT-16	319.600	0.000	0.000	0.000	314.354	Not Full	No	5.246	2.858
11	GT-17	319.380	0.225	0.230	0.000	314.882	Not Full	No	4.498	3.276
12	GT-18	319.630	0.000	0.000	0.000	315.178	Not Full	No	4.452	2.691
13	GT-19	319.980	0.000	0.000	0.000	315.721	Not Full	No	4.259	2.865
14	GT-20	320.040	0.000	0.000	0.000	316.250	Not Full	No	3.790	2.783
15	GT-21	319.140	0.038	0.039	0.000	316.908	Not Full	No	2.232	2.552
16	GT-23	319.200	0.000	0.000	0.000	317.772	Not Full	No	1.428	2.395
17	GT-24	319.800	0.042	0.043	0.000	318.362	Not Full	No	1.438	2.705
18	GT-25	319.390	0.000	0.000	0.000	319.390	Full	No	0.000	3.277
19	GT-26	321.400	0.000	0.000	0.000	321.400	Full	No	0.000	3.177
20	GT-27	324.460	0.000	0.000	0.000	323.807	Not Full	No	0.653	3.384
21	GT-28	329.160	0.022	0.023	0.000	326.739	Not Full	No	2.421	3.796
22	GT-29STP	329.780	0.082	0.084	0.000	329.780	Full	Yes	0.000	3.767
23	GT-30	334.390	0.000	0.000	0.000	332.302	Not Full	No	2.088	2.299
24	GT-31	361.520	0.000	0.000	0.000	357.536	Not Full	No	3.984	-0.398
25	GT-32	381.730	0.038	0.039	0.000	377.061	Not Full	No	4.669	-0.362
26	GT-34PLUM	1,422.500	0.417	0.425	0.000	416.763	Not Full	No	1,005.737	0.000
27	NORJC	1,386.980	0.628	0.641	0.000	428.976	Not Full	No	958.004	51.953
28	SUDLMH	368.000	0.000	0.000	0.000	358.040	Not Full	No	9.960	2.077



	ID	Flow (cfs)	Grade (ft)
1	5	2.988	305.351

South Shore model - Future SV to LLRI - Pump Report

	ID	From ID	To ID	Flow (gpm)	Head Increase (ft)	Power (hp)	Usage Speed
1	CAB	SPCAB	CABLE	1,000.000	0.000	0.000	1,000 1,000
2	SUDPUMP	SPSUD	SUDJC	500.000	29.888	3.778	1,000 1,000

	ID	Grade (ft)
1	SPCAB	310.330
2	SPSUD	358.040

DB Table - 'Manhole Modeling Data'

		ID (Char)	DIAMETER (Num)	RIM_ELEV (Num)	HEADLOSS (Num)	LOAD1 (Num)
1		1	4.000	316.000	0.000	0.000
2		NT38	4.000	345.000	0.750	0.000
3		NT-37	4.000	346.000	0.750	0.000
4		NT-33	4.000	349.500	0.750	15.000
5		NT-32	4.000	353.000	0.750	0.000
6		NT-31	4.000	352.000	0.750	0.000
7		NT-28	4.000	352.000	0.750	18.000
8		NT-25	4.000	348.500	0.750	0.000
9		NT-24	4.000	349.000	0.750	0.000
10		NT-22	4.000	348.000	0.750	0.000
11		NT-21	4.000	352.000	0.750	0.000
12		NT-19	4.000	350.000	0.750	0.000
13		NT-18	4.000	345.500	0.750	21.000
14		NT-17	4.000	340.000	0.750	0.000
15		NT-16	4.000	338.000	0.750	18.000
16		NT-14	4.000	336.000	0.750	0.000
17		NT-12	4.000	329.500	0.750	0.000
18		NT-11	4.000	328.000	0.750	0.000
19		NT-10	4.000	325.500	0.750	0.000
20		NT-9	4.000	326.500	0.750	0.000
21		NT-8	4.000	330.500	0.750	14.000
22		NT-7	4.000	324.000	0.750	0.000
23		NT-6	4.000	331.000	0.750	0.000
24		NT-5	4.000	325.500	0.750	0.000
25		NT-4	4.000	316.500	0.750	0.000
26		NT-3	4.000	317.000	0.750	0.000
27		NT-2	4.000	324.500	0.750	50.000
28		NT-1	4.000	325.000	0.750	11.000
29		COB-01	4.000	325.000	0.000	0.000
30		FM-01	4.000	325.000	0.750	0.000
31		NA-2	4.000	322.000	0.750	224.000

DB Table - 'Manhole Modeling Data'

		ID (Char)	TYPE1 (Num)	PATTERN1 (Char)	COVERAGE1 (Num)
1		1	0: Unpeakable		0.000
2		NT38	1: Peakable Base		0.000
3		NT-37	1: Peakable Base		0.000
4		NT-33	1: Peakable Base		0.000
5		NT-32	1: Peakable Base		0.000
6		NT-31	1: Peakable Base		0.000
7		NT-28	1: Peakable Base		0.000
8		NT-25	1: Peakable Base		0.000
9		NT-24	1: Peakable Base		0.000
10		NT-22	1: Peakable Base		0.000
11		NT-21	1: Peakable Base		0.000
12		NT-19	1: Peakable Base		0.000
13		NT-18	1: Peakable Base		0.000
14		NT-17	1: Peakable Base		0.000
15		NT-16	1: Peakable Base		0.000
16		NT-14	1: Peakable Base		0.000
17		NT-12	1: Peakable Base		0.000
18		NT-11	1: Peakable Base		0.000
19		NT-10	1: Peakable Base		0.000
20		NT-9	1: Peakable Base		0.000
21		NT-8	1: Peakable Base		0.000
22		NT-7	1: Peakable Base		0.000
23		NT-6	1: Peakable Base		0.000
24		NT-5	1: Peakable Base		0.000
25		NT-4	1: Peakable Base		0.000
26		NT-3	1: Peakable Base		0.000
27		NT-2	1: Peakable Base		0.000
28		NT-1	1: Peakable Base		0.000
29		COB-01	0: Unpeakable		0.000
30		FM-01	1: Peakable Base		0.000
31		NA-2	0: Unpeakable		0.000

DB Table - 'Manhole Modeling Data'

		ID (Char)	LOAD2 (Num)	TYPE2 (Num)	PATTERN2 (Char)
1		1	0.000 0: Unpeakable		
2		NT38	0.000 0: Unpeakable		
3		NT-37	0.000 0: Unpeakable		
4		NT-33	-4.000 0: Unpeakable		
5		NT-32	0.000 0: Unpeakable		
6		NT-31	0.000 0: Unpeakable		
7		NT-28	-4.000 0: Unpeakable		
8		NT-25	0.000 0: Unpeakable		
9		NT-24	0.000 0: Unpeakable		
10		NT-22	0.000 0: Unpeakable		
11		NT-21	0.000 0: Unpeakable		
12		NT-19	0.000 0: Unpeakable		
13		NT-18	-5.000 0: Unpeakable		
14		NT-17	0.000 0: Unpeakable		
15		NT-16	-5.000 0: Unpeakable		
16		NT-14	0.000 0: Unpeakable		
17		NT-12	0.000 0: Unpeakable		
18		NT-11	0.000 0: Unpeakable		
19		NT-10	0.000 0: Unpeakable		
20		NT-9	0.000 0: Unpeakable		
21		NT-8	-3.000 0: Unpeakable		
22		NT-7	0.000 0: Unpeakable		
23		NT-6	0.000 0: Unpeakable		
24		NT-5	0.000 0: Unpeakable		
25		NT-4	0.000 0: Unpeakable		
26		NT-3	0.000 0: Unpeakable		
27		NT-2	-12.000 0: Unpeakable		
28		NT-1	-3.000 0: Unpeakable		
29		COB-01	0.000 0: Unpeakable		
30		FM-01	0.000 0: Unpeakable		
31		NA-2	-56.000 0: Unpeakable		

DB Table - 'Manhole Modeling Data'

		ID (Char)	COVERAGE2 (Num)
1		1	0.000
2		NT38	0.000
3		NT-37	0.000
4		NT-33	0.000
5		NT-32	0.000
6		NT-31	0.000
7		NT-28	0.000
8		NT-25	0.000
9		NT-24	0.000
10		NT-22	0.000
11		NT-21	0.000
12		NT-19	0.000
13		NT-18	0.000
14		NT-17	0.000
15		NT-16	0.000
16		NT-14	0.000
17		NT-12	0.000
18		NT-11	0.000
19		NT-10	0.000
20		NT-9	0.000
21		NT-8	0.000
22		NT-7	0.000
23		NT-6	0.000
24		NT-5	0.000
25		NT-4	0.000
26		NT-3	0.000
27		NT-2	0.000
28		NT-1	0.000
29		COB-01	0.000
30		FM-01	0.000
31		NA-2	0.000

North Shore model - DB Table - 'Manhole'

