Detroit Water and Sewerage Department

Wastewater Master Plan

DWSD Project No. CS-1314

Evaluation of Clintondale Pump Station

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Evaluation of Clintondale Pump Station

Executive Summary

Clintondale Pump Station is located at 35029 Union Lake Road in Clinton Township in the vicinity of 15 Mile Road and Harper. The current capacity of the pump station is 80 cfs with the possibility of firm capacity to be 120 cfs, if an additional pump is installed. Wastewater enters the pump station through a 60" (5'-0") diameter pipe, which receives wastewater from the existing 129" (10'-9") diameter DWSD Lakeshore Interceptor. Discharge from the pump station is through a 60" (5'-0") diameter forcemain, which empties into 60" (5'-0") diameter gravity sewer at 15 Mile Road and Maynard. The 15 Mile Road sewer discharges into the Romeo Arm Interceptor at 15 Mile Road and Garfield Road. Per the analysis presented in the report, the maximum influent flow to the Clintondale Pump Station was estimated to be 210 cfs at build-out conditions, which is considered to be a fairly conservative number for design. The 15 Mile Road Interceptor sewer from the discharge point at the gravity sewer has a minimum slope of 0.034% that produces a carrying capacity of 48.2 cfs, which is the limiting capacity of this sewer.

After evaluation of different alternatives, it was recommended to construct a 96" (8'-0") diameter gravity sewer at a slope of 0.053% to replace / relieve the existing 60" (5'-0") diameter 15 Mile Road Interceptor. The capacity of this sewer would be 211.0 cfs at a velocity of 4.2 fps. This would alleviate the Sanitary Sewer Overflow (SSO) problem in Clinton Township. The force main portion of the existing 60" (5'-0") diameter 15 Mile Road Interceptor sewer was recommended to be abandoned and the gravity portion of the existing 60" (5'-0") diameter 15 Mile Road Interceptor sewer was recommended to remain in service to receive flows from two (2) Clinton Township connections located at 15 Mile Road and Little Mack (unmetered) and 15 Mile Road and Kelly (metered). This would reduce the cost of new connections to the proposed 96" (8'-0") diameter gravity sewer.

The range of flow for one, two, and three pumps at the reduced TDH after construction of the new 96" (8'-0") diameter gravity sewer would approximately be 41 to 47, 82 to 94, and 123 to 141 cfs, respectively. If the fourth pump is installed at the Clintondale Pump Station then the firm and design capacity of the pump station would be 123 to 141 and 164 to 188 cfs, respectively. The extension of the existing 129" (10'-9") Lakeshore Interceptor to 8 Mile Road and along the Eight Mile Road to the Northeast pump station, as proposed in the DWSD Basic Requirements Report, 1968, was found not to be feasible under the existing conditions because of high cost, constructability problems, and inadequate need.

1. Introduction

Clintondale Pump Station is located at 35029 Union Lake Road in Clinton Township in the vicinity of 15 Mile Road and Harper. The pump station was constructed in 1973 with three 40-cfs pumps and a provision for one additional pump. It consists of a wet well, pump house, switchgear building, and transformer. As one pump must be reserved for emergency operation, the current capacity of the pump station is 80 cfs. The firm capacity would increase to 120 cfs, if an additional pump were installed.

Wastewater enters the pump station through a 60″ (5′-0″) diameter pipe, which receives wastewater from the existing 129″ (10′-9″) diameter DWSD Lakeshore Interceptor. Discharge from the pump station is through 60″ (5′-0″) diameter force main, which empties into 60″ (5′-0″) diameter 15 Mile Road Interceptor at 15 Mile Road and Maynard. The 15 Mile Road sewer discharges into the Romeo Arm Interceptor at 15 Mile Road and Garfield Road.

This study was conducted for the Detroit Wastewater Master Plan (WWMP) with the following specific objectives:

1. Establish the ultimate influent wastewater flow to the Clintondale Pump Station from the Lakeshore Interceptor including the proposed North Gratiot Interceptor and Armada Arm of the Oakland-Macomb system.
2. Analyze the carrying capacity of the existing 60″ (5′-0″) diameter 15 Mile Road force main and gravity interceptor. The 15 Mile Road interceptor is a force main from the Clintondale Pump Station to 15 Mile Road and Maynard where it becomes a gravity sewer that discharges into Romeo Arm Interceptor at 15 Mile Road and Garfield Road.
3. Conduct a feasibility study of transporting the ultimate flow from the Clintondale Pump Station to the Romeo Arm Interceptor.
4. Analyze the feasibility of extending the 129″ (10′-9″) diameter DWSD Lakeshore Interceptor up to Eight Mile Road and then to Northeast Pump Station. Conduct a feasibility study on using the capacity available in the Lakeshore Interceptor by Southeast Macomb Sanitary District (SEMSD), if extended up to Eight Mile Road through the jurisdiction of SEMSD.
5. Examine feasibility of constructing 15 Mile Road Replacement/Relief sewer. Analyze the feasibility of connecting the metered/unmetered flow from Clinton Township to the 15 Mile Road sewer.
6. Analyze the current capacity of the Clintondale Pump Station and conduct a feasibility study to upgrade the pumping station.
7. Examine the feasibility of a relief sewer to the Eight-Foot Diameter Repair to Fifteen Mile Road Interceptor.
8. Consider the Nine-Foot Diameter Repair to Corridor Interceptor
9. Perform a cost analysis and present the cost estimate of the preferred scenario.

1.1 Ultimate Influent Flow to Clintondale Pump Station

The Clintondale pump station would receive wastewater flows from Lakeshore Interceptor, which would include flows from the existing Lakeshore Interceptor and the proposed North Gratiot Interceptor, Armada, Richmond, and Memphis Arms (Figure 1).

North Gratiot Interceptor Sewer (NGIS)

The proposed North Gratiot Interceptor Sewer would include the service area proposed to be served by Richmond Arm per the Oakland-Macomb Interceptor System – Basic Requirements Report, 1968.

Richmond Arm.

Per the Oakland-Macomb Interceptor System – Basic Requirements Report, 1968, the Richmond Arm was sized to carry ultimate peak period flows as tabulated below. This arm is shown on Figure 2.

Line	Population Build Out	Maximum Flow (cfs)	Size (inches)	Grade (%)	Capacity (cfs)
21-28	392,000	156.8	105	0.02	164
28-29	326,000	130.4	87	0.035	131
29-30	290,000	116.0	72	0.08	120
30-31	266,000	106.4	66	0.11	111
31-32	237,000	94.8	60	0.16	104
32-33	176,000	70.4	48	0.25	72
33-34	116,000	46.4	48	0.25	72
			36	0.50	47

The Richmond Arm was proposed to discharge through the Lakeshore Interceptor at Snover and Twenty Mile Road (M-59) at Point 21. The interceptor varies in size from 8′-9″ at Snover and Twenty Mile Road to 36″ at Forest and Gleason in the Village of Richmond.

Proposed North Gratiot Interceptor Sewer.

Phase I of the NGIS (Figure 3) is proposed to parallel the existing 42″ Lakeshore Interceptor Extension (LSIE) between H.B. Joy and 21 Mile Road and connect to the existing 129″ Lakeshore Interceptor (LSI) at H.B. Joy and I-94. Capacity requirements would be met through utilization of the 42″ LSIE in conjunction with the proposed NGIS. The communities within the district requested specific capacity allocations, which were added to the estimated interceptor infiltration and inflow (I/I) to develop a basis of design and to size the NGIS.

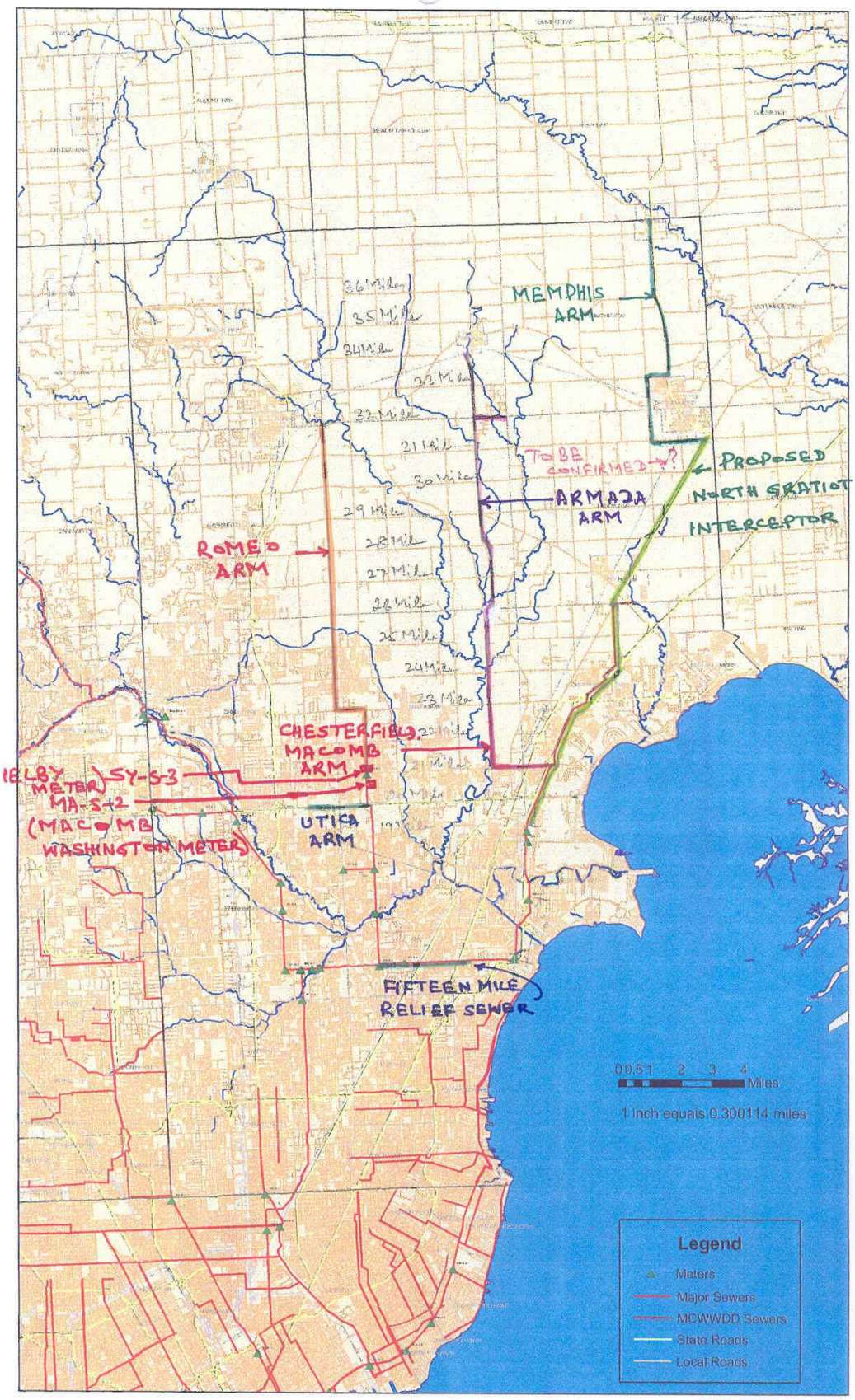

MEMPHIS ARM
TO BE CONFIRMED
PROPOSED NORTH GRATIOT INTERCEPTOR
ARMADA ARM
ROMEO ARM
CHESTERFIELD MACOMB ARM
SY-S-3
MA-S-2
(MACOMB WASHINGTON METER)
UTICA ARM
FIFTEEN MILE RELIEF SEWER
0 0.5 1 2 3 4 Miles
1 inch equals 0.300114 miles
Legend
Meters
Major Sewers
MCWWDD Sewers
State Roads
Local Roads

Figure 1

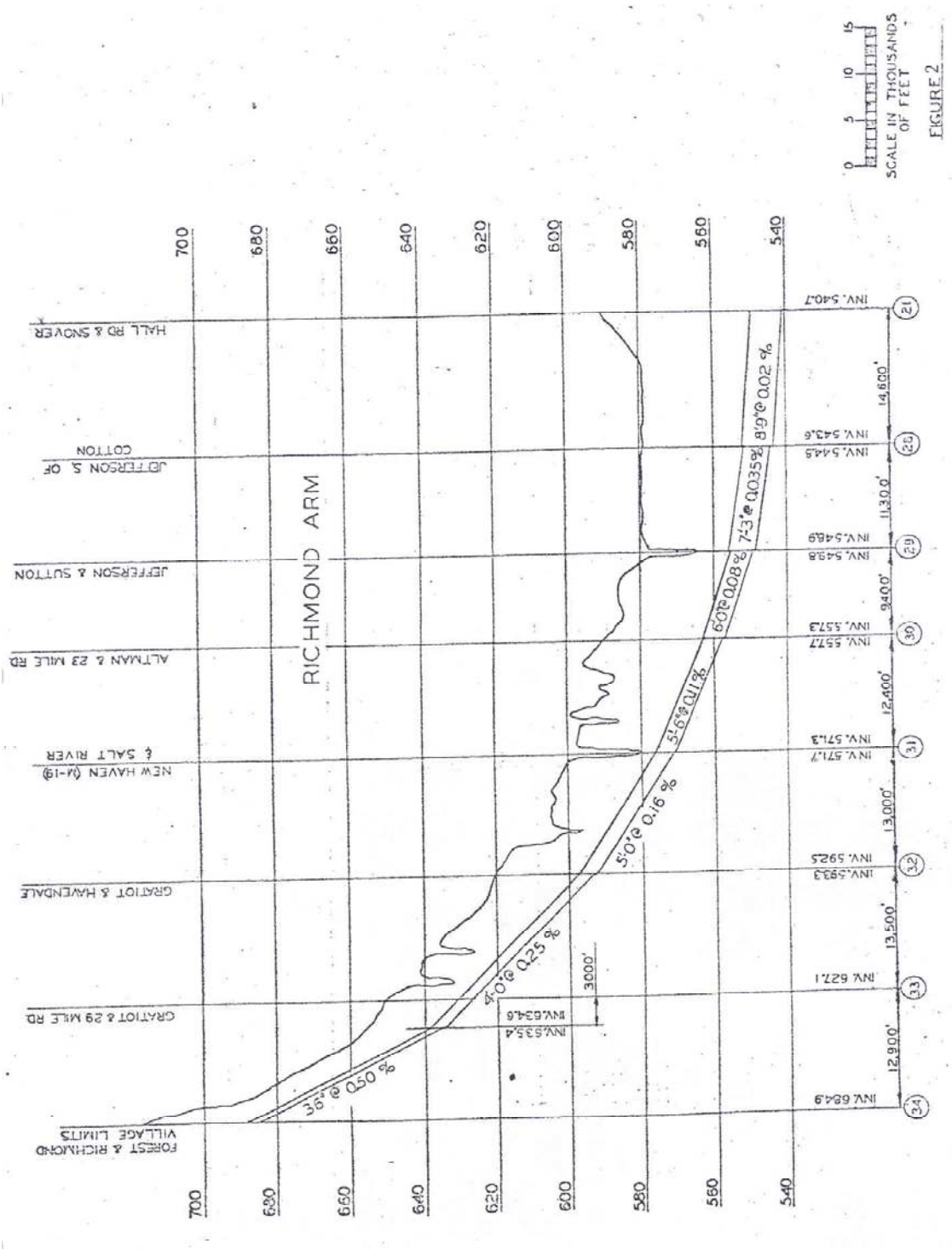


FIGURE 2
SCALE IN THOUSANDS OF FEET
0
5
10
15
RICHMOND ARM
700
680
660
640
620
600
580
560
540
FOREST & RICHMOND VILLAGE LIMITS
GRATIOT & 29 MILE RD.
GRATIOT & HAVENDALE
NEW HAVEN (M-19) & SALT RIVER
ALTMAN & 23 MILE RD.
JEFFERSON & SUTTON
JEFFERSON S. OF COTTON
HALL RD & SNOVER
INV. 684.9
INV. 627.1
INV. 592.5
INV. 571.7
INV. 557.3
INV. 548.9
INV. 543.6
INV. 540.7
12,900'
13,500'
13,000'
12,400'
9400'
11,300'
14,600'
3000'
3.6' @ 0.50 %
4'-0" @ 0.25 %
5'-0" @ 0.16 %
5'-6" @ 0.12 %
6'-0" @ 0.08 %
7'-3" @ 0.035 %
8'-9" @ 0.02 %

Design NGIS Capacity			
	54" @ 0.06% slope	60" @ 0.06% slope	66" @ 0.06% slope
Capacity	48.5	63.8	82.0
Capacity of Existing 42" Lakeshore Interceptor	20.2	20.2	20.2
Total Interceptor Capacity	68.7	84.0	102.2
(Less) Interceptor I/I (existing & proposed)	6.0	6.4	6.9
Available Capacity	62.7	77.6	95.4
(Less) Assumed Community Capacity	60.0	70.0	80.0

Existing Lakeshore Interceptor.

