# Table of Contents

## APPENDICIES

**EXECUTIVE SUMMARY**

The City of North Vernon submitted a final version of its original Long Term Control Plan to IDEM December 11, 2006. The LTCP was subsequently approved by IDEM in February 2007. Since the LTCP was to be implemented within a five-year schedule, there was no need for the City to enter into a legally enforceable document other than its NPDES Permit. However, with the requested revisions to the LTCP including an extension to the implementation schedule beyond the original five years, the City anticipates entering into an Agreed Order or other formal agreement with IDEM.

**A. Summary And Evaluation Of The Original Long Term Control Plan**

The original North Vernon LTCP consists of two phases to be implemented within a 5-year period. The goal of the plan using the presumptive approach is to reduce the total number of CSO discharges to less than four per year. Phase I of the LTCP (the first four years) involved a collection system evaluation and repair program to reduce wet weather flows to the WWTP. After each of the first four years was complete, evaluation of the improved system was required to determine the project effectiveness.

Phase II of the original LTCP involved proposed improvements to the equalization basin located at the treatment plant and construction of a wet weather UV disinfection facility to treat all remaining CSO events. This phase was to be completed in the last year of the implementation schedule with a final completion date of March 31, 2012.

The LTCP Phase I collection system investigation and repairs were given an estimated cost of $972,000 for implementation over four years. The cost of the Phase II equalization basin improvements and UV disinfection were estimated cost at $500,000 for a total of $1,472,000.

Early in 2010, as the number of CSO events did not decrease it became apparent to the City that the Phase I collection system evaluation and repairs were not yielding the expected results needed to achieve the goal of four overflows per year. Additionally, monitoring of the CSO discharge showed that the level of water quality needed for consistent and reliable disinfection using a UV system was not being met on a regular basis. These concerns caused the Utility Services Board to re-evaluate the original LTCP and look for possible alternatives.

**B. Combined Sewer System And Combined Sewer Overflows**

The North Vernon collection system has approximately 38 miles of sewer pipe, and is approximately 60% combined. There are twenty (20) pump stations which feed into three main trunk lines. Four (4) of these lift stations may experience surcharging during significant rain events. (See Appendix D for photos of these lift stations). These are the Northwest Lift Station, the Norris Avenue Lift Station, the Northeast Lift Station, and the Southwest Lift Station.

There is one remaining CSO, Outfall 002 located at the wet weather pump station at the WWTP headworks. During wet weather conditions, flows in excess of the WWTP's capacity are pumped to the 1,000,000 gallon equalization basin for storage until the WWTP has capacity, at which time flows are pumped back to the WWTP for full treatment and discharged via Outfall 001. When wet weather flows are in excess of 1,000,000 gallons, flows are directed to a diversion structure, then are discharged via CSO Outfall 002.

**C. Stream Characteristics And Sensitive Areas**

A Stream Reach Characterization Study (SRCER) conducted by Beckmar Environmental Laboratory on May 22, 1996. This study found the Commons Playground approximately 3.1 river miles downstream of the CSO discharge. The SRCER also identified a public access site located 3.8 river miles downstream at the Vernon Commons Park which is used as a canoe access point. Another public access point is located at the Muscatatuck County Park approximately 6.1 river miles downstream of Outfall 002. The SRCER did not identify any specific water quality concerns associated with these sensitive areas.

The SRCER determined that there are no Outstanding National Resource Waters, no Outstanding National Resource Waters, no threatened or endangered species or the designated critical habitat, no Public drinking water intakes or their designated protected areas, and no shellfish beds located downstream of CSO Outfall 002.

**D. CSO Control Approach**

The approach used to develop and evaluate the CSO control alternatives described in Section 8 of this LTCP is to comply with the intent of the design storm or "Michigan" approach. The 10 yr, 1 hr storm volume was defined using XP-SWMM modeling as described in Section 2.

**E. Recommended Plan**

The recommended plan for CSO control includes projects located within the collection system, and located at the WWTP.

The recommended plan for the collection system to prevent the current surcharge problem at four (4) lift stations throughout the city consist of improvements to the existing pumps and force mains as well as pipe replacements as described in Section 8. The estimated cost for the recommended plan for the collection system improvements total $1,377,610. Further flow monitoring is recommended at these locations before starting preliminary engineering for these improvements.

The recommended plan for the WWTP includes a Mechanical Wet Weather Treatment – High Rate Clarifier and additional storage. This option will completely capture and treat the "First Flush" with additional storage improvements. This stored volume will then flow through the treatment plant for full treatment. The High Rate Clarifier will provide primary treatment beyond the "first flush" and up to 10 yr, 1 hr flows. The intent of implementation is for no overflows from wet weather events without undergoing wet weather treatment processes below the 10 yr, 1 hr flow. This recommended plan for the WWTP improvements total $5,198,725.

Total cost for the LTCP recommended controls are $6,600,000.

**F. Implementation Schedule**

The LTCP is categorized as a "medium burden" on the community which allows up to 10 years for implementation of the LTCP control projects. Based upon the amount of work required by the plan, it would be beneficial to the community to have a total length of time closer to 10 years to complete all projects. This ten year implementation period includes five years from the original LTCP implementation schedule. An additional 5 years (2012-2017) is requested to implement the projects. The additional time would allow for flow monitoring so that the control alternatives can be sized correctly to avoid increased construction costs due to oversizing of piping, equipment, and facilities.

The following Table summarizes the Implementation Schedule to complete the City of North Vernon's Long Term Control Plan. This Schedule includes the collection system work as well as the WWTP improvements.

**Implementation Schedule Table**

| Key Events | Estimated Date |
|---|---|
| Long Term Control Plan Approval | April 30, 2012 |
| Current Headworks Improvements Project Complete | April 30, 2012 |
| Continue Flow Monitoring (Post Construction) at WWTP for Headworks Improvements Project | Ongoing |
| Pre-Monitoring for Lift Stations | April 30, 2012 |
| PER (Lift Station/Collection System) | January 1, 2013 |
| Design (Lift Station/Collection System) | July 1, 2013 |
| Lift Station/Collection System Construction | January 1, 2014 |
| Post Construction Monitoring | July 1, 2014 |
| WWTP (Wet Weather Facility) PER | January 1, 2015 |
| WWTP Design | April 1, 2015 |
| WWTP Bidding | August 1, 2015 |
| WWTP Construction Begins | September 1, 2015 |
| WWTP Construction Substantially Complete | February 20, 2017 |

## SECTION 1 – PURPOSE AND INTENT

### 1.1 Introduction

Combined sewers are sewers that convey both sewage and storm runoff. During dry weather, combined sewers carry sewage from domestic, commercial, and industrial sources to the wastewater treatment plant. During wet weather events, the same sewers also convey storm water and surface runoff collected from streets, lawns, parking lots, parks, etc. to the wastewater treatment plant (WWTP). When the capacity of the sewer system or the WWTP is exceeded, such as during heavy rainfall events, the excess water is occasionally allowed to overflow directly to surface water bodies, including the Vernon Fork of the Muscatatuck River, through the Combined Sewer Overflow (CSO) outfall listed in the City's NPDES Permits.

Combined sewer overflow discharges can potentially contain pollutants normally found in untreated sewage, including bacteria, pathogens, industrial pollutants, suspended solids, oil and grease, and other contaminants into rivers and streams. These contaminants can elevate bacteria levels and reduce oxygen (due to the oxygen demanding matter) in the water, creating conditions harmful to aquatic habitats, aquatic life and humans. CSO flows can also contain a variety of pollutants contributed from urban storm water runoff, automotive fluids, household chemicals, and floating sewage and debris. Because of the potential presence of these substances, combined sewer overflows, in addition to storm water runoff and upstream pollution, can cause a variety of adverse impacts on the quality of the surface waters.

Combined sewer systems are found primarily in older metropolitan communities of the Northeast, Mid-Atlantic, and Great Lakes regions. Of the estimated 9,471 combined sewer outfalls nationally, approximately 85 percent are found in these regions. In Indiana, combined sewer systems serve approximately 100 municipalities with a combined population of 2.5 million people. Indiana's 898 combined sewer outfalls account for more than 9 percent of the national total.

### 1.2 Overview

The City of North Vernon is located in southeastern Indiana in Jennings County (See Figure 1.1 and 1.2). The North Vernon population is approximately 6,728 (2010 U.S. Census). The City of North Vernon's wastewater is treated by a 2.2 MGD (average design flow) activated sludge type wastewater treatment plant with a peak design flow of 4.76 MGD. The wastewater treatment plant is regulated by the Indiana Department of Environmental Management (IDEM) under NPDES Permit No. IN0020451. **(See Appendix F).** The treatment plant discharges to the Vernon Fork of the Muscatatuck River.

The North Vernon collection system has approximately 38 miles of pipe, of which approximately 60% is combined. Six combined sewer overflow outfalls were removed from the collection system with the installation of storm sewers and other system improvements during the 1970s, leaving just one remaining overflow outfall at the wastewater treatment plant. This outfall is identified as CSO Outfall 002 and is located adjacent to the WWTP Outfall 001.

**1.3 CSO Operational Plan (CSOOP)**

The City of North Vernon received approval of their CSO Operational Plan from IDEM on April 22, 2000. The City is planning to completing revisions to the CSO Operational Plan throughout the implementation of the LTCP. This will include updating the plan with new construction projects and O&M practices that may change.

**1.4 Nine Minimum Controls**

As part of the LTCP, the City of North Vernon is implementing and documenting the Nine Minimum Controls as required under U.S. EPA's 1989 CSO strategy and 1994 National CSO Control Policy.

The listing of the current implementation of the Nine Minimum Controls is below:

1. Proper Operation and regular Maintenance of the collection system.
2. Maximum use of the collection system for storage of excess flows.
3. Review and modification of Industrial Wastewater Pretreatment Program.
4. Maximization of flow to the POTW for treatment.
5. Prohibition of CSO discharges during dry weather.
6. Control of solids and floatable materials in CSO discharges.
7. Pollution prevention programs (source control or source reduction)
8. Public notification to ensure that the public receives adequate notification of CSO occurrences and CSO impacts.
9. Monitoring to characterize CSO impacts, identify problem CSO points and identify the effectiveness of the previous 8 controls.

Items 1-9 are addressed through the City's CSO Operational Plan that was approved by IDEM on April 22, 2000. The City's utility staff has continued to implement the Nine Minimum Controls, however, the CSOOP has not been revised since its approval. Staff have revised many of the Standard Operating Procedures as they relate to implementation of the Nine Minimum Controls, and will revise the CSOOP once the revised LTCP has been approved.

**1.5 Original LTCP And Proposed Revision**

The City of North Vernon's original Long Term Control Plan was approved by IDEM in February 2007. The LTCP was developed into two phases. Phase I involves evaluation of the collection system via TV equipment, followed by a repair program to reduce wet weather flows to the WWTP. Flow monitoring was to be conducted to evaluate reductions of wet weather flow to the WWTP, and to size the wet weather, primary treatment and disinfection facility at the WWTP. Phase I implementation was to be completed within four years from approval. Phase II of the LTCP consists of design and construction of the wet weather disinfection facilities for the remaining CSO events from outfall 002. Phase II implementation was to be completed within the last year of the five year implementation schedule.

As the City continued with the implementation of Phase I of the LTCP, it became evident that there was not a significant reduction of wet weather flows to the WWTP, and thus no significant reduction of CSO events. This lack of progress toward meeting the goal of no more than four overflows per year caused the Utility Service Board to ask for a review and evaluation of the LTCP. The evaluation determined that a design storm approach may be a better option for the City than the presumptive approach.

**Table 1.1: No. of CSO Events by Year**

| Year | No. of CSO Discharges * |
|---|---|
| 2008 | 23 |
| 2009 | 16 |
| 2010 | 11 |
| 2011 | 26 |

*As reported to IDEM.

The design storm approach would require the City to provide full treatment for the first flush. Any flows up to the 10-yr, 1-hr storm would require primary treatment. This would involve primary clarification and disinfection prior to discharge. Any flows from a greater than a 10-yr, 1-hr storm will require whatever treatment is feasible given the capacity of the WWTP and the CSO abatement projects.

This plan complies with the intent of the design storm approach by completely capturing and treating the “First Flush” with additional storage improvements. This stored volume will then flow through the treatment plant for full treatment. The High Rate Clarifier will provide primary treatment beyond the “first flush” and up to 10 yr, 1 hr flows. The intent of implementation is for no overflows from wet weather events without undergoing wet weather treatment processes below the 10 yr, 1 hr flow.

## SECTION 2 – SYSTEM CHARACTERIZATION

### 2.1 Introduction

The following text in *Italics* is taken from the original CSO Long Term Control Plan as approved by IDEM:

*The North Vernon Wastewater Collection System was originally built in the 1930s with the construction of the "A" trunk sewer line and its tributary sewers. In the late 1950s, the City expanded both its collection and treatment systems by constructing approximately 22,500 linear feet of 12 inch to 36 inch interceptor sewer, two (2) new lift stations, a new "Main Intercepting Chamber", and a new 24 inch interceptor sewer ("Y" line). Seven (7) overflows were constructed: one (1) at each of the two main lift stations; five (5) in the collection system; including the one (1) at the "Main Intercepting Chamber" and one (1) at the treatment plant. The sewers built during this project were designed and constructed as combined sewers.*

*The City expanded and upgraded the treatment and collection system again in the late 1970s. Overflow structures were removed in the collection system by constructing storm sewers to eliminate the storm water inlets connected to the existing combined sewers. The "N" line was completely replaced and increased in size to handle the discharge from a new 1,400-gpm lift station. A section of the "F" line was abandoned and the flow diverted to the new 1,400-gpm lift station. The Main Intercepting Chamber was modified to eliminate an overflow by the installation of a parallel 24-inch relief sewer from the chamber to the treatment plant. A new storm water pump station and 1,000,000 gallon equalization basin were constructed to handle excess wet weather flow. An overflow from the storm water pump station wet well was constructed that is now designated as CSO No. 1 (Outfall 002).*

*Three major trunk lines serve North Vernon. Each of these trunk lines represents the major service areas within the City. The "A" line collects flow from the northern portion of North Vernon and the downtown area. The "H" line serves the southern portion of North Vernon and the Town of Vernon. The "N" line serves the central portion of North Vernon. Table 2.1 summarizes the three major trunk lines and sub basins contributing to each trunk line.*

**Table 2.1: Major Basins and Sub-Basins**

| Trunk Line | Sub-Basin | Type of System | Service Area (Acres) |
|---|---|---|---|
| *"A" Line* | *Downtown* | *Combined* | *171* |
| *"A" Line* | Norris Avenue | Separate | 101 |
| *"A" Line* | Northeast | Combined | 256 |
| *"A" Line* | Northwest | Separate | 704 |

| | | | |
|---|---|---|---|
| "A" Line | Second Street | Combined | 175 |
| "N" Line | East | Combined | 130 |
| "N" Line | Platter | Combined | 202 |
| "N" Line | U.S. 50 West | Separate | 176 |
| "H" Line | Southwest | Combined | 319 |
| "H" Line | Long Street | Combined | 384 |
| "H" Line | Town of Vernon | Separate | 128 |

### 2.2 Lift Station Operation and Maintenance

*North Vernon operates twenty-one (21) pump stations varying in size from 24 gallons per minute (gpm) to 1,400-gpm capacity. A lift station inventory is included in Table 2.2. Operation and maintenance of the lift stations is the responsibility of the Wastewater Superintendent.*

**Table 2.2: North Vernon Lift Station Inventory**

| LS Number | Lift Station Name | No. of Pumps | Flow (gpm), each pump | Motor (hp) | Service Area(Ac) | Service Subbasin |
|---|---|---|---|---|---|---|
| 1 | Hidden River | 2 | 75 | 5 | 27 | WWTP |
| 2 | Thompson's | 2 | 30 | 3 | 11 | Downtown |
| 3 | Summit Street | 2 | 60 | 5 | 14 | Downtown |
| 4 | Northeast | 2 | 200 | 15 | 55 | Downtown |
| 5 | Third Street – South | 2 | 45 | 3 | 4 | Northeast |
| 6 | Third Street – North | 2 | 35 | 2 | 3 | Northeast |
| 7 | Kreutzjans | 2 | 100 | 3 | 4 | 2nd Street |
| 8 | Second Street | 2 | 24 | 2 | 1 | 2nd Street |
| 9 | NVIS | 2 | 105 | No Info. | No Info. | Northwest |
| 10 | Northwest | 3 | 500 | 15 | 275 | Northwest |
| 11 | Middle School | No Info. | No Info. | No Info. | No Info. | Abandoned |
| 12 | Highway 50 West | No Info. | No Info. | No Info. | No Info. | Abandoned |
| 13 | Platter Drive | No Info. | No Info. | No Info. | No Info. | Abandoned |
| 14 | Norris Avenue | 2 | 80 | 15 | 50 | Norris |
| 15 | Long Street | No Info. | No Info. | No Info. | No Info. | Abandoned |
| 16 | Child's Lane | No Info. | No Info. | No Info. | No Info. | Abandoned |

| LS Number | Lift Station Name | No. of Pumps | Flow (gpm), each pump | Motor (hp) | Service Area(Ac) | Service Subbasin |
|---|---|---|---|---|---|---|
| *17* | *Whitey Miller's* | *2* | *32* | *2* | *2* | *Southeast* |
| *18* | *Spring Heights* | *2* | *40* | *3* | *7* | *Southeast* |
| *19* | *Park Avenue* | *2* | *45* | *3* | *6* | *Southeast* |
| *20* | *Twin Oaks* | *2* | *45* | *3* | *3* | *Southwest* |
| *21* | *Sand Creek School* | *2* | *80* | No Info. | No Info. | *Northwest* |
| *22* | *Southwest* | *3* | *634* | *25* | *988* | *Southwest* |
| *23* | *108 Spring Heights* | *1* | *35* | No Info. | No Info. | *Southeast* |
| *24* | *105 Spring Heights* | *1* | *35* | No Info. | No Info. | *Southeast* |
| *25* | *380 Park Avenue* | *1* | *35* | No Info. | No Info. | *Southeast* |

**2.3 Collection System – Lift Station Surcharging**

The existing collection system consists of multiple lift stations and their corresponding force mains. Four (4) of these lift stations experience surcharging during significant rain events (See Appendix D for photos of the lift stations). The following are the described four lift stations:

**2.3.1 Northwest Lift Station - Hickory Manor Trailer Park**

This lift station, also identified as Lift Station No. 10 and located in the northwest part of the city along State Road 7, receives flow from the "Northwest Subbasin". This area, approximately 275 acres, is mostly rural with a section of residential and some industrial development.

The Hickory Manor Trailer Park is an existing development located within the "Northwest Subbasin" consisting of ninety (90) lots, as can be seen from Figure 8.1, and is a major contributor to flows to the lift station during wet weather. One trailer is located on each lot with the associated utility hookups (water, gas, electric, and sanitary sewer). The park consists of three connected drives and utility easements located in the common areas between successive rows of lots.

The park currently has a conventional gravity sanitary sewer system to which each lot connects and discharges sewage. Through smoke testing and flow monitoring, it has been determined that this sewer system experiences significant wet weather infiltration and burdens the Northwest lift station. This excessive infiltration can contribute up to a third of all of the flow to this lift station during significant rain events, causing surcharging. The flow data is gathered through flow metering in a structure located downstream of the development. This surcharge data is gathered and reported by city personnel during these rain events (See Appendix A for overflow reports).

#### 2.3.2 Norris Avenue Lift Station

The Norris Avenue Lift Station, also identified as Lift Station No. 14, is located in the southern part of the city on Norris Ave. and south of West Base Road. This lift station services the Norris Subbasin, a separate system consisting of mostly residential development with an area of approximately 50 acres.
During significant rain events, this lift station experiences surcharging. This data is gathered and reported by city personnel during these rain events (See Appendix A for overflow reports).

#### 2.3.3 Northeast Lift Station

The Northeast Lift Station, also identified as Lift Station No. 4, is located in the "Northeast Subbasin", along Fifth Street across the existing Stone Quarry on the north side of the city. This lift station services both residential and commercial users for an area of approximately 55 acres.

The existing lift station consists of two (2) pumps. The associated force main is 6" in diameter and extends in a southerly direction, finally terminating in a manhole approximately 500 feet away.

During significant rain events, this lift station experiences surcharging. This data is gathered and reported by city personnel during these rain events (See Appendix A for overflow reports).

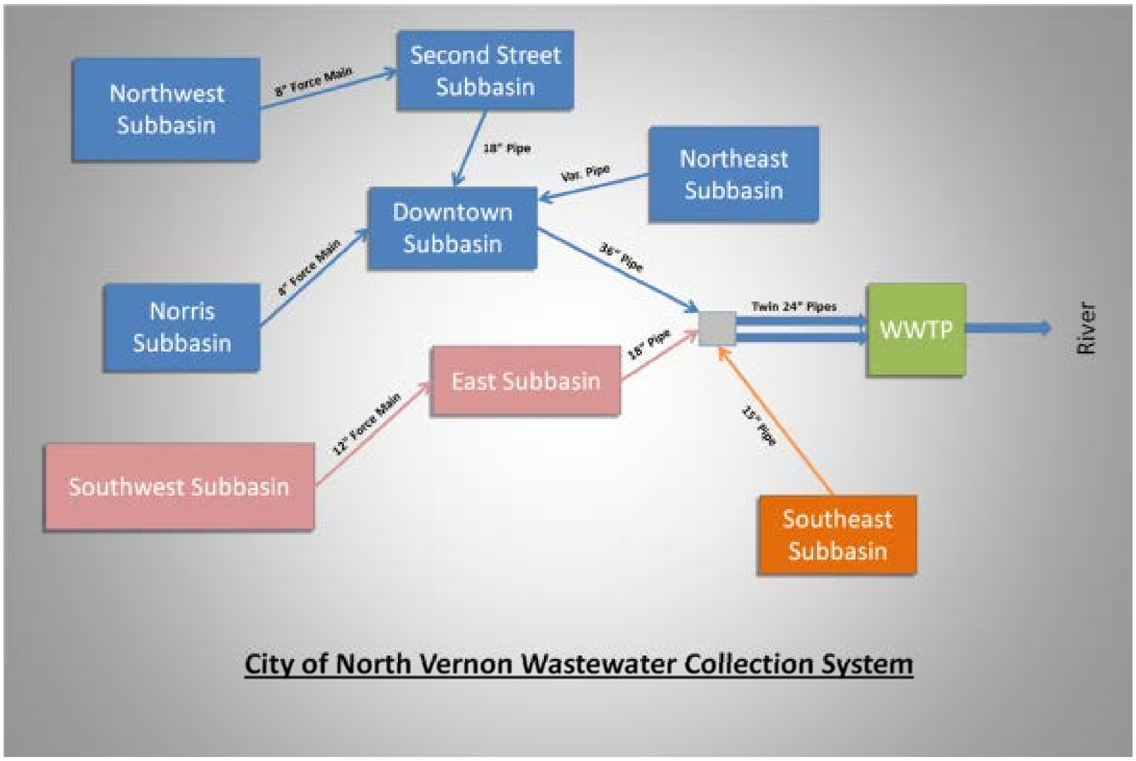
#### 2.3.4 Southwest Lift Station

The Southwest Lift Station, also identified as Lift Station No. 22, is located in the southwest part of the city along West Base Road. It services all of the "Southwest Subbasin" with an approximate area of 988 acres. This subbasin is almost entirely residential development.
During significant rain events, this lift station experiences surcharging. This data is gathered and reported by city personnel during these rain events (See Appendix A for overflow reports).

### 2.4 Watershed Characterization and Modeling

An important element in the analysis of the existing Wastewater Collection System is the development of an accurate theoretical model with which to draw conclusions. Wet weather flow rates and volumes were determined using the EPA approved XP-SWMM modeling program. This process included dividing the overall watershed drainage area into "subbasins" for the purpose of providing a more accurate representation of the watershed, as shown in Figures 2.1 and 2.2. This model was developed using flow data collected using Flow Link Software from city personnel to calibrate the model. This flow data was gathered from July, 2010 to the present.

**Figure 2.1: Sewer Shed.**




Flow monitors have been placed at the exit of the twin 24" pipes entering into the plant upstream of the headworks at the WWTP. Real-time flow monitoring data has been and continues to be collected and analyzed to provide a more accurate understanding of the effect of wet-weather in the City of North Vernon. This data was subsequently used in the calibration of the XPSWMM model. This calibration to real data resulted in a model that includes all significant interceptors in the collection system.

