Table of Contents

List of Tables

List of Figures

Appendices

CHAPTER 1 INTRODUCTION

The City of Huntington is one of more than 100 Indiana communities identified as containing combined sewers: sewers that accept both wastewater and stormwater to be treated by the wastewater treatment plant. During substantial rainfall events, the combined sewers are not able to handle the additional flow causing the excessive untreated flow to be released from the system at the combined sewer overflows (CSOs). The City's wastewater collection system serves an area of approximately 5,600 acres and includes 15 CSOs, which overflow into the Little River and Flint Creek during times of high wet weather flow. Of the 5,600 acres that compose the wastewater collection system, approximately 4,400 are separated sewers (**Figure 1-1**). As required by the State Judicial Agreement, a long-term control plan (LTCP) is to be developed and implemented to address the combined sewer overflows. A copy of the State Judicial Agreement is in **Appendix 1**.

The long term control plan focuses on the effect of the CSOs on water quality, and the evaluation of potential CSO abatement efforts.

This LTCP address the following items:

- System Characteristics and Sensitive Areas (Chapter 2)
- Previous CSO Abatement Efforts and projects (Chapter 3)
- Model Development and Calibration (Chapter 4)
- CSO Control Alternatives (Chapter 5)
- Public Participation (Chapter 6)
- Financial Capability and Implementation Schedule (Chapter 7)
- Cost Analysis vs. Performance (Chapter 8)
- Post-Construction Compliance (Chapter 9)

The City of Huntington's CSO LTCP was originally developed in 2003 by HNTB Corporation. The State Judicial Agreement required the City to update the plan in 2009. The plan was revised and updated (in 2010) by the Bonar Group. Again in July 2012, the CSO LTCP was updated by Bernardin, Lochmueller and Associates. The April 2013 update has been completed by Greeley and Hansen. The April 2013 update addresses the following components:

- Collection System Model Recalibration (completed by Bernadin, Lochmueller and Associates).
- Update of Storage Volumes for Alternatives 1A and 1B (per IDEM Non Rule Policy Document - Water 016).
- Update of WWTP Improvement and Frederick Street Project (Segment #5 and #6 of Interceptor Projects under Alternative 1A). The actual project costs have been provided.
- Project costs have been updated via the Engineering News Record Construction Costs Indices (ENRCCI)

- Development of Alternative 1C
- Revaluation of the Recommended Alternative

All new text in the April 2013 update is red in color. Text deleted from the report is indicated by a strikethrough (~~XXXX~~). The remaining text is as it was included in the July 2012 CSO LTCP.

A. CSO Operational Plan

Huntington received approval of their CSO Operational Plan in an IDEM letter dated May 14, 1998. The City is committed to completing revisions to the CSO Operational Plan throughout the implementation of the LTCP. This will include construction projects and O&M practices that may change.

The calibrated output was achieved by adjusting the watershed values and to a lesser extent, pipe Manning's n values, the %Zero-Imperv value, and the percent routed variable. These variables were adjusted because the initial values were only approximations instead of physically measured values like the elevation or pipe size data.

With the model calibrated, it was not possible to estimate the CSO volumes that would result from the 1-year, 1-hour storm and the 10-year, 1 hour storm. In accordance with IDEM non-rule policy document Water-0016, rainfall depths for the theoretical storms were taken from Bulletin 71, Rainfall Frequency Atlas of the Midwest. Huntington County is part of Climatic Section 3 according to Figure 1 of Bulletin 71, Climatic Sections for the Midwest. This yields a 1 year, 1 hour storm rainfall depth of 1.02 inches and a 10 year, 1 hour rainfall depth of 1.65 inches.

Rainfall was assumed to be of uniform intensity and distribution over the entire service area for the whole hour. No rainfall was assumed before or after the design storms.

For the existing condition layout, ~~the 1-year, 1-hour storm resulted in a total CSO volume of 4.6 MG that would require complete treatment prior to discharge. The 10-year, 1-hour storm resulted in a total CSO volume of 8.9 MG would require partial treatment prior to discharge. The remaining 4.6 MG would require complete treatment prior to discharge.~~ ~~A breakdown of~~ the volume by CSO resulting from the 1-year, 1-hour and 10-year, 1-hour storms are ~~is~~ presented in **Table 4-1** ~~for each design storm~~.

Table 4-1
Existing Condition
Design Storm CSO Volumes

CSO	1-Year, 1-Hour Volume (MG)	10-Year, 1-Hour Volume (MG)
002	1.446	1.642
003	1.116	1.843
004	0.185	0.349
005	0.043	0.220
006	0.000	0.000
007	0.205	0.679
008	0.697	1.218
009	0.000	0.000
010	0.147	0.769
011	0.115	0.366
012	0.000	0.000
013	0.070	0.163
014	0.293	0.796
015	0.112	0.469
016	0.124	0.387
Total	**4.553**	**8.902**

~~Options were developed to provide the level of treatment required for these design flows.~~

The options developed to reduce the overflows that result on a yearly basis are presented in **Chapter 5**.

In 2012 Bernardin, Lochmueller and Associates converted the model from EPA SWMM to XP SWMM. The updated model was verified by comparison to the assigned model outputs. The following collection system modifications were also added to the collection system model after verification:

- "Area 4" runoff was removed from the model to account for the completed Salamonie Avenue Sewer Separation Project (completed in 2011).
- The Lafontaine Street Lift Station was removed from the model (removed as part of the Frederick Street CSO Interceptor Project)
- The Frederick Street CSO Interceptor Project was added to the model (Segment #2, Segment #3 and Segment # 6 of CSO Control Alternatives 1A and 1C)

Results from the updated model were used for sizing and estimation of costs for the CSO Control Facilities described in Chapter 5. A breakdown of the updated volumes by CSO is presented in **Table 4-2**.

Table 4-2
Updated CSO Volumes

CSO	1-Year, 1-Hour Volume (MG)	10-Year, 1-Hour Volume (MG)
002	0.088	0.136
003	0.805	1.703
004	1.070	2.226
005	0.000	0.000
006	0.000	0.000
007	0.000	0.000
008	0.031	0.071
009	0.000	0.000
010	0.076	0.811
011	0.000	0.086
012	0.000	0.031
013	0.017	0.052
014	0.198	0.664
015	0.000	0.213
016	0.000	0.000
Total	**2.285**	**5.994**

CHAPTER 5 CSO CONTROL ALTERNATIVES

In accordance with IDEM, the City of Huntington must produce a plan aimed at eliminating untreated CSOs. This chapter introduces CSO control alternatives ranging from no action to partial elimination of CSOs as measured by percent reduction of yearly CSO volume to virtually complete elimination of CSOs based upon the design storm approach. Included for each alternative is a cost estimate and a figure that shows the location of each alternative.

The cost estimates were developed using procedures outlined in U.S. EPA's document titled *Costs for Select CSO Control Technologies*, October 1992. These costs were verified utilizing sources that include price quotes from equipment manufacturers, recently bid projects, and Means Construction Cost Estimating Guide. The contingency of 15% is based on actual bid projects to cover unforeseen construction changes after the bid. The non-construction costs include land acquisition, engineering design, grant administration, easement acquisition, and construction administration and inspection.

Yearly operation and maintenance costs were calculated by using equipment runtimes, power requirements, and life spans. Daily labor was also estimated. Detailed estimated of project capital cost and operation and maintenance can be found in Appendix 5.

Following development of the 7/19/2012 CSO LTCP update, the collection system model was recalibrated. As shown in Chapter 4 the recalibration indicated the projected CSO overflow volumes were less than the original overflow volumes. Accordingly, storage tank volumes in Alternative 1A and Alternative 1B have been updated to reflect the overflow volumes projected by the recalibrated model. A new alternative, Alternative 1C, has been developed as part of this update consistent with the requirements of IDEM's Non Rule Policy Document – Water 016.

Cost estimates for the Rabbit Run CSO Project have been further refined and have been updated in this CSO LTCP update. Costs for projects that have been completed or bid have been updated to reflect those actual costs. All other costs were updated to 2013 cost using the Engineering News Record Construction Costs Indices (ENRCCI).

A. Design Storm Approach Alternatives

The following alternatives were designed to provide full treatment for the 1-yr, 1-hr storm and partial treatment for the 10-yr, 1-hr storm.

1. Alternative 1A – North and South Side Interceptors

This alternative involves the installation of the following six interceptors:

Segment #1 runs from the CSO 008 to CSO 003 along the south side of the railroad tracks.

Segment #2 runs from CSO 007 along Herman Street and Frederick Street to Lafontaine Street.

Segment #3 runs from CSO 006 to the intersection of Frederick Street and Lafontaine Street, then west along Frederick Street to CSO 005.

Segment #4 runs from the CSO 003 to the WWTP along the south side of the railroad tracks.

Segment #5 runs along Market Street from CSO 015 to Water Street, south on Water Street CSO 003.

Segment #6 runs from CSO 005 along Clark Street to William Street, then southwest along William Street to an existing diversion structure on William Street.

Since this alternative would not retain any of the captured volume in the system, all overflows would need to be transported to the WWTP. This would require upgrades to the Rabbit Run lift station at the WWTP to transport the flow to the proposed ~~two (2) 5~~ 5.14 MG equalization basin~~s~~ and wet weather treatment process. Both of the equalization basins and the wet weather treatment process would be located on the south side of the Little River directly across from the WWTP. The required capacity of the Rabbit Run Lift Station lift station would be ~~90~~101 MGD.

The current capacity of the WWTP is not sufficient to treat the 1-yr, 1-hr flow. The additional treatment capacity of the WWTP would be achieved by storing the excess flow in an equalization basin. The proposed equalization basin is 2.15~~5~~ MG and would be located on the south side of the Little River across from the WWTP. All flow generated by a 1-yr, 1-hr storm must receive full treatment, so once the WWTP reaches capacity flow would be routed to the equalization basin. The Rabbit Run lift station would then send excess flow to the equalization basin. The volume up to the 1-yr, 1-hr storm would be stored in a separate this EQ basin so that it can be taken offline and sent back to the WWTP for full treatment as capacity becomes available.