	ID (Char)	DESCRIPT (Char)	TYPE (Num)	ELEVATION (Num)	YR_INST (Num)	YR_RETIRE (Num)	ZONE (Char)	PHASE (Num)
1	1	Agate Bay PS - simulated MH	1: Chamber	294.000				
2	NT38	Gravity Manhole	0: Loading	340.250				
3	NT-37	Gravity Manhole	0: Loading	339.890				
4	NT-33	Gravity Manhole	0: Loading	338.310				
5	NT-32	EDGEWOOD LANE Load Gravity Manhole	0: Loading	338.460				
6	NT-31	Gravity Manhole	0: Loading	337.920				
7	NT-28	E21 PL ST Load Manhole	0: Loading	336.470				
8	NT-25	Gravity Manhole	0: Loading	335.420				
9	NT-24	Gravity Manhole	0: Loading	335.120				
10	NT-22	Gravity Manhole	0: Loading	334.360				
11	NT-21	Gravity Manhole	0: Loading	333.930				
12	NT-19	Gravity Manhole	0: Loading	333.380				
13	NT-18	Dellesta PS Load Manhole	0: Loading	332.800				
14	NT-17	Gravity Manhole	0: Loading	332.210				
15	NT-16	Gravity Manhole	0: Loading	330.410				
16	NT-14	Gravity Manhole	0: Loading	328.420				
17	NT-12	Gravity Manhole	0: Loading	322.900				
18	NT-11	Gravity Manhole	0: Loading	321.900				
19	NT-10	Gravity Manhole	0: Loading	318.900				
20	NT-9	Gravity Manhole	0: Loading	315.570				
21	NT-8	Gravity Manhole	0: Loading	315.420				
22	NT-7	Gravity Manhole	0: Loading	315.030				
23	NT-6	Gravity Manhole	0: Loading	314.580				
24	NT-5	Gravity Manhole	0: Loading	313.980				
25	NT-4	Gravity Manhole	0: Loading	313.580				
26	NT-3	Gravity Manhole	0: Loading	312.990				
27	NT-2	Gravity Manhole	0: Loading	312.710				
28	NT-1	Edgewater PS Load Manhole	0: Loading	312.140				
29	COB-01	Bellingham Manhole	2: Outlet	312.000				
30	FM-01	Flow Meter MH (For Modeling Purposes)	0: Loading	312.060				
31	NA-2	Loading Manhole	0: Loading	302.000				



North Shore model - DB Table - 'Pipe Modeling Data'

		ID (Char)	FROM_INV (Num)	TO_INV (Num)	LENGTH (Num)	DIAMETER (Num)	COEFF (Num)	PARALLEL (Num)
1		2	300.000	340.300	5,905.000	8.000	90.000	
2		3	340.250	339.940	240.000	15.000	0.013	
3		4	339.890	338.510	810.000	15.000	0.013	
4		5	338.460	338.360	68.000	15.000	0.013	
5		6	338.310	337.970	227.000	15.000	0.013	
6		7	337.920	336.520	892.000	15.000	0.013	
7		8	336.470	335.470	598.000	15.000	0.013	
8		9	335.420	335.170	136.000	15.000	0.013	
9		10	335.120	334.400	460.000	15.000	0.013	
10		11	334.360	334.040	199.000	15.000	0.013	
11		12	333.930	333.430	296.500	15.000	0.013	
12		13	333.380	332.850	331.500	16.000	0.013	
13		14	332.800	332.260	386.500	15.000	0.013	
14		15	332.210	330.510	294.500	12.000	0.013	
15		16	330.410	328.520	268.000	12.000	0.013	
16		17	328.420	323.000	652.500	12.000	0.013	
17		18	322.900	322.000	221.500	12.000	0.013	
18		19	321.900	319.000	296.000	12.000	0.013	
19		20	318.980	315.620	325.000	12.000	0.013	
20		21	315.570	315.470	63.000	15.000	0.013	
21		22	315.420	315.080	259.600	15.000	0.013	
22		23	315.030	314.630	230.000	15.000	0.013	
23		24	314.580	314.030	365.600	15.000	0.013	
24		25	313.980	313.630	235.600	16.000	0.013	
25		26	313.580	312.990	418.700	16.000	0.013	
26		27	312.990	312.710	253.000	15.000	0.013	
27		28	312.710	312.140	325.000	15.000	0.013	
28		29	312.250	312.060	32.000	12.000	0.013	
29		30	312.060	312.000	17.500	4.000	0.013	
30		32	302.000	300.110	254.000	10.000	0.013	

North Shore model - DB Table - 'Pipe'

	ID (Char)	DESCRIPT (Char)	TYPE (Num)	YR_INST (Num)	YR_RETIRE (Num)	ZONE (Char)	PHASE (Num)	MATERIAL (Char)	LINING (Char)	COST_ID (Char)
1										
2		AGATE FORCE MAIN	1: Force	1978				Ductile Iron		
3		Gravity Pipe	0: Gravity					PVC		
4		Gravity Pipe	0: Gravity					PVC		
5		Gravity Pipe	0: Gravity					PVC		
6		Gravity Pipe	0: Gravity					PVC		
7		Gravity Pipe	0: Gravity					PVC		
8		Gravity Pipe	0: Gravity					PVC		
9		Gravity Pipe	0: Gravity					PVC		
10		Gravity Pipe	0: Gravity					PVC		
11		Gravity Pipe	0: Gravity					PVC		
12		Gravity Pipe	0: Gravity					PVC		
13		Gravity Pipe	0: Gravity					Ductile Iron		
14		Gravity Pipe	0: Gravity					PVC		
15		Gravity Pipe	0: Gravity					PVC		
16		Gravity Pipe	0: Gravity					PVC		
17		Gravity Pipe	0: Gravity					PVC		
18		Gravity Pipe	0: Gravity					PVC		
19		Gravity Pipe	0: Gravity					PVC		
20		Gravity Pipe	0: Gravity					PVC		
21		Gravity Pipe	0: Gravity					PVC		
22		Gravity Pipe	0: Gravity					PVC		
23		Gravity Pipe	0: Gravity					PVC		
24		Gravity Pipe	0: Gravity					PVC		
25		Gravity Pipe	0: Gravity					Ductile Iron		
26		Gravity Pipe	0: Gravity					Ductile Iron		
27		Gravity Pipe	0: Gravity					PVC		
28		Gravity Pipe	0: Gravity					PVC		
29		Gravity Pipe	0: Gravity					PVC		
30		Gravity Pipe	0: Gravity					Ductile Iron		
32		Gravity Loading Pipe	0: Gravity							

North Shore model - DB Table - 'Pump Modeling Data'

	ID (Char)	TYPE (Num)	PARALLEL (Num)	CAPACITY (Num)	SHUT_HEAD (Num)	DSGN_HEAD (Num)	DSGN_FLOW (Num)	HIGH_HEAD (Num)	HIGH_FLOW (Num)
1	AGATE	2: Exponential 3-Point Curve		350.000	86.000	72.000	350.000	43.000	1,000.000

North Shore model - DB Table - 'Pump'

	ID (Char)	DESCRIPT (Char)	YR_INST (Num)	YR_RETIRE (Num)	ZONE (Char)	RATED_PWR (Num)	COST_ID (Char)	PHASE (Num)
1	AGATE	Pump - top-mount S&	1977			15.000		

North Shore model - DB Table - Wetwell Modeling Data

	ID (Char)	TYPE (Num)	BTM_ELEV (Num)	HEADLOSS (Num)	MIN_LEVEL (Num)	MAX_LEVEL (Num)	INIT_LEVEL (Num)	DIAMETER (Num)	CURVE (Char)
1	SPAGA	0: Cylindrical	294.000	0.750	2.000	6.000	5.500	10.000	

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 \* of Sanitary Sewer Systems \*  
 \* Innovvyze, Inc. \*  
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[Title]  
 [Summary]  
 Number of loading manholes : 29  
 Number of outlets : 1  
 Number of junction chambers : 1  
 Number of wet wells : 1  
 Number of pipes : 29  
 Number of force-mains : 1  
 Number of pumps : 1

[Loading Manholes] Manhole ID	Base Flow	Storm Load	Total Flow
NA-2	114.0000	0.0000	114.0000
NT-1	11.0000	0.0000	11.0000
NT-16	14.0000	0.0000	14.0000
NT-18	20.0000	0.0000	20.0000
NT-2	46.0000	0.0000	46.0000
NT-28	17.0000	0.0000	17.0000
NT-33	14.0000	0.0000	14.0000
NT-8	13.0000	0.0000	13.0000
FM-01	0.0000	0.0000	0.0000
NT-10	0.0000	0.0000	0.0000
NT-11	0.0000	0.0000	0.0000
NT-12	0.0000	0.0000	0.0000
NT-14	0.0000	0.0000	0.0000
NT-17	0.0000	0.0000	0.0000
NT-19	0.0000	0.0000	0.0000
NT-21	0.0000	0.0000	0.0000
NT-22	0.0000	0.0000	0.0000
NT-24	0.0000	0.0000	0.0000
NT-25	0.0000	0.0000	0.0000
NT-3	0.0000	0.0000	0.0000
NT-31	0.0000	0.0000	0.0000
NT-32	0.0000	0.0000	0.0000

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NT-37 0.0000  
 NT-4 0.0000  
 NT-5 0.0000  
 NT-6 0.0000  
 NT-7 0.0000  
 NT-9 0.0000  
 NT38 0.0000

[Pipes]