Per the Oakland-Macomb Interceptor System – Basic Requirements Report, 1968, the Lakeshore Interceptor was designed to carry year 2040 peak period flows. Booster stations were planned to be constructed to provide the necessary hydraulic gradient for peak period flows after year 2040. This arm is shown in Figure 4.

The following was a tabulation of the estimated connected populations and flows upon which the interceptor was designed:

Line	Population		Flow (cfs)				Size (inches)	Grade (%)	Capacity (cfs)
	2040	Build Out	Average		Maximum				
			2040	Build Out	2040	Build Out			
1-15	904,000	1,349,000	204.4	293.4	503.2	681.2	162	0.02	522
15-16	824,000	1,269,000	180.4	269.4	423.2	601.2	150	0.02	424
16-17	753,000	1,198,000	159.1	248.1	352.2	530.2	141	0.02	359
17-18	698,000	1,143,000	142.6	231.6	297.2	475.2	132	0.02	301
18-19	637,000	1,082,000	130.4	219.4	272.8	450.8	129	0.02	284
19-20	589,000	1,034,000	120.8	209.8	253.6	431.6	126	0.02	266
20-21	540,000	985,000	108.0	197.0	216.0	394.0	117	0.02	219

This interceptor size that varied from 13′-6″ diameter at the Northeast Wastewater Pumping Station to 9′-9″ diameter at Twenty Mile Road and Snover would have carried ultimate average flows without boosting. An alternate to constructing booster pumping stations for the ultimate peak period flows was proposed to construct a parallel 9′-0″ diameter interceptor at a construction grade of 0.02%.

Different segments of the Lakeshore Interceptor north of Fifteen Mile Road were constructed as per the following schedule:

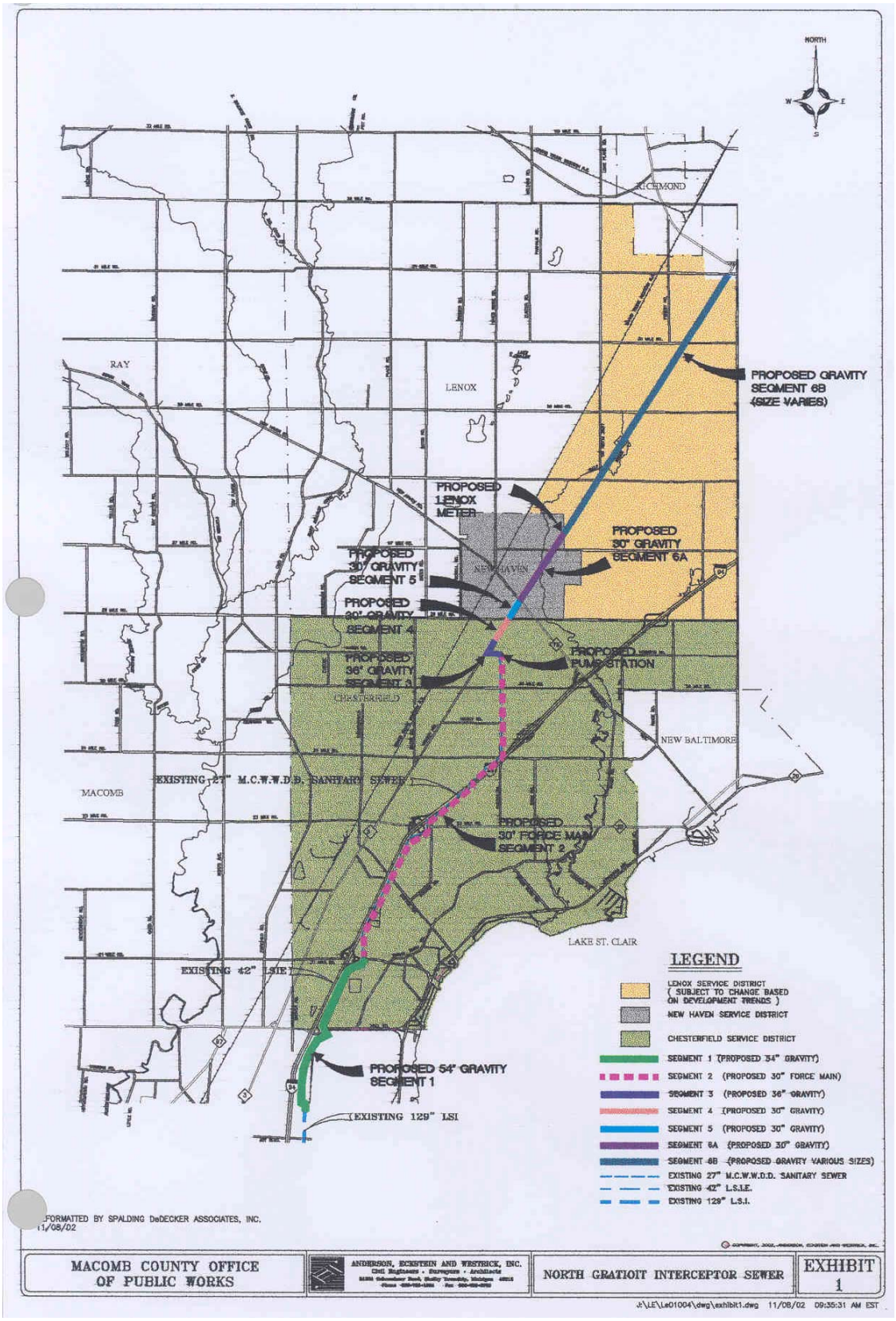


Figure 3. North Gratiot Interceptor

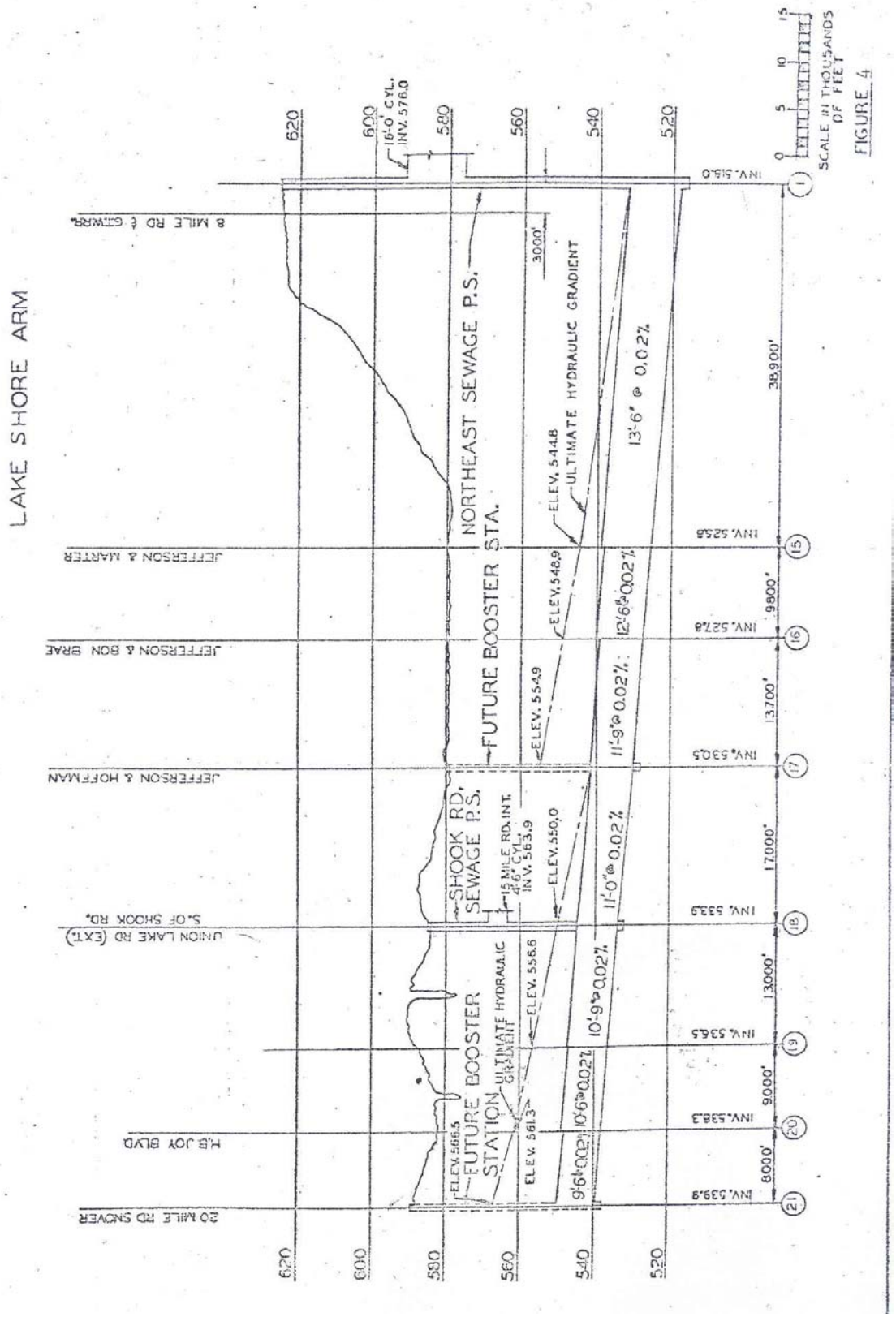

LAKE SHORE ARM
NORTHEAST SEWAGE P.S.
FUTURE BOOSTER STA.
SHOOK RD. SEWAGE P.S.
FUTURE BOOSTER STATION
ULTIMATE HYDRAULIC GRADIENT
ELEV. 544.8
ELEV. 548.9
ELEV. 554.9
ELEV. 550.0
ELEV. 556.6
ELEV. 561.3
ELEV. 566.5
16'-0" CYL. INV. 576.0
15 MILE RD. INT. 4'-6" CYL. INV. 563.9
13'-6" @ 0.02%
12'-6" @ 0.02%
11'-9" @ 0.02%
11'-0" @ 0.02%
10'-9" @ 0.02%
10'-6" @ 0.02%
9'-6" @ 0.02%
3000'
38,900'
9800'
13,700'
17,000'
13,000'
9000'
8000'
INV. 515.0
INV. 525.8
INV. 527.8
INV. 530.5
INV. 533.9
INV. 536.5
INV. 538.3
INV. 539.9
8 MILE RD & G.T.W.R.
JEFFERSON & MARTER
JEFFERSON & BON BRAE
JEFFERSON & HOFFMAN
S. OF SHOOK RD.
UNION LAKE RD (EXT.)
H.B. JOY BLVD.
20 MILE RD SNOVER
620
600
580
560
540
520
SCALE IN THOUSANDS OF FEET
0
5
10
15

FIGURE 4

Lakeshore Interceptor Construction Dates and Contract Numbers			
2'-3" Lakeshore Interceptor along the 26 Mile Road.	Interceptor	DWSD	Contract No. SS-1965, SS-1966, and SS-1964.
3'-6" Lakeshore Interceptor. H.B. Joy Road and I-94 to 21Mile Road and I-94.	Interceptor	DWSD	Contract No. PCI-42-A. Installed in 1987. Age is 15 yrs.
11'-0" Lakeshore Interceptor	Interceptor	DWSD	Contract No. PCI-14. Installed in June 1972. Age is 30 yrs.
11'-0" Lakeshore Interceptor	Interceptor	DWSD	Contract No. PCI-13. Installed in March 1972. Age is 30 yrs.

The portion south of Fifteen Mile Road (approximately Point 18 on Figure 4) was to be constructed and put in operation by the year 2000 to provide relief to the 15 Mile Road Interceptor to serve the communities of Eastpointe, Roseville, and St. Clair Shores located in the jurisdiction of South East Macomb Sanitary District (SEMSD). It was recommended that additional studies would be conducted prior to the construction of relief facilities (booster stations, parallel interceptors, holding tanks, etc.) for the Lakeshore Arm.

42″ DWSD Lakeshore Interceptor.
The 42″ (3′-6″) diameter DWSD Lakeshore Interceptor extends from the existing 129″ (10′-9″) diameter Lakeshore Interceptor at H.B. Joy and I-94 to 21 Mile Road and I-94. This sewer currently accepts wastewater from the 27″ (2′-3″) diameter Macomb County Wastewater Disposal District (MCWWDD) Interceptor and other tributary sewers within Chesterfield Township. The designed carrying capacity of the 42″ (3′-6″) diameter Lakeshore Interceptor is 20.2 cfs with a slope of 0.04%.

Armada Arm.
Per the Oakland-Macomb Interceptor System – Basic Requirements Report, 1968, the Armada Arm was sized to carry ultimate peak period flows as tabulated below.

Line	Population Build Out	Maximum Flow (cfs)	Size (inches)	Grade (%)	Capacity (cfs)
21-22	593,000	237.2	90	0.10	243
22-23	551,000	220.4	87	0.10	222
23-24	452,000	180.8	78	0.12	181
24-25	402,000	160.8	75	0.12	164
			66	0.27	172
25-26	184,000	73.6	48	0.32	81
26-27	86,000	34.4	36	0.32	38

The Armada Arm was proposed to discharge through the Lakeshore Interceptor at Snover and Twenty Mile Road (M-59) at Point 21 (Figure 5).

The interceptor was proposed to vary in size from 7′-6″ at Snover and Twenty Mile Road to 36″ at North Road and the Thirty-Four Mile Line.

Per the Macomb County Sanitary Sewer Interceptor Extension Plan (1997), the Armada Arm was proposed to discharge into Chesterfield /Macomb Arm (Contract #2), which was supposed to discharge into the proposed Lakeshore Interceptor relief sewer. This portion of the Chesterfield/Macomb Arm was proposed to discharge into the Lakeshore Interceptor relief sewer at 21 Mile Road and Brandenburg. This connection point at 21 Mile Road and Brandenburg would receive a peak flow of 89.4 cfs from upstream discharges, if ever constructed as per the proposed plan.

Memphis Arm.

Per the Macomb County Sanitary Sewer Interceptor Extension Plan (1997) and proposed North Gratiot Interceptor Sewer Plan, the Memphis Arm would extend from North Gratiot Interceptor Sewer to the City of Memphis. The completion of Memphis Arm would result in abandonment of the Memphis lagoon treatment system. The service district for this sewer would include Richmond Township east of the ridgeline and the City of Memphis. The estimated peak flow at the connection point of North Gratiot Interceptor sewer would be 23.2 cfs. This segment, however, was not considered in the DWSD Basic Requirement Study of 1968 for Oakland-Macomb Interceptor System. On the basis of this information, the influent flows to the Clintondale Pump Station estimated under different studies are presented below:

Influent Wastewater Flow to Clintondale Pump Station

Sewer	Build-Out Conditions			
	(Source: DWSD Basic Requirements Report, 1968)	(Source: Macomb County Sanitary Sewer Interceptor Extension Plan, 1997)	(Source: DWSD Wastewater Master Plan, 2003)	Recommended Design Capacity (cfs) (Source: Macomb County Sanitary Sewer Interceptor Extension Plan, 1997 and Clinton Township Permit Tracking)
	Maximum (cfs)	Maximum (cfs)	10-Year 1-Hour Peak Hour for 2050 (cfs)	
North Gratiot Interceptor Sewer (Richmond Arm)	157	52		52
Existing 42" Lakeshore Interceptor		20		20
Armada Arm including Chesterfield / Macomb Arm	237	89		89
Harrison Township				20
Clinton Township Area A, Meter CT-S-2		49		32
City of Mt. Clemens	Not included		N.A	N.A
Clintondale Pump Station	**451**	**211**	**75**	**213**
Memphis Arm	Not included	23	N.A	N.A
			Probable Maximum Future Flow Total	**Estimated 210 ***

* The estimated flow of 210 cfs at Clintondale Pump Station at build-out conditions is conservative. At this time, Macomb County is conducting a feasibility study on constructing a Northern Macomb County Regional Wastewater Treatment Plant (WWTP) for Northern Macomb County communities. Therefore, the flows from Memphis Arm and a part of the service area of Armada Arm could be transported to the proposed Northern Macomb County WWTP in the future.