The volume between the 1-yr, 1-hr storm and the 10-yr, 1-hr storm would be stored in an additional, separate 3~~5~~ MG EQ basin. Each basin would be fed independently. The splitting of flow between these two EQ basins would be accomplished by a series of valves at the influent structures. Treatment of this volume would be accomplished by a wet weather treatment process, but it would also be able to send flow back to the WWTP if capacity is available. This wet weather treatment process would consist of a 10 MGD high rate clarification system for primary treatment and a subsurface flow constructed wetland for secondary treatment. Prior to discharge the flow would be disinfected with a 10 MGD UV disinfection system. This flow would then be discharged through a second outfall to the Little River. The wet weather treatment process proposed would have the capability of providing full treatment by utilizing the constructed wetland. The wetland would be designed to meet the final effluent limits of the WWTP. This is proposed in the event the WWTP is not able to treat the volume generated by the 1-yr, 1-hr storm within 48 hours. It may be possible to eliminate the constructed wetland if the WWTP is able to treat the 1-yr, 1-hr volume within 48 hours. For all flows above the 10-yr, 1-hr storm, the WWTP and wet weather treatment

process would treat as much volume as possible, but any volume above the 10-yr, 1-hr storm would overflow to the Wabash River.

Improvements to the WWTP are needed to provide treatment for the additional peak wet weather flow resulting from this alternative. These improvements include:

- headworks and grit removal improvements
- pretreatment to address high strength industrial discharges
- aeration and secondary treatment improvements, and pretreatment to address industrial discharges,
- replacement of both anaerobic digester covers,
- construction of a biosolids storage building

~~Since the WWTP is not able to operate at its design capacity, several upgrades are proposed to restore it to its original design capacity. These upgrades include:~~

- ~~aeration a secondary treatment improvements, or pretreatment to address industrial discharges,~~
- ~~replacement of both anaerobic digester covers,~~
- ~~construction of a biosolids storage building, and~~
- ~~installation of effluent pumps for discharging during flood conditions.~~

~~The WWTP currently receives high concentrations of soluble BOD due to the presence of industrial discharges. Multiple alternatives will be evaluated to address this issue, including (1) the installation of a new type of secondary treatment system at the WWTP, (2) an upgrade of existing treatment systems at the WWTP, or (3) the addition of pretreatment systems at the individual industrial sites.~~

~~The anaerobic digester covers are proposed to be replaced because they are over 50 years old and are becoming inefficient at trapping gases.~~

~~A biosolids storage building would greatly benefit the WWTP because it would allow for the storage of solids until it can be hauled away. Currently, the WWTP has to maintain a high amount of solids in the clarifiers when hauling is not possible.~~

The last upgrade is to install effluent pumps at the WWTP. This is proposed because frequently the outfall of the WWTP becomes submerged as the river level rises. This results in the WWTP not being able to discharge. ~~These upgrades are estimated to cost $13,500,000~~.

Also proposed with this alternative is the rehabilitation of the existing gravity line between CSO 003 and the WWTP. Due to its proximity to the Little River, it is believed that a significant amount of water infiltrates into this pipe from the river. Rehabilitation of this line would eliminate a significant amount of this infiltration and free up capacity at the WWTP for treatment of wet weather flow.

It is believed that the existing CSO flap gates are no longer water tight. This would allow water to flow into the sewer system from the river and reduce the wet weather capacity of the WWTP. Replacement of all seven flap gates located on the Little River is proposed. ~~This is estimated to cost $500,000.~~

Additional monitoring and modeling would be necessary once each phase of the project is completed. This would be used to document the level of control achieved by the project and aid in the design of subsequent projects. ~~Monitoring and modeling is estimated to cost $500,000 for all projects.~~

This alternative also budgets $2,000,000 for green infrastructure projects over the next twenty years. Specific projects have not been identified because these projects require a site specific approach. The types of projects that may be implemented include pervious pavement, rain gardens, and residential runoff prevention programs.

The total capital cost for this alternative is estimated to be $77,773,000 ~~$67,000,000~~. The total annual operation and maintenance cost for this alternative is estimated to be $549,000 ~~$496,000~~. The costs are summarized in **Table 5-1**. **Figure 5-1** shows the location of the proposed projects for Alternative 1A. **Figure 5-2** shows how influent flow at the WWTP would be routed during wet weather.

Table 5-1
Cost Estimate for Alternative 1A: North and Southside Interceptors

Project Description	20~~09~~13 Capital Cost of Each Project
Segment #1 – CSO 008 to CSO 003	$996,000 ~~$900,000~~
Segment #2, Segment #3, Segment #6 – CSOs 005, 006 and 007	$7,252,000 ~~$2,100,000~~
~~Segment #3 – Lafontaine St./Frederick St. to CSO 005~~	~~$1,800,000~~
Segment #4 – CSO 003 to WWTP	$11,510,000 ~~$10,400,000~~
Segment #5– CSO 015 to CSO 003	$4,648,000 ~~$4,200,000~~
~~Segment #6 – CSO 005 to William Street Diversion Structure~~	~~$4,052,000~~
Rabbit Run LS Improvements, and EQ Basins and Wet Weather Treatment	$33,848,000 ~~$24,200,000~~
Green Infrastructure	$2,000,000
WWTP Improvements	$16,743,000 ~~$16,030,000~~
Replacement of CSO Flap Gates	$221,000 ~~$500,000~~
Post Construction Monitoring	$554,000 ~~$500,000~~
Total Construction Cost* (rounded to nearest $1,000~~,000~~)	$77,773,000 ~~$67,000,000~~

*Included estimates for contingency (15%) and non-construction costs (15%). See **Appendix 5** for individual project cost

2. Alternative 1B – North and South Side Interceptors with a Forcemain

This alternative involves the installation of the following four interceptors:

> Segment #1 runs from the CSO 008 to CSO 003 along the south side of the railroad tracks.
>
> Segment #2 runs from CSO 007 along Herman Street and Frederick Street to Lafontaine Street.
>
> Segment #3 runs from CSO 005 along Frederick Street to Lafontaine Street, then north on Lafontaine Street to the Lafontaine Street lift station.
>
> Segment #4 runs along Market Street from CSO 015 to Water Street,south on Water Street CSO 003.

All flow from the four interceptors above would be collected at the Lafontaine Street Lift Station and transported to the WWTP via a forcemain that runs along the Southside of the railroad tracks. This would require a significant increase in the pumping capacity of the Lafontaine Street liftstation. The new required capacity would be 144 MGD.

The current capacity of the WWTP is not sufficient to treat the 1-yr, 1-hr flow. The additional treatment capacity of the WWTP would be achieved by storing the excess flow in an equalization basin. The proposed equalization basin is 2.15~~10~~ MG and would be located on the south side of the Little River across from the WWTP. All flow generated by a 1-yr, 1-hr storm must receive full treatment, so once the WWTP reaches capacity flow would be routed to the equalization basin. The Rabbit Run lift station would be upgraded to a new capacity of 101 ~~90~~ MGD to transport excess flow to the equalization basin. The volume up to the 1-yr, 1-hr storm would be stored in a separate this EQ basin so that it can be taken offline and sent back to the WWTP for full treatment as capacity becomes available.

The volume between the 1-yr, 1-hr storm and the 10-yr, 1-hr storm would be stored in a separate EQ basin. Each basin would be fed independently. The splitting of flow between these two EQ basins would be accomplished by a series of valves at the influent structures. Treatment of this volume would be accomplished by a wet weather treatment process, but it would also be able to send flow back to the WWTP if capacity is available. This wet weather treatment process would consist of a 10 MGD high rate clarification system for primary treatment and a subsurface flow constructed wetland for secondary treatment. Prior to discharge the flow would be disinfected with a 10 MGD UV disinfection system. This flow would then be discharged through a second outfall to the Little River. The wet weather treatment process proposed would have the capability of providing full treatment by utilizing the constructed wetland. The wetland would be designed to meet the final effluent limits of the WWTP. This is proposed in the event the WWTP is not able to treat the volume generated by the 1-yr, 1-hr storm within 48 hours. It may be possible to eliminate the constructed wetland if the WWTP is able to

treat the 1-yr, 1-hr volume within 48 hours. For all flows above the 10-yr, 1-hr storm, the WWTP and wet weather treatment process would treat as much volume as possible, but any volume above the 10-yr, 1-hr storm would overflow to the Wabash River.

Improvements to the WWTP are needed to provide treatment for the additional wet weather flow generated as part of the CSO reduction. These improvements include:

- headworks and grit removal improvements
- aeration and secondary treatment improvements and pretreatment to address industrial discharges,
- replacement of both anaerobic digester covers,
- construction of a biosolids storage building

~~Since the WWTP is not able to operate at its design capacity, several upgrades are proposed to restore it to its original design capacity. These upgrades include:~~

- ~~aeration a secondary treatment improvements, or pretreatment to address industrial discharges,~~
- ~~replacement of both anaerobic digester covers,~~
- ~~construction of a biosolids storage building, and~~
- ~~installation of effluent pumps for discharging during flood conditions.~~

~~The WWTP currently receives high concentrations of soluble BOD due to the presence of industrial discharges. Multiple alternatives will be evaluated to address this issue, including (1) the installation of a new type of secondary treatment system at the WWTP, (2) an upgrade of existing treatment systems at the WWTP, or (3) the addition of pretreatment systems at the individual industrial sites.~~

~~The anaerobic digester covers are proposed to be replaced because they are over 50 years old and are becoming inefficient at trapping gases.~~

~~A biosolids storage building would greatly benefit the WWTP because it would allow for the storage of solids until it can be hauled away. Currently, the WWTP has to maintain a high amount of solids in the clarifiers when hauling is not possible.~~

The last upgrade is to install effluent pumps at the WWTP. This is proposed because frequently the outfall of the WWTP becomes submerged as the river level rises. This results in the WWTP not being able to discharge. ~~These upgrades are estimated to cost $13,500,000~~.

Also proposed with this alternative is the rehabilitation of the existing gravity line between CSO 003 and the WWTP. Due to its proximity to the Little River, it is believed that a significant amount of water infiltrates into this pipe from the river. Rehabilitation of this line would eliminate a significant amount of this infiltration and free up capacity at the WWTP for treatment of wet weather flow.