UnPeak ID	Peak Flow	From Cover ID	From Flow	To Actual ID	Flow Veloc	Flow Depth	Froude Number	Pipe Count	Pipe Crit slope	Pipe Full Diam	Pipe Total Cover Flow	Storm Load
10	114.00	NT-24	0.00	NT-22	1.43	0.30	0.55	1	0.002	15.00	145.00	0.00
11	114.00	NT-22	0.00	NT-21	1.44	0.30	0.55	1	0.002	15.00	145.00	0.00
12	114.00	NT-21	0.00	NT-19	1.47	0.29	0.57	1	0.002	15.00	145.00	0.00
13	114.00	NT-19	0.00	NT-18	1.43	0.29	0.56	1	0.002	16.00	145.00	0.00
14	114.00	NT-18	0.00	NT-17	1.42	0.33	0.52	1	0.001	15.00	165.00	0.00
15	114.00	NT-17	0.00	NT-16	2.41	0.25	1.01	1	0.006	12.00	165.00	0.00
16	114.00	NT-16	0.00	NT-14	2.65	0.25	1.12	1	0.007	12.00	179.00	0.00
17	114.00	NT-14	0.00	NT-12	2.81	0.24	1.21	1	0.008	12.00	179.00	0.00
18	114.00	NT-12	0.00	NT-11	2.18	0.28	0.85	1	0.004	12.00	179.00	0.00
19	114.00	NT-11	0.00	NT-10	2.98	0.23	1.31	1	0.010	12.00	179.00	0.00
20	114.00	NT-10	0.00	NT-9	3.04	0.22	1.35	1	0.010	12.00	179.00	0.00
21	114.00	NT-9	0.00	NT-8	1.53	0.33	0.55	1	0.002	15.00	179.00	0.00
22	114.00	NT-8	0.00	NT-7	1.45	0.36	0.50	1	0.001	15.00	192.00	0.00
23	114.00	NT-7	0.00	NT-6	1.61	0.34	0.58	1	0.002	15.00	192.00	0.00
24	114.00	NT-6	0.00	NT-5	1.53	0.35	0.54	1	0.002	15.00	192.00	0.00
25	114.00	NT-5	0.00	NT-4	1.51	0.34	0.54	1	0.001	16.00	192.00	0.00

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[Pipe ID]	[Force Mains]	[From ID]	[To ID]	[Pipe Diam]	[Pipe Flow]	[Pipe Vel.]	[Pipe Loss]	[Pump Count]	[Pump Flow]	[Pump Head]		
26	114.00	78.00	0.00	0.00	1.48	NT-3	0.26	1	0.001	16.00	192.00	0.00
27	114.00	78.00	0.00	0.00	1.37	NT-2	0.30	1	0.25	1296.20	0.00	0.00
28	114.00	78.00	0.00	0.00	1.71	NT-1	0.30	1	0.25	967.10	0.00	0.00
29	114.00	124.00	0.00	0.00	2.74	FM-01	0.30	1	0.002	15.00	238.00	0.00
30	114.00	135.00	0.00	0.00	1.24	NT-37	0.22	1	0.006	12.00	249.00	0.00
31	114.00	0.00	0.00	0.00	1.24	COB-01	0.22	1	0.31	1235.45	0.00	0.00
32	114.00	135.00	0.00	0.00	6.36	SPAGA	1.00	1	0.001	15.00	114.00	0.00
33	114.00	0.00	0.00	0.00	2.42	NT-33	0.25	1	0.19	1044.78	0.00	0.00
34	114.00	0.00	0.00	0.00	1.37	NT-33	0.21	1	0.003	4.00	249.00	0.00
35	114.00	0.00	0.00	0.00	0.00	NT-33	0.21	1	0.007	10.00	114.00	0.00
36	114.00	14.00	0.00	0.00	1.36	NT-31	0.23	1	0.22	850.52	0.00	0.00
37	114.00	14.00	0.00	0.00	1.38	NT-28	0.23	1	0.002	15.00	114.00	0.00
38	114.00	31.00	0.00	0.00	1.46	NT-25	0.24	1	0.19	1199.91	0.00	0.00
39	114.00	31.00	0.00	0.00	1.51	NT-24	0.23	1	0.001	15.00	0.00	0.00
40	114.00	0.00	0.00	0.00	0.00	NT-33	0.00	1	0.00	1114.80	0.00	0.00
41	114.00	14.00	0.00	0.00	1.36	NT-31	0.23	1	0.001	15.00	128.00	0.00
42	114.00	14.00	0.00	0.00	1.38	NT-28	0.23	1	0.21	1125.07	0.00	0.00
43	114.00	31.00	0.00	0.00	1.46	NT-25	0.24	1	0.002	15.00	128.00	0.00
44	114.00	31.00	0.00	0.00	1.51	NT-24	0.23	1	0.21	1151.68	0.00	0.00
45	114.00	0.00	0.00	0.00	0.00	NT-33	0.00	1	0.002	15.00	145.00	0.00
46	114.00	0.00	0.00	0.00	0.00	NT-33	0.00	1	0.22	1188.78	0.00	0.00
47	114.00	0.00	0.00	0.00	0.00	NT-33	0.00	1	0.002	15.00	145.00	0.00
48	114.00	0.00	0.00	0.00	0.00	NT-33	0.00	1	0.22	1246.39	0.00	0.00

[Force Mains]

[Pipe ID]	[From ID]	[To ID]	[Pipe Diam]	[Pipe Flow]	[Pipe Vel.]	[Pipe Loss]
2	1	NT38	8.00	114.00	2.24	30.526

[Pumps]

[Pump ID]	[Wet Well ID]	[Manhole ID]	[Pump Type]	[Pump Count]	[Pump Flow]	[Pump Head]
AGATE	SPAGA	1	Exponential 3-Point	1	350.18	71.99



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 \* of Sanitary Sewer Systems \*  
 \* Innovyze, Inc. \*  
 \*\*\*\*\*

[Title]  
 [Summary]  
 Number of loading manholes : 29  
 Number of outlets : 1  
 Number of junction chambers : 1  
 Number of wet wells : 1  
 Number of pipes : 29  
 Number of force-mains : 1  
 Number of pumps : 1

Manhole ID	Base Flow	Storm Load	Total Flow
NA-2	168.0000	0.0000	168.0000
NT-1	8.0000	0.0000	8.0000
NT-16	13.0000	0.0000	13.0000
NT-18	16.0000	0.0000	16.0000
NT-2	38.0000	0.0000	38.0000
NT-28	14.0000	0.0000	14.0000
NT-33	11.0000	0.0000	11.0000
NT-8	11.0000	0.0000	11.0000
FM-01	0.0000	0.0000	0.0000
NT-10	0.0000	0.0000	0.0000
NT-11	0.0000	0.0000	0.0000
NT-12	0.0000	0.0000	0.0000
NT-14	0.0000	0.0000	0.0000
NT-17	0.0000	0.0000	0.0000
NT-19	0.0000	0.0000	0.0000
NT-21	0.0000	0.0000	0.0000
NT-22	0.0000	0.0000	0.0000
NT-24	0.0000	0.0000	0.0000
NT-25	0.0000	0.0000	0.0000
NT-3	0.0000	0.0000	0.0000
NT-31	0.0000	0.0000	0.0000
NT-32	0.0000	0.0000	0.0000

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NT-37 0.0000  
 NT-4 0.0000  
 NT-5 0.0000  
 NT-6 0.0000  
 NT-7 0.0000  
 NT-9 0.0000  
 NT38 0.0000

[Pipes]

UnPeak ID	Peak Flow	From Cover ID	From Flow	To Actual ID	Flow Depth	Froude Number	Pipe Count	Pipe Crit slope	Pipe Full Diam	Pipe Total Cover Flow	Storm Load
10	160.00	NT-24	0.00	NT-22	0.35	0.55	1	0.002	15.00	193.00	0.00
11	160.00	NT-22	1.55	NT-21	0.34	0.56	1	0.002	15.00	193.00	0.00
12	160.00	NT-21	1.57	NT-19	0.34	0.57	1	0.002	15.00	193.00	0.00
13	160.00	NT-19	1.59	NT-18	0.34	0.56	1	0.002	16.00	193.00	0.00
14	160.00	NT-18	1.55	NT-17	0.34	0.56	1	0.001	15.00	209.00	0.00
15	155.00	NT-17	1.52	NT-16	0.37	0.52	1	0.27	1086.61	0.00	0.00
16	155.00	NT-16	2.58	NT-14	0.28	1.02	1	0.006	12.00	209.00	0.00
17	150.00	NT-14	2.82	NT-12	0.27	1.12	1	0.007	12.00	222.00	0.00
18	150.00	NT-12	2.99	NT-11	0.26	1.22	1	0.29	1346.43	0.00	0.00
19	150.00	NT-11	2.32	NT-10	0.32	0.85	1	0.004	12.00	222.00	0.00
20	150.00	NT-10	3.17	NT-9	0.25	1.32	1	0.010	12.00	222.00	0.00
21	150.00	NT-9	3.23	NT-8	0.25	1.36	1	0.29	1630.23	0.00	0.00
22	150.00	NT-8	1.62	NT-7	0.37	0.55	1	0.002	15.00	222.00	0.00
23	147.00	NT-7	1.53	NT-6	0.40	0.50	1	0.001	15.00	233.00	0.00
24	147.00	NT-6	1.70	NT-5	0.37	0.58	1	0.002	15.00	233.00	0.00
25	147.00	NT-5	1.61	NT-4	0.39	0.54	1	0.002	15.00	233.00	0.00
147.00	86.00	0.00	1.60	0.28	0.38	0.54	1	0.001	16.00	233.00	0.00