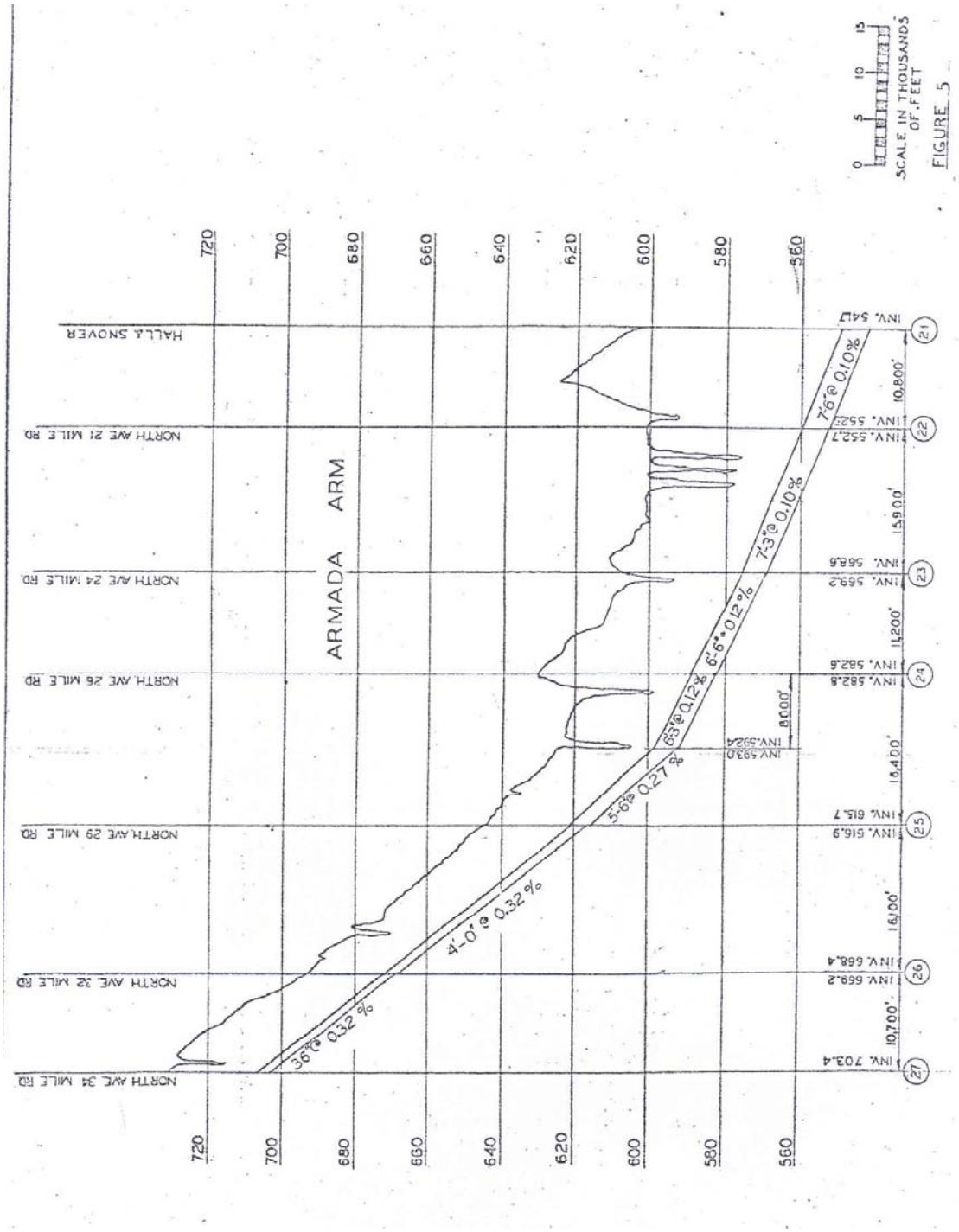


FIGURE 5
SCALE IN THOUSANDS OF FEET
0 5 10 15
ARMADA ARM
HALLA SNOVER
NORTH AVE 21 MILE RD.
NORTH AVE 24 MILE RD.
NORTH AVE 26 MILE RD.
NORTH AVE 29 MILE RD.
NORTH AVE 32 MILE RD.
NORTH AVE 34 MILE RD.
720 700 680 660 640 620 600 580 560
INV. 541.7
INV. 552.7
INV. 568.8
INV. 569.2
INV. 582.8
INV. 593.0
INV. 592.4
INV. 615.7
INV. 616.9
INV. 668.4
INV. 669.2
INV. 703.4
10,800'
15,900'
11,200'
8,000'
16,400'
16,100'
10,700'
7'6" @ 0.10%
7'3" @ 0.10%
6'6" @ 0.12%
6'3" @ 0.12%
5'6" @ 0.27%
4'-0" @ 0.32%
3'6" @ 0.32%

Per the estimates presented in the table, the maximum influent flow to the Clintondale Pump Station could be 210 cfs at build-out conditions, which is a fairly conservative number for design per the explanation presented in the foot note of the above table.

2.Carrying Capacity of the Existing 60" (5'-0") diameter 15 Mile Road Interceptor

As discussed under the Lakeshore Arm section of this report, only the portion of the interceptor north of Fifteen Mile Road was to be constructed initially. That section south to the Clintondale Pump Station was proposed to be constructed when relief for the Fifteen Mile Road Interceptor would have been required or the Cities of Eastpointe, Roseville, and St. Clair Shores would have required an additional sanitary waste outlet, whichever occurred first.

The Fifteen Mile Road Interceptor was to serve on an interim basis as a "Link-up" between the Lakeshore Arm (at 15 Mile Road) and the Romeo Arm Interceptor. This would allow DWSD to defer the expense of constructing the portion of the Lakeshore Arm south of Fifteen Mile Road until a base population sufficient to warrant its construction was developed by the communities to the north and south.

The Fifteen Mile Road Interceptor was designed for the year 2000-peak period flows. Tabulated below are the estimated total and connected populations and the resultant maximum (peak period), minimum and average wastewater flow generation. The flows were based on the projected connected population estimates.

Year	Population		Flow (cfs)		
	Total	Connected	Maximum	Average	Minimum
1970	111,000	57,000	35	14	7
1980	165,000	118,000	61	24	12
1990	230,000	191,000	91	36	18
2000	290,000	259,000	120	47	24

The maximum flows were developed utilizing a flow rate factor of 0.4 cfs per 1,000 population except for a portion from the City of Mt. Clemens. A flow rate factor of 1.0 cfs per 1,000 population was used for computing the flow from that City. Average flows were assumed to be 40 percent of the maximum flows. The minimum flows were assumed to be 50 percent of the average flows. Currently, the discharge from the Clintondale Pump Station travels through a 60" (5'-0") diameter force main, which empties into 60" (5'-0") diameter gravity sewer at 15 Mile Road and Maynard. The 15 Mile Road Interceptor sewer discharges into the Romeo Arm Interceptor at 15 Mile Road and Garfield Road. The 15 Mile Road Interceptor sewer has a minimum slope of 0.034% from the discharge point at the gravity sewer, which produces a carrying capacity of 48.2 cfs. This is the limiting capacity of this sewer.

3. Transporting the Ultimate Flow from Clintondale Pump Station to Romeo Arm Interceptor

As discussed above, the recommended ultimate design capacity of the Clintondale Pump Station is 210 cfs. In consideration of the discussion presented above, this design capacity is conservative, however, for the ultimate design conditions and unforeseen political will, this is an appropriate number to be considered for design capacity. This is particularly true in consideration of the fact that the upgrading of the Clintondale Pump Station would not require an addition to the existing building. The hydraulic analysis presented subsequently shows that only upgrading of the pumps would be required for pumping the ultimate firm capacity of 210 cfs.

For transporting flow from the Clintondale Pump Station, the following two alternatives were considered:

1. Extension of the Lakeshore Interceptor up to Eight Mile Road and then along Eight Mile Road to the Northeast Pumping Station per the recommendation of the Basic Requirements Report, 1968.
2. Construction of a replacement / relief sewer to the existing 15 Mile Road Interceptor and connection to the existing Romeo Arm Interceptor at Garfield Road.

4. Feasibility of Extension of Lakeshore Interceptor and Connection of SEMSD

The DWSD Basic Requirements Report, 1968 recommended the extension of the existing 129″ (10′-9″) Lakeshore Interceptor up to Eight Mile Road and then along Eight Mile Road to Northeast Pumping Station; however, this is not feasible under the current conditions because of the following reasons:

1. The total length of the multiple-diameter (11′-0″ to 13′-6″) extension would be about 15 miles, as given in the following table:

Lakeshore Interceptor Extension				
Interceptor Segment	Size	Slope (%)	I.E.	Length (ft)
Union Lake & Shook Road	11'-0"	0.02	533.9	
Jefferson & Hoffman	11'-0"	0.02	530.5	17,000
Jefferson & Bon Brae	11'-9"	0.02	527.8	13,700
Jefferson & Marter	12'-6"	0.02	525.8	9,800
Eight Mile / GTWRR/ Northeast Pump Station	13'-6"	0.02	518.0	38,900
		Total		79,400
		Say,	15.04	miles

2. The cost of construction of the Lakeshore Extension would be approximately $120 M or more depending upon the soil conditions and the method of construction.

3. Per the DWSD Basic Requirements Report, 1968, it was anticipated that the SEMSD would be connected to the proposed extension of the Lakeshore Interceptor. However, the SEMSD has recently implemented an improvement plan and designed their system around the two existing retention treatment basins (i.e., Martin and Chapaton) and a peak discharge of 102 cfs to the Northeast Wayne County System. With $80 M spent on their infrastructure improvements, they are currently not in need of any additional capacity.

4. There are two parallel sewers running under Jefferson Avenue and, therefore, the construction of an additional sewer of the proposed size (11′-0″ to 13′-6″) would require additional studies and efforts or else evaluation of alternate routes for construction of the Lakeshore Extension.

5. Feasibility of Construction of a Replacement/ Relief Sewer to the Existing Fifteen Mile Road Interceptor sewer and connection from Clinton Township

The carrying capacity of the existing 15 Mile Road Interceptor is limited to 48.2 cfs as described above; however, the influent flow to the Clintondale Pump Station would be much higher than the carrying capacity of the existing 15 Mile Road Interceptor. It is, therefore, necessary to provide a replacement or relief sewer to the existing 15 Mile Road Interceptor. The following alternatives were evaluated to provide relief to the existing 15 Mile Road Interceptor:

1. To eliminate the Clintondale Pump Station and construct a gravity sewer from the Clintondale Pump Station to Garfield Road and connect to the existing Romeo Arm Interceptor.
2. To construct a force main relief sewer from the Clintondale Pump Station to the Garfield Road and connect to the existing Romeo Arm Interceptor.
3. To convert the Clintondale Pump Station as a Lift Station and construct a gravity sewer from the Clintondale Pump Station to Garfield Road and connect to the existing Romeo Arm Interceptor.

Elimination of Clintondale Pump Station and construction of a gravity sewer from the Clintondale Pump Station to Garfield Road and connection to the existing Romeo Arm Interceptor.

The wastewater enters the Clintondale pump station through a 60″ (5′-0″) diameter pipe, which receives wastewater from the existing 129″ (10′-9″) diameter DWSD Lakeshore Interceptor. Discharge from the pump station is through a 60″ (5′-0″) diameter force main, which empties into the 60″ (5′-0″) diameter 15 Mile Road

Interceptor at 15 Mile Road and Maynard. The 15 Mile Road Interceptor discharges into the Romeo Arm Interceptor at 15 Mile Road and Garfield Road.

The invert elevation of the 60" (5'-0") diameter pipe at the Clintondale Pump Station is 533.00 and the invert elevation of the 132" (11'-0") diameter Romeo Arm Interceptor at Garfield Road where the 15 Mile Road Interceptor can be connected is 549.64. Hence, it is not feasible to eliminate the Clintondale Pump Station and construct a gravity sewer from the Clintondale Pump Station to the Romeo Arm Interceptor to transport flow from the Clintondale Pump Station.

Construction of a force main from the Clintondale Pump Station to Garfield Road and connection to the existing Romeo Arm Interceptor.

The construction of a force main from Clintondale Pump Station to Garfield Road and connection to the existing Romeo Arm Interceptor is feasible; however, this is not recommended due to the odor, corrosion, and operation and maintenance problems associated with force mains.

Conversion of the Clintondale Pump Station into a lift station and construction of a gravity sewer from the Clintondale Pump Station to Garfield Road and connection to the existing Romeo Arm Interceptor.

This was found to be the most feasible alternative since it would eliminate the negative impacts associated with force mains and transport the flow to Romeo Arm Interceptor by gravity. The gravity sewer is designed for the ultimate capacity of 210 cfs. The estimated flow of 210 cfs at Clintondale Pump Station at build-out conditions is conservative. At this time, Macomb County is conducting a feasibility study on constructing a Wastewater Treatment Plant (WWTP) for Northern Macomb County communities. It is expected that the flow from a part of the proposed Armada Arm and Memphis Arm can be diverted to the proposed Northern Macomb County WWTP. Similarly, it is not expected that the Mt. Clemens WWTP will be decommissioned in the next 50 years and the flow from the service district of Mt. Clemens WWTP would be transported to the DWSD system.

<u>Design of a Gravity Sewer.</u>
The gravity sewer is designed by using the Manning's equation. The design criteria for the proposed sewer is presented below:

Depth of Flow, d	Depth of Flow, d	S	n	Velocity	Discharge	
(ft)	(in)			(fps)	(cfs)	(gpm)
8.00	96.0	0.00053	0.013	4.2	211.0	94,682
Carrying Capacity when Flowing Full=					211.0	101,901
Slope Calculations for 8'-0" diameter Sewer.						
Diameter of Pipe, D =					8.00	Ft
Radius of Pipe, r =					4	Ft
Slope, s =					0.00053	ft/ft
Manning's Roughness Coefficient =					0.013	
Ground Elevation at Clintondale Pump Station					585.00	"+/-"
Assuming that the 8'-0" diameter 15-Mile sewer is installed 12' below ground, depth of cover					12	"+/-"
Thickness of pipe					0.8	Ft
Crown elevation of pipe					572.25	Ft
Invert Elevation at Upstream Station, Clintondale Pump Station =					564.25	"+/-"
Invert Elevation of 8'-0" diameter pipe at Garfield Road					552.04	Ft
Diameter of Romeo Arm Interceptor					11.0	Ft
Invert Elevation at Downstream Station @ 11'-0" Romeo Arm Interceptor =					549.64	"+/-"
Length of pipe					23,051	Ft
Flow carrying capacity of 8'-0" diameter pipe					211.0	Cfs

The slope of the sewer was calculated by using the following assumptions:

1. The depth of cover on the upstream end of the pipe should be 1 ½ times the diameter of the pipe.
2. The 96″ (8′-0″) diameter pipe of the 15 Mile Road Interceptor replacement sewer on the downstream is connected at 8/10th of the 132″ (11′-0″) diameter Romeo Arm Interceptor.

On the basis of the analysis presented above, it is recommended to construct a 96″ (8′-0″) diameter sewer at a slope of 0.053% to relieve the existing 60″ (5′-0″) diameter 15 Mile Road Interceptor, as shown in the attached plans. The capacity of this sewer would be 211.0 cfs at a velocity 4.2 fps (Drawing Sheet 1 of 1)-Reference CD.