To create this model, real flow data is gathered from the various rain events during the monitoring period (July 2010 to February 2012). A selection process was undertaken to isolate real rain events similar to the Design Storms. The following Table 2.3 illustrates some of the storm events used in the selection process. Selection factors upon which to base the choosing of appropriate storm events for model calibration include the following:

1. Choosing a storm event that closely matches the parameters of the "Design Storms" ("Rainfall Frequency Atlas of the Midwest" by Floyd A. Huff and James R. Angel, Bulletin 71):

   **1-year/1-hour: 1.16 inches**
   **10-year/1-hour: 2.08 inches**

2. Occurrence of a storm event after an extended dry period, so that the effects of rainfall-induced Infiltration and Inflow (I/I) would be limited;
3. Selection of a storm event that is concentrated over a relatively short time period;
4. Selection of a storm event that produces sufficient precipitation for providing reliable model results.

This led to the selection of three (3) storm events from the data collected. The December 20th, 2011 event was used for the first model calibration, where 1.01 inches fell over 3 hours. It had been 16 days since the last significant storm event. Because the precipitation amount of this rain event was close to the 1-year/1-hour design storm, in addition to the fact that there had been two weeks of dry weather before the event, this became a good wet-weather event for model calibration.

The rain event on April 27th, 2011 was used for a second calibration. This event resulted in 1.31 inches rain fallen over a six hour period, providing a significant rainfall amount for modeling. Finally, the rain event on June 21st, 2011 was used for further calibration. This event resulted in 0.49 inches in 30 minutes.

**Table 2.3: Rainfall Event Selection for XPSWMM Model Calibration**

| Date | Rainfall | Duration | General Comments |
|---|---|---|---|
| July 8, 2010 | 0.42 in. | 2hr | Not enough rainfall for the duration. |
| April 27th 2011 | 1.31 in. | 6hr | Used for calibration; also had significant rainfall for modeling purposes. |
| April 18th 2011 | 1.42 in. | 12hr | Rain occurred over too long a period with too many peak rains for accurate modeling |
| May 1st 2011 | 1.55 in. | 12hr | Rain occurred over too long a period with too many peak rains for accurate |
| June 11th 2011 | 0.77 in. | 3hr | Rainfall peaked in last hour of period |
| June 21st 2011 | 0.49 in. | 30min | Used for calibration; short duration but extrapolates to 1yr, 1hr; significant rainfall for modeling purposes. |
| November 14th 2011 | 1.84 in. | 12hr | Rain occurred over too long a period with too many peak rains for accurate modeling |
| November 3rd 2011 | 1.02 in. | 12 hr | Rain occurred over too long a period with too many peak rains for accurate modeling |
| December 20th 2011 | 1.01 in. | 3hr | Used for calibration; also had significant rainfall for modeling purposes. |
| December 5th 2011 | 3.06 in. | 48hr | Produced significant rainfall but was over long duration and during prolonged period of wet-weather |

After selection of the appropriate representative rain events, the model can be calibrated. Using the SWMM software, an iterative process is performed to closely match the model's flow results to the actual flow garnered from the meter data. The following Table 2.4 illustrates the results of the calibrations:

**Table 2.4: SWMM Model Calibration Summary, WWTP**

| | Model (Peak Flow Rate/ Volume) | Actual Data (Peak Flow Rate/ Volume) |
|---|---|---|
| April 27th, 2011 | 19.4 MGD/8.5 MG | 19 MGD/8.19 MG |
| June 21st 2011 | 9.1 MGD/2.41 MG | 9.8 MGD/2.10 MG |
| December 20th 2011 | 18.7 MGD/5.63 MG | 19 MGD/5.27 MG |

With the model calibrated, it can then be used to develop the effects of the required design rain events. These events are the 1 year, 1 hour and the 10 year, 1 hour. The results are shown in Table 2.5:

**Table 2.5: SWMM Model Results**

| Design Event | Peak Flow | Volume |
|---|---|---|
| 1 year, 1 hour | 21 MGD | 5.2 MG |
| 10 year, 1 hour | 40 MGD | 13.6 MG |

The City has implemented a sampling program for measuring pollutant concentrations in the CSO effluent during wet weather. The pollutant sampling device was placed at the Headworks of the plant. During a wet weather event, samples are collected every 15 minutes. Pollutants are measured in concentrations of milligrams per liter (mg/l) and include total suspended solids (TSS), ammonia ($NH_3$) and biochemical oxygen demand (BOD).

Appendix B show the pollutographs in comparison to the hydrographs for various rain events. For the May 26$^{th}$ 2011 storm event, samples were collected every 15 minutes from 11:28 p.m. to 4:14 a.m. BOD and TSS concentration decreased to less than 100 ppm within a short period of time during which the cumulative overflow volume was 475,000 gallons. As another example, the relationship between the hydrograph and pollutograph for the April 27$^{th}$ 2011 storm event results in a total First Flush volume of 541,667 gallons. A plot of those results gives similar results as the plot created for May 26$^{th}$ event. Another six (6) rain events were evaluated and the average first flush volume resulted in approximately 606,000 gallons (See Table 2.6). This analysis verifies that these sampling results quantify first-flush occurring within the first 606,000 gallons of flow volume as a result of rain events.

**Table 2.6: First Flush Volumes**

| Date | Volume (gal.) |
|---|---|
| April 9, 2011 | 667,000 |
| April 11, 2011 | 656,000 |
| April 27, 2011 | 542,000 |
| May 26, 2011 | 475,000 |
| June 18, 2011 | 625,000 |
| June 21$^{st}$ 2011 | 662,500 |
| November 14, 2011 | 656,250 |
| November 21, 2011 | 562,500 |
| Average: | 606,000 |

**SECTION 3 – PUBLIC PARTICIPATION**

The public participation section includes information concerning the City of North Vernon's efforts to inform the public and solicit comments from interested and affected parties as part of the LTCP process.

Except for documentation in subsection 3.4 of the Public Meeting held on March 5, 2012, this section has not been revised per consultation with IDEM staff, as the proposed level of CSO control is not being reduced with this revised LTCP. The following text in italics is taken directly from the December 11, 2006 CSO Long Term Control Plan as approved by IDEM. The information has been reorganized to fit the commonly accepted format for the Public Participation chapter.

**3.1 Public Education**

*7.1.2 Public Education Programs*

*Anti-litter campaigns and recycling efforts are coordinated in the community by "The Friends of the Muscatatuck" which is a not for profit group that conducts semi annual river cleanups and they have a part time staffer in charge of developing and implementing both public and school system education programs that encourage the proper disposal of sanitary and personal hygiene items advise the public about proper application of fertilizers, pesticides, and herbicides.*

**3.2 Public Involvement**

*4.2 Existing Public Participation Programs*

*The City has used or proposed a number of public participation efforts relating to the control of pollutants being discharged to the river. These include:*

- *Friends of the Muscatatuck*
- *County Recycling Program*
- *Public Broadcast*

*4.2.1 Friends of the Muscatatuck*

*Friends of the Muscatatuck established a program to conduct bi-annual River clean up days in which they pick up trash along the riverbank both up and downstream from the wastewater treatment plant.*

**3.3 Community Notification**

*4.2.4 Public Broadcast*

*In 1996 the city proposed a program to publish in the local newspaper and on radio reports the CSO discharge to the river. This program has been implemented.*

*8. PUBLIC NOTIFICATION*

*The sole remaining CSO outfall in North Vernon is located along the Muscatatuck River. Access to the outfall is generally restricted due to location. Public use of the shoreline is usually confined to a limited number of fishermen on private property with some small boat and canoe travel in this area.*

*In November of 2003 a "Combined Sewer Overflow Public Notification Rule" (327 lAC 5-2.1-1) was enacted and submitted to IDEM for approval. This rule provides as follows:*

*A. Summary of CSO Public Notification Rule*

*1) Educate the public, in general, and those persons who, specifically, may come into contact with water that may be affected by a CSO discharge as to the health implications possible from CSO discharge tainted water.*
*a. Brochure Developed*
*b. Public Meeting conduced each March*

*2) Alert members of the public who may be immediately affected by a CSO discharge or the potential for a CSO discharge to occur.*
*a. Issue public notice in January of each year to solicit information from the public.*
*b. Conduct a public meeting in March of each year to address issues identified in the public notice solicitation.*
*c. Notify interested individuals, local media, organizations, Jennings County Health Department using a notification system identified during the March meeting.*

*3) Enable members of the public to protect themselves from possible exposure to waterborne pathogens resulting from contact with or ingestion of water from a waterway that may be affected by a CSO discharge.*
*a. Address protection from exposure to waterborne pathogens in educational brochure.*
*b. Issue public service announcements (PSA)*

*4) Complement the CSO discharge requirements contained in the NPDES permit but not obviate or supersede any more stringent requirements contained in an NPDES permit.*
*- Review all current and applicable NPDES Permit requirements related to CSO Management and public notification during the public meeting.*

*B. Signage*

*The North Vernon Wastewater Department has posted requisite signs in prominent locations at CSO outfall. Additional signs have been posted and will be maintained in the following locations:*

*1) At access points to an affected water, including boat ramps, bridges, parks and school yards.*
*2) Along parkways and greenways on or adjacent to affected waters at locations most likely to provide direct access.*

*There are no drinking water intakes within 10 miles downstream of the CSO outfall in the City of North Vernon.*

*The City has two public participation programs related to CSO control: The annual meeting and ongoing county recycling program. These programs have been very successful in helping reduce materials discharged to the River.*

*These programs, along with regular street sweeping and regular trash pickup services as well as organizations such as "Friends of the Muscatatuck" provide an effort to stop illegal dumping. In and around the city much of the illegally dumped material ends up in ditches that flow directly into the CSS.*

*The intent of the eighth minimum control, public notification, is to inform the public of the location of CSO outfalls, the actual occurrences of CSOs, the possible health and environmental effects of CSOs, and the recreational or commercial activities (e.g., swimming and fishing) curtailed as a result of CSOs. Public notification is of particular concern at recreation areas directly or indirectly affected by CSOs. Potential risk is generally indicated by the exceedance of relevant water quality criteria.*

*8.1 Control Measures*

*-Signs are posted at the CSO Outfall and two other affected areas downstream from the outfall. These areas are accessible to the public.*

*- Newspapers and Radio notices are issued for situations that are not routine or are unusually severe in terms of impact or public sensitivity including all CSO events.*
*- Letter Notification to Affected Residents-Letters to affected residents are sent to those residents who have requested such at the public meeting or at any time during the year they have expressed their desire to be notified at the USB office. Notification is also sent to any organization requesting such including "The Friends of the Muscatatuck".*

*-Telephone/Fax notification is sent to The Town of Vernon, which is the only municipality located within ten miles downstream of the Wastewater Treatment Plant.*

*8.2 Documentation*

*-The procedures and protocol for issuing public notice was established with a manual developed and implemented November 1, 2003. A copy is attached in appendix C.*

**3.4 Public Meetings**

A Public Meeting was held by the North Vernon Utility Services Board on March 5, 2012 to provide the public information regarding the revised LTCP. A presentation citing the differences between the current LTCP and the proposed revised LTCP was given. The presentation emphasized the results of flow monitoring which found that a significantly greater volume of combined wastewater needs to be treated than the current LTCP accounted for. The findings and new alternatives were explained and associated costs were presented. Questions and answers followed. A copy of the presentation and meeting minutes from the March 5, 2012 Public Meeting is found in Appendix I.

## SECTION 4 – IDENTIFICATION OF DESIGNATED/EXISTING USES, SENSITIVE/PRIORITY AREAS, AND USE ATTAINABILITY ANALYSIS

This section is intended to describe the regulatory guidance, approach, and results of the determination of the designated, existing, and potential uses of the receiving streams and the identification of the sensitive and priority areas. This approach is based on the U.S. EPA National CSO Policy and Indiana CSO Control Strategy guidance. This section has not been revised per consolation with IDEM staff, as the proposed level of CSO control is not being reduced with this revised LTCP. The following text in italics is taken directly from the December 11, 2006 CSO Long Term Control Plan as approved by IDEM. Section numbers have been added for clarity.

### 4.1 Recreational Areas

*Table 2 lists a number of parks, forests, nature preserves and other recreational areas within Jennings County included in the Muscatatuck River Watershed.*

*Table 2*

| *Special Area* | *Manager* |
|---|---|
| | |
| *Brush Creek Fish & Wildlife Area* | *DNR Fish & Wildlife* |
| *Calli Farm* | *DNR Nature Preserve* |
| *Crosley Fish & Wildlife Area* | *DNR Fish & Wildlife* |
| *Guthrie Woods* | *Private – The Nature Conservancy* |
| *Jefferson Proving Grounds* | *U.S. Department of Defense* |
| *Muscatatuck County Park* | *Jennings County Park & Rec.* |
| *Muscatatuck National Wildlife Refuge* | *U.S. Fish & Wildlife Service* |
| *Muscatatuck River Bluffs* | *Private – The Nature Conservancy* |
| *Selmier State Forest* | *DNR Forestry* |
| *Tribbets Flatwoods* | *Private - The Nature Conservancy* |
| *Wells Woods Nature Preserve* | *DNR Nature Preserve* |

### 4.2 Endangered Species

*Two wildlife species that have been identified as being endangered (Indiana bat and bald eagle) inhabit the Muscatatuck River basin. A wide range of factors impact these species (Table 3).*

*Table 3*

| | | | |
|---|---|---|---|
| Jennings | Indiana bat (Myotis sodalis) | Endangered | Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests |
| | Bald eagle (Haliaeetus leucocephalus) | Threatened | Maternity and foraging habitat = lake environments & river corridors with well developed riparian woods. |

**4.3 River Uses**

- *Irrigation*
- *Livestock and wildlife watering*
- *Protection of aquatic life*
- *Boating and canoeing*
- *Swimming (No designated areas, incidental to boating, canoeing and/or fishing activities)*
- *Drinking water supply*
- *Warm water aquatic life*

*The Muscatatuck River is not listed on the 303(d) list of impaired streams however more information is available in appendix B FACT SHEET IDEM 32/01/018/1999 Rev. March 2001.*

*Dissolved oxygen readings are commonly used to measure water quality and determine whether the water is able to support desirable aquatic life. The ideal dissolved oxygen levels for fish are between seven and nine mg/1. Most fish can't survive at levels below three mg/1 for extended periods of time.*

*pH is a convenient method of expressing the acidity or alkalinity of a solution. Natural waters usually have a pH between 6.5 and 8.5, with 7.0 being neutral. Values less than 7.0 indicate acidity, and values greater than 7.0 are considered basic or alkaline.*

*Temperature can adversely affect water quality and aquatic life. Aquatic organisms tend to be poorly adapted to rapid temperature changes and rising water temperatures can have devastating effects.*

*Specific conductance is related to the type and concentration of ions in solution. It can be used for approximating the total dissolved solids content of water by testing its capacity to carry an electrical current.*

*Turbidity is a measure of the cloudiness of water. The term "turbid" is applied to waters containing suspended matter that interferes with the passage of light through water or in which visual depth is restricted. Turbidity may be caused by a wide variety of suspended materials, such as clay, silt, finely divided organic and inorganic matter, plankton and other microscopic organisms. Turbidity in water has public health implications due to the possibilities of pathogenic bacteria. Turbidity also interferes with water treatment (filtration) and affects aquatic life.*

*For the protection of aquatic life, the dissolved oxygen concentration should not be lower than 5 mg/L at any time. Discharges from the CSOs have the potential to adversely impact the aquatic life by increasing organic material (TBOD) concentration and reducing the dissolved oxygen concentration in the river.*

*On May 22, 1996, Beckmar Environmental Laboratory conducted a preliminary recreational use attainability analysis of the river upstream, at the wastewater treatment plant and downstream of the City.*

*The first site known as the Dam site is located approximately 11,000 feet upstream from the wastewater treatment plant at the water treatment plant intake facility. Samples were taken approximately two feet above the dam overflow in the middle of the dam. The estimated flow was 893.29 ft/min (111.38 gal/sec). The area is a popular fishing spot for local residents. Benthos, plankton and fish samples were taken approximately 150 feet below the dam. Chemical analysis is shown in table 4.*

*The second site located 100 feet below the wastewater treatment plant discharge, known as the mixing zone between the effluent and the receiving water. The river in this area was approximately 100 feet wide and there was debris and trash in this area. The samples were taken in the middle of the river just above or in the riffles. Chemical analysis is shown in table 4.*

*The third site was located at the Muscatatuck County Park located approximately 14,000 feet downstream from the wastewater treatment plant discharge. Samples were taken in a riffle area located in the middle of the stream. The river measured 112 feet wide in this location. Plankton, fish and insect samples were taken. Chemical analysis is shown in table 4.*

*Table 4*

| | *Site #1* | *Site #2* | *Site #3* |
|---|---|---|---|
| *Alkalinity (mg/1)* | *153.20* | *160.40* | *158.00* |
| *Cyanide (mg/1)* | *< 0.01* | *< 0.01* | *< 0.01* |
| *BOD (mg/1)* | *5.2* | *4.4* | *4.1* |
| *Hardness (total)(mg/1)* | *187.4* | *231.2* | *182.1* |
| *Ammonia (mg/1)* | *0.042* | *0.042* | *0.042* |
| *Nitrite (mg/l)* | *0.018* | *0.018* | *< 0.01* |
| *Nitrate (mg/l)_* | *2.15* | *2.55* | *1.45* |

| | | | |
|---|---|---|---|
| *pH (S.U.)* | *8.72* | *8.54* | *8.58* |
| *Temperature (Degrees C)* | *19* | *20* | *18* |
| *DO (mg/1)* | *15.12* | *10.61* | *13.2* |
| *Phosphorous (Total)* | *0.11* | *1.55* | *0.038* |
| *%Total Solids* | *0.066* | *0.087* | *0.084* |
| *TSS (mg/1)* | *14* | *9* | *15* |
| *Turbidity (NTU)* | *3.3* | *3.3* | *2.6* |
| *Cadmium (mg/1)* | *< 0.002* | *< 0.002* | *< 0.002* |
| *Chromium (mg/1)* | *< 0.020* | *< 0.020* | *< 0.020* |
| *Chromium-Hexavalent (mg/1)* | *< 0.010* | *< 0.010* | *< 0.010* |
| *Copper (mg/1)* | *< 0.010* | *< 0.010* | *< 0.010* |
| *Lead (mg/1)* | *< 0.030* | *< 0.030* | *< 0.030* |
| *Mercury (mg/1)* | *< 0.001* | *< 0.001* | *<0.001* |
| *Nickel (mg/1)* | *< 0.020* | *< 0.020* | *< 0.020* |
| *Zinc (mg/1)* | *< 0.010* | *< 0.010* | *< 0.010* |

### 4.4 Sensitive Areas Defined

*In accordance with the CSO Control Policy, municipalities should give highest priority to controlling overflows to receiving waters considered sensitive. As part of developing the LTCP, municipalities should be required to identify all sensitive water bodies and the CSO outfalls they discharge to them. The designated beneficial uses of the receiving water bodies will help identify sensitive areas (EPA, 1995g). Sensitive areas are identified by the Indiana Department of Environmental Management, in coordination with other State and Federal agencies a s appropriate. According to the CSO Control Policy, sensitive areas include:*

*- Outstanding National Resource Waters*
*- National Marine Sanctuaries*
*- Waters with threatened or endangered species or the designated criticalhabitat*
*- Primary contact recreation waters, such as bathing beaches*
*- Public drinking water intakes or their designated protected areas*
*- Shellfish beds*

*In accordance with the CSO Control Policy, the LTCP should give highest priority to the prohibition of new or significantly increased overflows (whether treated or untreated) to designated sensitive areas. If physically possible and economically achievable, existing overflows to sensitive areas should be eliminated or relocated unless elimination or relocation creates more environmental impact than continued discharge (with additional treatment necessary to meet WQS) to the sensitive area.*

### 4.5 Sensitive Areas Identified

*Outstanding National Resource Waters -There are no Outstanding National Resource Waters located within the Vernon Fork of the Muscatatuck River per the Stream Reach Characterization Study conducted by Beckmar Environmental Laboratory (May 22, 1996).*

*National Marine Sanctuaries -There are no National Marine Sanctuaries located on the Vernon Fork of the Muscatatuck River.*

*Waters with threatened or endangered species or the designated critical habitat-The Bald eagle (Haliaeetus leucocephalus) is listed as a threatened species in this area based on maternity and foraging habitat defined as river corridors with well developed riparian woods. While there are some developed riparian woods along the Vernon Fork, there are no known significant Eagle populations in the area neither around the treatment plant nor within the SRCER limits. This is most likely due to the limiting size and flow of the Vernon Fork of the Muscatatuck River.*

*The Indiana bat (Myotis sodalis) is listed as an endangered species in this area based on maternity and foraging habitat structure of small stream corridors with well developed riparian woods and upland forests and hibernacula environment located in caves and mines. While no formal bat study has been conducted in this area casual observation indicate there are bat colonies located along the SRCER limits.*

*Primary contact recreation waters – There are no bathing beaches located along the Vernon Fork of the Muscatatuck River, however swimming and wading do occur primarily incidentally in conjunction with boating, canoeing and fishing. The Vernon Commons is the first public access site located 3.8 river miles downstream from permitted CSO outfall. The commons area is a playground owned by the Town of Vernon and is used as a canoe access point. There is no formal beach or boat ramp at this site.*

*The second public access site at the Muscatatuck County Park is located 6.1 river miles downstream from the permitted CSO outfall at the Wastewater Treatment Plant. The access site at the County Park is simply an area that has a trail leading down to the river from the park, but there is no boat or canoe access at this location.*

*The next public access site is located approximately 9.1 river miles downstream at the boat ramp located next to the iron bridge in Crosley State Fish and Game Area. This is the only maintained boat ramp located on the Muscatatuck River down stream from the wastewater treatment plant for at least 15 river miles. This site is utilized for canoe and small boat access only.*

*Public drinking water intakes or their designated protected areas -The only public drinking water intake located on The Vernon Fork of the Muscatatuck River is for the City of North Vernon and is located upstream to the wastewater treatment plant and the CSO outfall.*

*Shellfish beds -There are no shellfish beds located within the limits of the SRCER on the Vernon Fork of the Muscatatuck River.*

**4.6 CSO Controls in Sensitive Areas**

*The City of North Vernon has eliminated all CSO outfalls save one located at the plant listed as CSO outfall # 002. This allows for better control of the CSO discharge since there is now only one discharge point. Discharge in this location will allow travel of approximately 3.1 river miles before arriving at the Commons Playground in Vernon which is the first access point along the river. Signage has been placed at the Commons warning of possible CSO exposure during high water events.*

*One main objective of the LTCP is to control untreated CSO flows to the Vernon Fork of the Muscatatuck River consistent with the CSO policy for presumptive compliance to minimize impacts to downstream sensitive areas. By meeting this objective North Vernon will eliminate the need to continually perform an updated review of the sensitive areas.*

## SECTION 5 – PREVIOUSLY COMPLETED CSO CONTROL PROJECTS

### 5.1 Introduction

The following section describes the Combined Sewer Overflow control projects that have been completed in North Vernon in recent years. These projects have eliminated several CSO Outfalls and greatly reduced the water quality impacts within the community. However, up to 60% of the North Vernon collection system remains combined, and therefore requires additional controls.

### 5.2 Historical Elimination Projects

A large portion of the combined collection system in North Vernon was constructed in the 1950s. This included seven (7) combined sewer overflows, one at each of the two main pump stations, and four (4) in the collection system and one at the treatment plant.

In the 1970s, the City of North Vernon conducted a major capital improvement project that included expansion of the wastewater treatment plant, and construction of storm sewers which eliminated all the CSO outfalls except CSO Outfall 002 which remains at the treatment plant. This project also included the addition of a new 24” relief sewer to the treatment plant, and a new wet weather pump station and 1,000,000 gallon flow equalization basin designed to store excess wet weather flows at the treatment plant.

### 5.3 Current Elimination Projects

#### 5.3.1 Headworks Replacement

The Headworks of the North Vernon WWTP is currently in the process of being replaced. The Headworks or preliminary treatment units include an influent sluice gate, grit channel, flow meter, and the mechanical screening equipment. These units represent decades old technology that was found to be in constant need of repair, as well as restricted flow to the secondary treatment units. The Headworks Replacement Project replaces the decades old headworks system with new technology. When complete, by April of 2012, it will provide the operators of the plant the ability and the flexibility to accurately maximize and manage the varying flows entering the facility.