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[Pipe ID]	[Force Mains]	[From ID]	[To ID]	[Pipe Diam]	[Pipe Flow]	[Pipe Vel.]	[Pipe Loss]	[Pump Count]	[Pump Flow]	[Pump Head]		
26	147.00	86.00	0.00	0.00	1.57	NT-3	0.29	1	0.001	16.00	233.00	0.00
27	147.00	86.00	0.00	0.00	1.44	NT-2	0.33	1	0.28	1296.20	0.00	0.00
28	135.00	136.00	0.00	0.00	1.78	NT-1	0.32	1	0.28	967.10	0.00	0.00
29	132.00	147.00	0.00	0.00	2.83	FM-01	0.32	1	0.002	15.00	271.00	0.00
3	168.00	0.00	0.00	0.00	1.39	NT-37	0.27	1	0.30	1217.44	0.00	0.00
30	132.00	147.00	0.00	0.00	7.12	COB-01	1.00	1	0.006	12.00	279.00	0.00
32	168.00	0.00	0.00	0.00	2.70	SPAGA	0.30	1	0.33	1235.45	0.00	0.00
4	168.00	0.00	0.00	0.00	1.54	NT-33	0.25	1	0.24	1044.78	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	NT-33	0.00	1	0.001	15.00	0.00	0.00
6	164.00	15.00	0.00	0.00	1.49	NT-31	0.27	1	0.001	15.00	179.00	0.00
7	164.00	15.00	0.00	0.00	1.52	NT-28	0.27	1	0.25	1125.07	0.00	0.00
8	160.00	33.00	0.00	0.00	1.59	NT-25	0.27	1	0.25	1151.68	0.00	0.00
9	160.00	33.00	0.00	0.00	1.64	NT-24	0.27	1	0.25	1188.78	0.00	0.00
									0.25	1246.39	0.00	

[Force Mains]

[Pipe ID]	[From ID]	[To ID]	[Pipe Diam]	[Pipe Flow]	[Pipe Vel.]	[Pipe Loss]
2	1	NT38	8.00	168.00	2.24	30.526

[Pumps]

[Pump ID]	[Wet Well ID]	[Manhole ID]	[Pump Type]	[Pump Count]	[Pump Flow]	[Pump Head]
AGATE	SPAGA	1	Exponential 3-Point	1	350.18	71.99

\*\*\*\*\*  
 \* Computer Modeling for Design and Planning \*  
 \* of Sanitary Sewer Systems \*  
 \* Innovyze, Inc. \*  
 \*\*\*\*\*

[Title]

[Summary]  
 Number of loading manholes : 29  
 Number of outlets : 1  
 Number of junction chambers : 1  
 Number of wet wells : 1  
 Number of pipes : 29  
 Number of force-mains : 1  
 Number of pumps : 1

[Loading Manholes]

Manhole ID	Base Flow	Storm Load	Total Flow
NA-2	168.0000	0.0000	215.0400
NT-1	8.0000	0.0000	10.2400
NT-16	13.0000	0.0000	16.6400
NT-18	16.0000	0.0000	20.4800
NT-2	38.0000	0.0000	48.6400
NT-28	14.0000	0.0000	17.9200
NT-33	11.0000	0.0000	14.0800
NT-8	11.0000	0.0000	14.0800
FM-01	0.0000	0.0000	0.0000
NT-10	0.0000	0.0000	0.0000
NT-11	0.0000	0.0000	0.0000
NT-12	0.0000	0.0000	0.0000
NT-14	0.0000	0.0000	0.0000
NT-17	0.0000	0.0000	0.0000
NT-19	0.0000	0.0000	0.0000
NT-21	0.0000	0.0000	0.0000
NT-22	0.0000	0.0000	0.0000
NT-24	0.0000	0.0000	0.0000
NT-25	0.0000	0.0000	0.0000
NT-3	0.0000	0.0000	0.0000
NT-31	0.0000	0.0000	0.0000
NT-32	0.0000	0.0000	0.0000

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NT-37 0.0000  
 NT-4 0.0000  
 NT-5 0.0000  
 NT-6 0.0000  
 NT-7 0.0000  
 NT-9 0.0000  
 NT38 0.0000

[Pipes]

Pipe UnPeak ID	Peak Flow	From Cover ID	Flow I/I	Flow Veloc	To Actual ID	d/D	Flow Depth	Froude Number	Pipe Count	Pipe Crit slope	Pipe Full Diam	Total Cover Flow	Storm Load
10	42.24	NT-24	0.00	1.66	NT-22	0.31	0.39	0.55	1	0.002	15.00	247.04	0.00
204.80	42.24	NT-22	0.00	1.68	NT-21	0.31	0.39	0.56	1	0.002	15.00	247.04	0.00
11	42.24	NT-21	0.00	1.71	NT-19	0.31	0.39	0.57	1	0.002	15.00	247.04	0.00
204.80	42.24	NT-19	0.00	1.67	NT-18	0.29	0.38	0.56	1	0.002	16.00	247.04	0.00
13	69.12	NT-18	0.00	1.63	NT-17	0.34	0.42	0.52	1	0.001	15.00	267.52	0.00
204.80	69.12	NT-17	0.00	2.77	NT-16	0.32	0.32	1.02	1	0.006	12.00	267.52	0.00
14	92.16	NT-16	0.00	3.03	NT-14	0.31	0.31	1.12	1	0.007	12.00	284.16	0.00
198.40	92.16	NT-14	0.00	3.21	NT-12	0.30	0.30	1.22	1	0.008	12.00	284.16	0.00
17	92.16	NT-12	0.00	2.48	NT-11	0.36	0.36	0.85	1	0.004	12.00	284.16	0.00
192.00	92.16	NT-11	0.00	3.41	NT-10	0.29	0.29	1.32	1	0.010	12.00	284.16	0.00
19	92.16	NT-10	0.00	3.47	NT-9	0.28	0.28	1.36	1	0.002	15.00	284.16	0.00
192.00	92.16	NT-9	0.00	1.74	NT-8	0.34	0.42	0.55	1	0.001	15.00	298.24	0.00
20	110.08	NT-8	0.00	1.64	NT-7	0.36	0.46	0.50	1	0.002	15.00	298.24	0.00
188.16	110.08	NT-7	0.00	1.82	NT-6	0.34	0.42	0.58	1	0.002	15.00	298.24	0.00
23	110.08	NT-6	0.00	1.73	NT-5	0.35	0.44	0.54	1	0.002	15.00	298.24	0.00
188.16	110.08	NT-5	0.00	1.71	NT-4	0.32	0.43	0.54	1	0.001	16.00	298.24	0.00
24	110.08	NT-4	0.00	1.71	NT-4	0.32	0.43	0.54	1	0.001	16.00	298.24	0.00
188.16	110.08	NT-4	0.00	1.71	NT-4	0.32	0.43	0.54	1	0.001	16.00	298.24	0.00

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[Force Mains] Pipe ID	From ID	To ID	Pipe Diam	Pipe Flow	Pipe Vel.	Pipe Loss	Pump Count	Pump Flow	Pump Head
26	NT-4	NT-3	1	0.001	16.00	298.24	0.00	0.00	0.00
188.16	110.08	0.00	0.33	0.43	0.53	0.00	0.00	0.00	0.00
27	NT-3	NT-2	1	0.001	15.00	298.24	0.00	0.00	0.00
188.16	110.08	0.00	0.38	0.48	0.46	0.00	0.00	0.00	0.00
28	NT-2	NT-1	1	0.002	15.00	346.88	0.00	0.00	0.00
172.80	174.08	0.00	0.37	0.46	0.58	0.00	0.00	0.00	0.00
29	NT-1	FM-01	1	0.006	12.00	357.12	0.00	0.00	0.00
168.96	188.16	0.00	0.37	0.37	1.02	0.00	0.00	0.00	0.00
3	NT38	NT-37	1	0.001	15.00	215.04	0.00	0.00	0.00
215.04	0.00	0.00	0.31	0.38	0.50	0.00	0.00	0.00	0.00
30	FM-01	COB-01	1	0.003	4.00	357.12	0.00	0.00	0.00
168.96	188.16	0.00	1.00	0.33	2.78	0.00	0.00	0.00	0.00
32	NA-2	SPAGA	1	0.007	10.00	215.04	0.00	0.00	0.00
215.04	0.00	0.00	0.34	0.29	1.12	0.00	0.00	0.00	0.00
4	NT-37	NT-33	1	0.002	15.00	215.04	0.00	0.00	0.00
215.04	0.00	0.00	0.29	0.36	0.57	0.00	0.00	0.00	0.00
5	NT-32	NT-33	1	0.001	15.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	NT-33	NT-31	1	0.001	15.00	229.12	0.00	0.00	0.00
209.92	19.20	0.00	0.31	0.38	0.54	0.00	0.00	0.00	0.00
7	NT-31	NT-28	1	0.002	15.00	229.12	0.00	0.00	0.00
209.92	19.20	0.00	0.30	0.38	0.55	0.00	0.00	0.00	0.00
8	NT-28	NT-25	1	0.002	15.00	247.04	0.00	0.00	0.00
204.80	42.24	0.00	0.31	0.39	0.57	0.00	0.00	0.00	0.00
9	NT-25	NT-24	1	0.002	15.00	247.04	0.00	0.00	0.00
204.80	42.24	0.00	0.30	0.38	0.60	0.00	0.00	0.00	0.00

[Force Mains]