It is believed that the existing CSO flap gates are no longer water tight. This would allow water to flow into the sewer system from the river and reduce the wet weather

capacity of the WWTP. Replacement of all seven flap gates located on the Little River is proposed. ~~This is estimated to cost $500,000.~~

Additional monitoring and modeling would be necessary once each phase of the project is completed. This would be used to document the level of control achieved by the project and aid in the design of subsequent projects. ~~Monitoring and modeling is estimated to cost $500,000 for all projects.~~

This alternative also budgets $2,000,000 for green infrastructure projects over the next twenty years. Specific projects have not been identified because these projects require a site specific approach. The types of projects that may be implemented include pervious pavement, rain gardens, and residential runoff prevention programs.

The total capital cost for this alternative is estimated to be $93,871,000 ~~$77,000,000~~. The total annual operation and maintenance cost for this alternative is estimated to be $675,000 ~~$610,000~~. The costs are summarized in **Table 5-2**. **Figure 5-3** shows the location of the proposed projects for Alternative 1B. Wet weather flows at the WWTP would be routed as shown in **Figure 5-2.**

Table 5-2
Cost Estimate for Alternative 1B: North and Southside Interceptors with a Forcemain

Project Description	20~~09~~13 Capital Cost of Each Project
Segment #1 – CSO 008 to CSO 003	$996,000 ~~$900,000~~
Segment #2 – CSO 007 to Lafontaine St,/Frederick St.	$1,218,000 ~~$1,100,000~~
Segment #3 – CSO 005 to Lafontaine St. Lift Station	$20,031,000 ~~$18,100,000~~
Segment #4 – CSO 015 to CSO 003	$4,648,000 ~~$4,200,000~~
Forcemain to WWTP	$13,612,000 ~~$12,300,000~~
Rabbit Run LS Improvements, and EQ Basins	$33,848,000 ~~$23,700,000~~
Green Infrastructure	$2,000,000
WWTP Improvements	$16,743,000 ~~$13,500,000~~
Replacement of CSO Flap Gates	$221,000 ~~$500,000~~
Post Construction Monitoring	$554,000 ~~$500,000~~
Total Construction Cost* (rounded to nearest $1,000~~,000~~)	$93,871,000 ~~$77,000,000~~

*Included estimates for contingency (15%) and non-construction costs (15%). See **Appendix 5** for individual project cost

2A. Alternative 1C – North and South Side Interceptors with CSO Treatment/Storage Tank at WWTP

This alternative involves the installation of the following six interceptors:

Segment #1 runs from the CSO 008 to CSO 003 along the south side of the railroad tracks.

Segment #2 runs from CSO 007 along Herman Street and Frederick Street to Lafontaine Street.

Segment #3 runs from CSO 006 to the intersection of Frederick Street and Lafontaine Street, then west along Frederick Street to CSO 005.

Segment #4 runs from the CSO 003 to the WWTP along the south side of the railroad tracks.

Segment #5 runs along Market Street from CSO 015 to Water Street, south on Water Street CSO 003.

Segment #6 runs from CSO 005 along Clark Street to William Street, then southwest along William Street to an existing diversion structure on William Street

All wet weather flows will be transported to the WWTP. The wet weather flows in excess of the WWTP capacity will flow by gravity to a cast in place concrete below grade storage tank on the WWTP site. The tank will be sized to store the 1-year, 1-hour storm event and to provide 30 minutes of detention time for the 10-year, 1-hour storm event. Flow from the North and South sides of the river will be consolidated upstream of the CSO storage tank. The flow will be screened to remove solids and floatables prior to entering the CSO storage tank.

Flow volumes up to the 1-year, 1-hour storm event will be stored in the CSO storage tank and pumped back to the WWTP for full treatment within 48 hours of the return of WPCP flows to below its design flow. Flow in excess of the 1-year, 1-hour storm and up to the 10-year, 1-hour storm event will receive at minimum 30 minutes of detention time (primary equivalency) and disinfection prior to being discharged out of CSO 004. Flows in excess of the 10-year, 1-hour storm event will receive settling and disinfection to the extent of the capability of the CSO storage tank prior to being discharged out of CSO 004.

Improvements to the WWTP are needed to provide treatment for the additional wet weather flow generated as part of the CSO reduction. These improvements include:

- headworks and grit removal improvements
- pretreatment to address industrial discharges,
- aeration and secondary treatment improvements,
- replacement of both anaerobic digester covers,
- construction of a biosolids storage building

An effluent pump station is also included in the WWTP Improvements common to all versions of Alternative 1. The WWTP is unable to discharge during periods of elevated river levels.

Also included in Alternative 1C is the replacement of the existing CSO flap gates. The existing gates are no longer water tight and allow river water to flow into the collection system during times of high river level. Replacement of all seven flap gates located on the Little River is proposed. The cost to replace the existing flap gates is estimated to cost $500,000.

Collection system monitoring, as appropriate, will be conducted after the completion of each project to document the level of control achieved by the project and aid in the design and sizing of subsequent projects. Monitoring and modeling is estimated to cost $500,000 for all projects.

This alternative also budgets $2,000,000 for green infrastructure projects over the next twenty years. Specific projects have not been identified because these projects require a site specific approach. The types of projects that may be implemented include pervious pavement, rain gardens, and residential runoff prevention programs.

The total capital cost for this alternative is estimated to be $62,902,000. The total annual operation and maintenance cost for this alternative is estimated to be $158,800. The costs are summarized in **Table 5-2A**. **Figure 5-3A** shows the location of the proposed projects for Alternative 1C. **Figure 5-3B** shows the wet weather operational strategy for the WWTP and CSO Treatment/Storage Facility.

Table 5-2A
Cost Estimate for Alternative 1C

Project Description	2013 Capital Cost of Each Project
Segment #1 – CSO 008 to CSO 003	$996,000
Segment #2, Segment #3, Segment #6 – CSOs 005, 006, 007	$7,252,000
Segment #4 – CSO 003 to WWTP	$11,510,000
Segment #5 – CSO 015 to CSO 003	$4,648,000
Rabbit Run CSO Project (Storage and Treatment)	$19,033,000
Green Infrastructure	$2,000,000
WWTP Improvements	$16,743,000
Replacement of CSO Flap Gates	$221,000
Post Construction Monitoring	$554,000
Total Construction Cost* (rounded to nearest $1,000)	$62,902,000

*Included estimates for contingency (15%) and non-construction costs (15%). See **Appendix 5** for individual project costs.

C. Green Technology

Green technologies were considered to reduce CSO events and volume. Due to the volume of Huntington's overflows it is not likely that a single all encompassing green technology could provide significant reduction is the number of events or volume. However, several alternatives exist that could be beneficial on a site specific basis.

These sites could be areas of localized flooding or ponding near storm sewer inlets. This problem might be reduced through the use of permeable pavement. The amount of capacity that this would free up in the sewer system would not be significant, but it would be a noticeable improvement for citizens. Permeable pavement could also be included for road rehabilitation projects. It could be installed in the gutter line to facilitate infiltration into the ground.

~~Wetlands are proposed for all alternatives except Alternative 4 to provide additional secondary treatment for flows that exceed the capacity of the WWTP.~~

The City could also implement programs for private citizens and companies to reduce their total runoff volume. The program could offer citizens incentives for complying with the requirements of these programs. One example of a program might be the installation of rain gardens or other BMPs. Another program might be aimed at commercial or significant contributors who have significant runoff. This program might offer incentives for the contributors to retain/reduce a specific amount of stormwater or to shift the runoff curve so that the peak occurs after the rain event.

The green technologies outlined above are only a few potential alternatives available. One of the biggest drawbacks for implementing green technologies is available space. Huntington does not have a lot of undeveloped space available for these projects. Situations should be examined on an individual basis to determine if a green technology could work and which one would work best.

D. Recommended Approach

The capital and O&M cost and level of control for each alternative is summarized in Table 5-7. Cost for Alternatives 1A, 1B, 2-5 were updated from 2009 (ENRCCI = 8570) to April 2013 (ENRCCI = 9484) costs using the ENR construction cost index and actual bids received. Table 5-7 shows that Alternative 1C is the most cost effective solution for the highest level of control. ~~To evaluate the most cost effective alternative, Figure 5-7 was generated that shows the anticipated number of CSO events vs. capital cost. In Figure 5-7 Alternative 1A occurs at the knee of the curve. This is the point of diminishing returns and after this point costs begin to increase faster for minor increases in level of control. Alternative 1A is the most cost effective because it provides a great level of control at a low cost when compared to the other alternatives.~~

Table 5-7
Summary of Alternative Capital Cost

Alternative	Alternative Description	2013 Capital Cost	O&M Cost	Level of Control (Overflows/yr)
Alternative 1A	North and Southside Interceptors	$77,773,000 ~~$67,000,000~~	$549,000 ~~$496,000~~	0
Alternative 1B	North and Southside Interceptors with a Forcemain	$93,871,000 ~~$77,000,000~~	$675,000 ~~$610,000~~	0
Alternative 1C	North and Southside Interceptors with CSO Treatment/Storage at WWTP	$62,902,000	$160,000	0*
Alternative 2	Northside Interceptors	$57,000,000	$470,000	18
Alternative 3	Southside Interceptors	$60,000,000	$510,000	38
Alternative 4	Total Separation	$70,000,000	$100,000	43
Alternative 5	No Action	$14,000,000	$160,000	85

*Meets intent of IDEM's Non Rule Policy Document Water 016

~~To evaluate the most cost effective alternative, Figure 5-7 was generated that shows the anticipated number of CSO events vs. capital cost. In Figure 5-7 Alternative 1A occurs at the knee of the curve. This is the point of diminishing returns and after this point costs begin to increase faster for minor increases in the level of control. Alternative 1A is the most cost effective because it provides a great level of control at a low cost when compared to the other alternatives.~~

11. Board of Works meeting No. 2 – November 16, 2009

At the regularly scheduled Board of Works meeting on November 16, 2009 the recommendation of the CAC was presented and accepted by the Board of Works. The Board gave permission to submit the LTCP. A copy of the meeting minutes from this meeting is included in **Appendix 6**.