This project consists of several components (See Figure 6.1). A new mechanically-cleaned bar screen is replacing the existing rotary drum-screening device. A new vortex type grit removal system is replacing the existing grit channel, optimizing removal of particulates and reducing the burden to the downstream processes. Integral to this project and to the operation of the plant itself, is the installation of a diversion structure downstream of the grit removal system. This structure contains an automatic flow control regulator gate device that will precisely regulate and control the flow passing to the Secondary Treatment Process systems.

Total cost of this project is approximately $1,200,000 and will be completed in April 2012.

**5.3.2 Collection System Repairs**

In addition to the routine collection system cleaning and repair program, Phase I of the original LTCP called for evaluation and repair of the "most severely identified I&I problems" throughout the collection system during the first four years of implementation.

To date, approximately $518,655 has been spent on 3,695 feet of sewer replacements and repairs along with the repair or replacement of fifteen (15) manholes. An additional 5,317 feet of repair or replacement have been identified at an estimated cost of $505,910. Combined with $78,218 for the cost and maintenance of the video equipment, the total projected costs are estimated to reach $1,102,783. The collection system investigation and evaluation is ongoing with additional repairs and replacements expected.

**5.3.3 Storm Water Improvements**

In 2010 the City of North Vernon initiated the construction of a new storm water collection system in four areas of the City that did not have existing or sufficient storm water infrastructure. This project covered four areas of the City: City Park, Shull Park, College Street, and Lincoln Avenue. In addition to the storm sewers, infiltration trenches and several rain gardens were installed to enhance water quality and reduce flow volume prior to discharge into the existing storm water system.

This project was completed in November 2011 at the approximate cost of $1,600,000.

**5.4 Conclusion**

Over the past five years, the City of North Vernon has initiated or completed projects that represent approximately $3,900,000 that will help reduce wet weather impacts to the CSS, WWTP, and receiving streams.

## SECTION 6 – MAXIMIZING TREATMENT AT THE WASTEWATER TREATMENT PLANT

### 6.1 Treatment Plant

The following text in italics is taken directly from the December 11, 2006 CSO Long Term Control Plan as approved by IDEM. Section numbers have been added for clarity.

*The Wastewater Treatment Plant is the final component of the collection and treatment system. The North Vernon Wastewater Treatment Plant was originally constructed in 1934 at the site on Greensburg Street; modified in 1979; and expanded/upgraded in 1997 to treat increased flows and to be more flexible and reliable in operating modes. The treatment plant provides secondary treatment utilizing activated sludge processes and sand filtration for effluent polishing with chlorination for disinfection. Currently biosolids are contract hauled offsite for disposal.*

*North Vernon's wastewater treatment plant is intended to treat all dry weather wastewater transported by the collection system. Since the collection system is a combined sewer system, the volume of wastewater transported and treated is dependent on weather conditions and wet weather events.*

*The wastewater treatment plant has an average daily flow design capacity of 2.2 million gallons per day (MGD) and a peak hydraulic design flow of 4.76 MGD. The treatment plant has an apparent maximum hydraulic capacity of 6.0 MGD, based on observations made since the plant expansion/upgrades were placed on-line.*

### 6.2 Storm Water Pump Station/Equalization Basin

*The storm water pump station and equalization basin provide North Vernon the ability to store wet weather flows (up to 1,000,000 gallons) in excess of the treatment plant's hydraulic capacity. Once wet weather flows have subsided, the wastewater stored in the EQ basin will then be returned through the plant for treatment.*

*Flows in excess of the plant's hydraulic capacity are discharged to the wet well of the storm water pump station. The storm water pump station automatically pumps excess wet weather flow to the EQ basin until the basin is full (1,000,000 gallons). Once full, the EQ basin pumps must be manually turned off to terminate the storm water pump station. The stored wastewater is directed to the preliminary treatment component for the initiation of full treatment, once excess influent flow has receded.*

*In addition to wet weather flow, the EQ basin also receives plant recycle side stream flows that may include filter backwash and aerobic digester supernatant. These flows, on a daily basis, represent less than ten per cent (10%) of the EQ basin storage capacity. The filters are typically shutdown during* *high flow to prevent continuous backwash conditions from consuming valuable EQ tank capacity as a "no feasible alternative".*

**6.3 Preliminary Treatment Unit Processes**

*The preliminary treatment unit processes at the North Vernon plant consist of an influent sluice gate, grit removal, flow measurement and a mechanical screening device.*

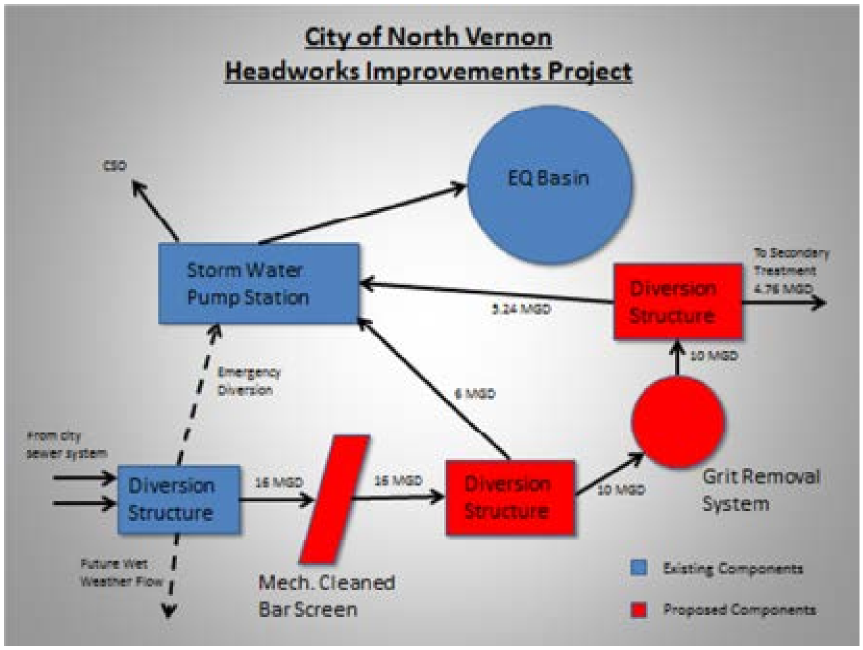
*The influent sluice gate regulates wastewater flow to the plant so that the plant's observed peak hydraulic flow is not exceeded. (The plant is frequently able to exceed peak design capacity through the treatment plant during high flow and has processed as much as 6.0 MGD through the plant). The influent sluice gate is manually operated. The open position of the gate is established by the operator and remains the same until manually changed. Opening and/or partially closing the gate valve during wet weather events allows for maximizing storage of wastewater in the collection system and for maximizing flows through the plant without jeopardizing the plant's performance from a hydraulic overload. Unfortunately, this method of operation is not accurate enough from a "plant maximization" standpoint. It is dependent on the actions of the operator. Current construction of a new headworks will alleviate this shortfall (see below).*

*Flow through the influent gate passes into a grit removal channel. Grit is removed by reducing flow velocity to one foot per second (1 fps) which allows the grit to settle in the channel, while the organic matter remains in suspension. This process is less effective during high flow events when the velocity exceeds 1 fps. The grit is removed from the channel by operating the chain and flight collection mechanism.*

*The wastewater flows from the grit removal channel through a 12-inch Parshall flume for influent flow measurement. Discharge from the Parshall flume passes through a downstream channel where the wastewater flows through a rotary drum-screening device that collects and removes debris and particles larger than one-quarter (1/4) inch. Wastewater passing through the rotary screen is conveyed through piping to the secondary treatment process.*

The above existing parts of the preliminary treatment, influent sluice gate, grit channel, flow measurement device, and the mechanical screening equipment, is currently undergoing replacement. This project, the "City of North Vernon, Headworks Improvements Project", replaces the decades old headworks system with new technology. When complete, by April of 2012, it will provide the operators of the plant the ability and the flexibility to accurately maximize and manage the varying flows entering the facility.

**Figure 6.1: Headworks Project**




This improvements project consists of several components (See Figure 6.1). A new mechanically-cleaned bar screen will replace the existing rotary drum-screening device. A new vortex type grit removal system will replace the existing grit channel, optimizing removal of particulates and reducing the burden to the downstream processes. Integral to this project and to the operation of the plant itself, is the installation of a diversion structure downstream of the grit removal system. This structure contains an automatic flow control regulator gate device that will precisely regulate and control the flow passing to the Secondary Treatment Process systems.

### 6.4 Secondary Treatment Process -Activated Sludge Biological Treatment

*North Vernon's activated sludge process consists of four (4) parallel aeration tanks operated in a plug flow mode. Each aeration tank has floor mounted, fine bubble aeration system to provide the mixing and oxygen necessary for the biological action and conversion of soluble material into insoluble form. The activated sludge biomass is continually mixed with influent to form the "mixed liquor" (microorganisms, soluble food substrate and wastewater). The mixed liquor is aerated in the aeration tanks allowing the microorganisms to use the biodegradable food substrate.*

*Flow distribution into the four (4) aeration tanks is controlled by the aeration tanks' influent slide gates located in the junction/splitter box. Air supplied to the tanks is controlled by the blower air supply and aeration system air control valves located on each tank.*

*Mixed liquor effluent from each tank flows into a common effluent launder. The combined mixed liquor flows by gravity to an intermediate pump station. The intermediate pump station pumps the* *mixed liquor to the secondary clarifiers, operating continuously, with 100 per cent backup capacity to handle the plant's peak design flow. The mixed liquor pumped to the secondary clarifiers flows into a splitter box which evenly divides the mixed liquor between the two clarifiers.*

*Two (2) secondary clarifiers provide solids separation and thickening for the activated sludge. Flow received in the center stilling well of the clarifiers flows horizontally toward the outer perimeter of the clarifiers allowing the biomass solids adequate time (approximately 2.5 hours during normal flows, however this time may decrease with high flow) to separate from the liquid phase of the mixed liquor and settle to the bottom. The settled biomass is returned to the aeration tanks to mix with the influent wastewater. The clarified water overflows the effluent weirs and flows by gravity to the next treatment unit process.*

*The settled activated sludge biomass is removed from the bottom of the clarifier by a rotating sludge collection arm that slowly sweeps the floor of the clarifier forcing the biomass solids to a center drain that flows by gravity back to the junction splitter box ahead of the aeration tank. The re-aeration tanks are used to thicken and dewater WAS prior to pumping to the Digesters for full aerobic digestion. However, if there is a need to reseed the plant due to something killing the biological population, it would most likely come from the re-aeration tanks.*

*The number of aeration tanks and secondary clarifiers in service at any given time is dependent on the operating conditions at the plant. Under normal operation all 4 aeration tanks are in service at all the times. During wet weather events both clarifiers are to be operated to maximize the hydraulic flow through the plant.*

**6.5 Disinfection**

*North Vernon uses chlorine for effluent disinfection. Chlorine gas is fed into the wastewater from 1-ton cylinders. Chlorine can be fed to three (3) different points in the plant, depending on need - secondary clarifier effluent, flow to the sand filters, and flow from the sand filters.*

*Effluent from the secondary clarifiers flows by gravity to the chlorine contact tank. The aqueous chlorine solution is injected into the piping leading to the chlorine contact tank to increase mixing and contact time. Disinfected wastewater flows from the chlorine contact tank to the sand filters. Chlorination for disinfection is only required April 1 through October 31. Additional chlorine can be injected into the piping carrying this flow if conditions warrant. This additional chlorine can help maintain filter performance and condition with disinfection a secondary benefit. Chlorine can also be added to the filter effluent if additional "disinfection polishing" is needed. De-chlorination is accomplished using Sulfur dioxide gas injected at the effluent parshall flume anytime chlorine is used.*

**6.6 Filtration Unit Process (High Rate Sand Filtration)**

*The rapid sand filters allow North Vernon to exceed minimum performance requirements described in the City's NPDES Permit. Chlorinated wastewater is piped to the rapid sand filters and is automatically divided by weirs between the four- (4) filter cells, during Chlorination Season. The filter cells are composed of graded sand and an under drain system. The sand adsorbs the fine solids and some of the carbonaceous material and the water passes through the under drain system to the filter clear well. When the head loss through the sand filter inhibits the filter's ability to pass flow (based on a predetermined flow rate), the filter cell is backwashed to remove the fine particles adsorbed by the sand which can be done in automatic or manual mode. A backwash pump reverses the flow through the filter at a high rate of flow cleaning the sand and removing the accumulated solids. The backwash water, high in solids, is pumped to the EQ basin to be recycled through the plant for treatment.*

**6.7 Biosolids Management**

*Excess biomass solids are generated as part of the activated sludge biological treatment process. The excess biosolids, waste activated sludge, are stabilized and concentrated in three (3) aerobic digesters. The aerobic digesters utilize course bubble aeration as the oxygen source for stabilizing the waste sludge. After adequate stabilization, based on the SOP for the digesters, the biosolids are dried via a belt press and disposed of by contacting Merrell Brothers in Kokomo, IN who contract haul and dispose of waste. Their primary disposal method is land application of dried biosolids per the requirements of their Land Application Permit.*

**6.8 Future Improvements – MUTC to North Vernon Force Main and Lift Station**

This project, MUTC to North Vernon Force Main and Lift Station, is planned to be implemented and will have an impact on the existing WWTP. This project connects the Muscatatuck Urban Training Center with the North Vernon WWTP. It consists of approximately 31,079 feet of 10” force main, a lift station, and an EQ basin at the North Vernon WWTP. When complete, sewage from MUTC will be pumped to the North Vernon WWTP. The effects of the improvements related to this project must be evaluated to determine the impact on the existing and the proposed wet weather treatment system.

## SECTION 7 – INDUSTRIAL PRETREATMENT PROGRAM

### 7.1 Introduction

The City of North Vernon maintains an Industrial Pretreatment Program approved by U.S. EPA on September 28, 1984. The purpose of the program is to help control the industrial discharges to the City's POTW, and to ensure the sludge is protected for beneficial reuse. A Pretreatment Program requires the City to develop an Emergency Response Plan and a Sewer Use Ordinance (SUO) in accordance with 40 CFR 403.

### 7.2 Industrial Dischargers

The City of North Vernon currently permits five (5) industrial users to discharge to the City's POTW subject to the Industrial Pretreatment Ordinance. These industrial Users are described in **Table 7.1.**

**Table 7.1: Characterization of Permitted Industries**

| Industry | Description of Industrial Processes | Wastewater Characteristics | Pollutants of Concern |
|---|---|---|---|
| Hilex Poly, Co, LLC | Produces plastic grocery and retail bags | Subject to 40 CFR 463- Plastic Molding & Forming; Non-contact cooling water | Conventional; Copper; O&G |
| Kromet America, Inc. | Washes and powder coats metal parts and accessories | Subject to 40 CFR 433- Metal Finishing | Conventional* |
| Martinrea Industries, Inc. | Stamps, fabricates, cleans and coats fuel tubes and motor vehicle parts and accessories | Non-contact Cooling Water | Conventional; Copper |
| Metaldyne Sintered Forged Products, LLC | Manufactures and machines forged powder metal rods used in the automotive industry | Non-contact Cooling Water | Conventional |
| Webster West Packaging, Inc. | Converts corrugated paper into boxes for use in packaging customer products | Printing, ink clean-up. | Conventional; Copper |

*Although categorical, the permittee currently hauls all process wastewater off-site for disposal.

Since the only CSO outfall is located at the POTW, the specific location of these permitted industries is not critical to the LTCP. Figure 7.1 shows the location of the permitted industries. Webster West, Martinrea Industries, and Hilex Poly Co. flow to the WWTP by gravity, and are therefore do no impact any lift stations which may currently experience surcharge issues. Kromate America does not discharge industrial wastewater to the collection system at this time. Metaldyne Products discharges to the collection system which is ultimately pumped to the WWTP by way of the North West Pump Station. This pump station occasionally experiences surcharges. However, this lift station will be addressed and repaired as described in this LTCP.

**7.3 Industrial Source Controls**

The North Vernon industrial users are required to comply with the wastewater discharge limitations in the North Vernon Industrial Sewer Use Ordinance (local limits), or categorical pretreatment standards (40 CFR 403-471), whichever is more stringent. Categorical pretreatment standards are technology-based limits unique to each industry, and local limits are technology-based limits unique to each municipality.

The City's NPDES permit requires a technical evaluation of the local limits each permit cycle. The City of North Vernon is in the process of replacing the treatment plant headworks which includes a new grit removal system. As a result, the technical review of the local limits or pollutant loading study has been delayed until the project is complete as the new headworks could have a significant impact on the study. The new grit removal structure will provide more efficient grit removal, which is a known source of metals in municipal wastewater treatment plants.

The Industrial Wastewater Pretreatment Permits for the North Vernon industries require that a Spill Prevention and Control Plan be in place at all times and is reviewed annually by the Pretreatment Coordinator. Several industries are required to develop a Slug Control Plan which minimizes the impact to the POTW from an accidental spill at the industry.

**7.4 Minimization of Industrial Discharges During Wet Weather Events**

As part of the annual pretreatment inspection, the Pretreatment Coordinator evaluates the flows from each industry in regard to the impact on the collection system. Flow volume and the ability of each industry to control the discharge during wet weather are as follows:

**Table 7.2: Flow Volumes of Permitted Industries**

| Industry | Average Discharge (gpd) | Able to Control or Hold Discharge |
|---|---|---|
| Hilex Poly Co. LLC | 69,000 | No |
| Kromet America, Inc. | No Discharge | Not Applicable |
| Martinrea Industries, Inc. | 3,500 | Yes |
| Metaldyne Sintered Forged Products, LLC | 3,500 | No |
| Webster West Packaging, Inc. | 325 per Batch | Yes |

With the exception of Hilex Poly Co., the volume from the industries does not have significant impact on the total CSO volume. The nature and characteristics of the industrial discharge from all industries is not an immediate concern as most of the discharges are from cooling water or sanitary sources.

**7.5 Conclusions**

The North Vernon Pretreatment Program is functioning as intended by U.S. EPA. NPDES permit compliance with metals limitations, sludge disposal and pretreatment requirements have been excellent in recent years. However, when the City revises the CSO Operational Plan as part of this LTCP implementation, the issue of wet weather control can be revisited with Hilex Poly Co. to reduce the discharge volume during wet weather events if deemed necessary for LTCP compliance, even though the majority of the volume is from cooling water sources and has little water quality impact.

## SECTION 8 – EVALUATION OF COMBINED SEWER OVERFLOW CONTROL ALTERNATIVES

The treatment alternatives evaluated in this Chapter are divided into those associated with the Collection System and those associated with the Wastewater Treatment Plant. These alternatives were evaluated to determine the most cost-effective solution to the current and future needs for the project area. Construction bid prices on similar projects and equipment supplier budgets were used to derive the estimated costs for the various alternatives. Non-Construction Costs include costs such as Design, Construction Administration, Inspection, Legal services, Bond Administration, etc.

As was discussed in Chapter 2 – System Characteristics, the collection system experiences surcharging in four (4) existing Lift Stations. The below Section 8.1 evaluates the alternatives associated with these problems.

Also discussed in Chapter 2, the Wastewater Treatment Plant (WWTP) contains the one permitted CSO in the city. During significant rain events, many times throughout the year, this CSO experiences overflows. In the year of 2011, there were 26 overflows. The treatment alternatives evaluated in this Chapter relating to the WWTP are based on the XP-SWMM modeling results (Chapter 2). The wet weather design flows and volumes were determined which included providing full treatment for the "First Flush" and a minimum of primary treatment and disinfection to the CSO volumes generated between the "First Flush" and the 10 year/1 hour storm events. These alternatives are discussed in Section 8.2.

### 8.1 Collection System – Existing Lift Stations

Domestic wastewater management begins with collection. This report evaluates four (4) collection problems, all regarding the four (4) lift stations that experience surcharging. These lift stations are the Northwest, the Southwest, the Northeast, and the Norris Subbasin. The potential corrections evaluated include the following: 1. low pressure sewers with grinder pumps system, 2. the replacement of existing sanitary sewers to reduce infiltration, and 3. the replacement of pumps and associated force mains to increase capacity.

#### 8.1.1 Northwest Lift Station (Alternate 1) – Hickory Manor Trailer Park: Low Pressure Sewers with Grinder Pumps

The Northwest Lift Station, also identified as Lift Station No. 10, is located in the Northwest Sub-basin, along State Road 7. This lift station services both residential and commercial users for an area of approximately 275 acres.

The existing lift station consists of two (2) wet wells. The first wet well consists of two (2) pumps rated at 15 hp and the associated 8" force main that terminates at a manhole located on Second Street and approximately 3,300 feet in length. The second wet well includes one (1) pump rated at 20 hp and its associated 6" force main that terminates into a manhole located on the south edge of City Park and this force main is approximately 4,800 feet in length.

During significant rain events, this lift station experiences surcharging. This data is gathered by city personnel during these rain events (See Appendix A for overflow reports).

The Hickory Manor Trailer Park is an existing development consisting of ninety (90) lots, as can be seen from Figure 8.1. One trailer is located on each lot with the associated utility hookups (water, gas, electric, and sanitary sewer). The park consists of three connected drives and utility easements located in the common areas between successive rows of lots.

The park currently has a conventional gravity sanitary sewer system to which each lot connects and discharges sewage. Through smoke testing and flow monitoring, it has been determined that this sewer system experiences significant wet weather infiltration and burdens the Northwest lift station, to which it flows. This excessive infiltration can contribute up to a third of all of the flow to this lift station during rain events.

This alternative involves the replacement of the existing sanitary sewers with a low pressure system and a storm sewer system. Low pressure sewers with grinder pumps use small pumps located in pump pits connected to one or more building laterals; one for every two lots, in this case. The pumps grind the sewage solids into small particles and then discharge into a collection system consisting of small pressure force mains, generally 1-¼" to 4" in diameter. The low pressure sewers follow the existing ground just below the frost line. Power for the pumps must come from the buildings connected to the pump pit or from a metered drop on a power pole.

Low pressure sewers with grinder pumps are well suited in areas with existing development and minimal future taps. They can be installed by using directional boring machines. Once the bore is complete the low pressure sewer is pulled into the bore as the bit is being withdrawn. This significantly reduces the amount of surface disturbance and the number of joints. Due to the constraints caused by limited work area within the easement and the close proximity of the trailers, this method is preferable to open cut alternatives. Disadvantages to this system include the number of mechanical parts and the required periodic maintenance of pumps and control panels. See Figures 8.2 and 8.3 for a preliminary layout. Construction cost estimates and O&M costs for this collection alternative are given by Table 8.1 and Table 8.2, respectively.

A conventional gravity sewer system was investigated, however, it was found that it would be cost prohibitive. One option of utilizing the existing easement between the trailers was discarded due to a lack of space for open-cut installation. The other option of installing the sewer in the existing streets would result in excessive costs (granular backfill, asphalt road repair, service lateral reversal).

A storm sewer system for this alternative is necessary due to the lack of drainage that will occur with the elimination of the infiltration into the existing sanitary sewer system. This system will utilize "green" technology with the installation of bioswales to naturally capture pollutants. Underground storage of storm water will be provided to lessen the burden of excessive flows to the downstream systems.

It is intended that this alternative will eliminate surcharging in the Northwest lift station. However, it is recommended that flow monitoring of the lift station be conducted to make this conclusion.