Evaluation of the existing 60″ (5′-0″) diameter force main and connection from Clinton Township

The above evaluation shows that the conversion of the Clintondale Pump Station into a lift station and construction of a 96″ (8′-0″) diameter gravity sewer to relieve the 15 Mile Road Interceptor is the best alternative. If this plan is chosen, recommendations concerning the existing 60″ (5′-0″) diameter force main are presented below

1. The force main portion of the existing 60″ (5′-0″) diameter 15 Mile Road Interceptor should be abandoned.
2. The gravity portion of the existing 60″ (5′-0″) diameter 15 Mile Road sewer should remain in service to receive flows from two Clinton Township connections located at 15 Mile Road and Little Mack (unmetered) and 15 Mile Road and Kelly (metered). This would reduce the cost of new connections to the proposed 96″ (8′-0″) diameter gravity sewer.

6. Current Capacity of Clintondale Pump Station and Feasibility of Upgrading the Pump Station

The Clintondale pump station was designed for installation of four sanitary pumps, three of which are presently installed. The existing pumps are constant speed vertical centrifugal pumps. Each pump's 30-inch pipe discharges into a 42-inch diameter common header. This 42-inch header is connected to the 15 Mile Road Interceptor. This Interceptor as described previously is a 5′-0″ (60″) diameter force main up to Maynard and gravity sewer further downstream.

Per one of the previous studies, the centerline elevation of the 42-inch diameter common header is 73.85 feet. The System Control Center operates the pump station so that no more than one pump operates at one time to avoid vibration and cavitation that would be caused, if two pumps were operating simultaneously. Upon completion of the proposed modifications to the wet well, it was anticipated that two pumps would be able to operate simultaneously without cavitation problems. The Clintondale Station is operated remotely by DWSD SCC. The low and high wet well water surface elevations are 56.6 feet and 60.1 feet, respectively. The range in static head at the Clintondale pumping station is 32 feet to 36 feet. All three pumps have the same discharge capacity of 40.1 cfs (25.9 MGD) at a TDH of 70 feet. As one pump must be reserved for emergency operation, the current firm capacity of the pump station is approximately 80 cfs with the design capacity being 120 cfs.

The Clintondale Pumps Operation Data for the year 2001 and 2002 is presented in the Appendix. The combined pumps operated for maximum of 43.0 and 25.8 hours per day pumping 6,192 thousand cubic feet (46 MG) and 3,715 thousand cubic feet (28 MG) per day for the years 2001 and 2002, respectively.

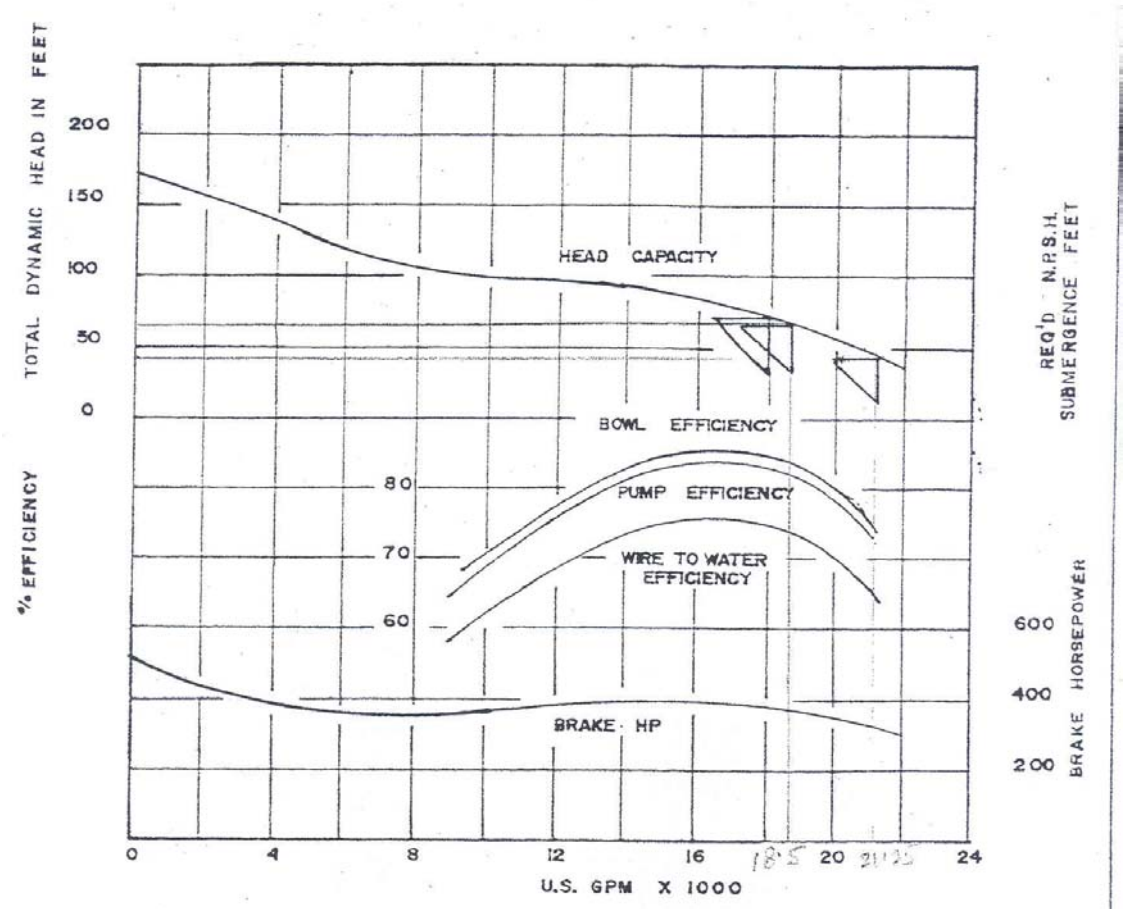
Evaluation of the existing pumps

The replacement of the 60″ (5′-0″) diameter force main by the proposed 96″ (8′-0″) diameter gravity sewer would result in a reduction of the static and friction head and, consequently, the total dynamic head (TDH). With a reduction in TDH, the existing pumps would discharge higher flows. The reduction in static and TDH under the proposed gravity sewer system for the existing pumps is presented in the following table:

DRAFT

Table: Pump System Head Calculations for the Proposed Gravity System for the Existing Pumps			
Forcemain Head Loss*			
Number of Pumps Operating	1	2	3
Diameter (ft)	5	5	5
Area (ft2)	19.6	19.6	19.6
Hydraulic Radius, R	1.3	1.3	1.3
Flow (cfs)	40	80	120
Velocity (ft/sec)	2.0	4.1	6.1
Manning's "n"	0.013	0.013	0.013
Length (ft)	8074	8074	8074
Friction Head Loss (ft)	1.9	7.6	17.1
Invert Elevation of High Point in the Forcemain (ft)	585.4	585.4	585.4
Elevation of the Bell Mouth in the Wet Well (ft)**	527.5	527.5	527.5
Maximum Static Head (ft)	57.9	57.9	57.9
Head Loss (Static + Force Main) (ft)	59.8	65.5	75.0
Assumed Minor Head Losses (ft)	5.0	7.5	10.0
Total Dynamic Head (ft)	64.8	73.0	85.0
Reduction in Total Head Loss due to Elimation of Force Main			
Invert Elevation of High Point in the Forcemain (ft)	585.4	585.4	585.4
Invert elevation of the proposed 8'-0" diameter gravity sewer	564.25	564.25	564.25
Reduction in static Head Loss	21.2	21.2	21.2
Reduction in Force Main Head Loss	1.9	7.6	17.1
Total Reduction in Head Loss	23.1	28.8	38.3
Pump System Head Loss Calculations for Gravity Sewer for the Existing Pumps			
Invert Elevation of Gravity Sewer (ft)	564.25	564.25	564.25
Elevation of the Bell Mouth in the Wet Well (ft)**	527.5	527.5	527.5
Maximum Static Head (ft)	36.8	36.8	36.8
Assumed Minor Head Losses (ft)***	10.0	15.0	20.0
Total Dynamic Head (ft)	46.8	51.8	56.8
TDH will vary depending upon operating conditions and wet well elevation		Say,	45 ft to 60 ft
Range of expected flow at TDH of 45 to 60 ft (cfs) (Refer to Pump Performance Characteristics Curves)	41 to 47	82 to 94	123 to 141
* The Total Dynamic Head calculations presented elsewhere in previous studies might be different than presented here.			
* The invert elevation of the influent sewer is 533.0 and the crown elevation of the wet well pit is 531.0.			
*** Minor Head Losses have been assumed for higher pump discharges than 40 cfs/pump.			

The range of flow for one, two, and three pumps at the reduced TDH would approximately be 41 to 47, 82 to 94, and 123 to 141 cfs, respectively. If the fourth pump



REPRESENTATIVE MANUFACTURE TEST CURVE

1180 RPM

DETROIT WATER & SEWERAGE DEPARTMENT CS-997 O & M MANUALS	
MADISON MADISON INTERNATIONAL OF MICHIGAN	CLINTONDALE SEWAGE PUMPING STATION
DATE: APRIL 93	PUMP CURVE

Table: Pump System Head Calculations for the Proposed Gravity System for the Existing Pumps			
Force main Head Loss*			
Number of Pumps Operating	1	2	3
Diameter (ft)	5	5	5
Area (ft2)	19.6	19.6	19.6
Hydraulic Radius, R	1.3	1.3	1.3
Flow (cfs)	40	80	120
Velocity (ft/sec)	2.0	4.1	6.1
Manning's "n"	0.013	0.013	0.013
Length (ft)	8074	8074	8074
Friction Head Loss (ft)	1.9	7.6	17.1
Invert Elevation of High Point in the Force Main (ft)	585.4	585.4	585.4
Elevation of the Bell Mouth in the Wet Well (ft)**	527.5	527.5	527.5
Maximum Static Head (ft)	57.9	57.9	57.9
Head Loss (Static + Force Main) (ft)	59.8	65.5	75.0
Assumed Minor Head Losses (ft)	5.0	7.5	10.0
Total Dynamic Head (ft)	64.8	73.0	85.0
Reduction in Total Head Loss due to Elimination of Force Main			
Invert Elevation of High Point in the Force main (ft)	585.4	585.4	585.4
Invert elevation of the proposed 8'-0" diameter gravity sewer	564.25	564.25	564.25
Reduction in static Head Loss	21.2	21.2	21.2
Reduction in Force Main Head Loss	1.9	7.6	17.1
Total Reduction in Head Loss	23.1	28.8	38.3
Pump System Head Loss Calculations for Gravity Sewer for the Existing Pumps			
Invert Elevation of Gravity Sewer (ft)	564.25	564.25	564.25
Elevation of the Bell Mouth in the Wet Well (ft)**	527.5	527.5	527.5
Maximum Static Head (ft)	36.8	36.8	36.8
Assumed Minor Head Losses (ft)***	10.0	15.0	20.0
Total Dynamic Head (ft)	46.8	51.8	56.8
TDH will vary depending upon operating conditions and wet well elevation		Say,	45 ft to 60 ft
Range of expected flow at TDH of 45 to 60 ft (cfs) (Refer to Pump Performance Characteristics Curves)	41 to 47	82 to 94	123 to 141
* The Total Dynamic Head calculations presented elsewhere in previous studies might be different than those presented here.			
* The invert elevation of the influent sewer is 533.0 and the crown elevation of the wet well pit is 531.0.			
*** Minor Head Losses have been assumed for pump discharges that are higher than 40 cfs/pump.			

The range of flow for one, two, and three pumps at the reduced TDH would be approximately 41 to 47, 82 to 94, and 123 to 141 cfs, respectively.

If the fourth pump were installed, then the firm and design capacity of the pump station would be 123 to 141 and 164 to 188 cfs, respectively.

The installation of the fourth pump at Clintondale Pump Station would insure the requirement of firm capacity of 120 to 130 cfs, so long as the flows from Mt. Clemens and Armada Arm are not diverted to the DWSD system.

In the future, if the flows from Mt. Clemens and Armada Arm are diverted to the DWSD system, then the existing pumps could be upgraded. The new pumps can be installed in the existing building without expansion. The pump system curves and catalogue cuts are attached for ready reference. The pump system head loss calculations for the proposed gravity system for new (upgraded) pumps are presented below:

Table: Pump System Head Loss Calculations for the Proposed Gravity System for New (Upgraded) Pumps

Number of Pumps Operating	1	2	3
Invert Elevation of Gravity Sewer (ft)	564.25	564.25	564.25
Elevation of the Bell Mouth in the Wet Well (ft)*	527.5	527.5	527.5
Maximum Static Head (ft)	36.8	36.8	36.8
Assumed Minor Head Losses (ft)	5.0	10.0	15.0
Total Dynamic Head (ft)	41.8	46.8	51.8
		Say,	50 ft to 60 ft
Range of expected flow at TDH of 50 to 60 ft (cfs) (Refer to Pump Performance Characteristics Curves)	50 to 58	100 to 116	150 to 174

* The invert elevation of the influent sewer is 533.0 and the crown elevation of the wet well pit is 531.0.

The installation of the four new pumps at Clintondale Pump Station would insure the firm capacity of 150 to 174 cfs and design capacity of 200 to 232 cfs for ultimate conditions.

7. Feasibility of Constructing a Relief Sewer to the Eight Foot Diameter Repair to Fifteen Mile Road Interceptor

The existing Fifteen Mile Road Interceptor between Garfield Road and the connection to the Corridor Interceptor is a 132" (11'-0") diameter sanitary sewer laid at 0.021% which was repaired, resulting in a 96" (8'-0") diameter sanitary sewer. The 132" (11'-0") sewer had a capacity of 310 cfs prior to the 96" (8'-0") diameter repair at 0.021% slope. The capacity of the repaired sewer is 133 cfs.

The service district for this portion of the 15 Mile Road Interceptor includes the service districts of the North Gratiot, Lakeshore and Romeo Interceptors.

Per the Macomb County Sanitary Sewer Interceptor Extension Plan (1997), the flow expected in the Romeo Arm Interceptor is 326 cfs, which is conservative.