12. Public Meeting – June 7, 2012

A public meeting was held to present the Preliminary Engineering Report to the public regarding the proposed, upcoming construction of interceptor sewer Segment 2 and Segment 3, referred to as the Frederick Street CSO Interceptor Project. Also included, was a discussion of the LTCP Alternative 1A revision to add Segment 6 and eliminate the Lafontaine Lift Station upgrade. A copy of the sign in sheet and meeting minutes from this meeting is included in **Appendix 6**.

13. Public Meeting – XXXXXXX, 2013

A public meeting was held to present the Preliminary Engineering Report for the Rabbit Run CSO Project Phase I and the CSO LTCP update to the public. A copy of the sign in sheet and meeting notes from this meeting is included in **Appendix 6**.

14. Future meetings

The City intends to maintain a CAC while the LTCP is implemented. This will enable the projects to address the community's concerns. CAC meetings will be held annually to review the current status of projects and upcoming projects. While projects are being designed CAC meetings may be held more frequently.

C. Public Education

In addition to the Citizen's Advisory Committee, the City will be implementing an educational program for the local community. Huntington will invite the public to an annual meeting to discuss the current status of the LTCP and any possible changes to the plan. The meeting locations and dates will be posted in the local newspaper and advertised accordingly. The reasoning behind the LTCP will be discussed and all questions will be addressed. In addition to this annual meeting, the City has a contact number posted at all of the CSO locations that can be used to provide additional information to concerned citizens.

CHAPTER 8 RECOMMENDED ALTERNATIVE AND IMPLEMENTATION SCHEDULE

~~Each alternative was evaluated to identify which was the most cost effective.~~ ~~**Figure 5-7**~~ ~~was generated and shows the total capital cost for each alternative plotted against the predicted number of CSO events.~~

Alternative 1C is the recommended alternative as it is the most cost effective solution to achieve the required level of control. Alternative 1C meets the requirements of IDEM's Non Rule Policy Document Water-016. No overflows will occur from the CSO Storage Basin for the 1-year, 1-hour storm and smaller events. Overflows for storms between the 1-year, 1-hour storm and the 10-year, 1-hour storm will receive primary equivalent treatment and disinfection prior to discharge from the tank, and storms larger than the 10-year, 1-hour storm will receive treatment and disinfection to the extent of the capability of the storage tank prior to discharging to the river. It also eliminates the Rabbit Run Storm Water Lift Station, the remote treatment site and the potential for untreated discharges as the result of wet weather flow rate in excess of the 10 year, 1-hour storm. ~~Alternative 1A is the recommended alternative because it satisfies the design storm approach and results in a $_{WWCHPI}$ just over 2% (2.41%). It provides a significant level of CSO control, but lessens the economic impact on residents. This alternative will meet the 1-year, 1-hour and the 10-year, 1-hour design storm criteria as outline in IDEM's CSO Treatment Facilities Nonrule Policy Document Water-016. Implementation will result in no overflows from wet weather events below the 1-year, 1-hour storm. Additionally, no overflows will occur between the 1-year, 1-hour storm and the 10-year, 1-hour storm except for flows treated by the wet weather treatment process.~~

Table 8-1 is the proposed implementation schedule for Alternative 1C~~A~~ based upon an implementation schedule of 16 years. The projects are ordered so that the projects that provide the greatest reduction in CSO volume will occur first. Additionally, by implementing the projects in the order outlined, it will be possible to minimize the cost for subsequent more costly projects by allowing for a period of flow monitoring. Implementation of this alternative will not require a Use Attainability Analysis, since it satisfies the requirements of IDEM's Non Rule Policy Document Water-016.~~the design storm approach~~.

~~If the City must implement the projects in less than 16 years, then the projects will still occur in the same order, but at an accelerated rate. Constructing all projects in such a short time would potentially result in additional expense because treatment and collection systems would potentially be oversized. Oversizing of pipes is more likely to occur when sufficient time is not allowed for flow monitoring. It would be in the City's best interest to have as much time as possible to construct the project to minimize expense and disruption to citizens.~~

Table 8-1 details the capital cost and operation and maintenance for each alternative. $2,000,000 has been allocated for green infrastructure in the form of a downtown

"Green Street" associated with the construction of Segment #5. However, each project should be evaluated for the possible inclusion of green opportunities.

Table 8-1
Project Implementation Schedule

Year	Projects	Capital Cost	Operation and Maintenance
2009	No Project – Monitoring Only	$30,000	$0
2010	No Project – Monitoring Only	$30,000	$0
2011	WWTP Improvements (South Anaerobic Digester Cover)	$1,350,000	$0
	Green Infrastructure Study (Analysis of Proposed LTCP Projects to Incorporate Green Infrastructure)	$48,500	
	Monitoring	$30,000	
2012	No Project – Monitoring Only	$30,000	$0
2013	No Project – Monitoring Only	$30,000	$0
2014	WWTP Improvements Phase I (Influent Screens, Grit Removal, Sludge Thickener, North Anaerobic Digester Cover, Secondary Treatment)	$12,019,000 ~~$6,900,000~~	$55,800 ~~$85,000~~
	Rabbit Run Phase I (Screens, CSO Storage Tank)	$15,008,000	
	~~WWTP Improvements Phase 1a (Additional Treatment Improvements and/or Pretreatment at~~	~~$5,580,000~~	
	Interceptors – Segment #2, Segment #3 and Segment #6 (Frederick Street CSOs 005, 006 and 007)	$7,253,000 ~~$7,952,000~~	
	Monitoring	$44,000 ~~$30,000~~	
2015	No Project – Monitoring Only	$30,000	$0
2016	Replacement of CSO Flap Gates	$221,000 ~~$500,000~~	$0 ~~$5,000~~
	Monitoring	$30,000	
2017	No Project – Monitoring Only	$30,000	$0
2018	WWTP Effluent Pumps	$3,374,000 ~~$4,500,000~~	$0 ~~$30,000~~
	Monitoring	$30,000	
2019	No Project – Monitoring Only	$30,000	$0
2020	Interceptor – Segment #1 (CSO 008 to CSO 003)	$996,000 ~~$900,000~~	$2,500 ~~$1,000~~
	Monitoring	$30,000	

Table 8-1 Project Implementation Schedule (continued)

Year	Projects	Capital Cost	Operation and Maintenance
2021	No Project – Monitoring Only	$30,000	$0
2022	Interceptor – Segment #5 (CSO 015 to CSO 003)	$4,648,000 ~~$4,200,000~~	
	Green Infrastructure for Segment #5	$2,000,000	
	Monitoring	$30,000	$11,700 ~~$10,000~~
2023	No Project – Monitor Only	$30,000	$0
2024	Interceptor – Segment #4 (CSO 003 to WWTP)	$11,510,000 ~~$10,400,000~~	
	Monitoring	$30,000	$28,800 ~~$5,000~~
2025	No Project – Monitoring Only	$30,000	$ 0
2026	Rabbit Run Phase II (Disinfection)	$4,000,000 ~~$14,400000~~	
	~~Green Infrastructure ($2,000,000 Total)~~	~~$225,000~~	
	Monitoring	$30,000	$60,000 ~~$360,000~~
Total		**$62,902,000** **~~$67,000,000~~**	**$158,800** **~~$496,000~~**

**Note: Citizens' Advisory Committee meetings will be held annually to review the current status of the LTCP. More frequent meetings should be held as necessary.*