Pipe ID	From ID	To ID	Pipe Diam	Pipe Flow	Pipe Vel.	Pipe Loss
2	1	NT38	8.00	215.04	2.24	30.526

[Pumps]

Pump ID	Wet Well ID	Manhole ID	Pump Type	Pump Count	Pump Flow	Pump Head
AGATE	SPAGA	1	Exponential 3-Point	1	350.18	71.99

	ID	Grade (ft)
1	1	371.492

North Shore model - Existing (yr 2012) - Force Main Report

ID	From ID	To ID	Diameter (in)	Length (ft)	Total Flow (gpm)	Unpeakable Flow (gpm)	Peakable Flow (gpm)	Coverage Flow (gpm)	Infiltration Flow (gpm)	Storm Flow (gpm)	Velocity (ft/s)	Headloss (ft)
1	1	NT38	8.000	5,905.000	114.000	114.000	0.000	0.000	0.000	0.000	2.235	30.526



North Shore model - Existing (yr 2012) - Gravity Main Report

ID	From ID	To ID	Diameter (in)	Length (ft)	Slope	Total Flow (gpm)	Unpeakable Flow (gpm)	Peakable Flow (gpm)	Coverage Flow (gpm)	Infiltration Flow (gpm)
1	10	NT-24	NT-22	15.000	460.000	0.002	145.000	114.000	31.000	0.000
2	11	NT-22	NT-21	15.000	199.000	0.002	145.000	114.000	31.000	0.000
3	12	NT-21	NT-19	15.000	296.500	0.002	145.000	114.000	31.000	0.000
4	13	NT-19	NT-18	16.000	331.500	0.002	145.000	114.000	31.000	0.000
5	14	NT-18	NT-17	15.000	386.500	0.001	165.000	114.000	51.000	0.000
6	15	NT-17	NT-16	12.000	294.500	0.006	165.000	114.000	51.000	0.000
7	16	NT-16	NT-14	12.000	268.000	0.007	179.000	114.000	65.000	0.000
8	17	NT-14	NT-12	12.000	652.500	0.008	179.000	114.000	65.000	0.000
9	18	NT-12	NT-11	12.000	221.500	0.004	179.000	114.000	65.000	0.000
10	19	NT-11	NT-10	12.000	296.000	0.010	179.000	114.000	65.000	0.000
11	20	NT-10	NT-9	12.000	325.000	0.010	179.000	114.000	65.000	0.000
12	21	NT-9	NT-8	15.000	63.000	0.002	179.000	114.000	65.000	0.000
13	22	NT-8	NT-7	15.000	259.600	0.001	192.000	114.000	78.000	0.000
14	23	NT-7	NT-6	15.000	230.000	0.002	192.000	114.000	78.000	0.000
15	24	NT-6	NT-5	15.000	365.600	0.002	192.000	114.000	78.000	0.000
16	25	NT-5	NT-4	16.000	235.600	0.001	192.000	114.000	78.000	0.000
17	26	NT-4	NT-3	16.000	418.700	0.001	192.000	114.000	78.000	0.000
18	27	NT-3	NT-2	15.000	253.000	0.001	192.000	114.000	78.000	0.000
19	28	NT-2	NT-1	15.000	325.000	0.002	238.000	114.000	124.000	0.000
20	29	NT-1	FM-01	12.000	32.000	0.006	249.000	114.000	135.000	0.000
21	3	NT38	NT-37	15.000	240.000	0.001	114.000	114.000	0.000	0.000
22	30	FM-01	COB-01	4.000	17.500	0.003	249.000	114.000	135.000	0.000
23	32	NA-2	SPAGA	10.000	254.000	0.007	114.000	114.000	0.000	0.000
24	4	NT-37	NT-33	15.000	810.000	0.002	114.000	114.000	0.000	0.000
25	5	NT-32	NT-33	15.000	68.000	0.001	0.000	0.000	0.000	0.000
26	6	NT-33	NT-31	15.000	227.000	0.001	128.000	114.000	14.000	0.000
27	7	NT-31	NT-28	15.000	892.000	0.002	128.000	114.000	14.000	0.000
28	8	NT-28	NT-25	15.000	598.000	0.002	145.000	114.000	31.000	0.000
29	9	NT-25	NT-24	15.000	136.000	0.002	145.000	114.000	31.000	0.000

North Shore model - Existing (yr 2012) - Gravity Main Report

ID	Storm Flow (gpm)	Flow Type	Velocity (ft/s)	d/D	q/Q	Water Depth (ft)	Critical Depth (ft)	Froude Number	Full Flow (gpm)	Coverage Count
1	0.000	Free Surface	1.428	0.240	0.126	0.300	0.220	0.547	1,150.109	0.000
2	0.000	Free Surface	1.442	0.238	0.124	0.298	0.220	0.554	1,165.735	0.000
3	0.000	Free Surface	1.467	0.235	0.121	0.294	0.220	0.567	1,193.780	0.000
4	0.000	Free Surface	1.429	0.219	0.105	0.292	0.216	0.556	1,380.676	0.000
5	0.000	Free Surface	1.424	0.263	0.152	0.329	0.235	0.518	1,086.610	0.000
6	0.000	Free Surface	2.413	0.249	0.135	0.249	0.250	1.013	1,218.157	0.000
7	0.000	Free Surface	2.653	0.246	0.133	0.246	0.261	1.120	1,346.434	0.000
8	0.000	Free Surface	2.812	0.236	0.122	0.236	0.261	1.213	1,461.272	0.000
9	0.000	Free Surface	2.180	0.283	0.175	0.283	0.261	0.853	1,022.012	0.000
10	0.000	Free Surface	2.982	0.227	0.113	0.227	0.261	1.315	1,586.992	0.000
11	0.000	Free Surface	3.039	0.224	0.110	0.224	0.261	1.350	1,630.232	0.000
12	0.000	Free Surface	1.525	0.266	0.155	0.332	0.245	0.552	1,158.194	0.000
13	0.000	Free Surface	1.453	0.289	0.183	0.362	0.254	0.502	1,052.055	0.000
14	0.000	Free Surface	1.608	0.269	0.158	0.336	0.254	0.578	1,212.321	0.000
15	0.000	Free Surface	1.527	0.279	0.170	0.349	0.254	0.538	1,127.534	0.000
16	0.000	Free Surface	1.510	0.257	0.144	0.342	0.250	0.540	1,330.890	0.000
17	0.000	Free Surface	1.482	0.260	0.148	0.347	0.250	0.526	1,296.195	0.000
18	0.000	Pressurized	1.368	0.302	0.199	0.378	0.254	0.462	967.097	0.000
19	0.000	Pressurized	1.715	0.300	0.195	0.375	0.284	0.581	1,217.439	0.000
20	0.000	Pressurized	2.742	0.305	0.202	0.305	0.309	1.031	1,235.445	0.000
21	0.000	Free Surface	1.244	0.223	0.109	0.279	0.195	0.495	1,044.785	0.000
22	0.000	Pressurized	6.357	1.000	4.965	0.333	0.187	1.940	50.146	0.000
23	0.000	Free Surface	2.419	0.247	0.134	0.206	0.218	1.116	850.517	0.000
24	0.000	Free Surface	1.372	0.208	0.095	0.260	0.195	0.566	1,199.910	0.000
25	0.000	Free Surface	0.000	0.000	0.000	0.000	0.000	0.000	1,114.800	0.000
26	0.000	Free Surface	1.356	0.228	0.114	0.285	0.207	0.534	1,125.066	0.000
27	0.000	Free Surface	1.379	0.225	0.111	0.281	0.207	0.546	1,151.683	0.000
28	0.000	Free Surface	1.462	0.236	0.122	0.295	0.220	0.565	1,188.778	0.000
29	0.000	Free Surface	1.512	0.230	0.116	0.288	0.220	0.591	1,246.385	0.000

North Shore model - Existing (yr 2012) - Gravity Main Report

	ID	Backwater Adjustment	Adjusted Depth (ft)	Adjusted Velocity (ft/s)
1	10	No	0.300	1.428
2	11	No	0.298	1.442
3	12	No	0.294	1.467
4	13	No	0.292	1.429
5	14	No	0.329	1.424
6	15	No	0.249	2.413
7	16	No	0.246	2.653
8	17	No	0.236	2.812
9	18	No	0.283	2.180
10	19	No	0.227	2.982
11	20	Yes	0.255	2.525
12	21	No	0.332	1.525
13	22	No	0.362	1.453
14	23	No	0.336	1.608
15	24	No	0.349	1.527
16	25	Yes	0.549	0.789
17	26	Yes	1.058	0.360
18	27	Yes	1.250	0.349
19	28	Yes	1.250	0.432
20	29	Yes	1.000	0.706
21	3	No	0.279	1.244
22	30	No	0.333	6.357
23	32	No	0.206	2.419
24	4	No	0.260	1.372
25	5	Yes	0.185	0.000
26	6	No	0.285	1.356
27	7	No	0.281	1.379
28	8	No	0.295	1.462
29	9	No	0.288	1.512