Kerr Pump and Supply, Inc.
Michael Kristl
Clintondale Pump Station

PUMP DATA SHEET

Fairbanks Morse Pump, 60 Hz

H2Optimize ver: 6.041
03/11/03

Curve: 9030125

Selection file: (untitled)

Catalog: FMCENT60.MPC v 2.0

Design Point: Flow: 22443 US gpm
Head: 60 ft

Fluid: Water Temperature: 60 °F
SG: 1
Viscosity: 1.122 cP
Vapor pressure: 0.2568 psi_a
Atm pressure: 14.7 psi_a

Pump: VTSH - 800 **Size: 30"VTSH**
Speed: 585 rpm Dia: 28.9375 in

Limits: Temperature: 160 °F Sphere size: 8 in
Pressure: — psi_g Power: — bhp

NPSHa: — ft

Specific Speed: Ns: 3311 Nss: 7871

Piping: System: —
Suction: — in
Discharge: — in

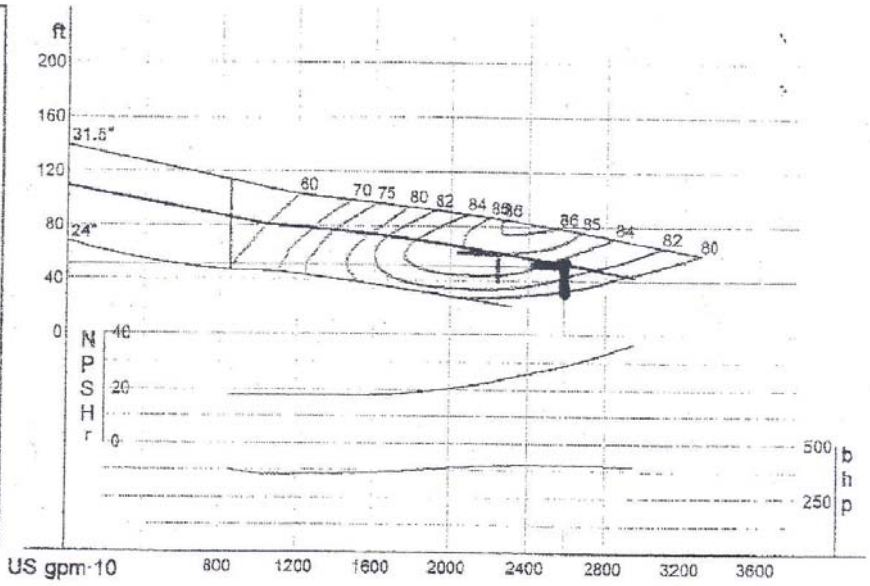
Dimensions: Suction: — in Discharge: 30 in

Motor: — hp NEMA Standard TEFC Enclosure
sized for Max Power on Design Curve

— Data Point —
Flow: 22443 US gpm
Head: 60.1 ft
Eff: 85%
Power: 400 bhp
NPSHr: 23.6 ft

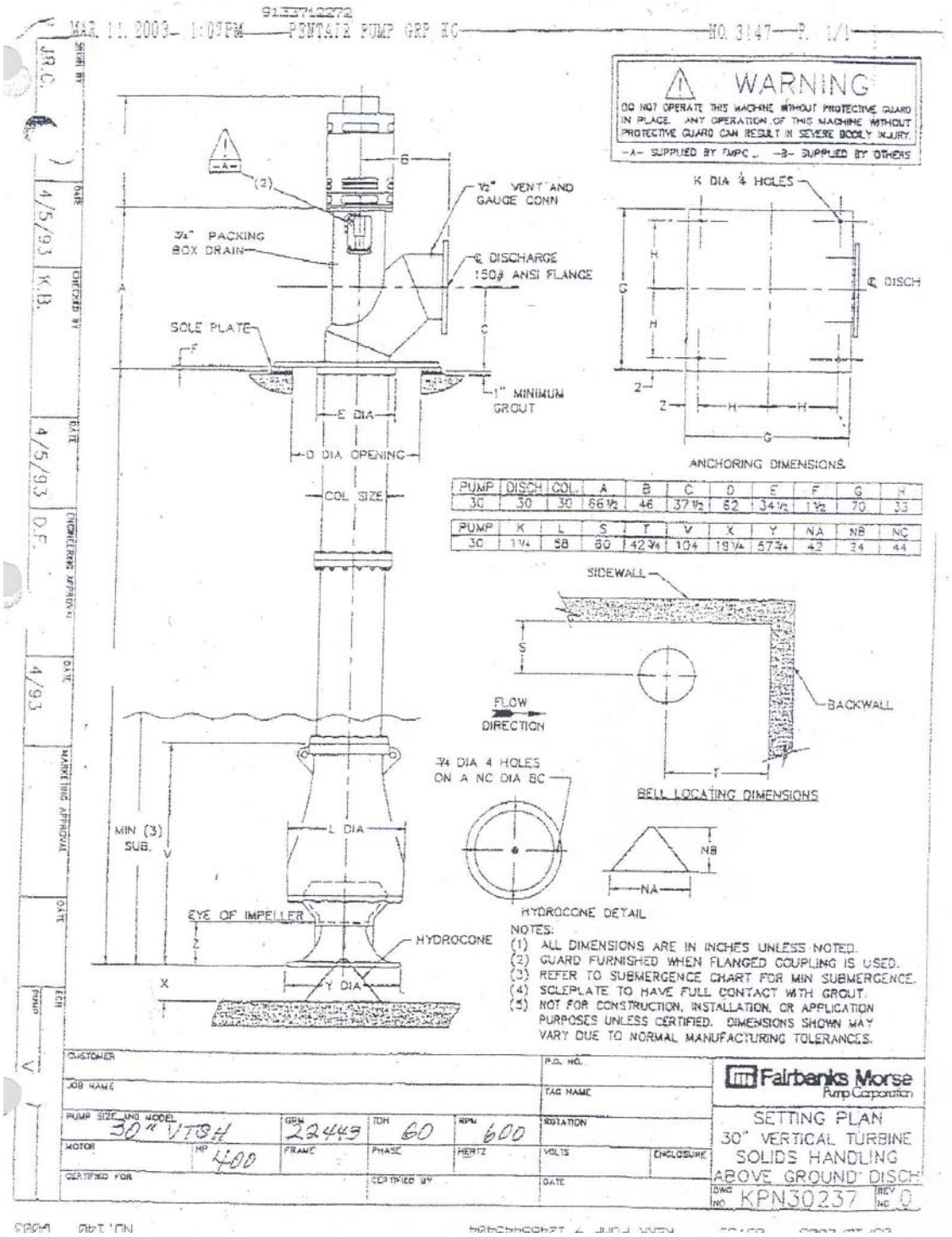
– Design Curve –
Shutoff Head: 108 ft
Shutoff dP: 47.3 psi
Min Flow: 8600 US gpm
BEP: 85% eff
@ 21596 US gpm
NOL Pwr: 405 bhp
@ 27299 US gpm

– Max Curve –
Max Pwr: 613 bhp
@ 30916 US gpm



— PERFORMANCE EVALUATION —

Flow US gpm	Speed rpm	Head ft	Pump %eff	Power bhp	NPSHr ft	Motor %eff	Motor kW	Hrs/yr	Cost /kWh
26932	585	49.1	82	405	31.1				
22443	585	60.1	85	400	23.6				
17954	585	70	84	379	18.9				
13466	585	77.3	73	361	18				
8977	585	85.1	52	374	18				



PUMP	DISCH	COL.	A	B	C	D	E	F	G	H
30	30	30	66½	46	37½	52	34½	1½	70	33

PUMP	K	L	S	T	V	X	Y	NA	NB	NC
30	1¼	58	80	42¾	104	19¼	57¾	42	24	44

To accommodate the 193.5 cfs above the capacity of the sewer repair, a relief sewer would be necessary. If a relief sewer is not constructed, the additional expected flow would induce a hydraulic grade line of 0.127% on the existing 96" (8'-0") diameter repair. This may create problems with sewage backing up into basements. However, flooding is not likely due to the depth of the existing 15 Mile Road Interceptor west of Garfield. The velocity resulting from the induced hydraulic gradient will be approximately 6.5 feet per second.

To compensate for the lost capacity due to this repair, the construction of a relief sewer is recommended. The relief gravity sewer is designed by using the Manning's equation. The design criteria for the proposed relief sewer of 108" (9'-0") diameter is presented below:

Depth of Flow, d		Velocity	Discharge	
(ft)	(in)		(cfs)	(gpm)
9.00	108.0	2.9	181.9	81647
7.20	86.4	3.3	177.9	79,860
Diameter of Pipe, D =				9.00
Radius of Pipe, r =				4.5
Slope, s =				0.00021
Manning's Roughness Coefficient =				0.013
Flow carrying capacity of 9'-0" diameter pipe when flowing full				181.9
Flow carrying capacity of 9'-0" diameter pipe when flowing 8/10th full				177.9

The slope of the proposed gravity sewer is assumed to be the same slope as the 15 Mile Road Interceptor. The proposed relief sewer will transport approximately 182 cfs and 178 cfs when flowing full and 8/10th full.

8. Changes Caused by Nine Foot Diameter Repair to Corridor Interceptor

The existing Corridor Interceptor is a 153" (12'-9") diameter sewer at a 0.068% slope. The portion of this sewer between the Red Run Drain and Fifteen Mile Road was lined resulting in a 108" (9'-0") diameter sewer at 0.068% slope. The capacity of the 153" (12'-9") sewer was 823 cfs while the capacity of the 108" (9'-0") sewer repair is 326.5 cfs. The service district for this portion of the Corridor Interceptor includes the service districts for the Lakeshore, Romeo, Fifteen Mile Road and Oakland Interceptors. The resulting capacity requirement for this portion of sewer is 541 cfs per the Macomb County Sanitary Sewer Interceptor Extension Plan (1997). To accommodate the 215 cfs beyond the capacity of the pipe, a hydraulic grade line of approximately 0.20 % would be induced on the 108" (9'-0") diameter portion of the sewer. This may create problems with sewage backing up into basements. However, flooding problems are not likely due to the depth of the existing interceptor sewers. An induced hydraulic gradient of 0.20% will result in velocities of approximately 8.8 feet per second. This velocity is slightly excessive and may result in solids settling out of the wastewater, however, this is not given any further consideration in this report

9. Cost Analysis

The cost analysis of different alternatives is presented below:

Alternatives	**Capital Cost (M$)**		**Annual O&M (M$) (Cleaning and Inspection)**	
	Pump Station	Pipe	Pump Station	Pipe
Alternative 1: Extension of Lakeshore Interceptor to Eight Mile Road and then along the Eight Mile Road to the Northeast Pump Station	Abandonment $0.075	$ 165.6*	N/A	$ 1.63
Alternative 2: Rehabilitate existing pump station and force main	This alternative was not found to be feasible because of the odor and corrosion problems associated with force mains. Because of the recent studies currently being conducted on these problems, the DWSD is emphasizing to minimize the use of force mains for transporting wastewater.			
Alternative 3: Rehabilitate existing pump station and new 8-foot gravity sewer	$ 1.0	26.5*	$ 1.2**	$0.47
* Source: Kopp's curve based on DWSD past contracts.				
** EPA O&M Charts				

An examination of the above table shows that the rehabilitation of the Clintondale Pump Station and construction of a new 96″ (8′-0″) diameter gravity sewer is the most cost-effective and feasible alternative.

10. Conclusions and Recommendations

1. Per the analysis presented above, the ultimate estimated influent peak flow to the Clintondale pump station would be 210 cfs. This would include the future flows from the proposed Armada Arm including Chesterfield and Macomb Arms; however, the possibility of diverting these flows to the Clintondale Pump Station is not high because these flows could be diverted to the proposed Northern Macomb County Regional Wastewater Treatment Plant in future.
2. It is recommended to construct a 96″ (8′-0″) diameter gravity sewer at a slope of 0.053% to relieve the existing 60″ (5′-0″) diameter 15 Mile Road Interceptor. The capacity of this sewer would be 211.0 cfs at a velocity 4.2 fps. This would alleviate the Sanitary Sewer Overflow (SSO) problem of Clinton Township.
3. The force main portion of the existing 60″ (5′-0″) diameter 15 Mile Road Interceptor sewer should be abandoned.
4. The gravity portion of the existing 60″ (5′-0″) diameter 15 Mile Road Interceptor sewer should remain in service to receive flows from two

5. (2) Clinton Township connections located at 15 Mile Road and Little Mack (unmetered) and 15 Mile Road and Kelly (metered). This would reduce the cost of new connections to the proposed 96" (8'-0") diameter gravity sewer.
6. The range of flow for one, two, and three pumps at the reduced TDH after construction of the new 96" (8'-0") diameter sewer would approximately be 41 to 47, 82 to 94, and 123 to 141 cfs, respectively. If the fourth pump were installed at the Clintondale Pump Station then the firm and design capacity of the pump station would be 123 to 141 and 164 to 188 cfs, respectively.
7. The installation of the fourth pump at Clintondale Pump Station would insure the requirement of firm capacity of 120 to 130 cfs so long as the flows from the Armada Arm are not diverted to the DWSD system.
8. In future, if the flows from Armada Arm are diverted to the DWSD system then the existing pumps could be upgraded, when needed. The new pumps can be installed in the existing building without expansion.
9. The cost of installing the gravity system and upgrading of the pump station would be about $27.5M.
10. The extension of the existing 129" (10'-9") Lakeshore Interceptor to 8 Mile Road and along the Eight Mile to the Northeast pump station as proposed in the DWSD Basic Requirements Report, 1968 is not feasible because of the following reasons:

- The total length of various sizes (11'-0" to 13'-6") extension would be about 15 miles.

- The cost of construction would be $165.6 M.

- Originally it was anticipated that SEMSD would connect to the proposed Lakeshore Interceptor, however, the SEMSD has spent $80 M on their infrastructure improvements recently and designed their system around two existing basins, Martin and Chapatan, and a peak discharge of 102 cfs to the Northeast Wayne County system. The SEMSD is currently not in need of any additional capacity.

- There are two parallel sewers running under Jefferson Avenue and, therefore, the construction of an additional sewer of the proposed size (11'-0" to 13'-6") would require additional studies and efforts or else alternate routes would need to be evaluated for construction.

Appendix

DWSD Clintondale Pump Station Operating Data

(2001-2002)

Date	Clintondale Pumps Operation Data					Wastewater Pumped (x1000 cu. ft.) @ 40cfs	Wastewater Pumped (MG) @ 25.86 MGD
	Hours of Operation						
	Santary Pump #1	Santary Pump #2	Santary Pump #3	Santary Pump #4	Total		
January 1, 2001	3.3	7.3			10.6	1,526	11.42
January 2, 2001	8.2	3.7			11.9	1,714	12.82
January 3, 2001	5.8	4.8			10.6	1,526	11.42
January 4, 2001	6.5	7.6			14.1	2,030	15.19
January 5, 2001	3	10.2			13.2	1,901	14.22
January 6, 2001	11.1	3.5			14.6	2,102	15.73
January 7, 2001	4.9	8.8			13.7	1,973	14.76
January 8, 2001	9	5.3			14.3	2,059	15.41
January 9, 2001	7.3	5.3			12.6	1,814	13.58
January 10, 2001	2	8.4			10.4	1,498	11.21
January 11, 2001	4.3	6.6			10.9	1,570	11.74
January 12, 2001	7.8	5.7			13.5	1,944	14.55
January 13, 2001	3	10.2			13.2	1,901	14.22
January 14, 2001	11.8	7.1			18.9	2,722	20.36
January 15, 2001	2.8	12			14.8	2,131	15.95
January 16, 2001	11.3	4.7			16	2,304	17.24
January 17, 2001	5.9	6.9			12.8	1,843	13.79
January 18, 2001	4.4	5.4			9.8	1,411	10.56
January 19, 2001	3.8	8.7			12.5	1,800	13.47
January 20, 2001	4.8	10.5			15.3	2,203	16.49
January 21, 2001	10	8.5			18.5	2,664	19.93
January 22, 2001	10.8	1.3			12.1	1,742	13.04
January 23, 2001	8.3	6.1			14.4	2,074	15.52
January 24, 2001	2.2		9.4		11.6	1,670	12.50
January 25, 2001		7.3	3.8		11.1	1,598	11.96
January 26, 2001		2.2	9.2		11.4	1,642	12.28
January 27, 2001		7.2	8.2		15.4	2,218	16.59
January 28, 2001		8.6	3		11.6	1,670	12.50
January 29, 2001		1.9	9.8		11.7	1,685	12.61
January 30, 2001		2.3	16.7		19	2,736	20.47
January 31, 2001					0	-	0.00
February 1, 2001		12.4	3.6		16	2,304	17.24
February 2, 2001		12	3.8		15.8	2,275	17.02
February 3, 2001		6.8	12.2		19	2,736	20.47
February 4, 2001		10.5	6		16.5	2,376	17.78
February 5, 2001		9.8	6.9		16.7	2,405	17.99
February 6, 2001		4.6	6.8		11.4	1,642	12.28
February 7, 2001		10.9	5		15.9	2,290	17.13
February 8, 2001		7.5	5.7		13.2	1,901	14.22
February 9, 2001		14.4	20.8		35.2	5,069	37.93
February 10, 2001		22	21		43	6,192	46.33
February 11, 2001		17.8	24		41.8	6,019	45.04
February 12, 2001		8.8	20		28.8	4,147	31.03
February 13, 2001			24		24	3,456	25.86
February 14, 2001			24		24	3,456	25.86
February 15, 2001		13	10.6		23.6	3,398	25.43
February 16, 2001		23.8	1		24.8	3,571	26.72
February 17, 2001		7.3	11.7		19	2,736	20.47
February 18, 2001		3.5	11.7		15.2	2,189	16.38
February 19, 2001		3.8	11.4		15.2	2,189	16.38
February 20, 2001		11.3	4.4		15.7	2,261	16.92
February 21, 2001		5.8	7.7		13.5	1,944	14.55
February 22, 2001		3.5	8.4		11.9	1,714	12.82
February 23, 2001		6.1	6.4		12.5	1,800	13.47
February 24, 2001		3.2	11.4		14.6	2,102	15.73
February 25, 2001		8.4	19.4		27.8	4,003	29.95
February 26, 2001		8.7	7.4		16.1	2,318	17.35
February 27, 2001		6.1	7.8		13.9	2,002	14.98
February 28, 2001		12.4	0.8		13.2	1,901	14.22
March 1, 2001		10.8	3.9		14.7	2,117	15.84
March 2, 2001		2.6	9.8		12.4	1,786	13.36