****Note: The total cost for monitoring is estimated to be $554,000 ~~$500,000.~~*

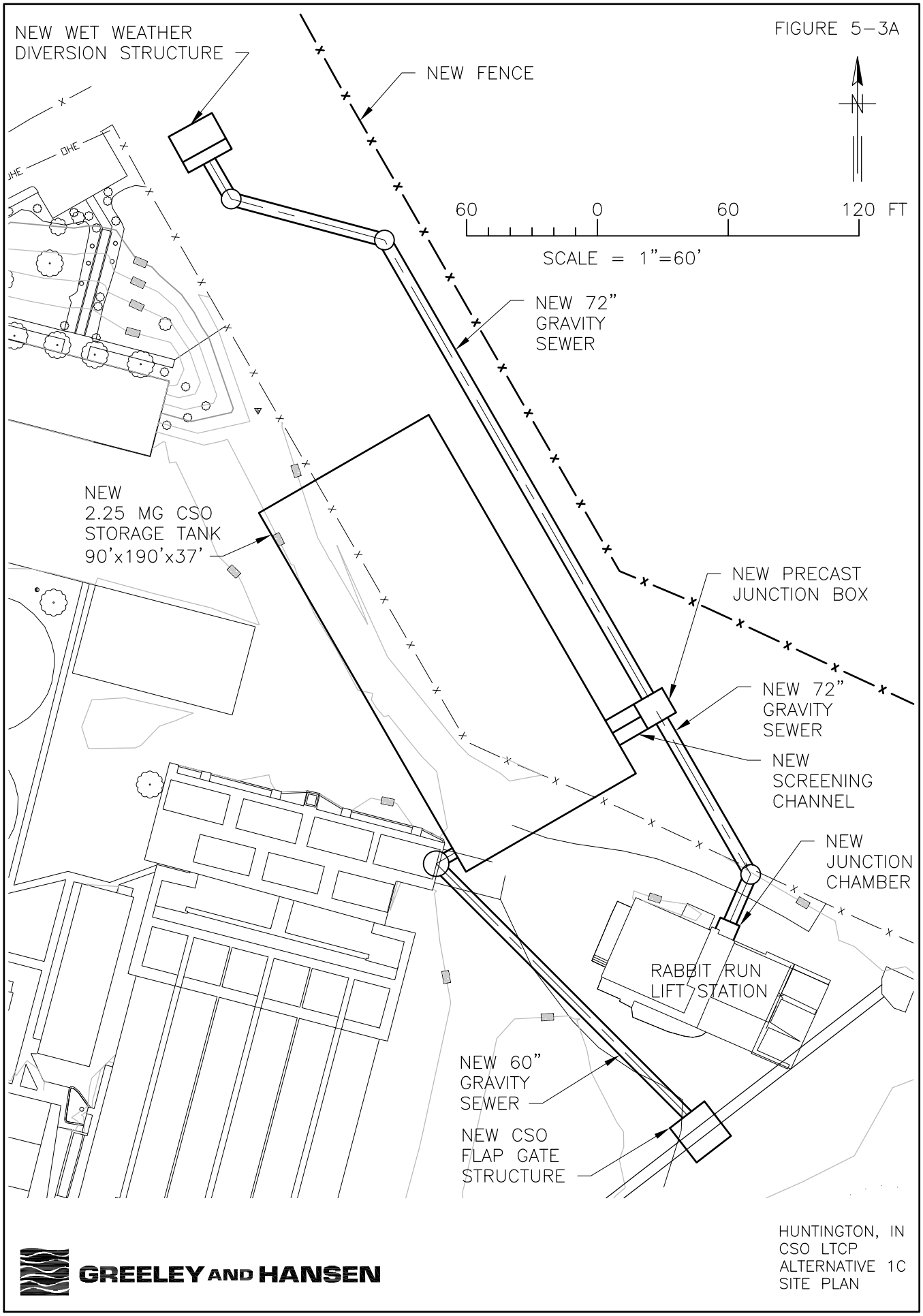
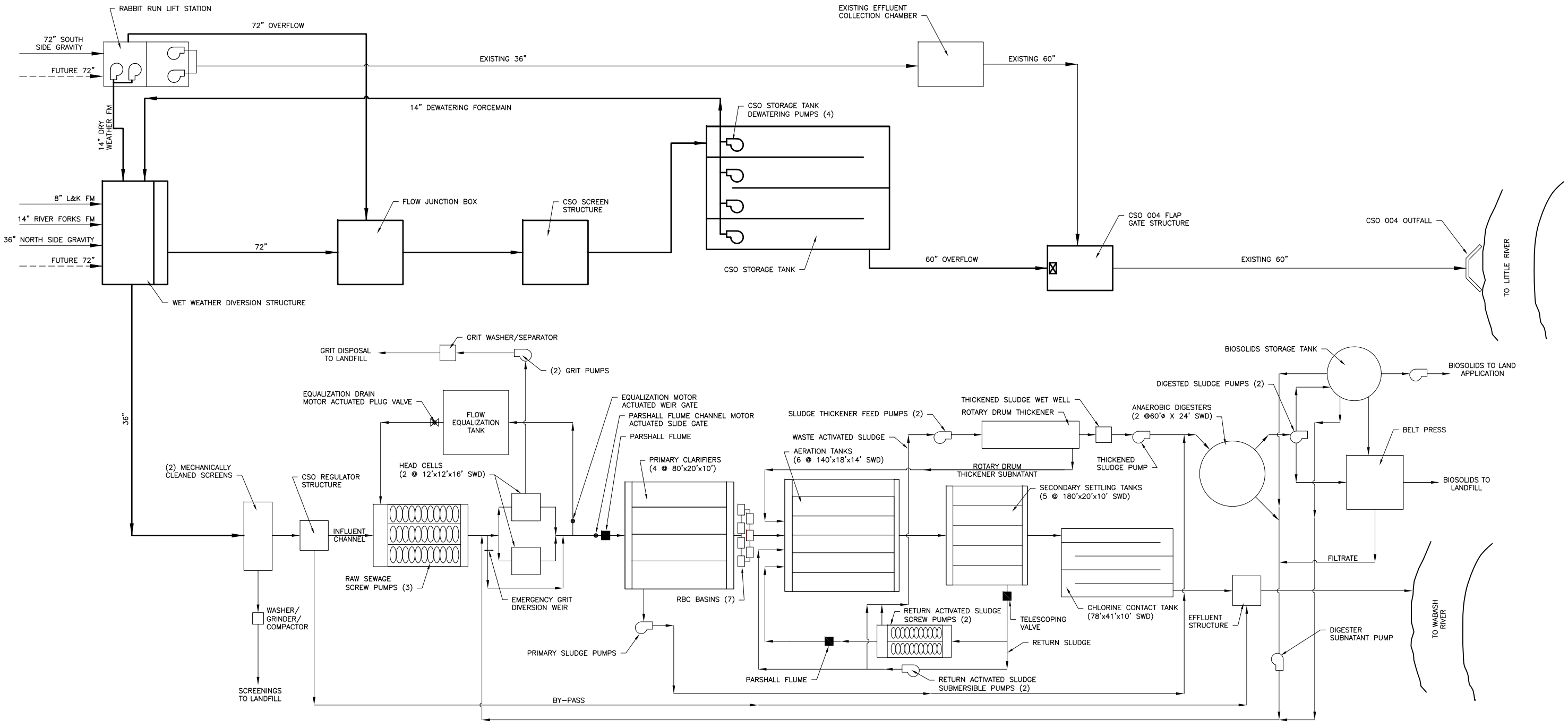


FIGURE 5-3A
NEW WET WEATHER DIVERSION STRUCTURE
NEW FENCE
N
60 0 60 120 FT
SCALE = 1"=60'
NEW 72" GRAVITY SEWER
NEW 2.25 MG CSO STORAGE TANK 90'x190'x37'
NEW PRECAST JUNCTION BOX
NEW 72" GRAVITY SEWER
NEW SCREENING CHANNEL
NEW JUNCTION CHAMBER
RABBIT RUN LIFT STATION
NEW 60" GRAVITY SEWER
NEW CSO FLAP GATE STRUCTURE
GREELEY AND HANSEN
HUNTINGTON, IN
CSO LTCP
ALTERNATIVE 1C
SITE PLAN

FIGURE 5-3B



NEW PROCESS FLOW DIAGRAM

NOT TO SCALE

LEGEND

EXISTING LINE
NEW LINE
FUTURE LINE

GATE VALVE
PLUG VALVE
BALL VALVE
CHECK VALVE
REDUCER
PUMP
FLOW METER
PRESSURE SENSOR

GREELEY AND HANSEN

HUNTINGTON, IN
CSO LTCP
ALTERNATIVE 1C
WET WEATHER OPERATIONAL STRATEGY
NEW PROCESS FLOW DIAGRAM

City of Huntington, IN
Water Pollution Control Plant
Rabbit Run CSO Project - Phase I

Alternative 1A - Rabbit Run CSO Project - Phase 1
Cost Summary

ENR CCI = 9484
Greeley and Hansen
April 2013

Description	Total Cost
Yard Piping, EQ Tank Force Main, River Crossing & CSO004 Flap Gate	$4,781,000
Wet Weather Diversion Structure	$534,000
Rabbit Run Lift Station and Valve Vault	$5,162,000
Equalization Tanks, Equalization Tank Valve Vault and Equalization Tank Drain Pump Station	$2,764,000
Mobilization and Demobilization	$343,000
Subtotal	$13,584,000
Contingency (15%)	$2,038,000
Non-Construction Costs (15%)	$2,343,000
	$17,965,000

City of Huntington, IN
Water Pollution Control Plant
Rabbit Run CSO Project - Phase I

Alternative 1A - Rabbit Run CSO Project - Phase 1
WPCP Yard Piping, EQ Tank Force Main, River Crossing and CSO 004 Flap Gate

ENR CCI = 9484
Greeley and Hansen
April 2013

Description	Quantity	Unit	Unit Price	Total Est Mat'l Cost	Labor % Mat'l	Total Est. Labor Cost	Total Cost
Sitework							
Dewatering Pumps at CSO 004 Structure	60	DA	$750	$45,000	-	-	$45,000
Soil Excavation	10,600	CY	$20	$212,000	-	-	$212,000
Rock Excavation	4,400	CY	$42	$184,800	-	-	$184,800
Select Backfill	3,900	CY	$35	$136,500	-	-	$136,500
Hauling	4,150	CY	$10	$41,500	-	-	$41,500
Grading	1	LS	$25,000	$25,000	-	-	$25,000
Seeding	55,000	SF	$1	$55,000	25%	$13,750	$68,750
Fence	700	LF	$30	$21,000	25%	$5,250	$26,250
Demolition and Clearing	1	LS	$100,000	$100,000	-	-	$100,000
Subtotal							$839,800
Overhead and Profit (16%)							$134,368
Subtotal							$974,168
Structural - CSO Structure							
Foundation Mat	7	CY	$400	$2,800	-	-	$2,800
Walls	26	CY	$600	$15,600	-	-	$15,600
Top Slab	5	CY	$900	$4,500	-	-	$4,500
Sheeting and Shoring	950	SF	$25	$23,750	-	-	$23,750
Subtotal							$46,650
Overhead and Profit (16%)							$7,464
Subtotal							$54,114
Civil - Other							
48" Precast Manhole	3	EA	$3,500	$10,500	25%	$2,625	$14,000
60" Precast Manhole	4	EA	$8,000	$32,000	25%	$8,000	$40,000
108" Precast Manhole	4	EA	$12,500	$50,000	25%	$12,500	$63,000
8' x 8' Precast Manhole	0	EA	$17,000	$0	25%	$0	$0
8' x 4' Access Hatch	1	EA	$10,000	$10,000	25%	$2,500	$13,000
Subtotal							$130,000
Overhead and Profit (16%)							$20,800
Subtotal							$150,800
Pipes & Valves							
8" Mechanical Joint DIP	280	LF	$35	$9,800	25%	$2,450	$12,250
8" Mechanical Joint 45 Deg Bend	2	EA	$122	$244	25%	$61	$305
12" Mechanical Joint DIP	150	LF	$50	$7,500	25%	$1,875	$9,375
12" x 12" x 12" Flanged Tee	1	EA	$2,200	$2,200	25%	$550	$2,750
12" Actuated Plug Valve	2	EA	$12,500	$25,000	25%	$6,250	$31,250
14" Mechanical Joint DIP	2,300	LF	$80	$184,000	25%	$46,000	$230,000
14" Mechanical Joint 45 Deg Bend	11	EA	$250	$2,750	25%	$688	$3,438
14" Mechanical Joint 90 Deg Bend	2	EA	$320	$640	25%	$160	$800
36" RCP	80	LF	$260	$20,800	25%	$5,200	$26,000
60" Mechanical Joint DIP	2,070	LF	$755	$1,562,850	25%	$390,713	$1,953,563
60" Mechanical Joint 45 Deg Bend	11	EA	$25,000	$275,000	25%	$68,750	$343,750
60" Actuated Plug Valves	0	EA	$200,000	$0	25%	$0	$0
60" RCP	80	LF	$110	$8,800	25%	$2,200	$11,000
72" RCP	440	LF	$190	$83,600	25%	$20,900	$104,500
CSO 004 Flap Gate	1	EA	$25,400	$25,400	50%	$12,700	$38,100
Miscellaneous Yard Piping	1	LS	$10,000	$10,000	25%	$2,500	$12,500
River Crossing (60-inch and 14-inch)	1	LS	$325,000	$325,000	-	-	$325,000
Subtotal							$3,104,580
Overhead and Profit (16%)							$496,733
Subtotal							$3,601,313
Total							$4,780,395
Total Cost (Roundoff)							**$4,781,000**