North Shore model - Existing (Yr 2012) - Loading Manhole Report

	ID	Rim Elevation (ft)	Base Flow (cfs)	Total Flow (cfs)	Storm Flow (cfs)	Grade (ft)	Status	Hydraulic Jump	Unfilled Depth (ft)	Surcharge Depth (ft)
1	FM-01	325.000	0.000	0.000	0.000	314.286	Not Full	No	10.714	1.892
2	NA-2	322.000	0.254	0.254	0.000	302.209	Not Full	No	19.791	-0.625
3	NT-1	325.000	0.025	0.025	0.000	314.299	Not Full	No	10.701	1.049
4	NT-10	325.500	0.000	0.000	0.000	319.207	Not Full	No	6.293	-0.773
5	NT-11	328.000	0.000	0.000	0.000	322.130	Not Full	No	5.870	-0.770
6	NT-12	329.500	0.000	0.000	0.000	323.186	Not Full	Yes	6.314	-0.714
7	NT-14	336.000	0.000	0.000	0.000	328.659	Not Full	No	7.341	-0.761
8	NT-16	338.000	0.031	0.031	0.000	330.659	Not Full	No	7.341	-0.751
9	NT-17	340.000	0.000	0.000	0.000	332.461	Not Full	No	7.539	-0.749
10	NT-18	345.500	0.045	0.045	0.000	333.130	Not Full	No	12.370	-0.920
11	NT-19	350.000	0.000	0.000	0.000	333.672	Not Full	No	16.328	-1.041
12	NT-2	324.500	0.102	0.102	0.000	314.323	Not Full	No	10.177	0.363
13	NT-21	352.000	0.000	0.000	0.000	334.225	Not Full	No	17.775	-0.955
14	NT-22	348.000	0.000	0.000	0.000	334.659	Not Full	No	13.341	-0.951
15	NT-24	349.000	0.000	0.000	0.000	335.421	Not Full	No	13.579	-0.949
16	NT-25	348.500	0.000	0.000	0.000	335.709	Not Full	No	12.791	-0.961
17	NT-28	352.000	0.038	0.038	0.000	336.766	Not Full	No	15.234	-0.954
18	NT-3	317.000	0.000	0.000	0.000	314.336	Not Full	No	2.664	0.096
19	NT-31	352.000	0.000	0.000	0.000	338.202	Not Full	No	13.798	-0.968
20	NT-32	353.000	0.000	0.000	0.000	338.595	Not Full	No	14.405	-1.115
21	NT-33	349.500	0.031	0.031	0.000	338.595	Not Full	No	10.905	-0.965
22	NT-37	346.000	0.000	0.000	0.000	340.151	Not Full	No	5.849	-0.989
23	NT-4	316.500	0.000	0.000	0.000	314.350	Not Full	No	2.150	-0.564
24	NT-5	325.500	0.000	0.000	0.000	314.358	Not Full	No	11.142	-0.955
25	NT-6	331.000	0.000	0.000	0.000	314.930	Not Full	No	16.070	-0.900
26	NT-7	324.000	0.000	0.000	0.000	315.368	Not Full	No	8.632	-0.912
27	NT-8	330.500	0.029	0.029	0.000	315.783	Not Full	No	14.717	-0.887
28	NT-9	326.500	0.000	0.000	0.000	315.903	Not Full	Yes	10.597	-0.917
29	NT38	345.000	0.000	0.000	0.000	345.000	Full	No	0.000	3.500

	ID	Flow (cfs)	Grade (ft)
1	COB-01	0.555	312.333

North Shore model - Existing (yr 2012) - Pump Report

	ID	From ID	To ID	Flow (gpm)	Head Increase (ft)	Power (hp)	Usage	Speed
1	AGATE	SPAGA	1	350.182	71.992	6.373	1.000	1.000

	ID	Grade (ft)
1	SPAGA	299.500

	ID	Grade (ft)
1	1	371.492



North Shore model - Future - Force Main Report

ID	From ID	To ID	Diameter (in)	Length (ft)	Total Flow (gpm)	Unpeakable Flow (gpm)	Peakable Flow (gpm)	Coverage Flow (gpm)	Infiltration Flow (gpm)	Storm Flow (gpm)	Velocity (ft/s)	Headloss (ft)
1	1	NT38	8.000	5,905.000	168.000	168.000	0.000	0.000	0.000	0.000	2.235	30.526

North Shore model - Future - Gravity Main Report

ID	From ID	To ID	Diameter (in)	Length (ft)	Slope	Total Flow (gpm)	Unpeakable Flow (gpm)	Peakable Flow (gpm)	Coverage Flow (gpm)	Infiltration Flow (gpm)
1	10	NT-24	NT-22	15.000	460.000	0.002	193.000	160.000	33.000	0.000
2	11	NT-22	NT-21	15.000	199.000	0.002	193.000	160.000	33.000	0.000
3	12	NT-21	NT-19	15.000	296.500	0.002	193.000	160.000	33.000	0.000
4	13	NT-19	NT-18	16.000	331.500	0.002	193.000	160.000	33.000	0.000
5	14	NT-18	NT-17	15.000	386.500	0.001	209.000	155.000	54.000	0.000
6	15	NT-17	NT-16	12.000	294.500	0.006	209.000	155.000	54.000	0.000
7	16	NT-16	NT-14	12.000	268.000	0.007	222.000	150.000	72.000	0.000
8	17	NT-14	NT-12	12.000	652.500	0.008	222.000	150.000	72.000	0.000
9	18	NT-12	NT-11	12.000	221.500	0.004	222.000	150.000	72.000	0.000
10	19	NT-11	NT-10	12.000	296.000	0.010	222.000	150.000	72.000	0.000
11	20	NT-10	NT-9	12.000	325.000	0.010	222.000	150.000	72.000	0.000
12	21	NT-9	NT-8	15.000	63.000	0.002	222.000	150.000	72.000	0.000
13	22	NT-8	NT-7	15.000	259.600	0.001	233.000	147.000	86.000	0.000
14	23	NT-7	NT-6	15.000	230.000	0.002	233.000	147.000	86.000	0.000
15	24	NT-6	NT-5	15.000	365.600	0.002	233.000	147.000	86.000	0.000
16	25	NT-5	NT-4	16.000	235.600	0.001	233.000	147.000	86.000	0.000
17	26	NT-4	NT-3	16.000	418.700	0.001	233.000	147.000	86.000	0.000
18	27	NT-3	NT-2	15.000	253.000	0.001	233.000	147.000	86.000	0.000
19	28	NT-2	NT-1	15.000	325.000	0.002	271.000	135.000	136.000	0.000
20	29	NT-1	FM-01	12.000	32.000	0.006	279.000	132.000	147.000	0.000
21	3	NT38	NT-37	15.000	240.000	0.001	168.000	168.000	0.000	0.000
22	30	FM-01	COB-01	4.000	17.500	0.003	279.000	132.000	147.000	0.000
23	32	NA-2	SPAGA	10.000	254.000	0.007	168.000	168.000	0.000	0.000
24	4	NT-37	NT-33	15.000	810.000	0.002	168.000	168.000	0.000	0.000
25	5	NT-32	NT-33	15.000	68.000	0.001	0.000	0.000	0.000	0.000
26	6	NT-33	NT-31	15.000	227.000	0.001	179.000	164.000	15.000	0.000
27	7	NT-31	NT-28	15.000	892.000	0.002	179.000	164.000	15.000	0.000
28	8	NT-28	NT-25	15.000	598.000	0.002	193.000	160.000	33.000	0.000
29	9	NT-25	NT-24	15.000	136.000	0.002	193.000	160.000	33.000	0.000

North Shore model - Future - Gravity Main Report

ID	Storm Flow (gpm)	Flow Type	Velocity (ft/s)	d/D	q/Q	Water Depth (ft)	Critical Depth (ft)	Froude Number	Full Flow (gpm)
1	0.000	Free Surface	1.551	0.277	0.168	0.346	0.255	0.549	1,150.109
2	0.000	Free Surface	1.566	0.275	0.166	0.344	0.255	0.556	1,165.735
3	0.000	Free Surface	1.593	0.272	0.162	0.340	0.255	0.570	1,193.780
4	0.000	Free Surface	1.553	0.253	0.140	0.337	0.250	0.560	1,380.676
5	0.000	Free Surface	1.523	0.297	0.192	0.372	0.265	0.519	1,086.610
6	0.000	Free Surface	2.583	0.280	0.172	0.280	0.283	1.016	1,218.157
7	0.000	Free Surface	2.823	0.275	0.165	0.275	0.292	1.123	1,346.434
8	0.000	Free Surface	2.992	0.263	0.152	0.263	0.292	1.217	1,461.272
9	0.000	Free Surface	2.317	0.317	0.217	0.317	0.292	0.852	1,022.012
10	0.000	Free Surface	3.174	0.253	0.140	0.253	0.292	1.321	1,586.992
11	0.000	Free Surface	3.235	0.249	0.136	0.249	0.292	1.356	1,630.232
12	0.000	Free Surface	1.622	0.297	0.192	0.371	0.274	0.553	1,158.194
13	0.000	Free Surface	1.535	0.320	0.221	0.400	0.281	0.502	1,052.055
14	0.000	Free Surface	1.699	0.297	0.192	0.371	0.281	0.579	1,212.321
15	0.000	Free Surface	1.613	0.308	0.207	0.386	0.281	0.538	1,127.534
16	0.000	Free Surface	1.597	0.283	0.175	0.378	0.276	0.541	1,330.890
17	0.000	Free Surface	1.567	0.287	0.180	0.383	0.276	0.527	1,296.195
18	0.000	Pressurized	1.445	0.334	0.241	0.418	0.281	0.461	967.097
19	0.000	Pressurized	1.779	0.321	0.223	0.401	0.303	0.581	1,217.439
20	0.000	Pressurized	2.832	0.323	0.226	0.323	0.328	1.030	1,235.445
21	0.000	Free Surface	1.392	0.271	0.161	0.339	0.237	0.499	1,044.785
22	0.000	Pressurized	7.123	1.000	5.564	0.333	0.187	2.174	50.146
23	0.000	Free Surface	2.703	0.301	0.198	0.251	0.266	1.120	850.517
24	0.000	Free Surface	1.536	0.253	0.140	0.316	0.237	0.572	1,199.910
25	0.000	Free Surface	0.000	0.000	0.000	0.000	0.000	0.000	1,114.800
26	0.000	Free Surface	1.494	0.270	0.159	0.337	0.245	0.537	1,125.066
27	0.000	Free Surface	1.519	0.267	0.155	0.333	0.245	0.549	1,151.683
28	0.000	Free Surface	1.588	0.272	0.162	0.341	0.255	0.567	1,188.778
29	0.000	Free Surface	1.642	0.266	0.155	0.333	0.255	0.595	1,246.385