Date	Clintondale Pumps Operation Data					Wastewater Pumped (x1000 cu. ft.) @ 40cfs	Wastewater Pumped (MG) @ 25.86 MGD
	Hours of Operation						
	Santary Pump #1	Santary Pump #2	Santary Pump #3	Santary Pump #4	Total		
March 3, 2001		0.7	13		13.7	1,973	14.76
March 4, 2001		7.8	7.8		15.6	2,246	16.81
March 5, 2001		4.3	5.8		10.1	1,454	10.88
March 6, 2001		3.2	9.2		12.4	1,786	13.36
March 7, 2001		4	8.2		12.2	1,757	13.15
March 8, 2001		5.1	9.7		14.8	2,131	15.95
March 9, 2001		3.6	8.6		12.2	1,757	13.15
March 10, 2001		9.2	6.1		15.3	2,203	16.49
March 11, 2001		5.3	12		17.3	2,491	18.64
March 12, 2001		7.3	5.5		12.8	1,843	13.79
March 13, 2001		3.7	16		19.7	2,837	21.23
March 14, 2001		9.3	4.5		13.8	1,987	14.87
March 15, 2001		1.7	15.8		17.5	2,520	18.86
March 16, 2001		4.9	6.6		11.5	1,656	12.39
March 17, 2001		10.6	6.7		17.3	2,491	18.64
March 18, 2001		3.8	12.3		16.1	2,318	17.35
March 19, 2001		10.7	5.9		16.6	2,390	17.89
March 20, 2001		3.1	9.3		12.4	1,786	13.36
March 21, 2001		1.3	17.5		18.8	2,707	20.26
March 22, 2001		7.8	3.8		11.6	1,670	12.50
March 23, 2001			17.9		17.9	2,578	19.29
March 24, 2001		12.8	0.7		13.5	1,944	14.55
March 25, 2001		5.5	5.5		11	1,584	11.85
March 26, 2001			16.4		16.4	2,362	17.67
March 27, 2001		6.8	7.8		14.6	2,102	15.73
March 28, 2001		10.8			10.8	1,555	11.64
March 29, 2001		4.6	10		14.6	2,102	15.73
March 30, 2001		1.6	13.5		15.1	2,174	16.27
March 31, 2001		12.7	2.3		15	2,160	16.16
April 1, 2001		5.2	11		16.2	2,333	17.46
April 2, 2001		3.1	9.2		12.3	1,771	13.25
April 3, 2001		5	7.9		12.9	1,858	13.90
April 4, 2001		3.7	9.4		13.1	1,886	14.12
April 5, 2001		3	8.1		11.1	1,598	11.96
April 6, 2001		5.3	14.6		19.9	2,866	21.44
April 7, 2001		13.8	2.6		16.4	2,362	17.67
April 8, 2001		9.8	9.4		19.2	2,765	20.69
April 9, 2001		11.8	5.8		17.6	2,534	18.96
April 10, 2001		10	6		16	2,304	17.24
April 11, 2001		6.5	8.3		14.8	2,131	15.95
April 12, 2001		12.4	2.9		15.3	2,203	16.49
April 13, 2001		9.8	3.2		13	1,872	14.01
April 14, 2001		10	4.4		14.4	2,074	15.52
April 15, 2001		10	2.8		12.8	1,843	13.79
April 16, 2001		9.5	3.9		13.4	1,930	14.44
April 17, 2001		9.3	4.1		13.4	1,930	14.44
April 18, 2001		4	7		11	1,584	11.85
April 19, 2001		6.2	6.9		13.1	1,886	14.12
April 20, 2001		1.6	6.1		7.7	1,109	8.30
April 21, 2001		14.4	2		16.4	2,362	17.67
April 22, 2001		4	9.5		13.5	1,944	14.55
April 23, 2001		5.3	8.9		14.2	2,045	15.30
April 24, 2001		12	5.4		17.4	2,506	18.75
April 25, 2001		12	5.4		17.4	2,506	18.75
April 26, 2001	5.3	4.7	4.4		14.4	2,074	15.52
April 27, 2001	2.5	5.2	4.7		12.4	1,786	13.36
April 28, 2001	8.6	1.7	1.9		12.2	1,757	13.15
April 29, 2001	9.8	0.8	3.2		13.8	1,987	14.87
April 30, 2001	14.4	4.8	1		20.2	2,909	21.77
May 1, 2001	4.2	5	2.6		11.8	1,699	12.71
May 2, 2001	2.6	3.2	5.7		11.5	1,656	12.39

Date	Clintondale Pumps Operation Data					Wastewater Pumped (x1000 cu. ft.) @ 40cfs	Wastewater Pumped (MG) @ 25.86 MGD
	Hours of Operation						
	Santary Pump #1	Santary Pump #2	Santary Pump #3	Santary Pump #4	Total		
May 3, 2001	3.7	2.5	6.5		12.7	1,829	13.68
May 4, 2001	3.3	1.2	5.3		9.8	1,411	10.56
May 5, 2001	2.3	8.8			11.1	1,598	11.96
May 6, 2001	2.8	4.9	3.7		11.4	1,642	12.28
May 7, 2001	4.7	5.9	5.3		15.9	2,290	17.13
May 8, 2001	4.3	4	3.3		11.6	1,670	12.50
May 9, 2001	7.5		4.7		12.2	1,757	13.15
May 10, 2001	7.3	2.7			10	1,440	10.78
May 11, 2001	1.2	2.1	4.7		8	1,152	8.62
May 12, 2001	4	3.3	6.8		14.1	2,030	15.19
May 13, 2001	2.7	7.4	0.3		10.4	1,498	11.21
May 14, 2001	10.5		4		14.5	2,088	15.62
May 15, 2001		3.3	9.6		12.9	1,858	13.90
May 16, 2001	9.7	4.9			14.6	2,102	15.73
May 17, 2001	1.9	3.7	4.3		9.9	1,426	10.67
May 18, 2001	4.7	3.6	6.3		14.6	2,102	15.73
May 19, 2001	3	5.2	0.9		9.1	1,310	9.81
May 20, 2001	1.4	6.6	3		11	1,584	11.85
May 21, 2001	2.5	6.2	3.2		11.9	1,714	12.82
May 22, 2001	0.8	7.4	4.8		13	1,872	14.01
May 23, 2001	9.7	2	3.1		14.8	2,131	15.95
May 24, 2001	1.8	8.1	1.3		11.2	1,613	12.07
May 25, 2001	3	6	4.5		13.5	1,944	14.55
May 26, 2001	4.2	0.4	5.1		9.7	1,397	10.45
May 27, 2001	4.7	6.2	1.7		12.6	1,814	13.58
May 28, 2001		15.9	4.2		20.1	2,894	21.66
May 29, 2001	8.6	7.9	10.4		26.9	3,874	28.98
May 30, 2001	5.3	7.5	0.3		13.1	1,886	14.12
May 31, 2001	2.8	10.8			13.6	1,958	14.65
June 1, 2001	7	6.3	0.2		13.5	1,944	14.55
June 2, 2001	11.4	8.3			19.7	2,837	21.23
June 3, 2001	7.6	10.2			17.8	2,563	19.18
June 4, 2001	7.5	9			16.5	2,376	17.78
June 5, 2001	7.4	2.9	4.5		14.8	2,131	15.95
June 6, 2001	5.6	5.8	0.5		11.9	1,714	12.82
June 7, 2001	7.4	4.8			12.2	1,757	13.15
June 8, 2001	7.3	6.5			13.8	1,987	14.87
June 9, 2001	9.5	3.3			12.8	1,843	13.79
June 10, 2001	6.7	5			11.7	1,685	12.61
June 11, 2001	4	6.9	2.7		13.6	1,958	14.65
June 12, 2001	8.7	6			14.7	2,117	15.84
June 13, 2001	11	6			17	2,448	18.32
June 14, 2001	4.8	10.1			14.9	2,146	16.05
June 15, 2001	5	10.8			15.8	2,275	17.02
June 16, 2001	7.9	5			12.9	1,858	13.90
June 17, 2001	3.8	6.3			10.1	1,454	10.88
June 18, 2001	3.7	4.7			8.4	1,210	9.05
June 19, 2001	3.7	8.7			12.4	1,786	13.36
June 20, 2001	1.6	11.8			13.4	1,930	14.44
June 21, 2001	8.1	8.6			16.7	2,405	17.99
June 22, 2001	1.7	12.5			14.2	2,045	15.30
June 23, 2001	6.6	6.8			13.4	1,930	14.44
June 24, 2001		8.3			8.3	1,195	8.94
June 25, 2001		16.5			16.5	2,376	17.78
June 26, 2001		6.9			6.9	994	7.43
June 27, 2001		10.8			10.8	1,555	11.64
June 28, 2001		14.3			14.3	2,059	15.41
June 29, 2001		12.6			12.6	1,814	13.58
June 30, 2001		8.8			8.8	1,267	9.48
July 1, 2001		12.2			12.2	1,757	13.15
July 2, 2001		12.3			12.3	1,771	13.25

Date	Clintondale Pumps Operation Data					Wastewater Pumped (x1000 cu. ft.) @ 40cfs	Wastewater Pumped (MG) @ 25.86 MGD
	Hours of Operation						
	Santary Pump #1	Santary Pump #2	Santary Pump #3	Santary Pump #4	Total		
July 3, 2001		11.5			11.5	1,656	12.39
July 4, 2001		12.5			12.5	1,800	13.47
July 5, 2001		8.7			8.7	1,253	9.37
July 6, 2001		9.2			9.2	1,325	9.91
July 7, 2001		12.5			12.5	1,800	13.47
July 8, 2001		8.7			8.7	1,253	9.37
July 9, 2001		14.7			14.7	2,117	15.84
July 10, 2001		12.9			12.9	1,858	13.90
July 11, 2001		9.6			9.6	1,382	10.34
July 12, 2001		11.2			11.2	1,613	12.07
July 13, 2001		10.8			10.8	1,555	11.64
July 14, 2001		7.3			7.3	1,051	7.87
July 15, 2001		9.8			9.8	1,411	10.56
July 16, 2001		10.1	0.3		10.4	1,498	11.21
July 17, 2001		10.8			10.8	1,555	11.64
July 18, 2001		7.4			7.4	1,066	7.97
July 19, 2001		12.6			12.6	1,814	13.58
July 20, 2001		9			9	1,296	9.70
July 21, 2001		13.5			13.5	1,944	14.55
July 22, 2001		13.7			13.7	1,973	14.76
July 23, 2001		11.4			11.4	1,642	12.28
July 24, 2001		7.3			7.3	1,051	7.87
July 25, 2001		12.5			12.5	1,800	13.47
July 26, 2001		13.4			13.4	1,930	14.44
July 27, 2001		11.6			11.6	1,670	12.50
July 28, 2001		11.7			11.7	1,685	12.61
July 29, 2001		10.4			10.4	1,498	11.21
July 30, 2001		11.6			11.6	1,670	12.50
July 31, 2001		10.3			10.3	1,483	11.10
August 1, 2001		20.7			20.7	2,981	22.30
August 2, 2001		10.8			10.8	1,555	11.64
August 3, 2001		13			13	1,872	14.01
August 4, 2001		10.2			10.2	1,469	10.99
August 5, 2001		12.4			12.4	1,786	13.36
August 6, 2001		12.4			12.4	1,786	13.36
August 7, 2001		10.2			10.2	1,469	10.99
August 8, 2001		9.5			9.5	1,368	10.24
August 9, 2001		13			13	1,872	14.01
August 10, 2001		12.9			12.9	1,858	13.90
August 11, 2001		15.8			15.8	2,275	17.02
August 12, 2001		10.7			10.7	1,541	11.53
August 13, 2001		8.8			8.8	1,267	9.48
August 14, 2001		11.6			11.6	1,670	12.50
August 15, 2001		10			10	1,440	10.78
August 16, 2001		14			14	2,016	15.09
August 17, 2001		10			10	1,440	10.78
August 18, 2001		13.9			13.9	2,002	14.98
August 19, 2001		17.6			17.6	2,534	18.96
August 20, 2001		13			13	1,872	14.01
August 21, 2001		9.6			9.6	1,382	10.34
August 22, 2001		12.3			12.3	1,771	13.25
August 23, 2001		13.1			13.1	1,886	14.12
August 24, 2001		14.7			14.7	2,117	15.84
August 25, 2001		9.3			9.3	1,339	10.02
August 26, 2001		11.2			11.2	1,613	12.07
August 27, 2001		12.2			12.2	1,757	13.15
August 28, 2001		13.6			13.6	1,958	14.65
August 29, 2001		11.9			11.9	1,714	12.82
August 30, 2001		9.9			9.9	1,426	10.67
August 31, 2001		12.3			12.3	1,771	13.25
September 1, 2001		15.1			15.1	2,174	16.27

Date	Clintondale Pumps Operation Data					Wastewater Pumped (x1000 cu. ft.) @ 40cfs	Wastewater Pumped (MG) @ 25.86 MGD
	Hours of Operation						
	Santary Pump #1	Santary Pump #2	Santary Pump #3	Santary Pump #4	Total		
September 2, 2001		8			8	1,152	8.62
September 3, 2001		13.5			13.5	1,944	14.55
September 4, 2001		11.4			11.4	1,642	12.28
September 5, 2001		9.9			9.9	1,426	10.67
September 6, 2001		14			14	2,016	15.09
September 7, 2001		13			13	1,872	14.01
September 8, 2001		10.9			10.9	1,570	11.74
September 9, 2001		14			14	2,016	15.09
September 10, 2001		15.4			15.4	2,218	16.59
September 11, 2001		12			12	1,728	12.93
September 12, 2001		15			15	2,160	16.16
September 13, 2001		10.1			10.1	1,454	10.88
September 14, 2001		13.7			13.7	1,973	14.76
September 15, 2001		11.2			11.2	1,613	12.07
September 16, 2001		12.6			12.6	1,814	13.58
September 17, 2001		11.3			11.3	1,627	12.18
September 18, 2001		14.2			14.2	2,045	15.30
September 19, 2001		13.7			13.7	1,973	14.76
September 20, 2001		17.3			17.3	2,491	18.64
September 21, 2001		13			13	1,872	14.01
September 22, 2001		13.3			13.3	1,915	14.33
September 23, 2001		13.6			13.6	1,958	14.65
September 24, 2001		12.2			12.2	1,757	13.15
September 25, 2001		14.8			14.8	2,131	15.95
September 26, 2001		11.6			11.6	1,670	12.50
September 27, 2001		15.8			15.8	2,275	17.02
September 28, 2001		13.8			13.8	1,987	14.87
September 29, 2001		10.9			10.9	1,570	11.74
September 30, 2001		15.5			15.5	2,232	16.70
October 1, 2001		13.8			13.8	1,987	14.87
October 2, 2001		12.6			12.6	1,814	13.58
October 3, 2001		13.7			13.7	1,973	14.76
October 4, 2001		12.5			12.5	1,800	13.47
October 5, 2001		18.7	4		22.7	3,269	24.46
October 6, 2001		18.4	2.8		21.2	3,053	22.84
October 7, 2001		0.6	15.1		15.7	2,261	16.92
October 8, 2001		7.1	6		13.1	1,886	14.12
October 9, 2001		12.1			12.1	1,742	13.04
October 10, 2001		14.9			14.9	2,146	16.05
October 11, 2001		8.3			8.3	1,195	8.94
October 12, 2001		24	2.8		26.8	3,859	28.88
October 13, 2001		17.9			17.9	2,578	19.29
October 14, 2001		21.3			21.3	3,067	22.95
October 15, 2001		18.2			18.2	2,621	19.61
October 16, 2001		21.3	0.8		22.1	3,182	23.81
October 17, 2001		24	15.7		39.7	5,717	42.78
October 18, 2001		15.4			15.4	2,218	16.59
October 19, 2001		19.5			19.5	2,808	21.01
October 20, 2001		17.2			17.2	2,477	18.53
October 21, 2001		14.8			14.8	2,131	15.95
October 22, 2001		11.4	3.8		15.2	2,189	16.38
October 23, 2001		3.8	11.3		15.1	2,174	16.27
October 24, 2001		6.6	9.9		16.5	2,376	17.78
October 25, 2001		10.3	7.6		17.9	2,578	19.29
October 26, 2001		6.5	16.1		22.6	3,254	24.35
October 27, 2001		2.8	6.9		9.7	1,397	10.45
October 28, 2001		4	11.2		15.2	2,189	16.38
October 29, 2001		6.8	9.8		16.6	2,390	17.89
October 30, 2001		1.3	14		15.3	2,203	16.49
October 31, 2001		4.5	9.7		14.2	2,045	15.30
November 1, 2001		3.3	9.5		12.8	1,843	13.79