City of Huntington, IN
Water Pollution Control Plant
Rabbit Run CSO Project - Phase I

Alternative 1A - Rabbit Run CSO Project - Phase 1
Wet Weather Diversion Structure

ENR CCI = 9484
Greeley and Hansen
April 2013

Description	Quantity	Unit	Unit Price	Total Est Mat'l Cost	Labor % Mat'l	Total Est. Labor Cost	Total Cost
Sitework							
Soil Excavation	200	CY	$20	$4,000	-	-	$4,000
Rock Excavation	600	CY	$42	$25,200	-	-	$25,200
Select Backfill	240	CY	$35	$8,400	-	-	$8,400
Hauling	740	CY	$10	$7,400	-	-	$7,400
Grading & Site Clearing	1	LS	$10,000	$10,000	-	-	$10,000
Sidewalks (3' Wide)	360	SF	$10	$3,600	-	-	$3,600
Subtotal							$58,600
Overhead and Profit (16%)							$9,376
Subtotal							$67,976
Structural							
Foundations	48	CY	$400	$19,200	-	-	$19,200
Walls	193	CY	$600	$115,800	-	-	$115,800
Fill Concrete	59	CY	$400	$23,600	-	-	$23,600
Grating	100	SF	$55	$5,500	-	-	$5,500
Sheeting and Shoring	2,468	SF	$25	$61,700	-	-	$61,700
Subtotal							$225,800
Overhead and Profit (16%)							$36,128
Subtotal							$261,928
Equipment							
Adjustable Weir Gate	1	EA	$116,000	$116,000	25%	$29,000	$145,000
Subtotal							$145,000
Overhead and Profit (16%)							$23,200
Subtotal							$168,200
Electrical							
Electrical Work	1	LS	$15,000	$15,000	50%	$7,500	$22,500
Subtotal							$22,500
Overhead and Profit (16%)							$3,600
Subtotal							$26,100
Instrumentation & Controls							
	1	LS	$9,038	$9,038		$0	$9,038
Total							$533,242
Total Cost (Roundoff)							**$534,000**

City of Huntington, IN
Water Pollution Control Plant
Rabbit Run CSO Project - Phase I

Alternative 1A - Rabbit Run CSO Project - Phase 1
Rabbit Run Lift Station and Valve Vault

ENR CCI = 9484
Greeley and Hansen
April 2013

Description	Quantity	Unit	Unit Price	Total Est Mat'l Cost	Labor % Mat'l	Total Est. Labor Cost	Total Cost
Sitework							
Soil Excavation	630	CY	$20	$12,600	-	-	$12,600
Rock Excavation	440	CY	$42	$18,480	-	-	$18,480
Select Backfill	370	CY	$35	$12,950	-	-	$12,950
Hauling	700	CY	$10	$7,000	-	-	$7,000
Paving	500	SY	$45	$22,500	-	-	$22,500
Subtotal							$73,530
Overhead and Profit (16%)							$11,765
Subtotal							$85,295
Structural - Valve Vault Structure							
Lower Foundation Mat	18	CY	$400	$7,200	-	-	$7,200
Grade Beam	8	CY	$400	$3,200	-	-	$3,200
Upper Foundation Mat	22	CY	$400	$8,800	-	-	$8,800
Footings	3	CY	$1,000	$3,000	-	-	$3,000
Footings	3	CY	$1,000	$3,000	-	-	$3,000
Columns	3	CY	$2,000	$5,600	-	-	$5,600
Columns	3	CY	$2,000	$5,600	-	-	$5,600
Short Perimeter Walls	15	CY	$600	$9,000	-	-	$9,000
Tall Perimeter Walls	40	CY	$600	$24,000	-	-	$24,000
Top Slab	38	CY	$900	$34,200	-	-	$34,200
Sheeting and Shoring	2,140	SF	$25	$53,500			$53,500
Structural - Junction Chamber							
Foundation Mat	4	CY	$400	$1,760	-	-	$1,760
Perimeter Walls	23	CY	$600	$13,620	-	-	$13,620
Grating	47	SF	$60	$2,802	-	-	$2,802
Sheeting and Shoring	1,450	SF	$45	$65,250			$65,250
Structural - Roof Modification							
Gabled Roof - Structural Components	1	LS	$55,000	$55,000	-	-	$55,000
Wall Reinforcing	1	LS	$25,000	$25,000	-	-	$25,000
Structural - Building Modfications							
Floor Reframing	1	LS	$45,000	$45,000	-	-	$45,000
Larger Openings in Existing Roof	1	LS	$16,000	$16,000	-	-	$16,000
Pipe Penetrations in Existing Wall	1	LS	$10,000	$10,000	-	-	$10,000
Structural - LS Overflow Structure							
Foundation Mat	4	CY	$400	$1,600	-	-	$1,600
Perimeter Walls	23	CY	$600	$13,800	-	-	$13,800
Grating	47	SF	$60	$2,820	-	-	$2,820
Sheeting and Shoring	156	SF	$45	$7,020			$7,020
Structural Subtotal							$416,772
Overhead and Profit (16%)							$66,684
Subtotal							$483,456
Equipment							

City of Huntington, IN
Water Pollution Control Plant
Rabbit Run CSO Project - Phase I

Alternative 1A - Rabbit Run CSO Project - Phase 1
Rabbit Run Lift Station and Valve Vault

ENR CCI = 9484
Greeley and Hansen
April 2013

Description	Quantity	Unit	Unit Price	Total Est Mat'l Cost	Labor % Mat'l	Total Est. Labor Cost	Total Cost
Vertical Turbine Solids Handling Pumps	2	EA	$913,000	$1,826,000	20%	$365,200	$2,191,200
Mechanical Bar Screen	1	EA	$330,000	$330,000	25%	$82,500	$412,500
Demolition of Existing Equipment	1	LS	$50,000	$50,000		$0	$50,000
Impellers for Dry Weather Pumps	2	EA	$5,000	$10,000	25%	$2,500	$12,500
Subtotal							$2,666,200
Overhead and Profit (16%)							$426,592
Subtotal							$3,092,792
Piping & Valves							
10" Flanged Pipe	15	LF	$130	$1,950	25%	$488	$2,438
10" x 14" Reducer	1	EA	$1,000	$1,000	25%	$250	$1,250
14" Flanged Pipe	10	LF	$150	$1,500	25%	$375	$1,875
14" 90 Deg Bend	4	EA	$810	$3,240	25%	$810	$4,050
36" Actuated Plug Valve	3	EA	$50,000	$150,000	25%	$37,500	$187,500
36" Manual Plug Valve	3	EA	$40,000	$120,000	25%	$30,000	$150,000
36" Coupling	3	EA	$1,470	$4,410	25%	$1,103	$5,513
36" Flanged Pipe	15	LF	$630	$9,450	25%	$2,363	$11,813
36" x 36" x 8" Tee	3	EA	$2,310	$6,930	25%	$1,733	$8,663
36" x 48" Reducer	3	EA	$7,080	$21,240	25%	$5,310	$26,550
48" Flanged Pipe	5	LF	$1,150	$5,750	25%	$1,438	$7,188
48" x 48" x 48" Tee	3	EA	$17,725	$53,175	25%	$13,294	$66,469
48" x 60" Reducer	1	EA	$15,820	$15,820	25%	$3,955	$19,775
60" Flanged Pipe	5	LF	$1,440	$7,200	25%	$1,800	$9,000
Subtotal							$502,081
Overhead and Profit (16%)							$80,333
Subtotal							$582,414
Architectural							
Aluminum Handrails and Guardrails	35	LF	$100	$3,500		$0	$3,500
Gabled Roof	1	EA	$56,000	$56,000		$0	$56,000
Openings in Existing Roof	3	EA		$0		$0	$0
Subtotal							$59,500
Electrical							
1600 A MCC Sections	8	EA	$15,000	$120,000	20%	$24,000	$144,000
500HP VFDs	3	EA	$58,142	$174,426	30%	$52,328	$226,754
30HP VFDs	2	EA	$5,825	$11,650	40%	$4,660	$16,310
100A Lighting panelboards	2	EA	$1,300	$2,600	70%	$1,820	$4,420
45 kVA Lighting transformers	2	EA	$1,550	$3,100	70%	$2,170	$5,270
Conduit and wiring	1	LS	$40,000	$40,000	100%	$40,000	$80,000
Miscellaneous electrical	1	LS	$20,000	$20,000		$0	$20,000
New Duke service	1	LS	$60,000	$60,000		$0	$60,000
Demolition	1	LS	$10,000	$10,000		$0	$10,000
Subtotal							$566,754
Overhead and Profit (16%)							$90,681
Subtotal							$657,434

City of Huntington, IN
Water Pollution Control Plant
Rabbit Run CSO Project - Phase I

Alternative 1A - Rabbit Run CSO Project - Phase 1
Rabbit Run Lift Station and Valve Vault