**LEGEND**

Existing Manholes

Existing Sewer

Existing Sanitary Sewer
Hickory Manor Trailer Park, North Vernon, IN

PREPARED BY:


BERNARDIN LOCHMUELLER & ASSOCIATES, INC.
Planners · Engineers · Surveyors
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http://www.blainc.com


DATE: 02/24/2012

PROJECT NO.: 211-0065

FIGURE: 8.1


**LEGEND**

| | | | |
|---|---|---|---|
| ▲ | Grinder Pump | | Proposed Sewer |
| | Pressure Line | ● | Existing Manholes To Remain |
| ● | Proposed Manholes | | Existing Sewer To Remain |

Sanitary Sewer Improvements
Hickory Manor Trailer Park, North Vernon, IN

PREPARED BY:


BERNARDIN LOCHMUELLER & ASSOCIATES, INC.
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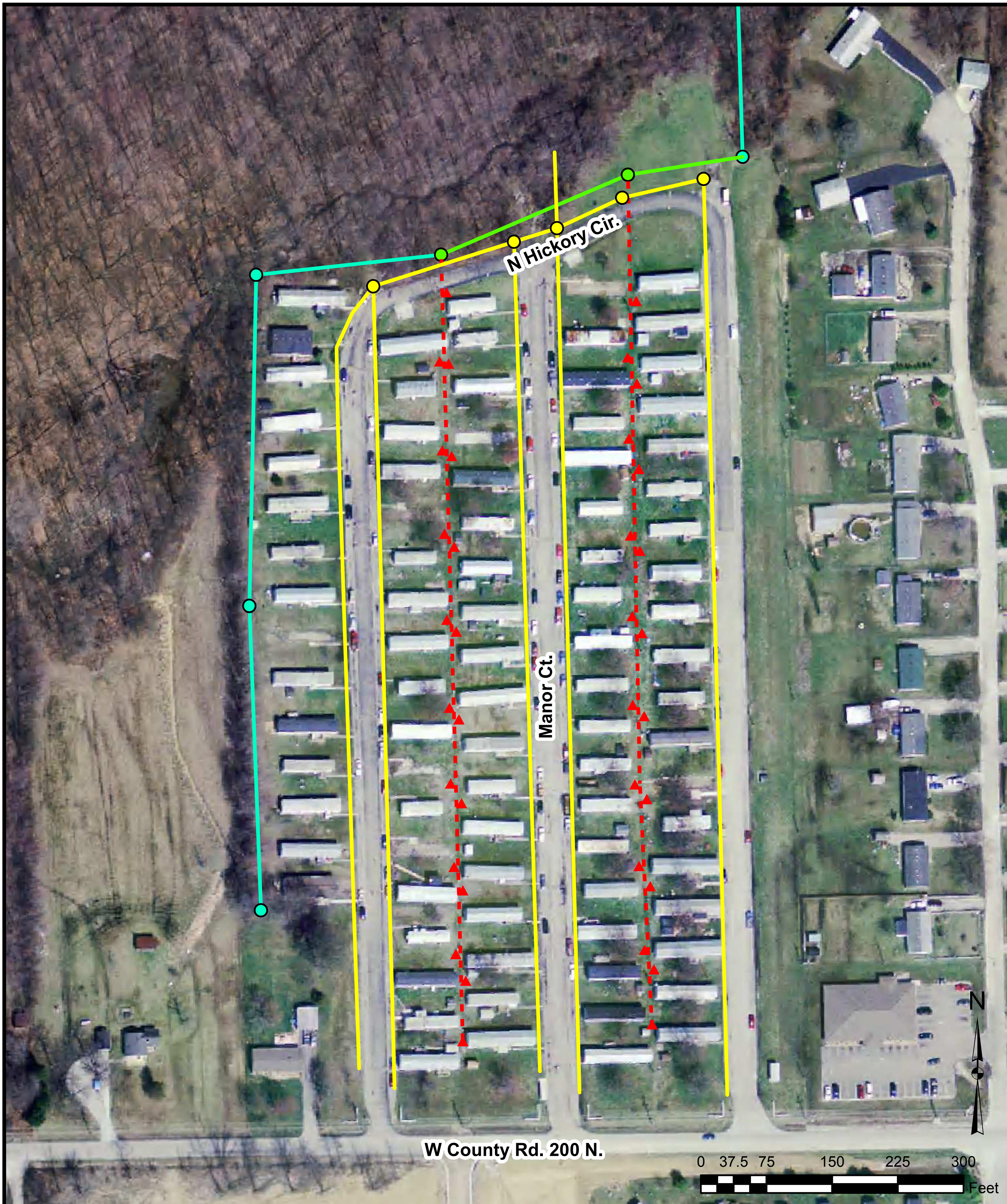
http://www.blainc.com


DATE:
02/24/2012

PROJECT NO.:
211-0065

FIGURE:
**8.2**




LEGEND

| | | | |
|---|---|---|---|
| ● | Storm Manhole | ● | Proposed Manholes |
| ▲ | Grinder Pump | — | Proposed Sewer |
| — | Storm Sewer | ● | Existing Manholes To Remain |
| - - - | Pressure Line | — | Existing Sewer To Remain |

Storm Sewer Improvements
Hickory Manor Trailer Park, North Vernon, IN

PREPARED BY:

BERNARDIN LOCHMUELLER & ASSOCIATES, INC.

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DATE: 02/24/2012

PROJECT NO.: 211-0065

FIGURE: 8.3

**Table 8.1 – Low-Pressure Grinder Pump Collection System Costs**

| Item: | Quantity | Unit | Unit Cost | Cost |
|---|---|---|---|---|
| 2" Low Pressure Sewer | 1,900 | Feet | $30 | $57,000 |
| 8" Sewer Pipe (Gravity) | 370 | Feet | $40 | $14,800 |
| Sanitary Manhole | 2 | Each | $2,000 | $4,000 |
| Grinder Pump Assemblies | 37 | Each | $6,000 | $222,000 |
| 6" Service Lateral | 700 | Each | $38 | $26,600 |
| Service Line Valves | 37 | Each | $300 | $11,100 |
| 6" Perf. Infiltration Pipe | 4,736 | Feet | $22 | $104,192 |
| 12" Storm Sewer Pipe | 412 | Feet | $40 | $16,480 |
| 18" Storm Sewer Pipe | 130 | Feet | $43 | $5,590 |
| Storm Manhole | 5 | Each | $2,000 | $10,000 |
| 6" Cleanout | 15 | Each | $160 | $2,400 |
| Asphalt Repair | 60 | Feet | $20 | $1,200 |
| Sidewalk Repair | 88 | Each | $300 | $26,400 |
| Grass Restoration | 2,640 | Feet | $2 | $5,280 |
| Bypass Pumping | 1 | Lump Sum | $5,000 | $5,000 |
| Traffic Control and Protection | 1 | Lump Sum | $7,500 | $7,500 |
| Mobilization | 1 | Lump Sum | $30,000 | $30,000 |
| | | | SubTotal: | $549,600 |
| | | | Contingency (20%): | $109,920 |
| | | | **Total Construction Cost:** | **$659,520** |
| | | | Non-Construction Cost: | $112,118 |
| | | | **Total Project Cost:** | **$771,638** |

**Table 8.2 - Low-Pressure Grinder Annual O & M Cost Estimates**

| Item | Annual Cost |
|---|---|
| Power | $185 |
| Labor | $1,332 |
| Maintenance | $440 |
| Replacement | $1,432 |
| **Total Annual O&M Costs** | **$3,389** |

#### 8.1.2 Northwest Lift Station (Alternate 2) – Pump Replacement and Force Main Replacement

The Northwest Lift Station, also identified as Lift Station No. 10, is located in the Northwest Sub-basin, along State Road 7. This lift station services both residential and commercial users for an area of approximately 275 acres.

The existing lift station consists of two (2) wet wells. The first one consists of two (2) pumps rated at 15 hp and the associated 8" force main that terminates at a manhole located on Second Street and approximately 3,300 feet in length. The second wet well includes one (1) pump rated at 20 hp and its associated 6" force main that terminates into a manhole located on the south edge of City Park and this force main is approximately 4,800 feet in length.

During significant rain events, this lift station experiences surcharging. This data is gathered by city personnel during these rain events (See Appendix A for overflow reports).

This alternative involves the replacement of the two (2) existing pumps with two (2) new, larger pumps as well as complete replacement of the existing 8" force main with 10" diameter piping. Flow velocities were calculated in the existing force main to make this conclusion (further evaluation with flow monitoring will be necessary). This will increase the flow rate to better match the incoming flows. Table 8.3 summarizes the costs associated with this alternative.

It is intended that this alternative will eliminate surcharging in the Northwest lift station. However, it is recommended that flow monitoring of the lift station be conducted to make this conclusion as well as to eliminate any potential adverse effects of the increased flow to the downstream system.

**Table 8.3 – Northwest Lift Station Pump Replacement Costs**

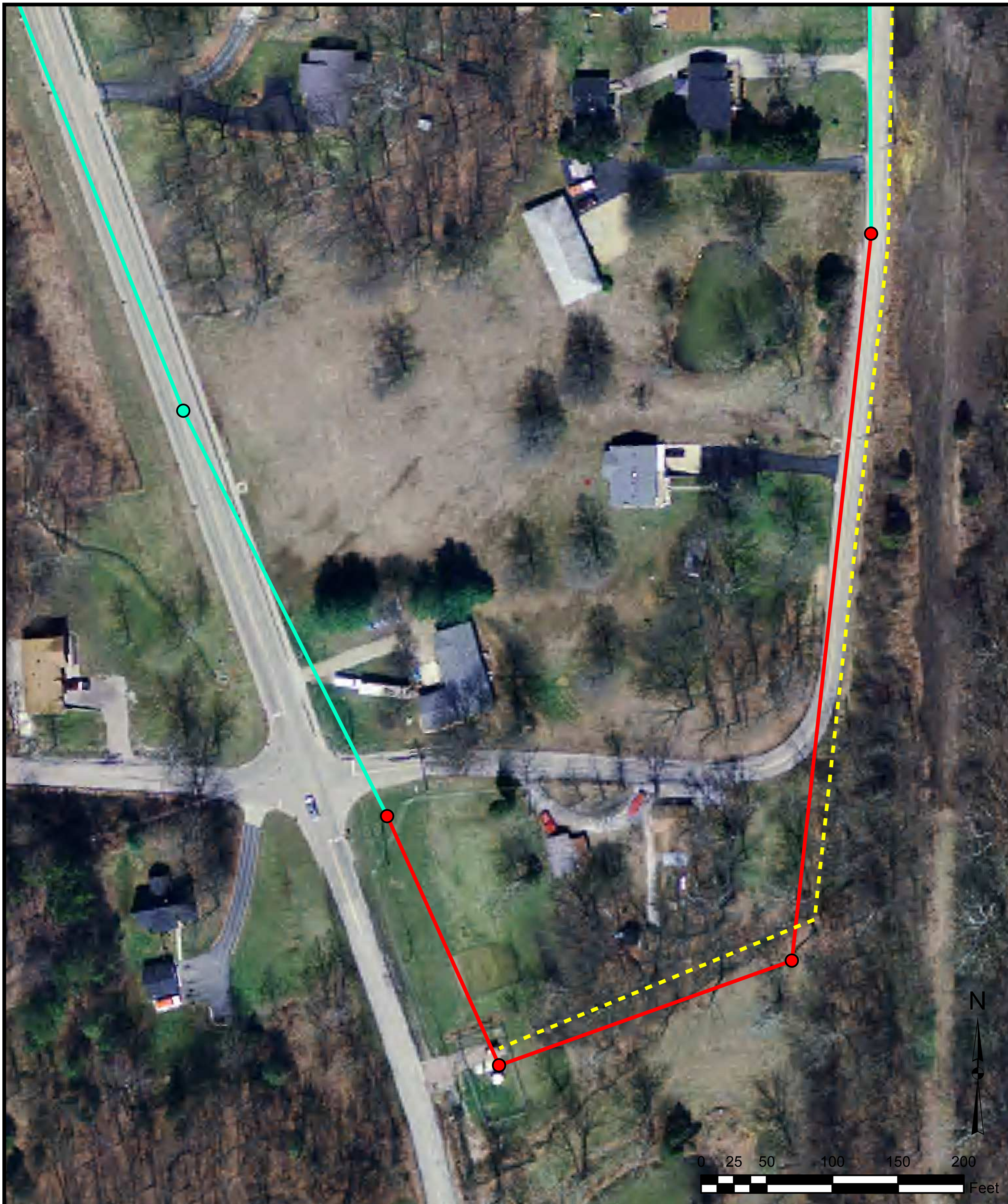
| Item: | Quantity | Unit | Unit Cost | Cost |
|---|---|---|---|---|
| Lift Station Pumps | 2 | Each | $20,000 | $40,000 |
| Lift Station Piping | 1 | Lump Sum | $3,000 | $3,000 |
| Wet Well Rehabilitation | 1 | Lump Sum | $12,000 | $12,000 |
| Site Electrical | 1 | Lump Sum | $18,000 | $18,000 |
| 10" Force Main | 3300 | Feet | $45 | $148,500 |
| Road Bore | 60 | Feet | $120 | $7,200 |
| Air Release Structure | 3 | Each | $2,000 | $6,000 |
| Connect to Existing Manhole | 1 | Lump Sum | $750 | $750 |
| Asphalt Road Repair | 60 | Feet | $68 | $4,080 |
| Grass Restoration | 3300 | Feet | $2 | $6,600 |
| Clearing | 1 | Lump Sum | $12,000 | $12,000 |
| Mobilization | 1 | Lump Sum | $19,000 | $19,000 |
| | | | Subtotal: | $277,200 |
| | | | Contingency (20%): | $55,440 |
| | | | **Total Construction Costs:** | **$332,640** |
| | | | Non-Construction Costs: | $56,549 |
| | | | **Total Project Cost:** | **$389,189** |

**8.1.3 Norris Avenue Lift Station – Sanitary Sewer Replacement**

The Norris Avenue Lift Station, also identified as Lift Station No. 14, is located in the southern part of the city on Norris Ave. and south of West Base Road. This lift station services the Norris Sub-basin, a separate system consisting of mostly residential development with an area of approximately 50 acres.

During significant rain events, this lift station experiences surcharging (See Appendix A). During these rain events, substantial infiltration occurs burdening the pumps and causing surcharging.
This alternative involves the replacement of the sanitary sewers in the area around the existing lift station. The sewers to be replaced, as can be seen in Figure 8.4, include three (3) segments. This piping will be installed by the open-cut method and will consist of areas of grass and asphalt road repair.

It is intended that this alternative will eliminate surcharging in the Norris Avenue lift station. However, it is recommended that flow monitoring of the lift station be conducted to make this conclusion as well as further investigation to eliminate other causes for the excessive storm flow.




**LEGEND**

- Existing Force Main
- Existing Manholes To Remain
- Existing Sewer To Remain
- Proposed Manholes
- Proposed Sewer

Sanitary Sewer Improvements
Norris Lift Station, North Vernon, IN

PREPARED BY:

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DATE: 02/24/2012

PROJECT NO.: 211-0065

FIGURE: 8.4

Construction cost estimates for this collection alternative are given by Table 8.4.

**Table 8.4 – Norris Lift Station Sanitary Sewer System Replacement Costs**

| Item: | Quantity | Unit | Unit Cost | Cost |
|---|---|---|---|---|
| 8" Sanitary Sewer | 1,026 | Feet | $60 | $61,560 |
| Manhole | 4 | Each | $3,000 | $12,000 |
| Asphalt Repair | 446 | Feet | $68 | $30,328 |
| Grass Restoration | 580 | Feet | $2 | $1,160 |
| Clearing | 1 | Lump Sum | $10,000 | $10,000 |
| Traffic Control and Protection | 1 | Lump Sum | $10,000 | $10,000 |
| Mobilization | 1 | Lump Sum | $6,000 | $6,000 |
| | | | Subtotal: | $131,100 |
| | | | Contingency (20%): | $26,220 |
| | | | **Total Construction Costs:** | **$157,320** |
| | | | Non-Construction Costs: | $26,744 |
| | | | **Total Project Cost:** | **$184,064** |

**8.1.4 Northeast Lift Station – Pump and Force Main Replacement**

The Northeast Lift Station, also identified as Lift Station No. 4, is located in the Northeast sub-basin, along Fifth Street across the existing Stone Quarry on the north side of the city. This lift station services both residential and commercial users for an area of approximately 55 acres.

The existing lift station consists of two (2) pumps rated at 15 hp. The force main is 6” in diameter and extends in a southerly direction, finally terminating in a manhole approximately 500 feet away.

During significant rain events, this lift station experiences surcharging. This data is gathered by city personnel during these rain events (See Appendix A for overflow reports).

This alternative involves the replacement of the two (2) existing pumps with two (2) new, larger pumps as well as complete replacement of the existing 6” force main with a 8” force main. Flow velocities were calculated in the existing force main to make this conclusion (further evaluation with flow monitoring will be necessary). This will increase the flow rate to better match the incoming flows.

It is intended that this alternative will eliminate surcharging in the Northeast lift station. However, it is recommended that flow monitoring of the lift station be conducted to make this conclusion as well as to eliminate any potential adverse effects of the increased flow to the downstream system.

Construction cost estimates for this collection alternative are given by Table 8.5.

**Table 8.5 – Northeast Lift Station Pump and Force Main Replacement Costs**

| Item: | Quantity | Unit | Unit Cost | Cost |
|---|---|---|---|---|
| Lift Station Pumps | 2 | Each | $20,000 | $40,000 |
| Lift Station Piping | 1 | Lump Sum | $3,000 | $3,000 |
| Wet Well Rehabilitation | 1 | Lump Sum | $12,000 | $12,000 |
| Site Electrical | 1 | Lump Sum | $18,000 | $18,000 |
| 8" Force Main | 500 | Feet | $68 | $34,000 |
| Air Release Structure | 1 | Each | $2,000 | $2,000 |
| Connect to Existing Manhole | 1 | Lump Sum | $750 | $750 |
| Grass Restoration | 500 | Feet | $2 | $1,000 |
| Clearing | 1 | Lump Sum | $12,000 | $12,000 |
| Mobilization | 1 | Lump Sum | $7,000 | $7,000 |
| | | | Subtotal: | $129,800 |
| | | | Contingency (20%): | $25,960 |
| | | | **Total Construction Costs:** | **$155,760** |
| | | | Non-Construction Costs: | $26,479 |
| | | | **Total Project Cost:** | **$182,239** |

**8.1.5 Southwest Lift Station – Pump Replacement**

The Southwest Lift Station, also identified as Lift Station No. 22, is located in the southwest part of the city along West Base Road. It services all of the "Southwest Sub-basin" with an approximate area of 988 acres. This sub-basin is almost entirely residential development.
During significant rain events, this lift station experiences surcharging. This data is gathered and reported by city personnel during these rain events (See Appendix A).

Flow tests were conducted by the city personnel to establish the output flow of the existing facility. This data was analyzed and the conclusion drawn that the existing pumps are not performing up to specifications. The associated force main, 12" in diameter, has capacity such that more flow can flow through it than what the existing pumps can produce.

This alternative involves the replacement of three (3) existing pumps with three (3) new, larger pumps for the wet weather flows. This will increase the flow rate to better match the incoming flows.

It is intended that this alternative will eliminate surcharging in the Southwest lift station. However, it is recommended that flow monitoring of the lift station be conducted to make this conclusion as well as to eliminate any potential adverse effects of the increased flow to the downstream system.

Construction cost estimates for this collection alternative are given by Table 8.6.

**Table 8.6 – Southwest Lift Station Pump Replacement Costs**

| Item: | Quantity | Unit | Unit Cost | Cost |
|---|---|---|---|---|
| Lift Station Pumps | 3 | Each | $17,700 | $53,100 |
| Lift Station Piping | 1 | Lump Sum | $3,000 | $3,000 |
| Wet Well Rehabilitation | 1 | Lump Sum | $12,000 | $12,000 |
| Site Electrical | 1 | Lump Sum | $8,000 | $8,000 |
| Mobilization | 1 | Lump Sum | $7,000 | $7,000 |
| | | | Subtotal: | $83,100 |
| | | | Contingency (20%): | $16,620 |
| | | | **Total Construction Costs:** | **$99,720** |
| | | | Non-Construction Costs: | $16,952 |
| | | | **Total Project Cost:** | **$116,672** |

#### 8.1.6 Phase I Improvements

Phase I of the original LTCP called for evaluation and repair of the "most severely identified I&I problems" throughout the collection system during the first four years of implementation. To date, approximately $518,655 has been spent on 3,695 feet of sewer replacements and repairs along with the repair or replacement of fifteen (15) manholes.

The collection system investigation and evaluation is ongoing with additional repairs and replacements expected. However, the Phase I evaluations of the original LTCP have identified an additional 5,317 feet of sewer repair or replacement at an estimated cost of $505,910 as shown in Table 8.11.

### 8.2 Wastewater Treatment Plant Alternatives

In addition to the above collections system alternatives, improvements at the existing Wastewater Treatment Plant (WWTP) were analyzed with regard to wet weather flows (See Section 2 – System Characterization). This plant is located in the southeast portion of the city and receives flow from all of the sub-basins (See Section 2). These alternates address the design rain event flows that the city experiences; burdening the facility and currently the cause of CSO overflows.

Several alternatives were evaluated in the original LTCP. These alternatives included No Action (8.2.1), Capture for Treatment (8.2.2), Elimination of all Combined Sewers (8.2.3), Chlorination treatment of CSO runoff (8.2.4), and UV treatment of CSO runoff (8.2.5).

In addition to the original alternatives, several other alternatives were evaluated. These alternatives include Mechanical Wet Weather Treatment (Chemically Enhanced High Rate Clarifier) (8.2.6 and 8.2.7), and Constructed Wetland/Ecological Treatment (8.2.8).

**8.2.1 No Action**

(The following text in *Italics* is taken from the original CSO Long Term Control Plan as approved by IDEM):

> *No Action alternative using the nine minimum controls and the improvements already in place will eliminate dry weather CSO events and will limit wet weather CSO events to less than five (5) events per year. The Indiana Department of Environmental Management has indicated they will only accept one (1) in ten (10) year untreated CSO event. With these criteria in mind this will eliminate the "No Action" alternative as unviable.*

**8.2.2 Capture for Treatment - Equalization Basin**

(The following replaces the original LTCP alternative)

This option involves installation of additional storage capacity in the form of Equalization Basin(s) to store the wet weather flow volumes caused by design storm events. Following the capture of this volume, disinfection would be required prior to discharge from the plant facility.
Integral to the viability of this alternative are the flows as well as the volume of sewage generated due to the design rain events. As a result of the analysis, it was determined that the design storm (10 yr, 1 hr event), created over 8 million gallons of water, as opposed to the original LTCP estimate of 2 million gallons, over and above that which would flow directly into and treated through the conventional facility processes. It would be necessary to store and treat this large volume over a 48 hour period.

The costs associated with this alternative relate to the size(s) and location(s) of the required storage. It is estimated that this alternative would cost $10,400,000. Due to the excessive cost for this option, it will not be considered further.

**8.2.3 Elimination of Combined Sewers**

(The following text in *Italics* is taken from the original CSO Long Term Control Plan as approved by IDEM):

> *Elimination of all Combined Sewers alternative is another option. Approximately 60% of The City of North Vernon's 38 miles of sewer is combined. To eliminate all combined sewers in the system would require an investment on the part of the city of at least $7,200,000.00. This alternative would meet the requirements set forth by IDEM in regards to the CSO, however without further adjustment and future growth the city may be required to address the storm water runoff as a part of MS4 Phase II.*

This alternative examines the total replacement of the “Combined Sewers” in the city. The city has a total of approximately 246,675 feet of sewers. Of this quantity, approximately 60% is considered Combined, i.e. sanitary as well as storm water flow travels through common pipes.

While this option corrects infiltration problems at its source, it does present difficult construction, coordination, and monetary issues. Demolition and replacement of existing facilities (utilities, roadways, sidewalks, etc.) would be particularly troublesome especially in the congested and historically sensitive downtown areas of the city. Major traffic issues would need to be addressed during construction.

Alternative #3 "Elimination of Combined Sewers" does meet the standard set for by IDEM, but at an estimated cost in excess of $7,000,000 (current estimates indicate cost to be $8,800,000) is not cost effective for the City of North Vernon. Due to the cost, Alternative #3 will not be considered at this time.

**8.2.4 Chlorination Treatment of CSO Runoff**

(The following text in *Italics* is taken from the original CSO Long Term Control Plan as approved by IDEM):

> *Chlorination treatment of CSO runoff alterative would include the injection of chlorine into the CSO pipe then utilizing an abandoned clear well as a chlorine contact tank. This appears not the to be a viable alternative since the estimated clarifier volume of 66,000 to 68,500 gallons this would not be enough volume for chlorine contact time for overflows under normal circumstances. To add additional volume would require acquiring additional land and major renovations including a much larger contact tank all of which makes this alternative unfeasible.*

**8.2.5 UV Treatment of CSO Runoff**

This alternative was evaluated in the original LTCP. This narrative supersedes that which was originally in the original LTCP.

Flows generated by the design storms as shown in Section 2 to be in excess of 40 MGD for the peak rate cannot be managed by the existing pumping facility or the existing EQ Basin improvements as described in the original LTCP. In addition, current Ultra-Violet Disinfection technologies cannot reliably treat the flow coming from what would be considered “primary treatment” received by the EQ Basin as described in the original LTCP.