Date	Clintondale Pumps Operation Data					Wastewater Pumped (x1000 cu. ft.) @ 40cfs	Wastewater Pumped (MG) @ 25.86 MGD
	Hours of Operation						
	Santary Pump #1	Santary Pump #2	Santary Pump #3	Santary Pump #4	Total		
November 2, 2001		3	11.8		14.8	2,131	15.95
November 3, 2001		5.2	5.1		10.3	1,483	11.10
November 4, 2001		12.2	5.6		17.8	2,563	19.18
November 5, 2001		7.5	4.7		12.2	1,757	13.15
November 6, 2001		7.9	4		11.9	1,714	12.82
November 7, 2001		9.5	5.4		14.9	2,146	16.05
November 8, 2001		8.3	5.3		13.6	1,958	14.65
November 9, 2001		6.4	5.5		11.9	1,714	12.82
November 10, 2001		5.3	6.3		11.6	1,670	12.50
November 11, 2001		7.5	7.4		14.9	2,146	16.05
November 12, 2001		6.3	6.1		12.4	1,786	13.36
November 13, 2001		5.3	8.8		14.1	2,030	15.19
November 14, 2001		7.7	7.3		15	2,160	16.16
November 15, 2001		4.4	12.8		17.2	2,477	18.53
November 16, 2001		8.6	4.7		13.3	1,915	14.33
November 17, 2001		5.3	9.5		14.8	2,131	15.95
November 18, 2001		6.3	5		11.3	1,627	12.18
November 19, 2001		5.8	8		13.8	1,987	14.87
November 20, 2001		6.2	7.3		13.5	1,944	14.55
November 21, 2001		2.9	11.1		14	2,016	15.09
November 22, 2001		9.8	3.1		12.9	1,858	13.90
November 23, 2001		7.4	6		13.4	1,930	14.44
November 24, 2001		1.3	12.9		14.2	2,045	15.30
November 25, 2001		8.3	5.2		13.5	1,944	14.55
November 26, 2001		4.9	8.5		13.4	1,930	14.44
November 27, 2001		3.1	6.1		9.2	1,325	9.91
November 28, 2001		4.3	10.1		14.4	2,074	15.52
November 29, 2001		3.4	12.4		15.8	2,275	17.02
November 30, 2001		15.1	20.5		35.6	5,126	38.36
December 1, 2001		7.2	19.4		26.6	3,830	28.66
December 2, 2001		9.3	11.3		20.6	2,966	22.20
December 3, 2001		9.7	5.9		15.6	2,246	16.81
December 4, 2001		6.8	7.1		13.9	2,002	14.98
December 5, 2001		6.4	9.8		16.2	2,333	17.46
December 6, 2001		7.4	6.7		14.1	2,030	15.19
December 7, 2001		5	8.9		13.9	2,002	14.98
December 8, 2001		9.3	5.2		14.5	2,088	15.62
December 9, 2001		4.8	7.3		12.1	1,742	13.04
December 10, 2001		4.7	9.9		14.6	2,102	15.73
December 11, 2001		5.9	4.3		10.2	1,469	10.99
December 12, 2001		6	7.2		13.2	1,901	14.22
December 13, 2001		5.8	7.8		13.6	1,958	14.65
December 14, 2001		13.8	1.8		15.6	2,246	16.81
December 15, 2001		4.1	11		15.1	2,174	16.27
December 16, 2001		11.3	5.5		16.8	2,419	18.10
December 17, 2001		15.3	3.7		19	2,736	20.47
December 18, 2001		6.6	8.8		15.4	2,218	16.59
December 19, 2001		13.5	7.9		21.4	3,082	23.06
December 20, 2001		0.9	7.3		8.2	1,181	8.84
December 21, 2001		9.1	12.4		21.5	3,096	23.17
December 22, 2001		10	8.1		18.1	2,606	19.50
December 23, 2001		9	7		16	2,304	17.24
December 24, 2001		8.8	6.1		14.9	2,146	16.05
December 25, 2001		7.2	7.3		14.5	2,088	15.62
December 26, 2001		5.2	10.7		15.9	2,290	17.13
December 27, 2001		2.4	13.4		15.8	2,275	17.02
December 28, 2001		8.6	4.8		13.4	1,930	14.44
December 29, 2001		5.4	8.5		13.9	2,002	14.98
December 30, 2001		14.3	0.4		14.7	2,117	15.84
December 31, 2001		7	6.7		13.7	1,973	14.76
				Maximum	43.0	6,192	46

Date	Clintondale Pumps Operation Data					Wastewater Pumped (x1000 cu. ft.) @ 40cfs	Wastewater Pumped (MG) @ 25.86 MGD
	Hours of Operation						
	Santary Pump #1	Santary Pump #2	Santary Pump #3	Santary Pump #4	Total		
				Average	14.2	2,050	15
				Minimum	-	-	-

Date	Clintondale Pumps Operation Data					Wastewater Pumped (x1000 cu. ft.) @ 40cfs	Wastewater Pumped (MG) @ 25.86 MGD
	Hours of Operation						
	Santary Pump #1	Santary Pump #2	Santary Pump #3	Santary Pump #4	Total		
January 1, 2002		4	10.2		14.2	2,045	15.30
January 2, 2002		5.2	12.3		17.5	2,520	18.86
January 3, 2002		4	9.2		13.2	1,901	14.22
January 4, 2002		5	6.1		11.1	1,598	11.96
January 5, 2002		5.8	5.7		11.5	1,656	12.39
January 6, 2002		7.7	5.3		13	1,872	14.01
January 7, 2002		9.5	4.7		14.2	2,045	15.30
January 8, 2002		5.9	5.3		11.2	1,613	12.07
January 9, 2002		9.1	3.4		12.5	1,800	13.47
January 10, 2002		10	2.6		12.6	1,814	13.58
January 11, 2002		9.2	3.3		12.5	1,800	13.47
January 12, 2002		6.3	5		11.3	1,627	12.18
January 13, 2002		6.1	6		12.1	1,742	13.04
January 14, 2002		8.3	5.5		13.8	1,987	14.87
January 15, 2002		4.8	5.5		10.3	1,483	11.10
January 16, 2002		4	8.2		12.2	1,757	13.15
January 17, 2002		6.3	5.5		11.8	1,699	12.71
January 18, 2002		6.9	6.2		13.1	1,886	14.12
January 19, 2002		8.7	4.6		13.3	1,915	14.33
January 20, 2002		6	7		13	1,872	14.01
January 21, 2002		6.1	7		13.1	1,886	14.12
January 22, 2002		2.3	8.3		10.6	1,526	11.42
January 23, 2002		5.6	8		13.6	1,958	14.65
January 24, 2002		3.6	10.3		13.9	2,002	14.98
January 25, 2002		3.2	10		13.2	1,901	14.22
January 26, 2002		5.4	8.1		13.5	1,944	14.55
January 27, 2002		7.5	4		11.5	1,656	12.39
January 28, 2002		1.9	5		6.9	994	7.43
January 29, 2002		4.9	7.9		12.8	1,843	13.79
January 30, 2002		5.8	4.8		10.6	1,526	11.42
January 31, 2002		2.7	9.4		12.1	1,742	13.04
February 1, 2002		13.1	5		18.1	2,606	19.50
February 2, 2002		5.7	9.8		15.5	2,232	16.70
February 3, 2002		4.7	11.3		16	2,304	17.24
February 4, 2002		4.2	20.6		24.8	3,571	26.72
February 5, 2002		7.3	7.3		14.6	2,102	15.73
February 6, 2002		6.3	6.5		12.8	1,843	13.79
February 7, 2002		6.4	10.3		16.7	2,405	17.99
February 8, 2002		12.2	1.2		13.4	1,930	14.44
February 9, 2002		2.5	12		14.5	2,088	15.62
February 10, 2002		3	16		19	2,736	20.47
February 11, 2002		11.4	5.5		16.9	2,434	18.21
February 12, 2002		1.3	14		15.3	2,203	16.49
February 13, 2002		8.9	6		14.9	2,146	16.05
February 14, 2002		3	8.4		11.4	1,642	12.28
February 15, 2002		10.5	4.4		14.9	2,146	16.05
February 16, 2002		6.8	7.3		14.1	2,030	15.19
February 17, 2002		4.5	10.5		15	2,160	16.16
February 18, 2002		5.1	8.3		13.4	1,930	14.44
February 19, 2002		4.3	11.5		15.8	2,275	17.02
February 20, 2002		5	12.5		17.5	2,520	18.86
February 21, 2002			22.2		22.2	3,197	23.92
February 22, 2002		12.2	6.8		19	2,736	20.47
February 23, 2002		1.8	14.4		16.2	2,333	17.46
February 24, 2002		1.2	15.2		16.4	2,362	17.67
February 25, 2002		4.7	8.3		13	1,872	14.01
February 26, 2002		7.4	8.5		15.9	2,290	17.13
February 27, 2002		10.6	6.8		17.4	2,506	18.75
February 28, 2002		6.3	8.5		14.8	2,131	15.95
March 1, 2002		8.8	3.1		11.9	1,714	12.82

Date	Clintondale Pumps Operation Data					Wastewater Pumped (x1000 cu. ft.) @ 40cfs	Wastewater Pumped (MG) @ 25.86 MGD
	Hours of Operation						
	Santary Pump #1	Santary Pump #2	Santary Pump #3	Santary Pump #4	Total		
March 2, 2002		7.8	8.2		16	2,304	17.24
March 3, 2002		23.3	1.3		24.6	3,542	26.51
March 4, 2002		11.3	4.1		15.4	2,218	16.59
March 5, 2002		3.8	11.3		15.1	2,174	16.27
March 6, 2002		9.6	6.4		16	2,304	17.24
March 7, 2002		6.5	8.7		15.2	2,189	16.38
March 8, 2002		2.2	13.1		15.3	2,203	16.49
March 9, 2002		5.3	10.1		15.4	2,218	16.59
March 10, 2002		7	10		17	2,448	18.32
March 11, 2002		10.7	4.7		15.4	2,218	16.59
March 12, 2002		8	7.9		15.9	2,290	17.13
March 13, 2002		0.3	11		11.3	1,627	12.18
March 14, 2002		10.1	5.3		15.4	2,218	16.59
March 15, 2002		4.3	7.7		12	1,728	12.93
March 16, 2002		5.3	7.4		12.7	1,829	13.68
March 17, 2002		5	8.3		13.3	1,915	14.33
March 18, 2002		3.7	10.9		14.6	2,102	15.73
March 19, 2002		7.1	3.6		10.7	1,541	11.53
March 20, 2002		17.3	7.3		24.6	3,542	26.51
March 21, 2002		5.5	8.8		14.3	2,059	15.41
March 22, 2002		7.2	5.6		12.8	1,843	13.79
March 23, 2002		3.9	9.6		13.5	1,944	14.55
March 24, 2002		10.4	1.5		11.9	1,714	12.82
March 25, 2002		6	7		13	1,872	14.01
March 26, 2002		3.6	13.8		17.4	2,506	18.75
March 27, 2002		5.2	9.1		14.3	2,059	15.41
March 28, 2002		8.3	2.9		11.2	1,613	12.07
March 29, 2002		2.3	11.6		13.9	2,002	14.98
March 30, 2002		8.5	4.8		13.3	1,915	14.33
March 31, 2002		5.6	7.8		13.4	1,930	14.44
April 1, 2002		7.8	5.4		13.2	1,901	14.22
April 2, 2002		1.9	16.3		18.2	2,621	19.61
April 3, 2002		9.9	5		14.9	2,146	16.05
April 4, 2002		1.5	13.4		14.9	2,146	16.05
April 5, 2002		2.6	9.1		11.7	1,685	12.61
April 6, 2002		5	8		13	1,872	14.01
April 7, 2002		11.3	5.4		16.7	2,405	17.99
April 8, 2002		9.8	5.3		15.1	2,174	16.27
April 9, 2002		24			24	3,456	25.86
April 10, 2002		13.8	5.6		19.4	2,794	20.90
April 11, 2002		0.3	14.2		14.5	2,088	15.62
April 12, 2002		7.9	6		13.9	2,002	14.98
April 13, 2002		20	5.8		25.8	3,715	27.80
April 14, 2002		5.7	12		17.7	2,549	19.07
April 15, 2002		11	4.4		15.4	2,218	16.59
April 16, 2002		3.5	12.6		16.1	2,318	17.35
April 17, 2002		7.2	7.2		14.4	2,074	15.52
April 18, 2002		7	9.8		16.8	2,419	18.10
April 19, 2002		3.8	11.1		14.9	2,146	16.05
April 20, 2002		3.1	10.3		13.4	1,930	14.44
April 21, 2002		3.6	11.9		15.5	2,232	16.70
April 22, 2002		2.1	12.7		14.8	2,131	15.95
April 23, 2002		4.9	13.4		18.3	2,635	19.72
April 24, 2002		5.5	7.6		13.1	1,886	14.12
April 25, 2002		6.7	5.5		12.2	1,757	13.15
April 26, 2002		8.4	6.4		14.8	2,131	15.95
April 27, 2002		6.6	5.5		12.1	1,742	13.04
April 28, 2002		6	7.8		13.8	1,987	14.87
April 29, 2002		4.7	10.7		15.4	2,218	16.59
April 30, 2002		4.3	10.7		15	2,160	16.16

