

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

This CSO Long-Term Control Plan provided a general review of Ohio's Combined Sewer Overflow Strategy along with developing sanitary collection system alternatives for meeting current National Pollutant Discharge Elimination System (NPDES) requirements.

Four (4) sewer collection system alternatives were developed and analyzed. Alternative No. 1 proposed the construction of a new separated sanitary sewer system which consists of constructing approximately 21,200 lineal feet of conventional gravity sewers at an estimated cost of \$2,605,486. Alternative No. 2 evaluated a Septic Tank-Small Diameter Shallow Gravity System at \$4,870,632. The third alternative was estimated at \$2,996,110 for a Low Pressure Grinder Pump Sewer System and alternative no. 4 included a Vacuum Sewer System at an estimated cost of \$3,111,888.

Recommendations

Based on the preliminary findings of this report and on-going discussions with Village officials, it is our recommendation that the Village of Malta consider as their combined sewer long-term strategy, Alternative No. 1 - the construction of a new separated sanitary sewer system which consists of constructing approximately 21,200 lineal feet of conventional gravity sewers.

The normal time required to secure appropriate funding, design and construction for a project of this magnitude is approximately five (5) years. Due to the Village's financial capabilities it may only be possible to complete the sanitary sewer separation (CSO elimination) project over a ten (10) year period.

Table 8 illustrates a proposed schedule of events for a ten (10) year completion period. The sanitary sewer separation project will be constructed in three (3) phases; each of the three (3) phases will be constructed every 3.33 years (40 months).

TABLE 8
PROPOSED SCHEDULE OF EVENTS (10 years)

No.	Task	No. of Months After Approval of Long-Term Control Plan or LTCP by Ohio EPA
PHASE 1		
1	Prepare and submit appropriate funding applications to complete the project	4
2	Upon receiving affordable planning and construction funding, begin design of the proposed improvements	10
3	Complete funding applications along with engineering design and submit to funding agencies and to Ohio EPA for review and approval	18
4	Receive funding agency's and Ohio EPA's approval for construction	22
5	Start construction Phase 1	28
6	Complete construction Phase 1	40
PHASE 2		
1	Prepare and submit appropriate funding applications to complete the project	44
2	Upon receiving affordable planning and construction funding, begin design of the proposed improvements	50
3	Complete funding applications along with engineering design and submit to funding agencies and to Ohio EPA for review and approval	58
4	Receive funding agency's and Ohio EPA's approval for construction	62
5	Start construction Phase 2	68
6	Complete construction Phase 2	80
PHASE 3		
1	Prepare and submit appropriate funding applications to complete the project	84
2	Upon receiving affordable planning and construction funding, begin design of the proposed improvements	90

TABLE 8 PROPOSED SCHEDULE OF EVENTS (10 years)		
No.	Task	No. of Months After Approval of Long-Term Control Plan or LTCP by Ohio EPA
3	Complete funding applications along with engineering design and submit to funding agencies and to Ohio EPA for review and approval	98
4	Receive funding agency's and Ohio EPA's approval for construction	102
5	Start construction Phase 3	108
6	Complete construction Phase 3	120

Construction and project costs will increase every year due to inflation. When the Village completes the project over a 10 year period the total project costs is estimated to increase by approximately \$212,493.90. This increase is based on a three (3%) percent annual inflation rate.

The increase in construction and project costs could actually be offset by being able to secure additional grants for a phased project versus a single project. This is due to the fact that the Village can re-apply through the same grant programs for each of the three (3) phases. A further discussion on financing sources for the 10 year schedule follows this section.

The Village of Malta presently has ten (10) combined sewer overflows as previously illustrated on Plate 2 and listed in Table 2. The level of impact to the Muskingum River is based on the number of overflow occurrences, duration of discharge, volume of discharge and pollutants. At this time the Village did not have sufficient data available to develop a sewer system priority based on the level of impact to the Muskingum River.

The suggested phased sewer separation has therefore been based on a general review and discussion with Village personnel and is listed as follows:

Phase Sewer Separation:

Phase 1 - Bid 2008

CSO Nos. 3, 4, 5, 6, and 7

6,991 lineal feet Gravity Sewer

Total Estimated Project Cost: \$847,160.44

Phase 2 - Bid 2011

CSO Nos. 1 and 9

6,131 lineal feet Gravity Sewer

Total Estimated Project Cost: \$802,083.40

Phase 3 - Bid 2015

CSO Nos. 8 and 10

8,078 lineal feet Gravity Sewer

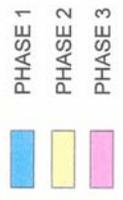
Total Estimated Project Cost: \$1,168,736.10

Plate 23 illustrates each of the areas for phased sanitary sewer separation.



CSO PRIORITY REMOVAL

CSO	LF	PHASE
CSO 3	2053 LF	PHASE 1
CSO 4&5	1072 LF	PHASE 1
CSO 2	1583 LF	PHASE 1
CSO 6	630 LF	PHASE 1
CSO 7	1653 LF	PHASE 1
CSO 1	2051 LF	PHASE 2
CSO 9	4080 LF	PHASE 2
CSO 8	5446 LF	PHASE 3
CSO 10	2632 LF	PHASE 3



REFERENCE:
ACAD DWG
R. HEYMAN
1/12/05
JOB #1312-017
FILE: PLATE15.DWG

PHASED 10 YEAR
CONVENTIONAL GRAVITY SEWER
SYSTEM SEPARATION
PLATE TWENTY THREE