Due to these limitations, this alternative will not be evaluated further.

**8.2.6 Mechanical Wet Weather Treatment Facility- Chemically Enhanced High Rate Clarifier and UV Disinfection**

This Alternative uses a chemically-enhanced, high rate clarification system (CEHRC) to treat the CSO volume greater than the “First Flush” volume. The “First Flush” will be captured and fully treated. Figure 8.5b illustrates these improvements.

Based on the flow sampling results, as discussed in Chapter 2, the first-flush produces a volume of 610,000 gallons at a peak flow of 30 MGD (See graph in Figure 8.6). This first-flush volume will be captured by way of three (3) paths:

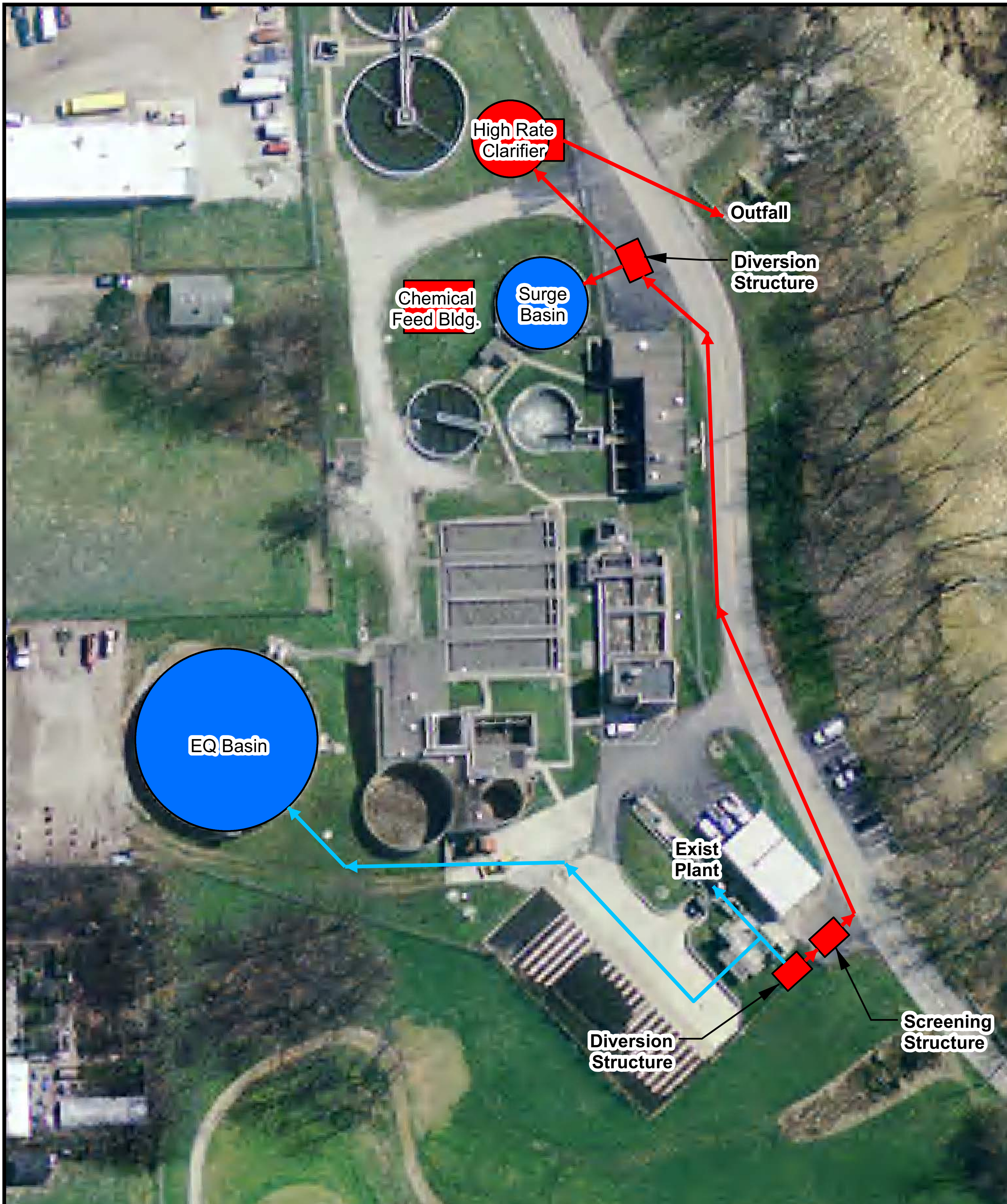
- The **first path**, with flow rates up to 4.76 MGD (208,000 gallons, indicated in purple), flow will be sent directly through the WWTP.
- The **second path** utilizes the existing EQ Basin and its pumping station. The capacity of the pumps is 7 MGD. Therefore, for flow rates greater than 4.76 MGD (see first path, above) and less than 11.76 MGD, flow will be sent for storage in the EQ Basin for storage and subsequently full-treatment (220,000 gallons, indicated in green). Flows will still be sent to the EQ Basin past the capture of the first-flush up to its capacity of 1 million gallons.
- The **third path** captures the remaining first-flush flow that the first and the second paths cannot. This would be for flows in excess of 11.76 MGD and up to 30 MGD. The volume associated with this path is 182,000 gallons, indicated in yellow. This volume will be stored with a Surge Tank located near the High Rate Clarifier. There is an existing 50 ft dia clarifier that has been abandoned in place. This clarifier will be modified into a storage/surge tank with pumps. Pumps in the surge tank will pump raw wastewater to the EQ tank after the storm event from where it will be sent to the WWTP by gravity for full- treatment.

Figure 8.7 illustrates the three flow paths for this “First Flush” situation. Table 8.7 summarizes the flow scenarios.

After the existing EQ Basin becomes full (1 million gallons), and the Surge Basin becomes full (0.2 million gallons), the remaining excess flow will be sent to the high rate clarifier. Figure 8.8 illustrates this situation.

A wet-weather treatment facility rated at a peak flow of 35 MGD will consist of a mechanical fine screen (Screening Structure), a surge tank (as described above), a chemically enhanced high rate clarifier, and UV disinfection. The mechanical screen will be a chain and rake type with 6 mm openings.

After the “First Flush” has been captured by way of the three (3) paths as described above, and up to the 10 yr 1 hr flow, flows will be diverted to a new Chemically Enhanced High Rate Clarification unit to provide primary equivalent treatment. All of the diverted wet weather flows will be treated by the CEHRC system. This system involves the addition of a coagulant and removes up to 90% TSS. Figure 8.8 illustrates this situation. Effluent from the CEHRC will be disinfected using a UV disinfection system prior to discharging to the Creek.




**LEGEND**

Existing Components

Proposed Compenents

Proposed Wet Weather Treatment Improvements
City of North Vernon

PREPARED BY:

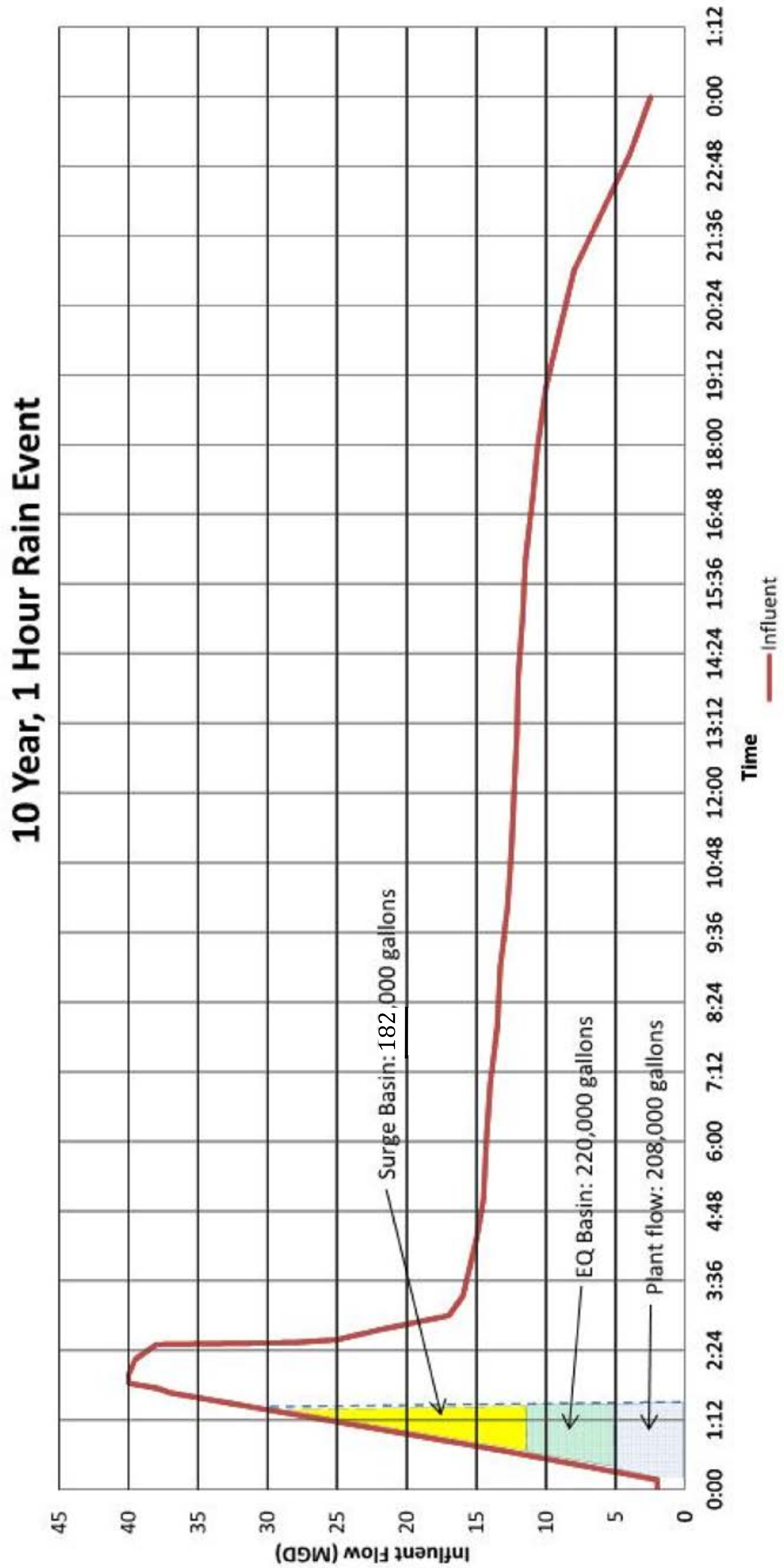
BERNARDIN LOCHMUELLER & ASSOCIATES, INC.

Planners · Engineers · Surveyors
3502 Woodview Trace, Suite 150
Indianapolis, IN 46268 (317) 222-3880
http://www.blainc.com

DATE: 02/24/2012

PROJECT NO.: 211-0065

FIGURE: 8.5




**LEGEND**

Rainfall Data
North Vernon, Indiana

PREPARED BY:

BERNARDIN LOCHMUELLER & ASSOCIATES, INC.

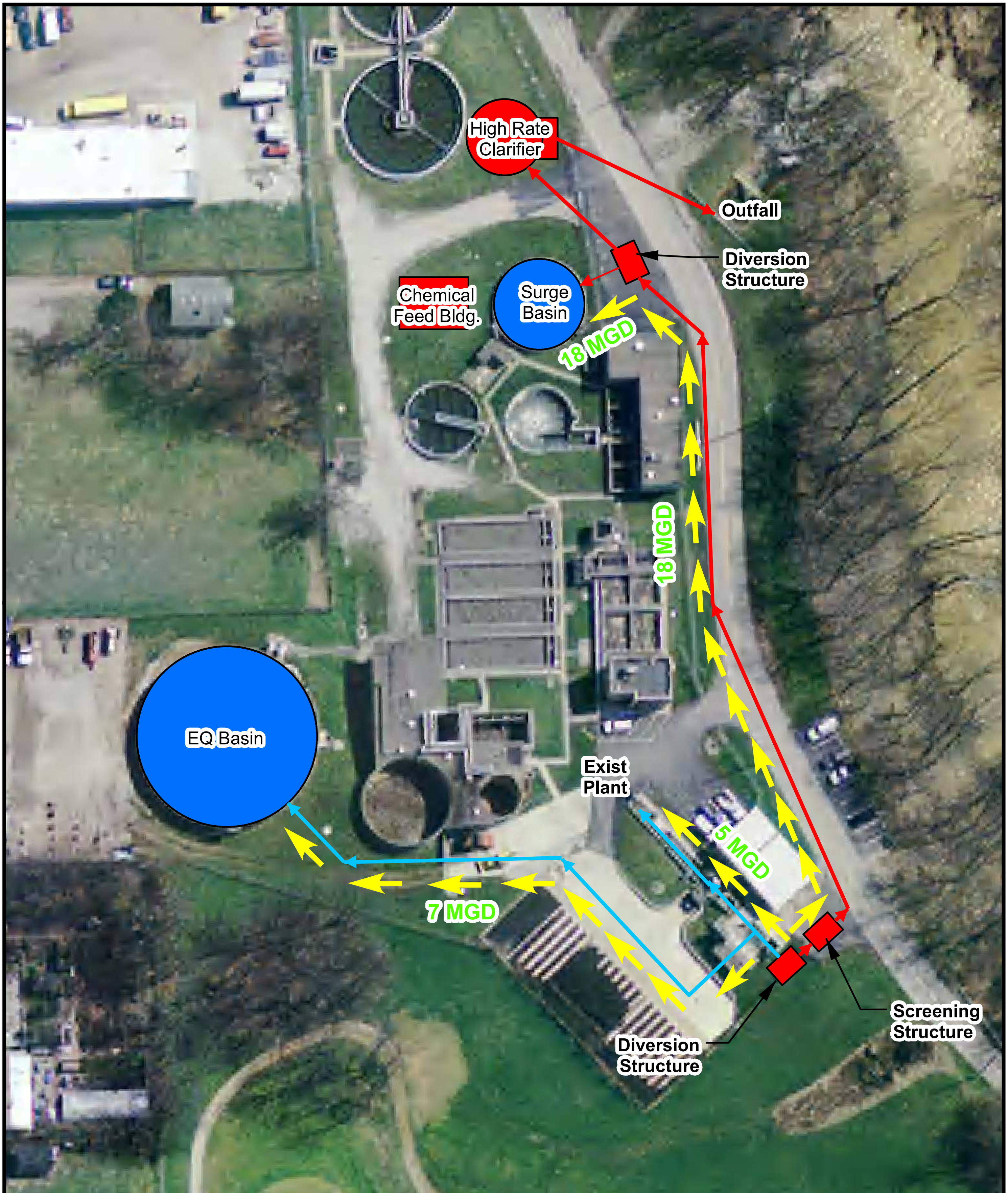
Planners · Engineers · Surveyors

3502 Woodview Trace, Suite 150
Indianapolis, IN 46268 (317) 222-3880
http://www.blainc.com

DATE: 02/24/2012

PROJECT NO.: 211-0065

FIGURE: 8.6




**LEGEND**

Existing Components

Proposed Compenents

First Flush Flow

First Flush Capture
City of North Vernon

PREPARED BY:

BERNARDIN LOCHMUELLER & ASSOCIATES, INC.

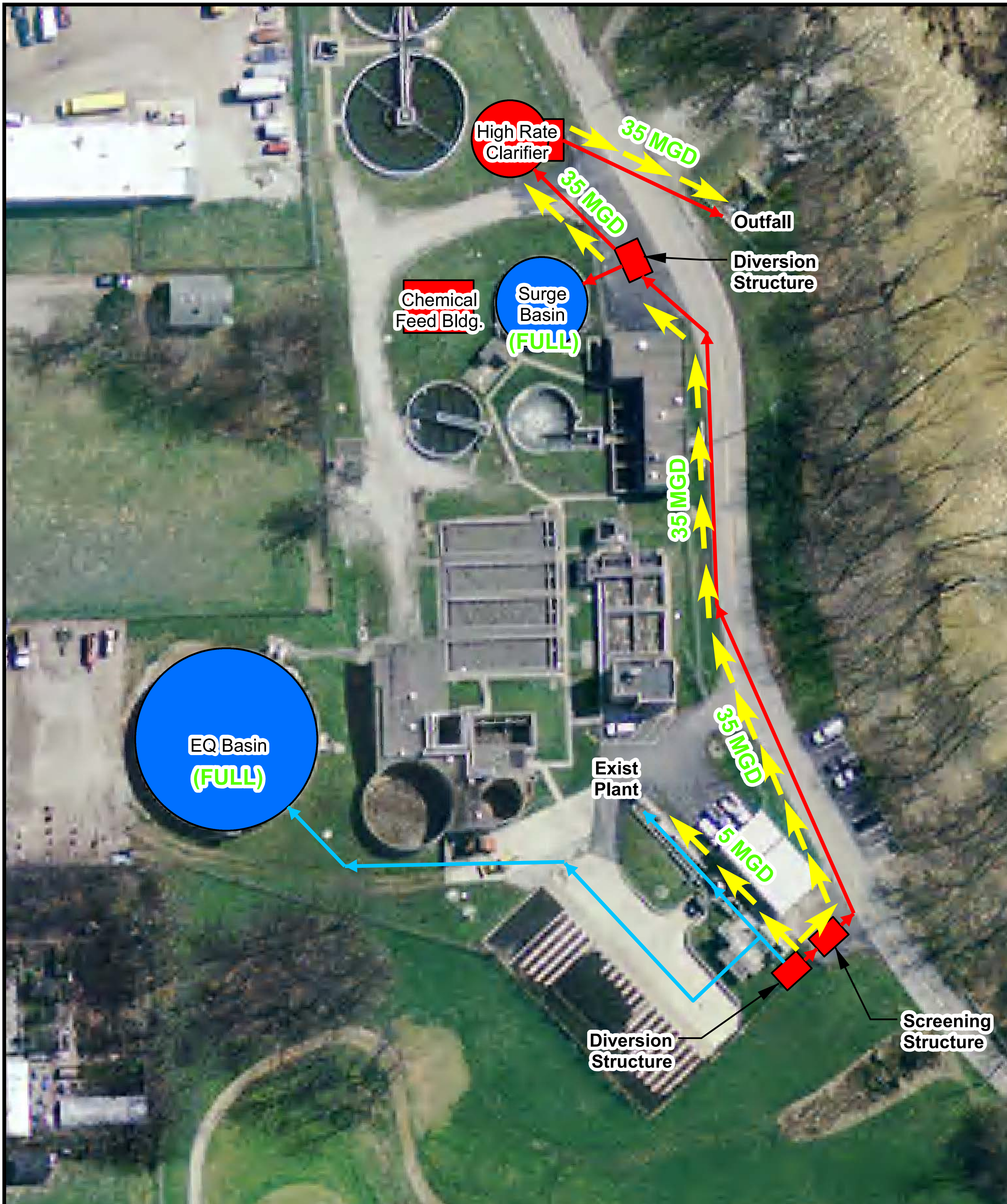
Planners · Engineers · Surveyors

3502 Woodview Trace, Suite 150
Indianapolis, IN 46268 (317) 222-3880
http://www.blainc.com

DATE: 02/24/2012

PROJECT NO.: 211-0065

FIGURE: 8.7




**LEGEND**

Existing Components

Proposed Compenents

Flow

Post First Flush Capture
City of North Vernon

PREPARED BY:

BERNARDIN LOCHMUELLER & ASSOCIATES, INC.
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http://www.blainc.com

DATE: 02/24/2012

PROJECT NO.: 211-0065

FIGURE: 8.8

**Table 8.7: WWTP/Wet Weather Facility Flow Paths**

| Scenario | FlowRate (MGD) | Systems In Use |
|---|---|---|
| 1 | 0 – 4.76 | WWTP Plant Flow |
| 2 | 4.76 – 11.76 | WWTP Plant Flow + EQ Basin |
| 3 | 11.76 – 30 | WWTP Plant Flow + EQ Basin + Surge Basin |
| 4 | 30 – 40 | WWTP Plant Flow + EQ Basin + Surge Basin + (CE)HRC |
| *4a | 4.76 – 40 | WWTP Plant Flow + (CE)HRC |

*4a – This scenario occurs when the EQ Basin and the Surge Basin are full.

Table 8.8 summarizes the cost of this alternative.

**Table 8.8 - Mechanical Wet Weather Treatment - CE High Rate Clarifier**

| Item: | Cost |
|---|---|
| Conveyance Piping | $366,100 |
| Densa Deg Unit | $3,094,000 |
| UV Disinfection System | $444,400 |
| Chemical Feed Building | $181,826 |
| Surge Basin (Convert Existing Clarifier) | $110,000 |
| Site Electrical/Instrumentation/SCADA | $380,000 |
| Diversion Structure | $77,800 |
| Mobilization/Demobilization | $180,000 |
| Subtotal: | $4,834,126 |
| Contingency (20%): | $966,825 |
| **Total Construction Costs:** | **$5,800,951** |
| Non-Construction Costs: | $1,160,190 |
| **Total Project Cost:** | **$6,961,141** |

**8.2.7 Mechanical Wet Weather Treatment – Chemically Enhanced High Rate Clarifier (Storm King)**

This Alternative is similar to the treatment scenario described in paragraph 8.2.6. A chemically enhanced high rate clarifier (CEHRC) will be used to treat CSO volume greater than the “First Flush” and less than the 10 yr 1 hr CSO volume. The “First Flush” will be captured and fully treated. Figure 8.5a illustrates these improvements.

Based on the flow sampling results, as discussed in Chapter 2, the 10-yr 1-hr event produces a first-flush volume of 610,000 gallons at a peak flow of 30 MGD (See graph in Figure 8.6). This first-flush volume will be captured by way of three (3) paths:

- The **first path**, with flow rates up to 4.76 MGD (208,000 gallons, indicated in purple), flow will be sent directly through the WWTP.
- The **second path** utilizes the existing EQ Basin and its pumping station. The capacity of the pumps is 7 MGD. Therefore, for flow rates greater than 4.76 MGD (see first path, above) and less than 11.76 MGD, flow will be sent for storage in the EQ Basin for storage and subsequently full-treatment (220,000 gallons, indicated in green). Flows will still be sent to the EQ Basin past the capture of the first-flush up to its capacity of 1 million gallons.
- The **third path** captures the remaining first-flush flow that the first and the second paths cannot. This would be for flows in excess of 11.76 MGD and up to 30 MGD. The volume associated with this path is 182,000 gallons, indicated in yellow. This volume will be stored with a Surge Tank located near the High Rate Clarifier. There is an existing 50 ft dia clarifier that has been abandoned in place. This clarifier will be modified into a storage/surge tank with pumps. Pumps in the surge tank will pump raw wastewater to the EQ tank after the storm event from where it will be sent to the WWTP by gravity for full- treatment.

Figure 8.7 illustrates the three flow paths for this “First Flush” situation. Table 8.7 summarizes the flow scenarios.

After the existing EQ Basin becomes full (1 million gallons), and the Surge Basin becomes full (0.2 million gallons), the remaining excess flow will be sent to the high rate clarifier. Figure 8.8 illustrates this situation.

A wet-weather treatment facility rated at a peak flow of 35 MGD will consist of a mechanical fine screen (Screening Structure), a surge tank (as described above), a hydrodynamic separation high rate clarifier, and chlorine disinfection. The mechanical screen will be a chain and rake type with 6 mm openings.

The high rate clarifier, as manufactured by Hydro International, will remove 50% TSS and 95% grit. See figure 8.8. Effluent from the HRC will be disinfected using Chlorine Disinfection followed by de-chlorination prior to discharging to the Creek. A pre-engineered building will be constructed for the chlorination/de-chlorination system.

Table 8.9 summarizes the cost of this alternative.

**Table 8.9 - Mechanical Wet Weather Treatment - High Rate Clarifier (Storm King)**

| Item: | | Cost |
|---|---|---|
| Conveyance Piping | | $366,100 |
| Storm King Unit | | $2,259,500 |
| Chemical Feed Building | | $181,826 |
| Chlorination System Upgrade | | $85,000 |
| Surge Basin (Convert Existing Clarifier) | | $110,000 |
| Site Electrical/Instrumentation/SCADA | | $350,000 |
| Diversion Structure | | $77,800 |
| Mobilization/Demobilization | | $180,000 |
| | Subtotal: | $3,610,226 |
| | Contingency (20%): | $722,045 |
| | **Total Construction Costs:** | **$4,332,271** |
| | Non-Construction Costs: | $866,454 |
| | **Total Project Cost:** | **$5,198,725** |

**8.2.8 Constructed Wetland/Ecological Treatment**

This alternative involves the installation of a Constructed Wetland/Ecological Treatment facility. This wetland would accept the volumes of flow caused by the design storm events.