ENR CCI = 9484
Greeley and Hansen
April 2013

Description	Quantity	Unit	Unit Price	Total Est Mat'l Cost	Labor % Mat'l	Total Est. Labor Cost	Total Cost
HVAC							
Exhaust Air Fan L-EAF-1	1	LS	$3,600	$3,600	-	-	$3,600
Exhaust Air Fan L-EAF-2	1	LS	$3,800	$3,800	-	-	$3,800
Exhaust Air Fan L-EAF-3	1	LS	$2,500	$2,500	-	-	$2,500
Exhaust Air Fan L-EAF-4	1	LS	$2,500	$2,500	-	-	$2,500
Exhaust Air Fan L-EAF-5	1	LS	$2,500	$2,500	-	-	$2,500
Supply Air Fan L-SAF-1	1	LS	$4,300	$4,300	-	-	$4,300
Supply Air Fan L-SAF-2	1	LS	$4,800	$4,800	-	-	$4,800
Duct (Aluminum)	1	LS	$3,880	$3,880	-	-	$3,880
Duct (PVC Coated AL)	1	LS	$1,485	$1,485	-	-	$1,485
Duct Accessories	1	LS	$2,000	$2,000	-	-	$2,000
Supply Registers	1	LS	$1,200	$1,200	-	-	$1,200
Grilles	1	LS	$220	$220	-	-	$220
Temperature Controls	1	LS	$18,000	$18,000	-	-	$18,000
Duct Testing & Balancing	1	LS	$4,000	$4,000	-	-	$4,000
Duct Cleaning	1	LS	$1,500	$1,500	-	-	$1,500
Miscellaneous	1	LS	$2,000	$2,000	-	-	$2,000
Exhaust Air Fan	1	LS	$700	$700	-	-	$700
Ductwork and Supports	1	LS	$1,000	$1,000	-	-	$1,000
Manual Controls	1	LS	$1,400	$1,400	-	-	$1,400
Testing and Cleaning	1	LS	$500	$500	-	-	$500
Miscellaneous	1	LS	$400	$400	-	-	$400
Subtotal							$62,285
Overhead and Profit (16%)							$9,966
Subtotal							$72,251
Instrumentation & Control							
	1	LS	$128,629	$128,629		$0	$128,629
Subtotal							$128,629
Total							$5,161,770
Total Cost (Roundoff)							**$5,162,000**

City of Huntington, IN
Water Pollution Control Plant
Rabbit Run CSO Project - Phase I

Alternative 1A - Rabbit Run CSO Project - Phase 1
Equalization Tanks, Equalization Tank Valve Vault and Equalization Tank Drain Pump Station

ENR CCI = 9484
Greeley and Hansen
April 2013

Description	Quantity	Unit	Unit Price	Total Est Mat'l Cost	Labor % Mat'l	Total Est. Labor Cost	Total Cost
Sitework							
Soil Excavation	4,510	CY	$20	$90,200	-	-	$90,200
Rock Excavation	5,080	CY	$42	$213,360	-	-	$213,360
Select Backfill	4,000	CY	$35	$140,000	-	-	$140,000
Hauling	5,590	CY	$10	$55,900	-	-	$55,900
Paving	1,500	SY	$45	$67,500	-	-	$67,500
Grading	1	LS	$15,000	$15,000	-	-	$15,000
Seeding	85,000	SF	$1	$85,000	25%	$21,250	$106,250
Fence	1,680	LF	$30	$50,400	25%	$12,600	$63,000
Access Gate	1	EA	$3,300	$3,300	25%	$825	$4,125
Building & Tank Demolition	0	LS	$100,000	$0	-	-	$0
Underground Utility Relocation	0	LS	$250,000	$0	-	-	$0
Subtotal							$755,335
Overhead and Profit (16%)							$120,854
Subtotal							$876,189
Structural - Valve Vault							
Foundation Mat	44	CY	$400	$17,600	-	-	$17,600
Walls	58	CY	$600	$34,800	-	-	$34,800
Top Slab	30	CY	$900	$27,000	-	-	$27,000
Sheeting and Shoring	2,300	SF	$25	$57,500	-	-	$57,500
Subtotal							$136,900
Overhead and Profit (16%)							$21,904
Subtotal							$158,804
Equipment							
EQ Tanks & Foundation	1	EA	$800,000	$800,000	-	-	$800,000
EQ Tank Drain Pumps	2	EA	$25,000	$50,000	25%	$12,500	$62,500
EQ Tank Recirculation/Flush System	1	EA	$20,000	$20,000	25%	$5,000	$25,000
Subtotal							$887,500
Overhead and Profit (16%)							$142,000
Subtotal							$1,029,500
Piping & Valves							
6" Actuated Plug Valve	1	EA	$7,500	$7,500	25%	$1,875	$9,375
6" Flanged Pipe	6	LF	$30	$180	25%	$45	$225
6" x 14" Reducer	2	EA	$360	$720	25%	$180	$900
12" Actuated Plug Valve	1	EA	$12,500	$12,500	25%	$3,125	$15,625
14" Manual Plug Valve	3	EA	$4,000	$12,000	25%	$3,000	$15,000

City of Huntington, IN
Water Pollution Control Plant
Rabbit Run CSO Project - Phase I

Alternative 1A - Rabbit Run CSO Project - Phase 1
Equalization Tanks, Equalization Tank Valve Vault and Equalization Tank Drain Pump Station

ENR CCI = 9484
Greeley and Hansen
April 2013

Description	Quantity	Unit	Unit Price	Total Est Mat'l Cost	Labor % Mat'l	Total Est. Labor Cost	Total Cost
14" Swing Check Valve	2	EA	$8,600	$17,200	25%	$4,300	$21,500
14" Flanged Pipe	25	LF	$150	$3,750	25%	$938	$4,688
14" 90 Deg Bend	2	EA	$810	$1,620	25%	$405	$2,025
14" Coupling	2	EA	$750	$1,500	25%	$375	$1,875
14" x 36" Reducer	0	EA	$2,500	$0	25%	$0	$0
60" Actuated Plug Valve	1	EA	$200,000	$200,000	25%	$50,000	$250,000
60" Flanged Pipe	20	LF	$1,440	$28,800	25%	$7,200	$36,000
60" Coupling	1	EA	$2,825	$2,825	25%	$706	$3,531
60" x 60" x 60" Tee	0	EA	$60,350	$0	25%	$0	$0
60" x 60" x 36" Tee	0	EA	$47,160	$0	25%	$0	$0
Subtotal							$360,744
Overhead and Profit (16%)							$57,719
Subtotal							$418,463
Architectural							
Prefabricated building	1	LS	$35,000	$35,000	-	-	$35,000
Electrical							
25 HP VFDs	2	EA	$4,650	$9,300	40%	$3,720	$13,020
225A Distribution panelboard	1	EA	$4,175	$4,175	40%	$1,670	$5,845
Service Disconnect CB	1	EA	$2,700	$2,700	20%	$540	$3,240
60kW diesel generator (ATS included)	1	EA	$50,000	$50,000	20%	$10,000	$60,000
Conduit and wiring	1	LS	$15,000	$15,000	100%	$15,000	$30,000
Lighting	1	LS	$5,000	$5,000	50%	$2,500	$7,500
Grounding	1	LS	$15,000	$15,000	50%	$7,500	$22,500
Miscellaneous electrical	1	LS	$5,000	$5,000	-	-	$5,000
Subtotal							$147,105
Overhead and Profit (16%)							$23,537
Subtotal							$170,642
HVAC							
Exhaust Air Fan	1	LS	$700	$700			$700
Ductwork and Supports	1	LS	$1,000	$1,000			$1,000
Manual Controls	1	LS	$1,400	$1,400			$1,400
Testing and Cleaning	1	LS	$500	$500			$500
Miscellaneous	1	LS	$400	$400			$400

City of Huntington, IN
Water Pollution Control Plant
Rabbit Run CSO Project - Phase I

Alternative 1A - Rabbit Run CSO Project - Phase 1
Equalization Tanks, Equalization Tank Valve Vault and Equalization Tank Drain Pump Station

ENR CCI = 9484
Greeley and Hansen
April 2013

Description	Quantity	Unit	Unit Price	Total Est Mat'l Cost	Labor % Mat'l	Total Est. Labor Cost	Total Cost
Subtotal							$4,000
Overhead and Profit (16%)							$640
Subtotal							$4,640
Instrumentation & Control							
	1	LS	$69,798	$69,798		$0	$69,798
Total							$2,763,035
Total Cost (Roundoff)							**$2,764,000**

City of Huntington, IN
Water Pollution Control Plant
Rabbit Run CSO Project - Phase I

Alternative 1C - Rabbit Run CSO Project Phase 1
Cost Summary

ENR CCI = 9484
Greeley and Hansen
April 2013

Description	Total Cost
Yard Piping & CSO004 Flap Gate	$1,041,000
Wet Weather Diversion Structure	$529,000
Rabbit Run Lift Station Modifications	$812,000
CSO Storage Tank	$8,679,000
Mobilization and Demobilization	$287,000
Subtotal	$11,348,000
Construction Contingency (10%)	$1,135,000
Non-Construction Costs (20%)	$2,497,000
	$14,980,000

City of Huntington, IN
Water Pollution Control Plant
Rabbit Run CSO Project - Phase I

Alternative 1C - Rabbit Run CSO Project Phase 1
WPCP Yard Piping and CSO 004 Flap Gate