North Shore model - Future - Gravity Main Report

	ID	Coverage Count	Backwater Adjustment	Adjusted Depth (ft)	Adjusted Velocity (ft/s)
1	10	0.000	No	0.346	1.551
2	11	0.000	No	0.344	1.566
3	12	0.000	No	0.340	1.593
4	13	0.000	No	0.337	1.553
5	14	0.000	No	0.372	1.523
6	15	0.000	No	0.280	2.583
7	16	0.000	No	0.275	2.823
8	17	0.000	No	0.263	2.992
9	18	0.000	No	0.317	2.317
10	19	0.000	No	0.253	3.174
11	20	0.000	Yes	0.288	2.638
12	21	0.000	No	0.371	1.622
13	22	0.000	No	0.400	1.535
14	23	0.000	No	0.371	1.699
15	24	0.000	Yes	0.621	0.853
16	25	0.000	Yes	1.073	0.431
17	26	0.000	Yes	1.333	0.372
18	27	0.000	Yes	1.250	0.423
19	28	0.000	Yes	1.250	0.492
20	29	0.000	Yes	1.000	0.791
21	3	0.000	No	0.339	1.392
22	30	0.000	No	0.333	7.123
23	32	0.000	No	0.251	2.703
24	4	0.000	No	0.316	1.536
25	5	0.000	Yes	0.238	0.000
26	6	0.000	No	0.337	1.494
27	7	0.000	No	0.333	1.519
28	8	0.000	No	0.341	1.588
29	9	0.000	No	0.333	1.642

North Shore model - Future - Loading Manhole Report

	ID	Rim Elevation (ft)	Base Flow (cfs)	Total Flow (cfs)	Storm Flow (cfs)	Grade (ft)	Status	Hydraulic Jump	Unfilled Depth (ft)	Surcharge Depth (ft)
1	FM-01	325.000	0.000	0.000	0.000	314.784	Not Full	No	10.216	2.391
2	NA-2	322.000	0.374	0.374	0.000	302.257	Not Full	No	19.743	-0.577
3	NT-1	325.000	0.018	0.018	0.000	314.801	Not Full	No	10.199	1.551
4	NT-10	325.500	0.000	0.000	0.000	319.234	Not Full	No	6.266	-0.746
5	NT-11	328.000	0.000	0.000	0.000	322.157	Not Full	No	5.843	-0.743
6	NT-12	329.500	0.000	0.000	0.000	323.221	Not Full	Yes	6.279	-0.679
7	NT-14	336.000	0.000	0.000	0.000	328.688	Not Full	No	7.312	-0.732
8	NT-16	338.000	0.029	0.029	0.000	330.689	Not Full	No	7.311	-0.721
9	NT-17	340.000	0.000	0.000	0.000	332.494	Not Full	No	7.506	-0.716
10	NT-18	345.500	0.036	0.036	0.000	333.173	Not Full	No	12.327	-0.877
11	NT-19	350.000	0.000	0.000	0.000	333.718	Not Full	No	16.282	-0.995
12	NT-2	324.500	0.085	0.085	0.000	314.833	Not Full	No	9.667	0.873
13	NT-21	352.000	0.000	0.000	0.000	334.271	Not Full	No	17.729	-0.909
14	NT-22	348.000	0.000	0.000	0.000	334.705	Not Full	No	13.295	-0.905
15	NT-24	349.000	0.000	0.000	0.000	335.468	Not Full	No	13.532	-0.902
16	NT-25	348.500	0.000	0.000	0.000	335.754	Not Full	No	12.746	-0.916
17	NT-28	352.000	0.031	0.031	0.000	336.812	Not Full	No	15.188	-0.908
18	NT-3	317.000	0.000	0.000	0.000	314.851	Not Full	No	2.149	0.611
19	NT-31	352.000	0.000	0.000	0.000	338.254	Not Full	No	13.746	-0.916
20	NT-32	353.000	0.000	0.000	0.000	338.648	Not Full	No	14.352	-1.062
21	NT-33	349.500	0.025	0.025	0.000	338.648	Not Full	No	10.852	-0.912
22	NT-37	346.000	0.000	0.000	0.000	340.207	Not Full	No	5.793	-0.933
23	NT-4	316.500	0.000	0.000	0.000	314.872	Not Full	No	1.628	-0.042
24	NT-5	325.500	0.000	0.000	0.000	314.884	Not Full	No	10.616	-0.429
25	NT-6	331.000	0.000	0.000	0.000	314.968	Not Full	No	16.032	-0.862
26	NT-7	324.000	0.000	0.000	0.000	315.403	Not Full	No	8.597	-0.877
27	NT-8	330.500	0.025	0.025	0.000	315.822	Not Full	No	14.678	-0.848
28	NT-9	326.500	0.000	0.000	0.000	315.943	Not Full	Yes	10.557	-0.877
29	NT38	345.000	0.000	0.000	0.000	345.000	Full	No	0.000	3.500

	ID	Flow (cfs)	Grade (ft)
1	COB-01	0.622	312.333

North Shore model - Future - Pump Report

	ID	From ID	To ID	Flow (gpm)	Head Increase (ft)	Power (hp)	Usage	Speed
1	AGATE	SPAGA	1	350.182	71.992	6.373	1.000	1.000

North Shore model - Future - Wet Well Report

	ID	Grade (ft)
1	SPAGA	299.500



	ID	Grade (ft)
1	1	371.492

North Shore model - Future Max Cap - Force Main Report

ID	From ID	To ID	Diameter (in)	Length (ft)	Total Flow (gpm)	Unpeakable Flow (gpm)	Peakable Flow (gpm)	Coverage Flow (gpm)	Infiltration Flow (gpm)	Storm Flow (gpm)	Velocity (ft/s)	Headloss (ft)
1	1	NT38	8.000	5,905.000	215.040	215.040	0.000	0.000	0.000	0.000	2.235	30.526

North Shore model - Future Max Cap - Gravity Main Report

ID	From ID	To ID	Diameter (in)	Length (ft)	Slope	Total Flow (gpm)	Unpeakable Flow (gpm)	Peakable Flow (gpm)	Coverage Flow (gpm)	Infiltration Flow (gpm)
1	10	NT-24	NT-22	15.000	460.000	0.002	247.040	204.800	42.240	0.000
2	11	NT-22	NT-21	15.000	199.000	0.002	247.040	204.800	42.240	0.000
3	12	NT-21	NT-19	15.000	296.500	0.002	247.040	204.800	42.240	0.000
4	13	NT-19	NT-18	16.000	331.500	0.002	247.040	204.800	42.240	0.000
5	14	NT-18	NT-17	15.000	386.500	0.001	267.520	198.400	69.120	0.000
6	15	NT-17	NT-16	12.000	294.500	0.006	267.520	198.400	69.120	0.000
7	16	NT-16	NT-14	12.000	268.000	0.007	284.160	192.000	92.160	0.000
8	17	NT-14	NT-12	12.000	652.500	0.008	284.160	192.000	92.160	0.000
9	18	NT-12	NT-11	12.000	221.500	0.004	284.160	192.000	92.160	0.000
10	19	NT-11	NT-10	12.000	296.000	0.010	284.160	192.000	92.160	0.000
11	20	NT-10	NT-9	12.000	325.000	0.010	284.160	192.000	92.160	0.000
12	21	NT-9	NT-8	15.000	63.000	0.002	284.160	192.000	92.160	0.000
13	22	NT-8	NT-7	15.000	259.600	0.001	298.240	188.160	110.080	0.000
14	23	NT-7	NT-6	15.000	230.000	0.002	298.240	188.160	110.080	0.000
15	24	NT-6	NT-5	15.000	365.600	0.002	298.240	188.160	110.080	0.000
16	25	NT-5	NT-4	16.000	235.600	0.001	298.240	188.160	110.080	0.000
17	26	NT-4	NT-3	16.000	418.700	0.001	298.240	188.160	110.080	0.000
18	27	NT-3	NT-2	15.000	253.000	0.001	298.240	188.160	110.080	0.000
19	28	NT-2	NT-1	15.000	325.000	0.002	346.880	172.800	174.080	0.000
20	29	NT-1	FM-01	12.000	32.000	0.006	357.120	168.960	188.160	0.000
21	3	NT38	NT-37	15.000	240.000	0.001	215.040	215.040	0.000	0.000
22	30	FM-01	COB-01	4.000	17.500	0.003	357.120	168.960	188.160	0.000
23	32	NA-2	SPAGA	10.000	254.000	0.007	215.040	215.040	0.000	0.000
24	4	NT-37	NT-33	15.000	810.000	0.002	215.040	215.040	0.000	0.000
25	5	NT-32	NT-33	15.000	68.000	0.001	0.000	0.000	0.000	0.000
26	6	NT-33	NT-31	15.000	227.000	0.001	229.120	209.920	19.200	0.000
27	7	NT-31	NT-28	15.000	892.000	0.002	229.120	209.920	19.200	0.000
28	8	NT-28	NT-25	15.000	598.000	0.002	247.040	204.800	42.240	0.000
29	9	NT-25	NT-24	15.000	136.000	0.002	247.040	204.800	42.240	0.000