Integral to the viability of this alternative are the flows, the volume of sewage created due to the design rain events, as well as the location of the wetland. Due to the nature of constructed wetland treatment, a large physical footprint would need to be acquired for this facility. Additionally, transport of the wet weather flow (pumping, force mains, etc.) would be necessary. Because the elevation of the WWTP is lower than most of the surrounding city, this wet weather flow would need to be pumped with a new large pumping station and conveyed through a force main(s).

As a result of the analysis, it was determined that the design storm (10 yr, 1 hr event) created over 8 million gallons of water over and above that which would flow directly into and be treated through the standard facility processes. It would be necessary to transport this wastewater to the wetland facility for treatment. This volume of wastewater would require a wetland of approximately 6 ½ acres.

The cost for this option, including the Wet Weather Pump Station, force main, wetland, and UV Disinfection, is estimated to be $5,580,000 (See Table 8.10). However, beyond the costs for this option are qualitative factors that would need to be considered. The Environmental issues and impacts may limit the wetland site location and the outfall into a receiving body of water, for example. To be considered as a viable alternative, this option must be evaluated further.

**Table 8.10 - Constructed Wetland/Ecological Treatment**

| Item: | | Cost |
|---|---|---|
| Pump Station | | $970,000 |
| Force Main | | $840,000 |
| Constructed Wetland | | $875,000 |
| Screening | | $320,000 |
| UV Disinfection | | $540,000 |
| Land Acquisition | | $130,000 |
| Mobilization/Demobilization | | $200,000 |
| | Subtotal: | $3,875,000 |
| | Contingency (20%): | $775,000 |
| | **Total Construction Costs:** | **$4,650,000** |
| | Non-Construction Costs: | $930,000 |
| | **Total Project Cost:** | **$5,580,000** |

**8.3 Recommended Approach**

The following Table 8.9 evaluates and compares the two viable alternatives from the above discussion. These two alternatives are the Chemically Enhanced High Rate Clarifier (CEHRC) options. This analysis compares these two options and relates the initial Capital Costs with the Operation and Maintenance costs to reveal the most beneficial alternative.

North Vernon CSO LTCP Project
Presentworth Analysis

**Life Cycle Cost Analysis for Two Wet-Weather Treatment Facility Alternatives**

| Parameter | Alternative 8.2.6 CEHRC | Alternative 8.2.7 CEHRC (Storm King) |
|---|---|---|
| Planning Period, years | 20 | 20 |
| Discount Rate, % | 8 | 8 |
| Inflation Rate, % | 2.5 | 2.5 |
| Electricity Cost per KW-Hr, cents | 10 | 10 |
| Capital Cost[1] | $6,961,141 | $5,198,725 |
| Installation Cost[2] | $0 | $0 |
| Annual Value Capital Cost | $709,008 | $529,502 |
| Present Value Capital Cost | $6,961,141 | $5,198,725 |
| Wet-Weather Treatment System | | |
| Annual KW-Hrs | 504,766 | 152,184 |
| Cost for Electricity per Year | $50,477 | $15,218 |
| Present Value Electricity Cost | $495,586 | $149,416 |
| Chemical Usuage for New System | | |
| Annual Chemicals Use per event, ton | 4 | 2 |
| Cost of Chemicals per event, $/ton | $310 | $200 |
| Chemical Cost per Year | $124,000 | $40,000 |
| Present Value Chemical Cost | $1,933,056 | $623,566 |
| Annual Regular Maintanence | $55,000 | $10,000 |
| Present Value Maintanence Cost | $539,998 | $98,181 |
| Life Cycle Cost | | |
| Total Life Cycle Cost - Present Value | $9,930,000 | $6,070,000 |
| Total Life Cycle Cost - Annual Value | $938,000 | $595,000 |

The “Total Life Cycle Cost – Present Value” indicates that Alternative “8.2.7 Mechanical Wet Weather Treatment - High Rate Clarifier” is the most beneficial option for the city.

**Table 8. 11 - Sanitary Sewer Priority Repair List**

| Date Problem Identified | Street Name or Location | Subbasin | From Manhole # | To Manhole # | Size Pipe in inches | Type Pipe Existing | Estimated Lineal ft. of pipe | Repair required or type repair needed | Replace existing pipe w/type | Estimated Repair Cost |
|---|---|---|---|---|---|---|---|---|---|---|
| 5/1/2009 | Jennings | Downtown | PW2 | PW1 | 10 | VCP | 212 | Roots,clean | SDR35 | $38,000 |
| 11/1/2009 | Shull Dr. | Southwest | AB4 | End | 8 | VCP | 100 | Replace pipe | SDR35 | $18,000 |
| 5/1/2009 | Oakridge | Southwest | M7 | K9 | 8 | VCP | 210 | Replace pipe | SDR35 | $26,280 |
| 6/1/2010 | Franklin | Southwest | F9 | F10 | 8 | VCP | 200 | Slip-line | CIP | $11,000 |
| 7/1/2010 | Off road | Southwest | F23 | F24 | 15 | VCP | 330 | Slip-line | CIP | $30,690 |
| 7/1/2010 | Poplar | Southwest | FH1 | FH2 | 8 | VCP | 100 | Replace pipe | SDR35 | $14,400 |
| 7/1/2010 | Off road | Southwest | FH1 | F25 | 8 | VCP | 125 | Replace pipe | SDR35 | $13,500 |
| 11/1/2009 | Shull Dr. | Southwest | F8 | AB4 | 8 | VCP | 200 | Replace pipe | SDR35 | $21,600 |
| 3/1/2010 | Greensburg | East | NV1 | NV3 | 8 | VCP | 523 | Replace pipe | SDR35 | $60,443 |
| 9/1/2008 | Off road | Southeast | HJ5 | HJ7 | 8 | VCP | 575 | Replace pipe | SDR35 | $27,575 |
| 3/1/2008 | Industrial Park Dr. | Northwest | AFG5 | AFG6 | 8 | VCP | 242 | Replace pipe | SDR35 | $9,922 |
| 3/1/2007 | Hickory Manor T.P. | Northwest | AD36 | AD36A | 8 | VCP | 2500 | Replace pipe | SDR35 | $234,500 |
| | | | | | | | | | | $505,910 |

## SECTION 9 – FINANCIAL CAPABILITIES ANALYSIS

The CSO control alternatives have to be evaluated based on the financial burden that each one would impose upon the residents of North Vernon. IDEM recommends following a two-phase approach as outlined in *Guidance for Financial Capability Assessment and Schedule Development* (EPA March 1997). This guidance document contains ten worksheets that were used to determine the financial capability of North Vernon. Appendix G contains these worksheets.

Phase one of this approach requires a simple computation to relate the LTCP cost per household to the City's median household Income (MHI). Phase two examines several socio-economic factors for the community to determine its overall financial health.

### 9.1 Wastewater Cost Per Household ($WW_{CPH}$)

Worksheet 1 in Appendix G is used to calculate the cost per household due to existing wastewater treatment costs and the LTCP costs. Implementing the LTCP would result in an annual residential WWCPH of $577 per year ($48.08 per month). This is based upon all projects being funded with a 20 year loan and assuming an interest rate of 6 % and 2,394 residential customers.

Worksheet 2 in Appendix G calculates the residential indicator, which relates the annual $WW_{CPH}$ to the median household income. It estimates the current MHI based upon 2010 Census data and the Consumer Price Index (CPI). The MHI in 2010 was $38,659. Between 2010 and 2011 the CPI increased by an average of 1.04 % per year. This was used to adjust the MHI to 2011 to $40,205. The $WW_{CPH}$ was then calculated based upon the 2011 MHI. The result is that the $WW_{CPH}$ is 1.43 % of the MHI.

### 9.2 Financial Capability Analysis (SEIM)

The length of a community's implementation schedule is also dependent on several socio-economic factors. Each socio-economic criteria is evaluated and given a score of weak = 1, mid-range = 2, or strong = 3 when compared to a benchmark. The scores are then tabulated and averaged. The average score helps determine the overall socio-economic impact and the length of time a community has to implement the projects.

#### 9.2.1 Bond Rating

Worksheet 3 in Appendix G evaluated North Vernon's bond rating. The City of North Vernon does not have a bond rating so an evaluation is not possible.

#### 9.2.2 Overall Net Debt Per Capita

Worksheet 4 in Appendix G evaluated the net debt per capita. The evaluation resulted in an overall net debt of 3.3% of the full market value. This received a score of "mid-range".

### 9.2.3 Average Unemployment Rate

Worksheet 5 in Appendix G evaluated the average unemployment. The City of North Vernon had an average unemployment rate of 11.3% (3/2011) and the national average was 9.1%. Unemployment information was obtained from the U.S. Census and the U.S. Department of Labor. This receives a score of "weak" because the City's unemployment rate exceeds the national average by more than 1%.

### 9.2.4 Median Household Income

Worksheet 6 in Appendix G compared North Vernon's median household income to the national median household income. The comparison showed that the City's median household income is 25% below the national average. This received a score of "mid-range".

### 9.2.5 Property Tax Revenue as a Percent of Full Market Value

Worksheet 7 in Appendix G compared the total property tax revenue collected to the full market property value. The total property value for the City for is $215,132,297 (Jennings County Assessor's Office). The total property tax revenue collected for 2010 was $4,854,201 (North Vernon County Treasurer's Office). The property tax revenue as a percentage of full market value is 2.2%. This received a score of "mid-range".

### 9.2.6 Property Tax Revenue Collection Rate

Worksheet 8 in Appendix G determined the total property tax revenue collection rate. The total property taxes revenues for the City for 2010 was $4,854,201 with $5,772,443 in property taxes levied (Indiana State Auditor). The property tax collection rate was 84.1%. This receives a score of "weak".

### 9.2.7 Financial Capability Matrix

Worksheet 9 in Appendix G calculated the average score for each of the above socio-economic indicators. The average score is 1.66. Worksheet 10 in Appendix G used the average socio-economic indicator score and the WWCPH to assign a level of burden. A burden is assigned by using a financial capability matrix, like the one below, and the average socio-economic indicator score along with the $WW_{CPH}$.

**Table 9.1: Burden Analysis**

| Permittee Financial Capability Indicators Score | Residential Indicator (Cost Per Household as a % of MHI) | | |
|---|---|---|---|
| | Low (Below 1.0%) | Mid-Range (Between 1.0 and 2.0%) | High (Above 2.0%) |
| Weak (Below 1.5) | Medium Burden | High Burden | High Burden |
| Mid-Range (Between 1.5 and 2.5) | Low Burden | Medium Burden | High Burden |
| Strong (Above 2.5) | Low Burden | Low Burden | Medium Burden |

The total time period for the LTCP to be completed is up to ten years **(Table 9.2).** This ten year schedule would include the five year implementation from the original LTCP leaving five additional years to implement the proposed projects.

**Table 9.2: Allowable Schedule**

| Financial Capability Matrix Category | Implementation Period |
|---|---|
| Low Burden | Normal Engineering / Construction |
| Medium Burden | Up to 10 years |
| High Burden | Up to 15 years*<br>*(Schedule up to 20 years based on negotiations with EPA and state NPDES authorities) |

**9.3 Conclusions**

Since the LTCP is categorized as a "medium burden" on the community it allows up to 10 years for implementation of the LTCP projects. Based upon the amount of work required by the plan, it would be beneficial to the community to have a total length of time closer to 10 years to complete all projects. A length of 5 years (2012-2017) is requested to implement the projects. The additional time would allow for flow monitoring so that the control alternatives can be sized correctly to avoid increased construction costs due to oversizing of piping, equipment, and facilities.

A municipal bond sale or a low interest loan through the SRF program may be necessary to finance the projects because there will not be enough time to save enough money to finance all of the projects.

**SECTION 10 – RECOMMENDED PLAN AND IMPLEMENTATION SCHEDULE**

The treatment alternatives evaluated in this Chapter can be divided into those associated with the Collection System and those associated with the Wastewater Treatment Plant. These alternatives were evaluated to determine the most cost-effective solution to the current and future needs for the project area (See Section 8 – Evaluation of Combined Sewer Overflow Control Alternatives).

This plan orders the various projects recommended in such a way as to minimize the cost impacts as well as disruption to the city. In addition, the results of these improvements and how they impact the flows in the sewer system can be evaluated post-construction to refine the future recommended projects. Additionally, the City will continue to seek out opportunities to implement green infrastructure and evaluate the use of green technology where ever possible.

**10.1 Recommended Plan – Collection System**

The recommended plan for the collection system to prevent the current surcharge problem at four (4) lift stations throughout the city consist of improvements to the existing pumps and force mains as well as pipe replacements as described in Section 8. Table 10.1 summarizes the chosen alternatives:

**Table 10.1: Collection System – Lift Station Improvements Chosen Alternatives**

| | Description | Total Project Cost | General Comments |
|---|---|---|---|
| Northwest Lift Station | Pump Replacements and Force Main Replacement | $389,000 | More Cost-Effective option than Hickory Manor Improvements. |
| Norris Ave. Lift Station | Sanitary Sewer Replacement | $184,000 | Existing sewers experience excessive infiltration. |
| Northeast Lift Station | Pump Replacements and Force Main Replacement | $182,000 | Pumps are under-capacity. |
| Southwest Lift Station | Pump Replacements | $116,700 | Pumps are under-capacity. |
| Phase I Improvements | I & I Sewer Improvements | $505,910 | Original LTCP repairs |

This recommended plan for the collection system improvements total $1,377,610. Further flow monitoring is recommended at these locations to make a final determine as to the course of action (See Section 8).

**10.2 Recommended Plan – Wastewater Treatment Plant**

In Section 8, all of the alternatives were presented and discussed. The two viable options were then evaluated to identify which was the most cost effective.

Alternative 8.2.7 Mechanical Wet Weather Treatment – Chemically Enhanced High Rate Clarifier (Storm King) is the recommended alternative. This option, in complying with the intent of the design storm approach, will completely capture the “First Flush” and provide primary treatment up to 10 yr 1 hr flows. Implementation will result in no overflows from wet weather events without undergoing wet weather treatment processes below the 10 yr 1 hr flow.

**10.3 Implementation Schedule**

The following Table 10.2 summarizes the Implementation Schedule to complete the City of North Vernon’s Long Term Control Plan. This Schedule includes the collection system work as well as the WWTP improvements.

**Table 10.2: Implementation Schedule Table**

| Key Events | Estimated Completion Date |
|---|---|
| Long Term Control Plan Approval | April 30, 2012 |
| Current Headworks Improvements Project Complete | April 30, 2012 |
| Continue Flow Monitoring (Post Construction) at WWTP for Headworks Improvements Project | Ongoing |
| Pre-Monitoring for Lift Stations | April 30, 2012 |
| PER (Lift Station/Collection System) | January 1, 2013 |
| Design (Lift Station/Collection System) | July 1, 2013 |
| Lift Station/Collection System Construction | January 1, 2014 |
| Post Construction Monitoring | July 1, 2014 |
| WWTP (Wet Weather Facility) PER | January 1, 2015 |
| WWTP Design | April 1, 2015 |
| WWTP Bidding | August 1, 2015 |
| WWTP Construction Begins | September 1, 2015 |
| WWTP Construction Substantially Complete | February 20, 2017 |

## SECTION 11 – POST CONSTRUCTION COMPLIANCE MONITORING PROGRAM (PCCMP)

The recommended LTCP Control Projects can be divided into those associated with the collection system, and those associated with the CSO treatment system. As a result, the PCCMP addresses specific monitoring for each.

### 11.1 Collection System Flow Monitoring

The recommended plan as described in Section 10 calls for improvements to four (4) lift stations throughout the CSS. These include pump replacements, sewer repairs, and force main replacement. Flow monitoring will be required prior to the final design of these projects to determine correct sizing of pumps and possibly the extent of the sewer repairs and replacement. It is recommended that flow monitoring of the influent and effluent be conducted for a minimum of six (6) months after each lift station project is completed to determine the projects effectiveness. It is also proposed that each lift station have a permanent flow monitor installed after the 6 month monitoring period.

### 11.2 CSO Monitoring

The City of North Vernon proposes to treat the flows in excess to the “first flush volume” with a mechanical wet weather treatment system as described in Section 8 before final discharge to the Muscatatuck River by way of existing CSO outfall 002. It is anticipated that this discharge be subject to monitoring requirements for Biochemical Oxygen Demand (BOD), Total Suspended Solids (TSS), and ammonia-nitrogen, as well as effluent limits for *E. coli* upon complete implementation. The appropriate equipment will be installed to comply with the NPDES permit monitoring requirements.

The PCCMP includes monitoring of CSO Outfall 002 in accordance with the requirements of Attachment A of the NPDES permit, as modified once the revised LTCP is approved. For this CSO outfall, flow in excess of the “first flush volume” will include sampling for *E. coli*, BOD, and TSS, and ammonia-nitrogen for any CSO discharges which may occur after implementation is complete. Flow monitoring will be conducted from the resulting overflow upon completion of the LTCP implementation. These results will also be reported on the CSO DMRs as required by the NPDES permit.

**SECTION 12 – COMBINED SEWER OVERFLOW OPERATIONAL PLAN REVISIONS**

The Combined Sewer Overflow Operational Plan (CSOOP) and this LTCP are intended to be dynamic documents, subject to periodic review and revision to reflect changes to the system over time and implementation.

The City of North Vernon ensures that the nine minimum controls will continued to be implemented as described in the CSOOP as approved by IDEM April 22, 2000. Additionally, the City of North Vernon will revise the CSOOP during the implementation of the LTCP control projects, during the post construction monitoring period, and into the future as required by the NPDES permit to reflect current operational procedures and needs.

The City of North Vernon will review the LTCP for effectiveness after the completion of each control project and determine if additional controls are needed to comply with the goals of the LTCP and the CSOOP.

# Appendix A

# BYPASS / OVERFLOW INCIDENT REPORT

State Form 48373 (R3 / 10-05)
Indiana Department of Environmental Management
Office of Water Quality

*INSTRUCTIONS: Complete all parts of this form and fax it to Office of Water Quality, Compliance Evaluation Section at (317) 232-8637 or 232-8406. This report will satisfy the Office of Water Quality (OWQ) telephone and written bypass / overflow reporting requirements of your NPDES permit. To speak with someone in OWQ, call (317) 232-8670.*

**To report a spill or if the release is resulting in a fish kill or other severe environmental damage,** immediately report the release to the Emergency Response Section spill response line at: (317) 233-7745 or toll free within Indiana at (888) 233-7745.

**GENERAL INFORMATION**

| Facility Name: | County: | NPDES Permit Number: |
|---|---|---|
| North Vernon Wastewater Department | Jennings | IN 0020451 |
| Individual Making Report: | Phone Number: | Date & Time IDEM Notified: |
| Russell Vaught | (812) 346-1496 | 12/21/2011 4:00 PM |

**RELEASE INFORMATION**

| Date & Time Release Began: | Date & Time Release Stopped: | Location Released From: *(Address & Description of Manhole, Lift Station, Force Main, etc.)* | Receiving Area: *(Ground, Stream Name, Storm Sewer, etc.)* |
|---|---|---|---|
| 12/21/2011 | 12/21/2011 | Norris Ave Lift Station | Unnamed drainage swale |
| 4:00 AM | 9:30 AM | | |

| Amount of Flow Released: | WWTP Flow During Release: | WWTP Peak Design Flow: |
|---|---|---|
| Check one: ☒ Estimated ☐ Actual | 12.0 MGD | 4.76 MGD |

Description of the Bypass or Overflow: *(Check All That Apply)*
☒Untreated Release ☐Partially Treated Release ☐Bypass of a Treatment Process ☐Blended With Final Effluent & Sampled

Describe any damage to aquatic life or receiving stream:
None

Reason for Bypass/Overflow:
☐ Construction Related ☐ Power Failure ☐ Equipment Failure ☒ Precipitation __________ Inches

Additional Information:
The sewer drainage basin received a total of 1.12 inches of rain in a 4 hour period. The rainfall created flow that exceeded the pump station's capacity. The Muscatatuck River flow increased from the dry weather flow of approximately 200 CFS to a wet weather flow of approximately 12,000 CFS due to the rainfall event. Overflows had a negligible impact on the Muscatatuck River.

Actions Taken to Prevent, Minimize, or Mitigate Damage:

Actions Taken or Planned to Prevent Recurrence:

*(ATTACH ADDITIONAL SHEETS IF NECESSARY)*

**CERTIFICATION AND SIGNATURE**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

SIGNATURE:______________________________ DATE:______________________

# BYPASS / OVERFLOW INCIDENT REPORT

State Form 48373 (R3 / 10-05)
Indiana Department of Environmental Management
Office of Water Quality

*INSTRUCTIONS: Complete all parts of this form and fax it to Office of Water Quality, Compliance Evaluation Section at (317) 232-8637 or 232-8406. This report will satisfy the Office of Water Quality (OWQ) telephone and written bypass / overflow reporting requirements of your NPDES permit. To speak with someone in OWQ, call (317) 232-8670.*

**To report a spill or if the release is resulting in a fish kill or other severe environmental damage,** immediately report the release to the Emergency Response Section spill response line at: (317) 233-7745 or toll free within Indiana at (888) 233-7745.

**GENERAL INFORMATION**

| Facility Name: | County: | NPDES Permit Number: |
|---|---|---|
| North Vernon Wastewater Department | Jennings | IN 0020451 |
| Individual Making Report: Russell Vaught | Phone Number: (812) 346-1496 | Date & Time IDEM Notified: 4/252011 4:35P.M. |

**RELEASE INFORMATION**

| Date & Time Release Began: | Date & Time Release Stopped: | Location Released From: *(Address & Description of Manhole, Lift Station, Force Main, etc.)* | Receiving Area: *(Ground, Stream Name, Storm Sewer, etc.)* |
|---|---|---|---|
| 12/04/2011 | 12/05/2011 | Norris Ave Lift Station | Unnamed drainage swale |
| 6:30 PM | 10:30 PM | | |

| Amount of Flow Released: | WWTP Flow During Release: | WWTP Peak Design Flow: |
|---|---|---|
| Check one: ☒ Estimated ☐ Actual | Over 10.0 MGD | 4.76 MGD |

Description of the Bypass or Overflow: *(Check All That Apply)*
☒Untreated Release ☐Partially Treated Release ☐Bypass of a Treatment Process ☐Blended With Final Effluent & Sampled

Describe any damage to aquatic life or receiving stream:
None

Reason for Bypass/Overflow:
☐ Construction Related ☐ Power Failure ☐ Equipment Failure ☒ Precipitation __________ Inches

Additional Information:
The sewer drainage basin received a total of 2.440 inches of rain in a 12 hour period. The rainfall created flow that exceeded the pump station's capacity. The Muscatatuck River flow increased from the dry weather flow on 12/04/11 of approximately 200 CFS to a wet weather flow on 12/05/11 of approximately 14,000CFS due to the rainfall event. Overflows had a negligible impact on the Muscatatuck River.

Actions Taken to Prevent, Minimize, or Mitigate Damage:

Actions Taken or Planned to Prevent Recurrence:

*(ATTACH ADDITIONAL SHEETS IF NECESSARY)*

**CERTIFICATION AND SIGNATURE**

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Office of Water Quality

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**GENERAL INFORMATION**

| Facility Name: | County: | NPDES Permit Number: |
|---|---|---|
| | Jennings | IN 0020451 |
| **Individual Making Report:** | **Phone Number:** | **Date & Time IDEM Notified:** |
| Russell Vaught | (812) 346-1496 | 4/19/2011 4:35P.M. |

**RELEASE INFORMATION**

| Date & Time Release Began: | Date & Time Release Stopped: | Location Released From: *(Address & Description of Manhole, Lift Station, Force Main, etc.)* | Receiving Area: *(Ground, Stream Name, Storm Sewer, etc.)* |
|---|---|---|---|
| 4/19/2011 | 4/19/2011 | Norris Ave Lift Station | Unnamed drainage swale |
| 8:00 AM | 3:30 PM | | |

| Amount of Flow Released: | WWTP Flow During Release: | WWTP Peak Design Flow: |
|---|---|---|
| Check one: ☒ Estimated ☐ Actual | Over 9.0 MGD | 4.76 MGD |

Description of the Bypass or Overflow: *(Check All That Apply)*
☒Untreated Release ☐Partially Treated Release ☐Bypass of a Treatment Process ☐Blended With Final Effluent & Sampled

Describe any damage to aquatic life or receiving stream:
None

Reason for Bypass/Overflow:
☐ Construction Related ☐ Power Failure ☐ Equipment Failure ☒ Precipitation __________ Inches

Additional Information:
The sewer drainage basin received a total of 1.47 inches of rain on 4/19/2011. We do have that was hit by lighty it is out for repair. The Muscatatuck River flow increased from the dry weather flow on 4/18/11 of approximately 500 CFS to a wet weather flow on 4/19/11 of approximately 8,000CFS due to the rainfall event. Overflows had a negligible impact on the Muscatatuck River.