ENR CCI = 9484
Greeley and Hansen
April 2013

Description	Quantity	Unit	Unit Price	Total Est Mat'l Cost	Labor % Mat'l	Total Est. Labor Cost	Total Cost
Sitework							
Dewatering Pumps at CSO 004 Structure	60	DA	$750	$45,000	-	-	$45,000
Soil Excavation	4,300	CY	$20	$86,000	-	-	$86,000
Rock Excavation	2,200	CY	$42	$92,400	-	-	$92,400
Select Backfill	1,600	CY	$35	$56,000	-	-	$56,000
Hauling	2,200	CY	$10	$22,000	-	-	$22,000
Grading	1	LS	$25,000	$25,000	-	-	$25,000
Fence	700	LF	$30	$21,000	25%	$5,250	$26,250
Demolition and Clearing	1	LS	$100,000	$100,000	-	-	$100,000
Paving	450	SY	$45	$20,250	-	-	$20,250
Subtotal							$472,900
Overhead and Profit (16%)							$75,664
Subtotal							$548,564
Structural - CSO Structure							
Foundation Mat	7	CY	$400	$2,800	-	-	$2,800
Walls	26	CY	$600	$15,600	-	-	$15,600
Top Slab	5	CY	$900	$4,500	-	-	$4,500
Sheeting and Shoring	950	SF	$25	$23,750	-	-	$23,750
Subtotal							$46,650
Overhead and Profit (16%)							$7,464
Subtotal							$54,114
Civil - Other							
48" Precast Manhole	1	EA	$3,500	$3,500	25%	$875	$5,000
60" Precast Manhole	4	EA	$8,000	$32,000	25%	$8,000	$40,000
108" Precast Manhole	2	EA	$12,500	$25,000	25%	$6,250	$32,000
8' x 8' Precast Manhole	3	EA	$17,000	$51,000	25%	$12,750	$64,000
8' x 4' Access Hatch	1	EA	$10,000	$10,000	25%	$2,500	$13,000
Subtotal							$154,000
Overhead and Profit (16%)							$24,640
Subtotal							$178,640
Pipes & Valves							
14" Mechanical Joint DIP	100	LF	$80	$8,000	25%	$2,000	$10,000
36" RCP	80	LF	$260	$20,800	25%	$5,200	$26,000
60" RCP	250	LF	$110	$27,500	25%	$6,875	$34,375
72" RCP	430	LF	$190	$81,700	25%	$20,425	$102,125
CSO 004 Flap Gate	1	EA	$25,400	$25,400	50%	$12,700	$38,100
Miscellaneous Yard Piping	1	LS	$10,000	$10,000	25%	$2,500	$12,500
Subtotal							$223,100
Overhead and Profit (16%)							$35,696
Subtotal							$258,796
Total							$1,040,114
Total Cost (Roundoff)							**$1,041,000**

City of Huntington, IN
Water Pollution Control Plant
Rabbit Run CSO Project - Phase I

Alternative 1C - Rabbit Run CSO Project Phase 1
Wet Weather Diversion Structure

ENR CCI = 9484
Greeley and Hansen
April 2013

Description	Quantity	Unit	Unit Price	Total Est Mat'l Cost	Labor % Mat'l	Total Est. Labor Cost	Total Cost
Sitework							
Soil Excavation	200	CY	$20	$4,000	-	-	$4,000
Rock Excavation	550	CY	$42	$23,100	-	-	$23,100
Select Backfill	240	CY	$35	$8,400	-	-	$8,400
Hauling	550	CY	$10	$5,500	-	-	$5,500
Grading & Site Clearing	1	LS	$10,000	$10,000	-	-	$10,000
Sidewalks (3' Wide)	360	SF	$10	$3,600	-	-	$3,600
Subtotal							$54,600
Overhead and Profit (16%)							$8,736
Subtotal							$63,336
Structural							
Foundations	48	CY	$400	$19,200	-	-	$19,200
Walls	193	CY	$600	$115,800	-	-	$115,800
Fill Concrete	59	CY	$400	$23,600	-	-	$23,600
Grating	100	SF	$55	$5,500	-	-	$5,500
Sheeting and Shoring	2,470	SF	$25	$61,750	-	-	$61,750
Subtotal							$225,850
Overhead and Profit (16%)							$36,136
Subtotal							$261,986
Equipment							
Adjustable Weir Gate	1	EA	$116,000	$116,000	25%	$29,000	$145,000
Subtotal							$145,000
Overhead and Profit (16%)							$23,200
Subtotal							$168,200
Electrical							
Electrical Work	1	LS	$15,000	$15,000	50%	$7,500	$22,500
Subtotal							$22,500
Overhead and Profit (16%)							$3,600
Subtotal							$26,100
Instrumentation & Controls							
	1	LS	$8,959	$8,959		$0	$8,959
Total							$528,581
Total Cost (Roundoff)							**$529,000**

City of Huntington, IN
Water Pollution Control Plant
Rabbit Run CSO Project - Phase I

Alternative 1C - Rabbit Run CSO Project Phase 1
Rabbit Run Lift Station and Valve Vault

ENR CCI = 9484
Greeley and Hansen
April 2013

Description	Quantity	Unit	Unit Price	Total Est Mat'l Cost	Labor % Mat'l	Total Est. Labor Cost	Total Cost
Sitework							
Soil Excavation	70	CY	$20	$1,400	-	-	$1,400
Rock Excavation	130	CY	$42	$5,460	-	-	$5,460
Select Backfill	110	CY	$35	$3,850	-	-	$3,850
Hauling	130	CY	$10	$1,300	-	-	$1,300
Subtotal							$12,010
Overhead and Profit (16%)							$1,922
Subtotal							$13,932
Structural - Junction Chamber							
Foundation Mat	4	CY	$400	$1,600	-	-	$1,600
Perimeter Walls	23	CY	$600	$13,800	-	-	$13,800
Grating	47	SF	$60	$2,820	-	-	$2,820
Sheeting and Shoring	1,450	SF	$45	$65,250			$65,250
Structural - Roof Modification							
Gabled Roof - Structural Components	1	LS	$55,000	$55,000	-	-	$55,000
Wall Reinforcing	1	LS	$25,000	$25,000	-	-	$25,000
Structural Subtotal							$163,470
Overhead and Profit (16%)							$26,155
Subtotal							$189,625
Equipment							
Mechanical Bar Screen	1	EA	$330,000	$330,000	25%	$82,500	$412,500
Demolition of Existing Equipment	1	LS	$5,000	$5,000		$0	$5,000
Impellers for Dry Weather Pumps	2	EA	$5,000	$10,000	25%	$2,500	$12,500
Subtotal							$430,000
Overhead and Profit (16%)							$68,800
Subtotal							$498,800
Architectural							
Aluminum Handrails and Guardrails	35	LF	$100	$3,500		$0	$3,500
Gabled Roof	1	EA	$56,000	$56,000		$0	$56,000
Subtotal							$59,500
Electrical							
30HP VFDs	2	EA	$5,825	$11,650	40%	$4,660	$16,310
Miscellaneous electrical	1	LS	$10,000	$10,000		$0	$10,000
Subtotal							$26,310
Overhead and Profit (16%)							$4,210
Subtotal							$30,520

City of Huntington, IN
Water Pollution Control Plant
Rabbit Run CSO Project - Phase I

Alternative 1C - Rabbit Run CSO Project Phase 1
Rabbit Run Lift Station and Valve Vault

ENR CCI = 9484
Greeley and Hansen
April 2013

Description	Quantity	Unit	Unit Price	Total Est Mat'l Cost	Labor % Mat'l	Total Est. Labor Cost	Total Cost
Instrumentation & Control							
	1	LS	$18,954	$18,954		$0	$18,954
Subtotal							$18,954
Total							$811,330
Total Cost (Roundoff)							**$812,000**

City of Huntington, IN
Water Pollution Control Plant
Rabbit Run CSO Project - Phase I

Alternative 1C - Rabbit Run CSO Project Phase 1
CSO Storage Tank

ENR CCI = 9484
Greeley and Hansen
April 2013

Description	Quantity	Unit	Unit Price	Total Est Mat'l Cost	Labor % Mat'l	Total Est. Labor Cost	Total Cost
Sitework							
Soil Excavation	5,200	CY	$20	$104,000	-	-	$104,000
Rock Excavation	26,400	CY	$42	$1,108,800	-	-	$1,108,800
Select Backfill	2,000	CY	$35	$70,000	-	-	$70,000
Hauling	26,400	CY	$10	$264,000	-	-	$264,000
Grading	1	LS	$15,000	$15,000	-	-	$15,000
Seeding	23,200	SF	$1	$23,200	25%	$5,800	$29,000
Dewatering	240	DAY	$750	$180,000	-	-	$180,000
Subtotal							$1,770,800
Overhead and Profit (16%)							$283,328
Subtotal							$2,054,128
Structural - Valve Vault/Concrete Tank							
Foundation Mat	1,977	CY	$400	$790,600	-	-	$790,600
Interior Walls	2,265	CY	$550	$1,245,750	-	-	$1,245,750
End Walls	644	CY	$600	$386,400	-	-	$386,400
Side Walls	2,118	CY	$550	$1,164,900	-	-	$1,164,900
Struts	267	CY	$550	$146,850	-	-	$146,850
Fill	39	CY	$400	$15,600	-	-	$15,600
Rock Anchors	220	EA	$3,500	$770,000	-	-	$770,000
Sheeting and Shoring	3,750	SF	$25	$93,750	-	-	$93,750
Structural - Screen Channel							
Foundation Mat	65	CY	$400	$26,000	-	-	$26,000
Walls	279	CY	$600	$167,400	-	-	$167,400
Sheeting and Shoring	700	SF	$25	$17,500	-	-	$17,500
Subtotal							$4,824,750
Overhead and Profit (16%)							$771,960
Subtotal							$5,596,710
Equipment							
Dewatering Pumps	4	EA	$7,500	$30,000	25%	$7,500	$37,500
Tipping Buckets	4	EA	$47,000	$188,000	25%	$47,000	$235,000
Mechanical Bar Screen	1	EA	$345,000	$345,000	25%	$86,250	$431,250
Subtotal							$703,750
Overhead and Profit (16%)							$112,600
Subtotal							$816,350

City of Huntington, IN
Water Pollution Control Plant
Rabbit Run CSO Project - Phase I

Alternative 1C - Rabbit Run CSO Project Phase 1
CSO Storage Tank

ENR CCI = 9484
Greeley and Hansen
April 2013

Description	Quantity	Unit	Unit Price	Total Est Mat'l Cost	Labor % Mat'l	Total Est. Labor Cost	Total Cost
Electrical							
225A Distribution panelboard	1	EA	$4,175	$4,175	40%	$1,670	$5,845
Service Disconnect CB	5	EA	$2,700	$13,500	20%	$2,700	$16,200
Conduit and wiring	1	LS	$15,000	$15,000	100%	$15,000	$30,000
Lighting	1	LS	$5,000	$5,000	50%	$2,500	$7,500
Grounding	1	LS	$15,000	$15,000	50%	$7,500	$22,500
Miscellaneous electrical	1	LS	$5,000	$5,000	-	-	$5,000
Subtotal							$87,045
Overhead and Profit (16%)							$13,927
Subtotal							$100,972
Instrumentation & Control							
	1	LS	$110,795	$110,795		$0	$110,795
Total							$8,678,955
Total Cost (Roundoff)							**$8,679,000**