Date	Clintondale Pumps Operation Data					Wastewater Pumped (x1000 cu. ft.) @ 40cfs	Wastewater Pumped (MG) @ 25.86 MGD
	Hours of Operation						
	Santary Pump #1	Santary Pump #2	Santary Pump #3	Santary Pump #4	Total		
May 1, 2002		2.2	11.9		14.1	2,030	15.19
May 2, 2002		3.2	13.4		16.6	2,390	17.89
May 3, 2002		8.2	3.9		12.1	1,742	13.04
May 4, 2002		10	7.1		17.1	2,462	18.43
May 5, 2002		6.2	5.8		12	1,728	12.93
May 6, 2002		6	6.9		12.9	1,858	13.90
May 7, 2002		7.7	5.7		13.4	1,930	14.44
May 8, 2002		3.1	10.2		13.3	1,915	14.33
May 9, 2002		5.6	6.4		12	1,728	12.93
May 10, 2002		9.7	4.4		14.1	2,030	15.19
May 11, 2002		6.8	6.8		13.6	1,958	14.65
May 12, 2002		3.3	14.6		17.9	2,578	19.29
May 13, 2002		7.3	8.6		15.9	2,290	17.13
May 14, 2002		2.8	14.7		17.5	2,520	18.86
May 15, 2002		8.8	4.4		13.2	1,901	14.22
May 16, 2002		6.9	4.8		11.7	1,685	12.61
May 17, 2002		5.8	9.5		15.3	2,203	16.49
May 18, 2002		3.4	10.1		13.5	1,944	14.55
May 19, 2002		5.1	9.2		14.3	2,059	15.41
May 20, 2002		6.4	7		13.4	1,930	14.44
May 21, 2002		5.7	7.2		12.9	1,858	13.90
May 22, 2002		8.3	4		12.3	1,771	13.25
May 23, 2002		3.6	6.4		10	1,440	10.78
May 24, 2002		3.9	10.8		14.7	2,117	15.84
May 25, 2002		3.3	8.2		11.5	1,656	12.39
May 26, 2002		8.6	2.5		11.1	1,598	11.96
May 27, 2002		4.8	8		12.8	1,843	13.79
May 28, 2002		3.2	4.9		8.1	1,166	8.73
May 29, 2002		12.7	1.5		14.2	2,045	15.30
May 30, 2002		9	2.8		11.8	1,699	12.71
May 31, 2002		8.9	2.8		11.7	1,685	12.61
June 1, 2002		0.6	11		11.6	1,670	12.50
June 2, 2002		3.7	9.3		13	1,872	14.01
June 3, 2002		4.7	7.7		12.4	1,786	13.36
June 4, 2002		8.6	7.6		16.2	2,333	17.46
June 5, 2002		6	4.3		10.3	1,483	11.10
June 6, 2002		6	3.4		9.4	1,354	10.13
June 7, 2002		4.7	2.3		7	1,008	7.54
June 8, 2002		5.3	9.2		14.5	2,088	15.62
June 9, 2002		6.6	3.1		9.7	1,397	10.45
June 10, 2002		9.2	3		12.2	1,757	13.15
June 11, 2002		8.5	2.8		11.3	1,627	12.18
June 12, 2002		5.4	6.9		12.3	1,771	13.25
June 13, 2002		3.9	12.2		16.1	2,318	17.35
June 14, 2002		7.3	4.5		11.8	1,699	12.71
June 15, 2002		2.9	9		11.9	1,714	12.82
June 16, 2002		7.2	4.2		11.4	1,642	12.28
June 17, 2002		16.5	5.5		22	3,168	23.71
June 18, 2002		2.4	8		10.4	1,498	11.21
June 19, 2002		6.4	3.3		9.7	1,397	10.45
June 20, 2002			10.7		10.7	1,541	11.53
June 21, 2002		1.5	7.7		9.2	1,325	9.91
June 22, 2002		4.3	9.2		13.5	1,944	14.55
June 23, 2002		2.8	8.8		11.6	1,670	12.50
June 24, 2002		5.3	8.1		13.4	1,930	14.44
June 25, 2002		3.3	8.7		12	1,728	12.93
June 26, 2002		2.5	8.5		11	1,584	11.85
June 27, 2002		2.3	10.1		12.4	1,786	13.36
June 28, 2002		4.1	8.1		12.2	1,757	13.15
June 29, 2002		8.5	3		11.5	1,656	12.39

Date	Clintondale Pumps Operation Data					Wastewater Pumped (x1000 cu. ft.) @ 40cfs	Wastewater Pumped (MG) @ 25.86 MGD
	Hours of Operation						
	Santary Pump #1	Santary Pump #2	Santary Pump #3	Santary Pump #4	Total		
June 30, 2002		7.2	4.4		11.6	1,670	12.50
July 1, 2002		0.9	11.4		12.3	1,771	13.25
July 2, 2002		2.3	9.5		11.8	1,699	12.71
July 3, 2002		7.7	3.7		11.4	1,642	12.28
July 4, 2002		6.4	2.7		9.1	1,310	9.81
July 5, 2002		2.5	5.8		8.3	1,195	8.94
July 6, 2002		1.8	8.8		10.6	1,526	11.42
July 7, 2002		7.9	2.3		10.2	1,469	10.99
July 8, 2002		1.9	8.6		10.5	1,512	11.31
July 9, 2002		2	10.7		12.7	1,829	13.68
July 10, 2002					0	-	0.00
July 11, 2002		4	9.4		13.4	1,930	14.44
July 12, 2002		6.2	4.1		10.3	1,483	11.10
July 13, 2002		5.9	5.3		11.2	1,613	12.07
July 14, 2002		6.9	7.6		14.5	2,088	15.62
July 15, 2002		5.8	8.9		14.7	2,117	15.84
July 16, 2002		5	5		10	1,440	10.78
July 17, 2002		8.3	1		9.3	1,339	10.02
July 18, 2002		6.8	7.3		14.1	2,030	15.19
July 19, 2002		6.4	5.4		11.8	1,699	12.71
July 20, 2002		8.1	5.2		13.3	1,915	14.33
July 21, 2002		1	11.8		12.8	1,843	13.79
July 22, 2002		5.6	8.3		13.9	2,002	14.98
July 23, 2002		8.8	6.6		15.4	2,218	16.59
July 24, 2002		9.5	1.8		11.3	1,627	12.18
July 25, 2002		6.3	5.7		12	1,728	12.93
July 26, 2002		1.7	10.7		12.4	1,786	13.36
July 27, 2002		3.3	11.7		15	2,160	16.16
July 28, 2002		4.8	9		13.8	1,987	14.87
July 29, 2002		4.3	9.1		13.4	1,930	14.44
July 30, 2002		3.8	8.7		12.5	1,800	13.47
July 31, 2002		3.8	7.2		11	1,584	11.85
August 1, 2002		5.7	5.5		11.2	1,613	12.07
August 2, 2002		7.5	5.7		13.2	1,901	14.22
August 3, 2002		8.3	3.5		11.8	1,699	12.71
August 4, 2002		4.3	12		16.3	2,347	17.56
August 5, 2002		7.6	2.7		10.3	1,483	11.10
August 6, 2002		4.1	9.3		13.4	1,930	14.44
August 7, 2002		5.3	6		11.3	1,627	12.18
August 8, 2002		1.8	5.6		7.4	1,066	7.97
August 9, 2002		2.3	9.4		11.7	1,685	12.61
August 10, 2002		7.6	3.5		11.1	1,598	11.96
August 11, 2002		3.4	7		10.4	1,498	11.21
August 12, 2002		7.9	3.4		11.3	1,627	12.18
August 13, 2002		2.9	6.7		9.6	1,382	10.34
August 14, 2002		5.4	6.5		11.9	1,714	12.82
August 15, 2002		5.2	5.9		11.1	1,598	11.96
August 16, 2002		8.7	2.3		11	1,584	11.85
August 17, 2002		3.7	9.7		13.4	1,930	14.44
August 18, 2002		1	9.4		10.4	1,498	11.21
August 19, 2002		2.8	7.1		9.9	1,426	10.67
August 20, 2002		5.4	9.3		14.7	2,117	15.84
August 21, 2002		3.2	7.5		10.7	1,541	11.53
August 22, 2002		4.7	7.7		12.4	1,786	13.36
August 23, 2002		6.9	1		7.9	1,138	8.51
August 24, 2002		10.5	2.9		13.4	1,930	14.44
August 25, 2002		7.4	3.8		11.2	1,613	12.07
August 26, 2002		7.8	4		11.8	1,699	12.71
August 27, 2002		6	5.3		11.3	1,627	12.18
August 28, 2002		3.6	5.8		9.4	1,354	10.13

Date	Clintondale Pumps Operation Data					Wastewater Pumped (x1000 cu. ft.) @ 40cfs	Wastewater Pumped (MG) @ 25.86 MGD
	Hours of Operation						
	Santary Pump #1	Santary Pump #2	Santary Pump #3	Santary Pump #4	Total		
August 29, 2002		2.9	5.4		8.3	1,195	8.94
August 30, 2002		8.5	3.2		11.7	1,685	12.61
August 31, 2002		5.6	1.7		7.3	1,051	7.87
September 1, 2002		4.9	5.6		10.5	1,512	11.31
September 2, 2002		6.3	4.8		11.1	1,598	11.96
September 3, 2002		4.9	6.7		11.6	1,670	12.50
September 4, 2002		4	4.8		8.8	1,267	9.48
September 5, 2002		5.8	8		13.8	1,987	14.87
September 6, 2002		4.9	3.5		8.4	1,210	9.05
September 7, 2002		3.6	6.3		9.9	1,426	10.67
September 8, 2002		6	7.1		13.1	1,886	14.12
September 9, 2002		2.6	7.8		10.4	1,498	11.21
September 10, 2002		7.8	2.9		10.7	1,541	11.53
September 11, 2002		4.7	6.7		11.4	1,642	12.28
September 12, 2002		7.7	3.1		10.8	1,555	11.64
September 13, 2002		2.8	8.8		11.6	1,670	12.50
September 14, 2002		3.7	6.7		10.4	1,498	11.21
September 15, 2002		7.2	4.1		11.3	1,627	12.18
September 16, 2002		3.7	6.7		10.4	1,498	11.21
September 17, 2002		5.5	4.7		10.2	1,469	10.99
September 18, 2002		5.3	6.8		12.1	1,742	13.04
September 19, 2002		6	4.2		10.2	1,469	10.99
September 20, 2002		2.4	8.4		10.8	1,555	11.64
September 21, 2002		5.7	6.2		11.9	1,714	12.82
September 22, 2002		4.2	6		10.2	1,469	10.99
September 23, 2002		7.1	4.3		11.4	1,642	12.28
September 24, 2002		8.5	0.5		9	1,296	9.70
September 25, 2002		2.1	6.9		9	1,296	9.70
September 26, 2002		5.8	4		9.8	1,411	10.56
September 27, 2002		8.6	4.7		13.3	1,915	14.33
September 28, 2002		2.3	9		11.3	1,627	12.18
September 29, 2002		6.5	2.2		8.7	1,253	9.37
September 30, 2002		3.1	6.6		9.7	1,397	10.45
October 1, 2002		10	3.4		13.4	1,930	14.44
October 2, 2002		7	4.8		11.8	1,699	12.71
October 3, 2002		6	4.8		10.8	1,555	11.64
October 4, 2002		8.8	1.8		10.6	1,526	11.42
October 5, 2002		3.4	9.2		12.6	1,814	13.58
October 6, 2002		2.8	7.2		10	1,440	10.78
October 7, 2002		6.1	5.3		11.4	1,642	12.28
October 8, 2002		7.7	2.5		10.2	1,469	10.99
October 9, 2002		4.7	7.5		12.2	1,757	13.15
October 10, 2002		4.8	2.3		7.1	1,022	7.65
October 11, 2002		5.4	7.6		13	1,872	14.01
October 12, 2002		4.9	7		11.9	1,714	12.82
October 13, 2002		8.3	2.3		10.6	1,526	11.42
October 14, 2002		4.4	6.9		11.3	1,627	12.18
October 15, 2002		3.5	5.8		9.3	1,339	10.02
October 16, 2002		3.5	8.1		11.6	1,670	12.50
October 17, 2002		7.7	4.9		12.6	1,814	13.58
October 18, 2002		3.5	6.3		9.8	1,411	10.56
October 19, 2002		5.3	2.4		7.7	1,109	8.30
October 20, 2002		9.3	5.4		14.7	2,117	15.84
October 21, 2002			11.5		11.5	1,656	12.39
October 22, 2002		3.8	7.9		11.7	1,685	12.61
October 23, 2002		2.8	8.3		11.1	1,598	11.96
October 24, 2002		3.3	7.5		10.8	1,555	11.64
October 25, 2002		4.1	7.5		11.6	1,670	12.50
October 26, 2002		8.6	1.7		10.3	1,483	11.10
October 27, 2002		7.3	3.6		10.9	1,570	11.74

Date	Clintondale Pumps Operation Data					Wastewater Pumped (x1000 cu. ft.) @ 40cfs	Wastewater Pumped (MG) @ 25.86 MGD
	Hours of Operation						
	Santary Pump #1	Santary Pump #2	Santary Pump #3	Santary Pump #4	Total		
October 28, 2002		3.1	4.4		7.5	1,080	8.08
October 29, 2002		3.2	8.3		11.5	1,656	12.39
October 30, 2002		5.2	4.1		9.3	1,339	10.02
October 31, 2002		4.5	6.6		11.1	1,598	11.96
November 1, 2002		6.4	4.8		11.2	1,613	12.07
November 2, 2002		6.5	3.8		10.3	1,483	11.10
November 3, 2002		3.4	7.6		11	1,584	11.85
November 4, 2002		3.5	6.1		9.6	1,382	10.34
November 5, 2002		6.7	4		10.7	1,541	11.53
November 6, 2002		5.4	5.7		11.1	1,598	11.96
November 7, 2002		4.3	5.9		10.2	1,469	10.99
November 8, 2002		4.3	5.1		9.4	1,354	10.13
November 9, 2002		7.2	3.6		10.8	1,555	11.64
November 10, 2002		3.5	11.2		14.7	2,117	15.84
November 11, 2002		5	5.7		10.7	1,541	11.53
November 12, 2002		7.3	3		10.3	1,483	11.10
November 13, 2002		5.4	4.8		10.2	1,469	10.99
November 14, 2002		5.2	7.2		12.4	1,786	13.36
November 15, 2002		5.3	7.8		13.1	1,886	14.12
November 16, 2002		3.3	6		9.3	1,339	10.02
November 17, 2002		10			10	1,440	10.78
November 18, 2002		5.1	3.6		8.7	1,253	9.37
November 19, 2002		5.3	7.1		12.4	1,786	13.36
November 20, 2002		2.7	7.7		10.4	1,498	11.21
November 21, 2002		5.5	7.5		13	1,872	14.01
November 22, 2002		6.9	6.2		13.1	1,886	14.12
November 23, 2002		4.8	9.1		13.9	2,002	14.98
November 24, 2002		4.2	6.2		10.4	1,498	11.21
November 25, 2002		7.8	3.8		11.6	1,670	12.50
November 26, 2002		1.7	7.9		9.6	1,382	10.34
November 27, 2002		3.3	6.2		9.5	1,368	10.24
November 28, 2002		5.9	8.3		14.2	2,045	15.30
November 29, 2002		4.3	4		8.3	1,195	8.94
November 30, 2002		2.5	9.3		11.8	1,699	12.71
December 1, 2002		6	3.8		9.8	1,411	10.56
December 2, 2002		9.4			9.4	1,354	10.13
December 3, 2002		4.7	6.4		11.1	1,598	11.96
December 4, 2002		6.5	4.3		10.8	1,555	11.64
December 5, 2002		6.2	2.8		9	1,296	9.70
December 6, 2002		3	7.9		10.9	1,570	11.74
December 7, 2002		2.3	6.6		8.9	1,282	9.59
December 8, 2002		6.1	5.5		11.6	1,670	12.50
December 9, 2002		3.2	4.1		7.3	1,051	7.87
December 10, 2002		4.9	4.5		9.4	1,354	10.13
December 11, 2002		4.9	6		10.9	1,570	11.74
December 12, 2002		6.7	3.6		10.3	1,483	11.10
December 13, 2002		5.2	7.5		12.7	1,829	13.68
December 14, 2002		1.2	9.9		11.1	1,598	11.96
December 15, 2002			10.5		10.5	1,512	11.31
December 16, 2002		5.7	5.6		11.3	1,627	12.18
December 17, 2002		9.7	1.3		11	1,584	11.85
December 18, 2002		5.6	4.6		10.2	1,469	10.99
December 19, 2002		3.9	8.9		12.8	1,843	13.79
December 20, 2002		5.8	6.9		12.7	1,829	13.68
December 21, 2002		7	6.9		13.9	2,002	14.98
December 22, 2002		3.5	7.5		11	1,584	11.85
December 23, 2002		7.7	4.7		12.4	1,786	13.36
December 24, 2002		5.3	0.7		6	864	6.47
December 25, 2002		6.1	5.7		11.8	1,699	12.71
December 26, 2002		1.8	8.3		10.1	1,454	10.88

Date	Clintondale Pumps Operation Data					Wastewater Pumped (x1000 cu. ft.) @ 40cfs	Wastewater Pumped (MG) @ 25.86 MGD
	Hours of Operation						
	Santary Pump #1	Santary Pump #2	Santary Pump #3	Santary Pump #4	Total		
December 27, 2002		4.4	8.3		12.7	1,829	13.68
December 28, 2002			16.8		16.8	2,419	18.10
December 29, 2002		7.9	2.3		10.2	1,469	10.99
December 30, 2002		5.4	4.1		9.5	1,368	10.24
December 31, 2002		3.8	7.1		10.9	1,570	11.74
				Maximum	25.8	3,715	28
				Average	12.5	1,807	14
				Minimum	-	-	-