Actions Taken to Prevent, Minimize, or Mitigate Damage:

Actions Taken or Planned to Prevent Recurrence:

*(ATTACH ADDITIONAL SHEETS IF NECESSARY)*

**CERTIFICATION AND SIGNATURE**

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|---|---|---|
| North Vernon Wastewater Department | Jennings | IN 0020451 |
| **Individual Making Report:** | **Phone Number:** | **Date & Time IDEM Notified:** |
| Russell Vaught | (812) 346-1496 | 4/252011 4:35P.M. |

**RELEASE INFORMATION**

| Date & Time Release Began: | Date & Time Release Stopped: | Location Released From: *(Address & Description of Manhole, Lift Station, Force Main, etc.)* | Receiving Area: *(Ground, Stream Name, Storm Sewer, etc.)* |
|---|---|---|---|
| 4/23/2011 | 4/23/2011 | Norris Ave Lift Station | Unnamed drainage swale |
| 1:00 AM | 2:00 AM | | |

| Amount of Flow Released: | WWTP Flow During Release: | WWTP Peak Design Flow: |
|---|---|---|
| Check one: ☒ Estimated ☐ Actual | Over 12.0 MGD | 4.76 MGD |

Description of the Bypass or Overflow: *(Check All That Apply)*
☒Untreated Release ☐Partially Treated Release ☐Bypass of a Treatment Process ☐Blended With Final Effluent & Sampled

Describe any damage to aquatic life or receiving stream:
None

Reason for Bypass/Overflow:
☐ Construction Related ☐ Power Failure ☐ Equipment Failure ☒ Precipitation __________ Inches

Additional Information:
The sewer drainage basin received a total of 5.88 inches of rain 4/20/2011 thur 4/25/2011. The Muscatatuck River flow increased from the dry weather flow on 4/19/11 of approximately 1000 CFS to a wet weather flow on 4/23/11 of approximately 15,000CFS due to the rainfall event. Overflows had a negligible impact on the Muscatatuck River.

Actions Taken to Prevent, Minimize, or Mitigate Damage:

Actions Taken or Planned to Prevent Recurrence:

*(ATTACH ADDITIONAL SHEETS IF NECESSARY)*

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Office of Water Quality

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|---|---|---|
| North Vernon Wastewater Department | Jennings | IN 0020451 |
| Individual Making Report: Russell Vaught | Phone Number: (812) 346-1496 | Date & Time IDEM Notified: 4/27/2011 4:00P.M. |

**RELEASE INFORMATION**

| Date & Time Release Began: | Date & Time Release Stopped: | Location Released From: *(Address & Description of Manhole, Lift Station, Force Main, etc.)* | Receiving Area: *(Ground, Stream Name, Storm Sewer, etc.)* |
|---|---|---|---|
| 4/27/2011 | 4/27/2011 | Norris Ave. Lift Station | Unnamed drainage swale |
| 5:00 AM | 3:00 PM | | |

| Amount of Flow Released: | WWTP Flow During Release: | WWTP Peak Design Flow: |
|---|---|---|
| Check one: ☒ Estimated ☐ Actual | Over 10 MGD | 4.76 MGD |

Description of the Bypass or Overflow: *(Check All That Apply)*
☒Untreated Release ☐Partially Treated Release ☐Bypass of a Treatment Process ☐Blended With Final Effluent & Sampled

Describe any damage to aquatic life or receiving stream:
None

Reason for Bypass/Overflow:
☐ Construction Related ☐ Power Failure ☐ Equipment Failure ☒ Precipitation __________ Inches

Additional Information:
The sewer drainage basin received a total of 1.47 inches. The Muscatatuck River flow increased from the flow on 4/26/11 of approximately 1000 CFS to a wet weather flow on 4/27/11 of approximately 18,000CFS due to the rainfall event. Overflows had a negligible impact on the Muscatatuck River. We have had 7.35 inches of rain from 4/22/2011 to 4/27/2011

Actions Taken to Prevent, Minimize, or Mitigate Damage:

Actions Taken or Planned to Prevent Recurrence:

*(ATTACH ADDITIONAL SHEETS IF NECESSARY)*

**CERTIFICATION AND SIGNATURE**

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**GENERAL INFORMATION**

| Facility Name: | County: | NPDES Permit Number: |
|---|---|---|
| North Vernon Wastewater Department | Jennings | IN 0020451 |
| Individual Making Report: Russell Vaught | Phone Number: (812) 346-1496 | Date & Time IDEM Notified: 4/27/2011 4:00P.M. |

**RELEASE INFORMATION**

| Date & Time Release Began: | Date & Time Release Stopped: | Location Released From: *(Address & Description of Manhole, Lift Station, Force Main, etc.)* | Receiving Area: *(Ground, Stream Name, Storm Sewer, etc.)* |
|---|---|---|---|
| 11/15/2011 | 11/15/2011 | Northeast Lift Station | Unnamed drainage swale |
| 12:00 AM | 10:00 AM | | |

| Amount of Flow Released: | WWTP Flow During Release: | WWTP Peak Design Flow: |
|---|---|---|
| Check one: ☒ Estimated ☐ Actual | Over 12 MGD | 4.76 MGD |

Description of the Bypass or Overflow: *(Check All That Apply)*
☒Untreated Release ☐Partially Treated Release ☐Bypass of a Treatment Process ☐Blended With Final Effluent & Sampled

Describe any damage to aquatic life or receiving stream:
None

Reason for Bypass/Overflow:
☐ Construction Related ☐ Power Failure ☐ Equipment Failure ☒ Precipitation __________ Inches

Additional Information:
The sewer drainage basin received a total of 2.30 inches. The Muscatatuck River flow increased from the flow on 11/15/11 of approximately 50 CFS to a wet weather flow on 11/15/11 of approximately 5,000CFS due to the rainfall event. Overflows had a negligible impact on the Muscatatuck River.

Actions Taken to Prevent, Minimize, or Mitigate Damage:

Actions Taken or Planned to Prevent Recurrence:

*(ATTACH ADDITIONAL SHEETS IF NECESSARY)*

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|---|---|---|
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| Individual Making Report: Russell Vaught | Phone Number: (812) 346-1496 | Date & Time IDEM Notified: 4/27/2011 4:00P.M. |

**RELEASE INFORMATION**

| Date & Time Release Began: | Date & Time Release Stopped: | Location Released From: *(Address & Description of Manhole, Lift Station, Force Main, etc.)* | Receiving Area: *(Ground, Stream Name, Storm Sewer, etc.)* |
|---|---|---|---|
| 12/04/2011 | 12/05/2011 | Northeast Lift Station | Unnamed drainage swale |
| 6:30 PM | 10:30 PM | | |

| Amount of Flow Released: | WWTP Flow During Release: | WWTP Peak Design Flow: |
|---|---|---|
| Check one: ☒ Estimated ☐ Actual | Over 10.0 MGD | 4.76 MGD |

Description of the Bypass or Overflow: *(Check All That Apply)*
☒Untreated Release ☐Partially Treated Release ☐Bypass of a Treatment Process ☐Blended With Final Effluent & Sampled

Describe any damage to aquatic life or receiving stream:
None

Reason for Bypass/Overflow:
☐ Construction Related ☐ Power Failure ☐ Equipment Failure ☒ Precipitation __________ Inches

Additional Information:
The sewer drainage basin received a total of 2.440 inches. The rainfall created flows that exceeded the pump station's capacity. The Muscatatuck River flow increased from the flow on 12-04-2011 of approximately 200 CFS to a wet weather flow on 12/05/11 of approximately 14,000CFS due to the rainfall event. Overflows had a negligible impact on the Muscatatuck River.

Actions Taken to Prevent, Minimize, or Mitigate Damage:

Actions Taken or Planned to Prevent Recurrence:

*(ATTACH ADDITIONAL SHEETS IF NECESSARY)*

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|---|---|---|
| North Vernon Wastewater Department | Jennings | IN 0020451 |
| Individual Making Report: Russell Vaught | Phone Number: (812) 346-1496 | Date & Time IDEM Notified: 12/21/ 2011 4:00 PM |

**RELEASE INFORMATION**

| Date & Time Release Began: | Date & Time Release Stopped: | Location Released From: *(Address & Description of Manhole, Lift Station, Force Main, etc.)* | Receiving Area: *(Ground, Stream Name, Storm Sewer, etc.)* |
|---|---|---|---|
| 12/21/2011 | 12/21/2011 | Northeast Lift Station | Unnamed drainage swale |
| 4:00AM | 9:30 AM | | |

| Amount of Flow Released: | WWTP Flow During Release: | WWTP Peak Design Flow: |
|---|---|---|
| Check one: ☒ Estimated ☐ Actual | 12.0 MGD | 4.76 MGD |

Description of the Bypass or Overflow: *(Check All That Apply)*
☒Untreated Release ☐Partially Treated Release ☐Bypass of a Treatment Process ☐Blended With Final Effluent & Sampled

Describe any damage to aquatic life or receiving stream:
None

Reason for Bypass/Overflow:
☐ Construction Related ☐ Power Failure ☐ Equipment Failure ☒ Precipitation __________ Inches

Additional Information:
The sewer drainage basin received a total of 1.12 inches of rain in 4 hour period. The Muscatatuck River flow increased from the flow on of approximately 200 CFS to a wet weather flow of approximately 12,000CFS due to the rainfall event. Overflows had a negligible impact on the Muscatatuck River.

Actions Taken to Prevent, Minimize, or Mitigate Damage:

Actions Taken or Planned to Prevent Recurrence:

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**RELEASE INFORMATION**

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|---|---|---|---|
| 4/27/2011 | 4/27/2011 | Northeast Lift Station | Unnamed drainage swale |
| 5:00 AM | 11:30 AM | | |

| Amount of Flow Released: | WWTP Flow During Release: | WWTP Peak Design Flow: |
|---|---|---|
| Check one: ☒ Estimated ☐ Actual | Over 10 MGD | 4.76 MGD |

Description of the Bypass or Overflow: *(Check All That Apply)*
☒Untreated Release ☐Partially Treated Release ☐Bypass of a Treatment Process ☐Blended With Final Effluent & Sampled

Describe any damage to aquatic life or receiving stream:
None

Reason for Bypass/Overflow:
☐ Construction Related ☐ Power Failure ☐ Equipment Failure ☒ Precipitation __________ Inches

Additional Information:
The sewer drainage basin received a total of 1.47 inches. The Muscatatuck River flow increased from the flow on 4/26/11 of approximately 1000 CFS to a wet weather flow on 4/27/11 of approximately 18,000CFS due to the rainfall event. Overflows had a negligible impact on the Muscatatuck River. We have had 7.35 inches of rain from 4/22/2011 to 4/27/2011

Actions Taken to Prevent, Minimize, or Mitigate Damage:

Actions Taken or Planned to Prevent Recurrence:

*(ATTACH ADDITIONAL SHEETS IF NECESSARY)*

**CERTIFICATION AND SIGNATURE**

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**RELEASE INFORMATION**

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|---|---|---|---|
| 12/04/2011 | 12/05/2011 | Northwest Lift Station | Unnamed drainage swale |
| 4:30 AM | 9:30 PM | | |

| Amount of Flow Released: | WWTP Flow During Release: | WWTP Peak Design Flow: |
|---|---|---|
| Check one: ☒ Estimated ☐ Actual | Over 10.0 MGD | 4.76 MGD |

Description of the Bypass or Overflow: *(Check All That Apply)*
☒Untreated Release ☐Partially Treated Release ☐Bypass of a Treatment Process ☐Blended With Final Effluent & Sampled

Describe any damage to aquatic life or receiving stream:
None

Reason for Bypass/Overflow:
☐ Construction Related ☐ Power Failure ☐ Equipment Failure ☒ Precipitation __________ Inches

Additional Information:
The sewer drainage basin received a total of 2.440 inches of rain in a 12 hour period. The rainfall created flows that exceeded the pump station's capacity. The Muscatatuck River flow increased from dry weatther flow of 200 CFS to a wet weather flow on 12-05-2011 of approximately 14,000CFS due to the rainfall event. Overflows had a negligible impact on the Muscatatuck River.

Actions Taken to Prevent, Minimize, or Mitigate Damage:

Actions Taken or Planned to Prevent Recurrence:

*(ATTACH ADDITIONAL SHEETS IF NECESSARY)*

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SIGNATURE:____________________________________________ DATE:________________________

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|---|---|---|
| North Vernon Wastewater Department | Jennings | IN 0020451 |
| Individual Making Report: Russell Vaught | Phone Number: (812) 346-1496 | Date & Time IDEM Notified: 12/21/2011 4:00 AM |

**RELEASE INFORMATION**

| Date & Time Release Began: | Date & Time Release Stopped: | Location Released From: *(Address & Description of Manhole, Lift Station, Force Main, etc.)* | Receiving Area: *(Ground, Stream Name, Storm Sewer, etc.)* |
|---|---|---|---|
| 12/21/2011 | 12/21/2011 | Northwest Lift Station | Unnamed drainage swale |
| 4:00 AM | 8:30 AM | | |

| Amount of Flow Released: | WWTP Flow During Release: | WWTP Peak Design Flow: |
|---|---|---|
| Check one: ☒ Estimated ☐ Actual | 12.0 MGD | 4.76 MGD |

Description of the Bypass or Overflow: *(Check All That Apply)*
☒Untreated Release ☐Partially Treated Release ☐Bypass of a Treatment Process ☐Blended With Final Effluent & Sampled

Describe any damage to aquatic life or receiving stream:
None

Reason for Bypass/Overflow:
☐ Construction Related ☐ Power Failure ☐ Equipment Failure ☒ Precipitation __________ Inches

Additional Information:
The sewer drainage basin received a total of 1.12 inches of rain in a 4 hour period. The rainfall created flows that exceeded the pump station's capacity. The Muscatatuck River flow increased from dry weatther flow of 200 CFS to a wet weather flow on of approximately 12,000CFS due to the rainfall event. Overflows had a negligible impact on the Muscatatuck River.

Actions Taken to Prevent, Minimize, or Mitigate Damage:

Actions Taken or Planned to Prevent Recurrence:

*(ATTACH ADDITIONAL SHEETS IF NECESSARY)*

**CERTIFICATION AND SIGNATURE**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

SIGNATURE:______________________________ DATE:____________________

# BYPASS / OVERFLOW INCIDENT REPORT

State Form 48373 (R3 / 10-05)
Indiana Department of Environmental Management
Office of Water Quality

*INSTRUCTIONS: Complete all parts of this form and fax it to Office of Water Quality, Compliance Evaluation Section at (317) 232-8637 or 232-8406. This report will satisfy the Office of Water Quality (OWQ) telephone and written bypass / overflow reporting requirements of your NPDES permit. To speak with someone in OWQ, call (317) 232-8670.*

**To report a spill or if the release is resulting in a fish kill or other severe environmental damage,** immediately report the release to the Emergency Response Section spill response line at: (317) 233-7745 or toll free within Indiana at (888) 233-7745.

**GENERAL INFORMATION**

| Facility Name: | County: | NPDES Permit Number: |
|---|---|---|
| North Vernon Wastewater Department | Jennings | IN 0020451 |
| Individual Making Report: | Phone Number: | Date & Time IDEM Notified: |
| Russell Vaught | (812) 346-1496 | 2-25-11 1:15 P.M. |

**RELEASE INFORMATION**

| Date & Time Release Began: | Date & Time Release Stopped: | Location Released From: *(Address & Description of Manhole, Lift Station, Force Main, etc.)* | Receiving Area: *(Ground, Stream Name, Storm Sewer, etc.)* |
|---|---|---|---|
| 2/25/2011 | 2/25/2011 | Northwest Lift Station | Unnamed drainage swale |
| | | | |

| Amount of Flow Released: | WWTP Flow During Release: | WWTP Peak Design Flow: |
|---|---|---|
| Check one: ☒ Estimated ☐ Actual | Over 7.0 MGD | 4.76 MGD |

Description of the Bypass or Overflow: *(Check All That Apply)*
☒Untreated Release ☐Partially Treated Release ☐Bypass of a Treatment Process ☐Blended With Final Effluent & Sampled

Describe any damage to aquatic life or receiving stream:
None

Reason for Bypass/Overflow:
☐ Construction Related ☒ Power Failure ☐ Equipment Failure ☒ Precipitation __________ Inches

Additional Information:
The sewer drainage basin received a total of 1.42 inches of rain on 2/24/11 &2/25/11. We also had a power failure and that is what case the overflow. The Muscatatuck River flow increased from the dry weather flow on 2/24/11 of approximately 500 CFS to a wet weather flow on 2/25/11 of approximately 10,000 CFS due to the rainfall event. Overflows had a negligible impact on the Muscatatuck River.

Actions Taken to Prevent, Minimize, or Mitigate Damage:

Actions Taken or Planned to Prevent Recurrence:

*(ATTACH ADDITIONAL SHEETS IF NECESSARY)*

**CERTIFICATION AND SIGNATURE**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

SIGNATURE:______________________________ DATE:____________________

# BYPASS / OVERFLOW INCIDENT REPORT

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Indiana Department of Environmental Management
Office of Water Quality

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**GENERAL INFORMATION**

| Facility Name: | County: | NPDES Permit Number: |
|---|---|---|
| North Vernon Wastewater Department | Jennings | IN 0020451 |
| Individual Making Report: | Phone Number: | Date & Time IDEM Notified: |
| Russell Vaught | (812) 346-1496 | 4/19/2011 4:35P.M. |

**RELEASE INFORMATION**

| Date & Time Release Began: | Date & Time Release Stopped: | Location Released From: *(Address & Description of Manhole, Lift Station, Force Main, etc.)* | Receiving Area: *(Ground, Stream Name, Storm Sewer, etc.)* |
|---|---|---|---|
| 4/19/2011 | 4/19/2011 | Northwest Lift Station | Unnamed drainage swale |
| 6:00 AM | 7:30 am | | |

| Amount of Flow Released: | WWTP Flow During Release: | WWTP Peak Design Flow: |
|---|---|---|
| Check one: ☒ Estimated ☐ Actual | Over 9.0 MGD | 4.76 MGD |

Description of the Bypass or Overflow: *(Check All That Apply)*
☒Untreated Release ☐Partially Treated Release ☐Bypass of a Treatment Process ☐Blended With Final Effluent & Sampled

Describe any damage to aquatic life or receiving stream:
None

Reason for Bypass/Overflow:
☐ Construction Related ☐ Power Failure ☒ Equipment Failure ☒ Precipitation __________ Inches

Additional Information:
The sewer drainage basin received a total of 1.47 inches of rain on 4/19/2011. We do have that was hit by lighty it is out for repair. The Muscatatuck River flow increased from the dry weather flow on 4/18/11 of approximately 500 CFS to a wet weather flow on 4/19/11 of approximately 8,000CFS due to the rainfall event. Overflows had a negligible impact on the Muscatatuck River.

Actions Taken to Prevent, Minimize, or Mitigate Damage:

Actions Taken or Planned to Prevent Recurrence:

*(ATTACH ADDITIONAL SHEETS IF NECESSARY)*

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# BYPASS / OVERFLOW INCIDENT REPORT

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**GENERAL INFORMATION**

| Facility Name: | County: | NPDES Permit Number: |
|---|---|---|
| North Vernon Wastewater Department | Jennings | IN 0020451 |
| Individual Making Report: Russell Vaught | Phone Number: (812) 346-1496 | Date & Time IDEM Notified: 4/25/2011 4:35P.M. |

**RELEASE INFORMATION**

| Date & Time Release Began: | Date & Time Release Stopped: | Location Released From: *(Address & Description of Manhole, Lift Station, Force Main, etc.)* | Receiving Area: *(Ground, Stream Name, Storm Sewer, etc.)* |
|---|---|---|---|
| 4/23/2011 | 4/23/2011 | Northwest Lift Station | Unnamed drainage swale |
| 1:00 AM | 2:00 am | | |

| Amount of Flow Released: | WWTP Flow During Release: | WWTP Peak Design Flow: |
|---|---|---|
| Check one: ☒ Estimated ☐ Actual | Over 12 MGD | 4.76 MGD |

Description of the Bypass or Overflow: *(Check All That Apply)*
☒Untreated Release ☐Partially Treated Release ☐Bypass of a Treatment Process ☐Blended With Final Effluent & Sampled

Describe any damage to aquatic life or receiving stream:
None

Reason for Bypass/Overflow:
☐ Construction Related ☐ Power Failure ☐ Equipment Failure ☒ Precipitation __________ Inches

Additional Information:
The sewer drainage basin received a total of 5.88 inches of rain on 4/20/2011 thur 4/25/2011 The Muscatatuck River flow increased from the dry weather flow on 4/19/11 of approximately 1000 CFS to a wet weather flow on 4/23/11 of approximately 15,000CFS due to the rainfall event. Overflows had a negligible impact on the Muscatatuck River.

Actions Taken to Prevent, Minimize, or Mitigate Damage:

Actions Taken or Planned to Prevent Recurrence:

*(ATTACH ADDITIONAL SHEETS IF NECESSARY)*

**CERTIFICATION AND SIGNATURE**

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# BYPASS / OVERFLOW INCIDENT REPORT

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**GENERAL INFORMATION**

| Facility Name: | County: | NPDES Permit Number: |
|---|---|---|
| North Vernon Wastewater Department | Jennings | IN 0020451 |
| Individual Making Report: | Phone Number: | Date & Time IDEM Notified: |
| Russell Vaught | (812) 346-1496 | 4/27/2011 4:00P.M. |

**RELEASE INFORMATION**

| Date & Time Release Began: | Date & Time Release Stopped: | Location Released From: *(Address & Description of Manhole, Lift Station, Force Main, etc.)* | Receiving Area: *(Ground, Stream Name, Storm Sewer, etc.)* |
|---|---|---|---|
| 4/27/2011 | 4/27/2011 | Northwest Lift Station | Unnamed drainage swale |
| 5:00 AM | 11:30 AM | | |

| Amount of Flow Released: | WWTP Flow During Release: | WWTP Peak Design Flow: |
|---|---|---|
| Check one: ☒ Estimated ☐ Actual | Over 10 MGD | 4.76 MGD |

Description of the Bypass or Overflow: *(Check All That Apply)*
☒Untreated Release ☐Partially Treated Release ☐Bypass of a Treatment Process ☐Blended With Final Effluent & Sampled

Describe any damage to aquatic life or receiving stream:
None

Reason for Bypass/Overflow:
☐ Construction Related ☐ Power Failure ☐ Equipment Failure ☒ Precipitation __________ Inches

Additional Information:
The sewer drainage basin received a total of 1.47 inches. The Muscatatuck River flow increased from the flow on 4/26/11 of approximately 1000 CFS to a wet weather flow on 4/27/11 of approximately 18,000CFS due to the rainfall event. Overflows had a negligible impact on the Muscatatuck River. We have had 7.35 inches of rain from 4/22/2011 to 4/27/2011

Actions Taken to Prevent, Minimize, or Mitigate Damage:

Actions Taken or Planned to Prevent Recurrence:

*(ATTACH ADDITIONAL SHEETS IF NECESSARY)*

**CERTIFICATION AND SIGNATURE**

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SIGNATURE:______________________________ DATE:____________________

# BYPASS / OVERFLOW INCIDENT REPORT

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Office of Water Quality

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**GENERAL INFORMATION**

| Facility Name: | County: | NPDES Permit Number: |
|---|---|---|
| North Vernon Wastewater Department | Jennings | IN 0020451 |
| Individual Making Report: Russell Vaught | Phone Number: (812) 346-1496 | Date & Time IDEM Notified: 5/26/2011 8:30 AM. |

**RELEASE INFORMATION**

| Date & Time Release Began: | Date & Time Release Stopped: | Location Released From: *(Address & Description of Manhole, Lift Station, Force Main, etc.)* | Receiving Area: *(Ground, Stream Name, Storm Sewer, etc.)* |
|---|---|---|---|
| 5/26/2011 | 5/26/2011 | Northwest Lift Station | Unnamed drainage swale |
| 12:00 AM | 2:00 AM | | |

| Amount of Flow Released: | WWTP Flow During Release: | WWTP Peak Design Flow: |
|---|---|---|
| Check one: ☒ Estimated ☐ Actual | Over 4.75 MGD | 4.76 MGD |

Description of the Bypass or Overflow: *(Check All That Apply)*
☒Untreated Release ☐Partially Treated Release ☐Bypass of a Treatment Process ☐Blended With Final Effluent & Sampled

Describe any damage to aquatic life or receiving stream:
None

Reason for Bypass/Overflow:
☐ Construction Related ☒ Power Failure ☐ Equipment Failure ☒ Precipitation __________ Inches

Additional Information:
We had a bad storm and lost power to the lift station. Sewer drainage basin received approximately .68 inches of rain in a 4 hour period. The power was restore and the overflow stop in about 10 Min. The Muscatatuck river increased flow 800 cfs to a flow of 400 cfs during this event.