North Shore model - Future Max Cap - Gravity Main Report

ID	Storm Flow (gpm)	Flow Type	Velocity (ft/s)	d/D	q/Q	Water Depth (ft)	Critical Depth (ft)	Froude Number	Full Flow (gpm)	Coverage Count	Backwater Adjustment
1	0.000	Free Surface	1.663	0.315	0.215	0.393	0.289	0.549	1,150.109	0.000	No
2	0.000	Free Surface	1.680	0.313	0.212	0.391	0.289	0.557	1,165.735	0.000	No
3	0.000	Free Surface	1.709	0.309	0.207	0.386	0.289	0.570	1,193.780	0.000	No
4	0.000	Free Surface	1.667	0.286	0.179	0.382	0.284	0.561	1,380.676	0.000	No
5	0.000	Free Surface	1.633	0.338	0.246	0.423	0.301	0.518	1,086.610	0.000	No
6	0.000	Free Surface	2.770	0.318	0.220	0.318	0.321	1.016	1,218.157	0.000	No
7	0.000	Free Surface	3.028	0.312	0.211	0.312	0.331	1.123	1,346.434	0.000	No
8	0.000	Free Surface	3.211	0.299	0.194	0.299	0.331	1.219	1,461.272	0.000	No
9	0.000	Free Surface	2.482	0.361	0.278	0.361	0.331	0.849	1,022.012	0.000	No
10	0.000	Free Surface	3.407	0.286	0.179	0.286	0.331	1.324	1,586.992	0.000	No
11	0.000	Free Surface	3.472	0.283	0.174	0.283	0.331	1.360	1,630.232	0.000	Yes
12	0.000	Free Surface	1.739	0.337	0.245	0.422	0.311	0.552	1,158.194	0.000	Yes
13	0.000	Free Surface	1.644	0.364	0.283	0.455	0.318	0.500	1,052.055	0.000	Yes
14	0.000	Pressurized	1.821	0.338	0.246	0.422	0.318	0.578	1,212.321	0.000	Yes
15	0.000	Pressurized	1.728	0.351	0.265	0.439	0.318	0.537	1,127.534	0.000	Yes
16	0.000	Pressurized	1.712	0.322	0.224	0.429	0.313	0.541	1,330.890	0.000	Yes
17	0.000	Pressurized	1.680	0.326	0.230	0.435	0.313	0.526	1,296.195	0.000	Yes
18	0.000	Pressurized	1.546	0.381	0.308	0.476	0.318	0.458	967.097	0.000	Yes
19	0.000	Pressurized	1.905	0.365	0.285	0.457	0.344	0.578	1,217.439	0.000	Yes
20	0.000	Pressurized	3.032	0.368	0.289	0.368	0.373	1.025	1,235.445	0.000	Yes
21	0.000	Free Surface	1.493	0.308	0.206	0.385	0.269	0.499	1,044.785	0.000	No
22	0.000	Pressurized	9.118	1.000	7.122	0.333	0.187	2.783	50.146	0.000	No
23	0.000	Free Surface	2.897	0.343	0.253	0.286	0.303	1.117	850.517	0.000	No
24	0.000	Free Surface	1.649	0.287	0.179	0.358	0.269	0.573	1,199.910	0.000	No
25	0.000	Free Surface	0.000	0.000	0.000	0.000	0.000	0.000	1,114.800	0.000	Yes
26	0.000	Free Surface	1.603	0.306	0.204	0.383	0.278	0.537	1,125.066	0.000	No
27	0.000	Free Surface	1.630	0.302	0.199	0.378	0.278	0.550	1,151.683	0.000	No
28	0.000	Free Surface	1.704	0.309	0.208	0.387	0.289	0.568	1,188.778	0.000	No
29	0.000	Free Surface	1.762	0.302	0.198	0.377	0.289	0.595	1,246.385	0.000	No

	ID	Adjusted Depth (ft)	Adjusted Velocity (ft/s)
1	10	0.393	1.663
2	11	0.391	1.680
3	12	0.386	1.709
4	13	0.382	1.667
5	14	0.423	1.633
6	15	0.318	2.770
7	16	0.312	3.028
8	17	0.299	3.211
9	18	0.361	2.482
10	19	0.286	3.407
11	20	0.646	1.179
12	21	1.098	0.554
13	22	1.250	0.541
14	23	1.250	0.541
15	24	1.250	0.541
16	25	1.333	0.476
17	26	1.333	0.476
18	27	1.250	0.541
19	28	1.250	0.630
20	29	1.000	1.013
21	3	0.385	1.493
22	30	0.333	9.118
23	32	0.286	2.897
24	4	0.358	1.649
25	5	0.285	0.000
26	6	0.383	1.603
27	7	0.378	1.630
28	8	0.387	1.704
29	9	0.377	1.762

North Shore model - Future Max Cap - Loading Manhole Report

	ID	Rim Elevation (ft)	Base Flow (cfs)	Total Flow (cfs)	Storm Flow (cfs)	Grade (ft)	Status	Hydraulic Jump	Unfilled Depth (ft)	Surcharge Depth (ft)
1	FM-01	325.000	0.000	0.000	0.000	316.349	Not Full	No	8.651	3.956
2	NA-2	322.000	0.374	0.479	0.000	302.295	Not Full	No	19.705	-0.539
3	NT-1	325.000	0.018	0.023	0.000	316.377	Not Full	No	8.623	3.127
4	NT-10	325.500	0.000	0.000	0.000	319.270	Not Full	No	6.230	-0.710
5	NT-11	328.000	0.000	0.000	0.000	322.194	Not Full	No	5.806	-0.706
6	NT-12	329.500	0.000	0.000	0.000	323.268	Not Full	Yes	6.232	-0.632
7	NT-14	336.000	0.000	0.000	0.000	328.726	Not Full	No	7.274	-0.694
8	NT-16	338.000	0.029	0.037	0.000	330.729	Not Full	No	7.271	-0.681
9	NT-17	340.000	0.000	0.000	0.000	332.535	Not Full	No	7.465	-0.675
10	NT-18	345.500	0.036	0.046	0.000	333.225	Not Full	No	12.275	-0.825
11	NT-19	350.000	0.000	0.000	0.000	333.764	Not Full	No	16.236	-0.950
12	NT-2	324.500	0.085	0.108	0.000	316.428	Not Full	No	8.072	2.468
13	NT-21	352.000	0.000	0.000	0.000	334.318	Not Full	No	17.682	-0.862
14	NT-22	348.000	0.000	0.000	0.000	334.753	Not Full	No	13.247	-0.857
15	NT-24	349.000	0.000	0.000	0.000	335.516	Not Full	No	13.484	-0.854
16	NT-25	348.500	0.000	0.000	0.000	335.800	Not Full	No	12.700	-0.870
17	NT-28	352.000	0.031	0.040	0.000	336.859	Not Full	No	15.141	-0.861
18	NT-3	317.000	0.000	0.000	0.000	316.458	Not Full	No	0.542	2.218
19	NT-31	352.000	0.000	0.000	0.000	338.300	Not Full	No	13.700	-0.870
20	NT-32	353.000	0.000	0.000	0.000	338.695	Not Full	No	14.305	-1.015
21	NT-33	349.500	0.025	0.031	0.000	338.695	Not Full	No	10.805	-0.865
22	NT-37	346.000	0.000	0.000	0.000	340.250	Not Full	No	5.750	-0.890
23	NT-4	316.500	0.000	0.000	0.000	316.492	Not Full	No	0.008	1.579
24	NT-5	325.500	0.000	0.000	0.000	316.513	Not Full	No	8.987	1.199
25	NT-6	331.000	0.000	0.000	0.000	316.555	Not Full	No	14.445	0.725
26	NT-7	324.000	0.000	0.000	0.000	316.583	Not Full	No	7.417	0.303
27	NT-8	330.500	0.025	0.031	0.000	316.613	Not Full	No	13.887	-0.057
28	NT-9	326.500	0.000	0.000	0.000	316.623	Not Full	Yes	9.877	-0.197
29	NT38	345.000	0.000	0.000	0.000	345.000	Full	No	0.000	3.500

North Shore model - Future Max Cap - Outlet Report

	ID	Flow (cfs)	Grade (ft)
1	COB-01	0.796	312.333

North Shore model - Future Max Cap - Pump Report

	ID	From ID	To ID	Flow (gpm)	Head Increase (ft)	Power (hp)	Usage	Speed
1	AGATE	SPAGA	1	350.182	71.992	6.373	1.000	1.000



	ID	Grade (ft)
1	SPAGA	299.500