Actions Taken to Prevent, Minimize, or Mitigate Damage:

Actions Taken or Planned to Prevent Recurrence:

*(ATTACH ADDITIONAL SHEETS IF NECESSARY)*

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# BYPASS / OVERFLOW INCIDENT REPORT

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**GENERAL INFORMATION**

| Facility Name: | County: | NPDES Permit Number: |
|---|---|---|
| North Vernon Wastewater Department | Jennings | IN 0020451 |
| Individual Making Report: Russell Vaught | Phone Number: (812) 346-1496 | Date & Time IDEM Notified: 5/1-09 at 11:10 A.M. |

**RELEASE INFORMATION**

| Date & Time Release Began: | Date & Time Release Stopped: | Location Released From: *(Address & Description of Manhole, Lift Station, Force Main, etc.)* | Receiving Area: *(Ground, Stream Name, Storm Sewer, etc.)* |
|---|---|---|---|
| 2/21/11 | 02/21/11 | Southwest Lift Station | Unnamed drainage swale |
| 6:00 PM. | 8:00 PM | Quaker Hills Subdivision, North Vernon | |

| Amount of Flow Released: | WWTP Flow During Release: | WWTP Peak Design Flow: |
|---|---|---|
| Check one: ☒ Estimated ☐ Actual | 6.6 MGD | 4.76 MGD |

Description of the Bypass or Overflow: *(Check All That Apply)*
☒Untreated Release ☐Partially Treated Release ☐Bypass of a Treatment Process ☐Blended With Final Effluent & Sampled

Describe any damage to aquatic life or receiving stream:
None

Reason for Bypass/Overflow:
☐ Construction Related ☐ Power Failure ☒ Equipment Failure ☒ Precipitation __________ Inches

Additional Information:
Sewer drainage basin received approximately 1.25 inches of rain in a 6 hour period. The rainfall created flows that exceeded the pump station's capacity The Muscatatuck river increased from a dry weather flow of 75 cfs to a wet weather flow of 10,000 cfs during this event.

Actions Taken to Prevent, Minimize, or Mitigate Damage:
none

Actions Taken or Planned to Prevent Recurrence:

*(ATTACH ADDITIONAL SHEETS IF NECESSARY)*

**CERTIFICATION AND SIGNATURE**

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SIGNATURE:______________________________ DATE:______________________

# BYPASS / OVERFLOW INCIDENT REPORT

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Office of Water Quality

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**GENERAL INFORMATION**

| Facility Name: | County: | NPDES Permit Number: |
|---|---|---|
| North Vernon Wastewater Department | Jennings | IN 0020451 |
| Individual Making Report: Russell Vaught | Phone Number: (812) 346-1496 | Date & Time IDEM Notified: 2/25/11 1:15 P.M. |

**RELEASE INFORMATION**

| Date & Time Release Began: | Date & Time Release Stopped: | Location Released From: *(Address & Description of Manhole, Lift Station, Force Main, etc.)* | Receiving Area: *(Ground, Stream Name, Storm Sewer, etc.)* |
|---|---|---|---|
| 2/24/11 | 02/25/11 | Southwest Lift Station | Unnamed drainage swale |
| | | | |

| Amount of Flow Released: | WWTP Flow During Release: | WWTP Peak Design Flow: |
|---|---|---|
| Check one: ☒ Estimated ☐ Actual | 7.0 MGD | 4.76 MGD |

Description of the Bypass or Overflow: *(Check All That Apply)*
☒Untreated Release ☐Partially Treated Release ☐Bypass of a Treatment Process ☐Blended With Final Effluent & Sampled

Describe any damage to aquatic life or receiving stream:
None

Reason for Bypass/Overflow:
☐ Construction Related ☐ Power Failure ☒ Equipment Failure ☒ Precipitation __________ Inches

Additional Information:
Sewer drainage basin received approximately 1.42 inches of rain in a 6 hour period. The rainfall created flows that exceeded the pump station’s capacity The Muscatatuck river increased from a dry weather flow of 500 cfs to a wet weather flow of 10,000 cfs during this event.

Actions Taken to Prevent, Minimize, or Mitigate Damage:
none

Actions Taken or Planned to Prevent Recurrence:

*(ATTACH ADDITIONAL SHEETS IF NECESSARY)*

**CERTIFICATION AND SIGNATURE**

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SIGNATURE:______________________________ DATE:____________________

# BYPASS / OVERFLOW INCIDENT REPORT

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**GENERAL INFORMATION**

| Facility Name: | County: | NPDES Permit Number: |
|---|---|---|
| North Vernon Wastewater Department | Jennings | IN 0020451 |
| Individual Making Report: Russell Vaught | Phone Number: (812) 346-1496 | Date & Time IDEM Notified: 4/12/11 3:00 p.m.. |

**RELEASE INFORMATION**

| Date & Time Release Began: | Date & Time Release Stopped: | Location Released From: *(Address & Description of Manhole, Lift Station, Force Main, etc.)* | Receiving Area: *(Ground, Stream Name, Storm Sewer, etc.)* |
|---|---|---|---|
| 04/11/11 | 04/11/11 | Southwest Lift Station | Unnamed drainage swale |
| 6:00 p.m. | 8:00 p.m. | | |

| Amount of Flow Released: | WWTP Flow During Release: | WWTP Peak Design Flow: |
|---|---|---|
| Check one: ☒ Estimated ☐ Actual | 5.0 MGD | 4.76 MGD |

Description of the Bypass or Overflow: *(Check All That Apply)*
☒Untreated Release ☐Partially Treated Release ☐Bypass of a Treatment Process ☐Blended With Final Effluent & Sampled

Describe any damage to aquatic life or receiving stream:
None

Reason for Bypass/Overflow:
☐ Construction Related ☐ Power Failure ☒ Equipment Failure ☒ Precipitation __________ Inches

Additional Information:
Sewer drainage basin received approximately 2.30 inches of rain in a 12 hour period. The rainfall created flows that exceeded the pump station's capacity

Actions Taken to Prevent, Minimize, or Mitigate Damage:
none

Actions Taken or Planned to Prevent Recurrence:

*(ATTACH ADDITIONAL SHEETS IF NECESSARY)*

**CERTIFICATION AND SIGNATURE**

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# BYPASS / OVERFLOW INCIDENT REPORT

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**GENERAL INFORMATION**

| Facility Name: | County: | NPDES Permit Number: |
|---|---|---|
| North Vernon Wastewater Department | Jennings | IN 0020451 |
| **Individual Making Report:** | **Phone Number:** | **Date & Time IDEM Notified:** |
| Russell Vaught | (812) 346-1496 | 4/19/2011 4:35 PM. |

**RELEASE INFORMATION**

| Date & Time Release Began: | Date & Time Release Stopped: | Location Released From: *(Address & Description of Manhole, Lift Station, Force Main, etc.)* | Receiving Area: *(Ground, Stream Name, Storm Sewer, etc.)* |
|---|---|---|---|
| 4/19/11 | 04/19/11 | Southwest Lift Station | Unnamed drainage swale |
| 6:30 PM. | 8:30 PM | Quaker Hills Subdivision, North Vernon | |

| Amount of Flow Released: | WWTP Flow During Release: | WWTP Peak Design Flow: |
|---|---|---|
| Check one: ☒ Estimated ☐ Actual | 9.0 MGD | 4.76 MGD |

Description of the Bypass or Overflow: *(Check All That Apply)*
☒Untreated Release ☐Partially Treated Release ☐Bypass of a Treatment Process ☐Blended With Final Effluent & Sampled

Describe any damage to aquatic life or receiving stream:
None

Reason for Bypass/Overflow:
☐ Construction Related ☐ Power Failure ☒ Equipment Failure ☒ Precipitation __________ Inches

Additional Information:
Sewer drainage basin received approximately 1.47 inches of rain in a 6 hour period. The rainfall created flows that exceeded the pump station's capacity The Muscatatuck river increased from a dry weather flow of 500 cfs to a wet weather flow of 8,000 cfs during this event.

Actions Taken to Prevent, Minimize, or Mitigate Damage:
none

Actions Taken or Planned to Prevent Recurrence:

*(ATTACH ADDITIONAL SHEETS IF NECESSARY)*

**CERTIFICATION AND SIGNATURE**

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SIGNATURE:_______________________________________________ DATE:____________________________

**BYPASS / OVERFLOW INCIDENT REPORT**
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|---|---|---|
| North Vernon Wastewater Department | Jennings | IN 0020451 |
| Individual Making Report: | Phone Number: | Date & Time IDEM Notified: |
| Russell Vaught | (812) 346-1496 | 4/19/2011 4:35 PM. |

**RELEASE INFORMATION**

| Date & Time Release Began: | Date & Time Release Stopped: | Location Released From: *(Address & Description of Manhole, Lift Station, Force Main, etc.)* | Receiving Area: *(Ground, Stream Name, Storm Sewer, etc.)* |
|---|---|---|---|
| 4/20/2011 | 04/20/11 | Southwest Lift Station | Unnamed drainage swale |
| 12:00 AM. | 2:00 AM | Quaker Hills Subdivision, North Vernon | |

| Amount of Flow Released: | WWTP Flow During Release: | WWTP Peak Design Flow: |
|---|---|---|
| Check one: ☒ Estimated ☐ Actual | 9.0 MGD | 4.76 MGD |

Description of the Bypass or Overflow: *(Check All That Apply)*
☒Untreated Release ☐Partially Treated Release ☐Bypass of a Treatment Process ☐Blended With Final Effluent & Sampled

Describe any damage to aquatic life or receiving stream:
None

Reason for Bypass/Overflow:
☐ Construction Related ☒ Power Failure ☐ Equipment Failure ☒ Precipitation __________ Inches

Additional Information:
We had a bad storm and lost power to the lift station . Sewer drainage basin received approximately 2.0 inches of rain in a 6 hour period. The power was restore and the over flow stop in about 30 min. The Muscatatuck river increased from a dry weather flow of 500 cfs to a wet weather flow of 10,000 cfs during this event.

Actions Taken to Prevent, Minimize, or Mitigate Damage:
none

Actions Taken or Planned to Prevent Recurrence:

*(ATTACH ADDITIONAL SHEETS IF NECESSARY)*

**CERTIFICATION AND SIGNATURE**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

SIGNATURE:______________________________ DATE:______________________

# BYPASS / OVERFLOW INCIDENT REPORT

State Form 48373 (R3 / 10-05)
Indiana Department of Environmental Management
Office of Water Quality

*INSTRUCTIONS: Complete all parts of this form and fax it to Office of Water Quality, Compliance Evaluation Section at (317) 232-8637 or 232-8406. This report will satisfy the Office of Water Quality (OWQ) telephone and written bypass / overflow reporting requirements of your NPDES permit. To speak with someone in OWQ, call (317) 232-8670.*

**To report a spill or if the release is resulting in a fish kill or other severe environmental damage,** immediately report the release to the Emergency Response Section spill response line at: (317) 233-7745 or toll free within Indiana at (888) 233-7745.

**GENERAL INFORMATION**

| Facility Name: | County: | NPDES Permit Number: |
|---|---|---|
| North Vernon Wastewater Department | Jennings | IN 0020451 |
| Individual Making Report: | Phone Number: | Date & Time IDEM Notified: |
| Russell Vaught | (812) 346-1496 | 4/19/2011 4:35 PM. |

**RELEASE INFORMATION**

| Date & Time Release Began: | Date & Time Release Stopped: | Location Released From: *(Address & Description of Manhole, Lift Station, Force Main, etc.)* | Receiving Area: *(Ground, Stream Name, Storm Sewer, etc.)* |
|---|---|---|---|
| 4/23/2011 | 04/22311 | Southwest Lift Station | Unnamed drainage swale |
| 1:00 AM. | 2:00 AM | Quaker Hills Subdivision, North Vernon | |

| Amount of Flow Released: | WWTP Flow During Release: | WWTP Peak Design Flow: |
|---|---|---|
| Check one: ☒ Estimated ☐ Actual | 12.0 MGD | 4.76 MGD |

Description of the Bypass or Overflow: *(Check All That Apply)*
☒Untreated Release ☐Partially Treated Release ☐Bypass of a Treatment Process ☐Blended With Final Effluent & Sampled

Describe any damage to aquatic life or receiving stream:
None

Reason for Bypass/Overflow:
☐ Construction Related ☐ Power Failure ☐ Equipment Failure ☒ Precipitation __________ Inches

Additional Information:
The Sewer drainage basin received approximately 5.88 inches of rain from 4/20/2011 to 4/25/2011 in that period. The Muscatatuck river increased from a dry weather flow on 4/19/2011of 1000 cfs to a wet weather flow on 4/23/2011of 15,000 cfs during this event.

Actions Taken to Prevent, Minimize, or Mitigate Damage:
none

Actions Taken or Planned to Prevent Recurrence:

*(ATTACH ADDITIONAL SHEETS IF NECESSARY)*

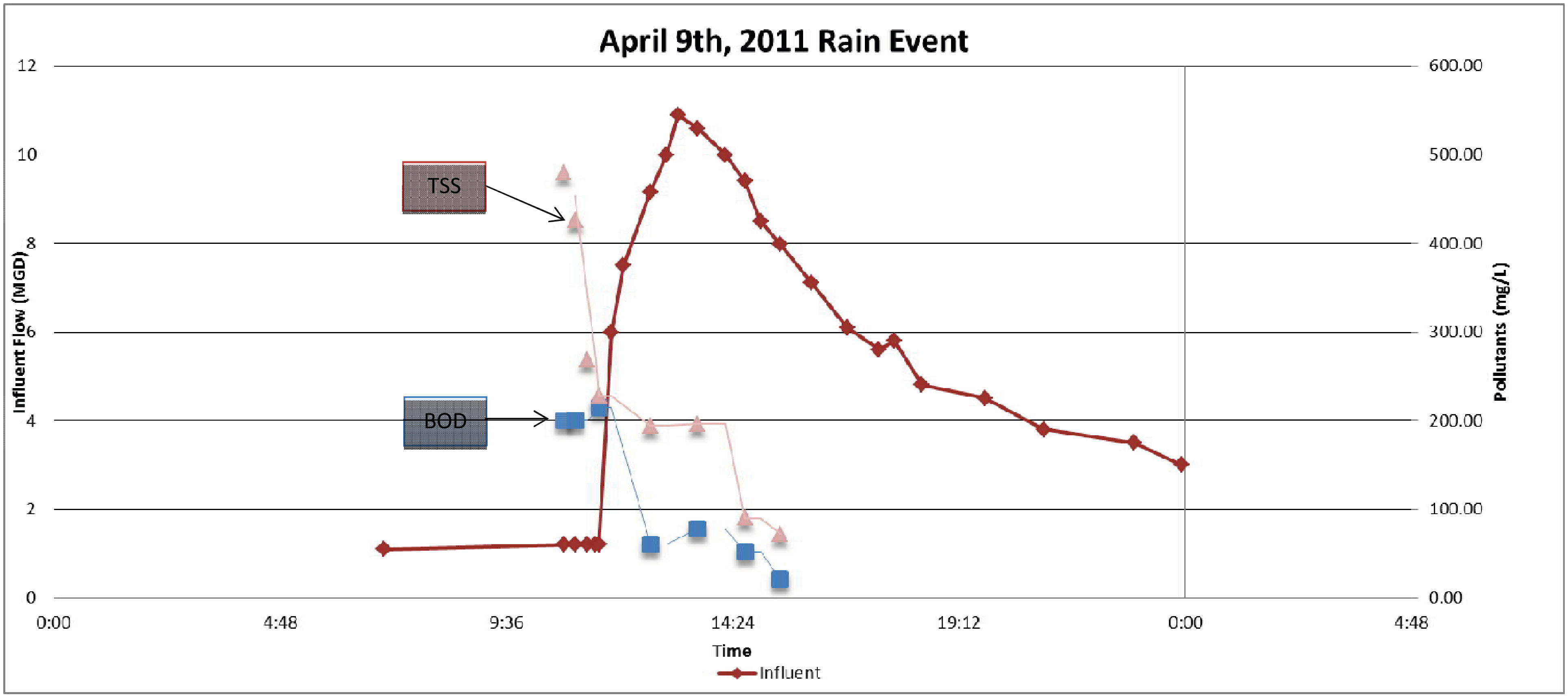
**CERTIFICATION AND SIGNATURE**

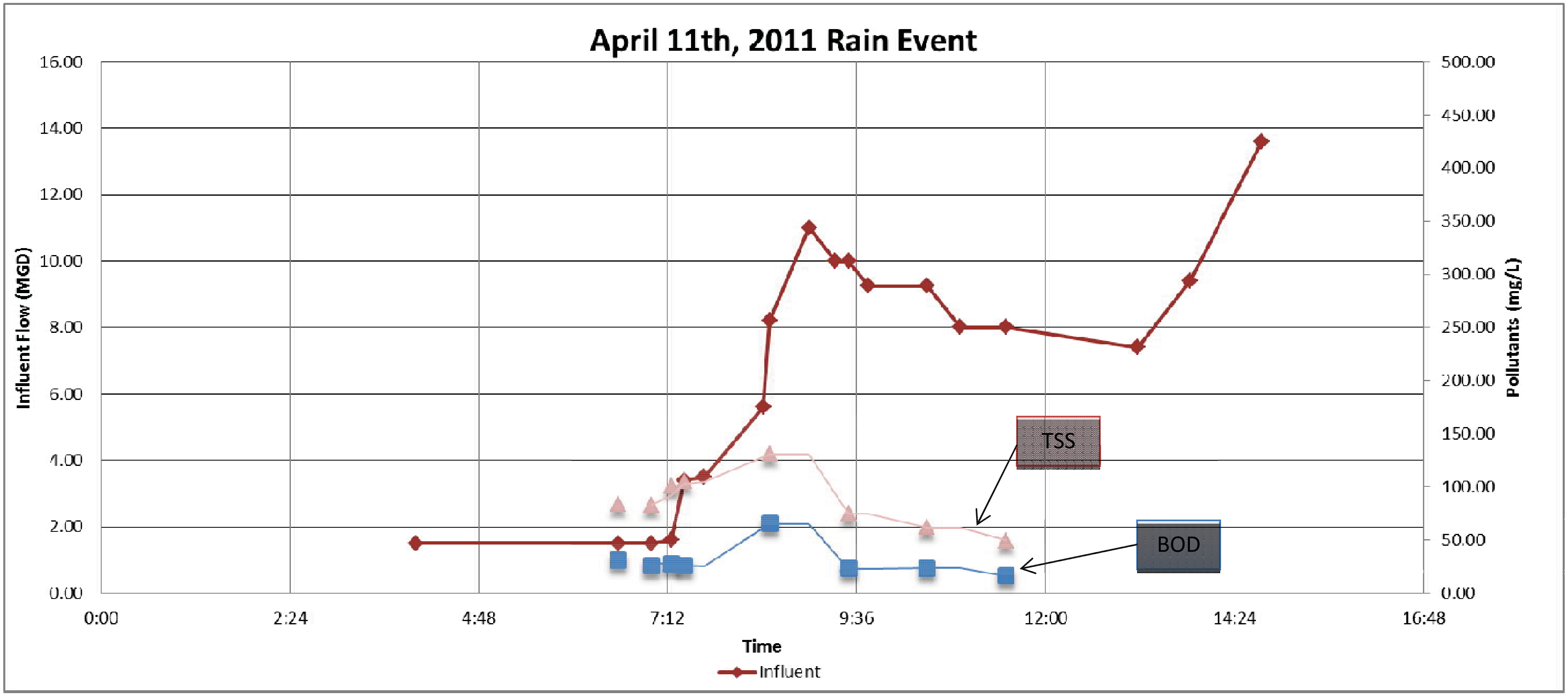
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

SIGNATURE:______________________________ DATE:______________________

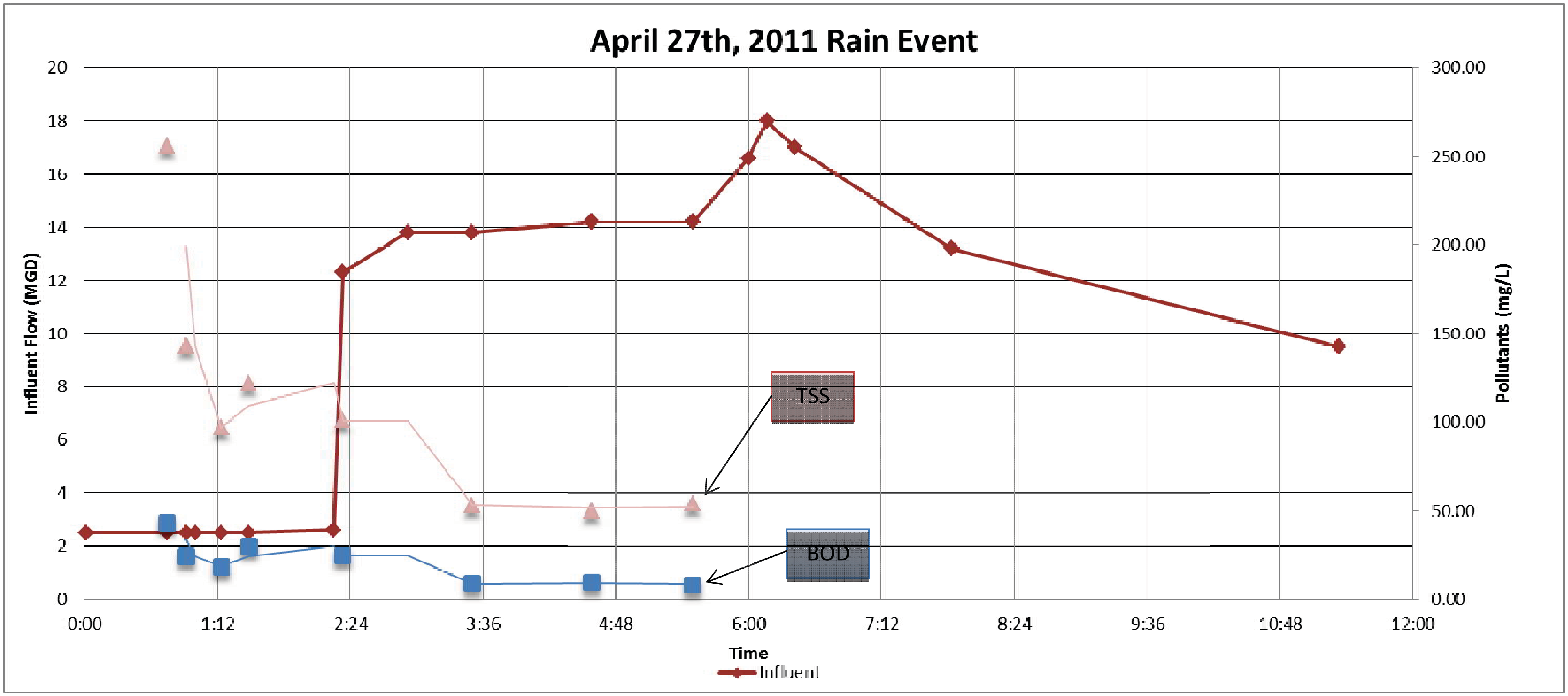
# Appendix B

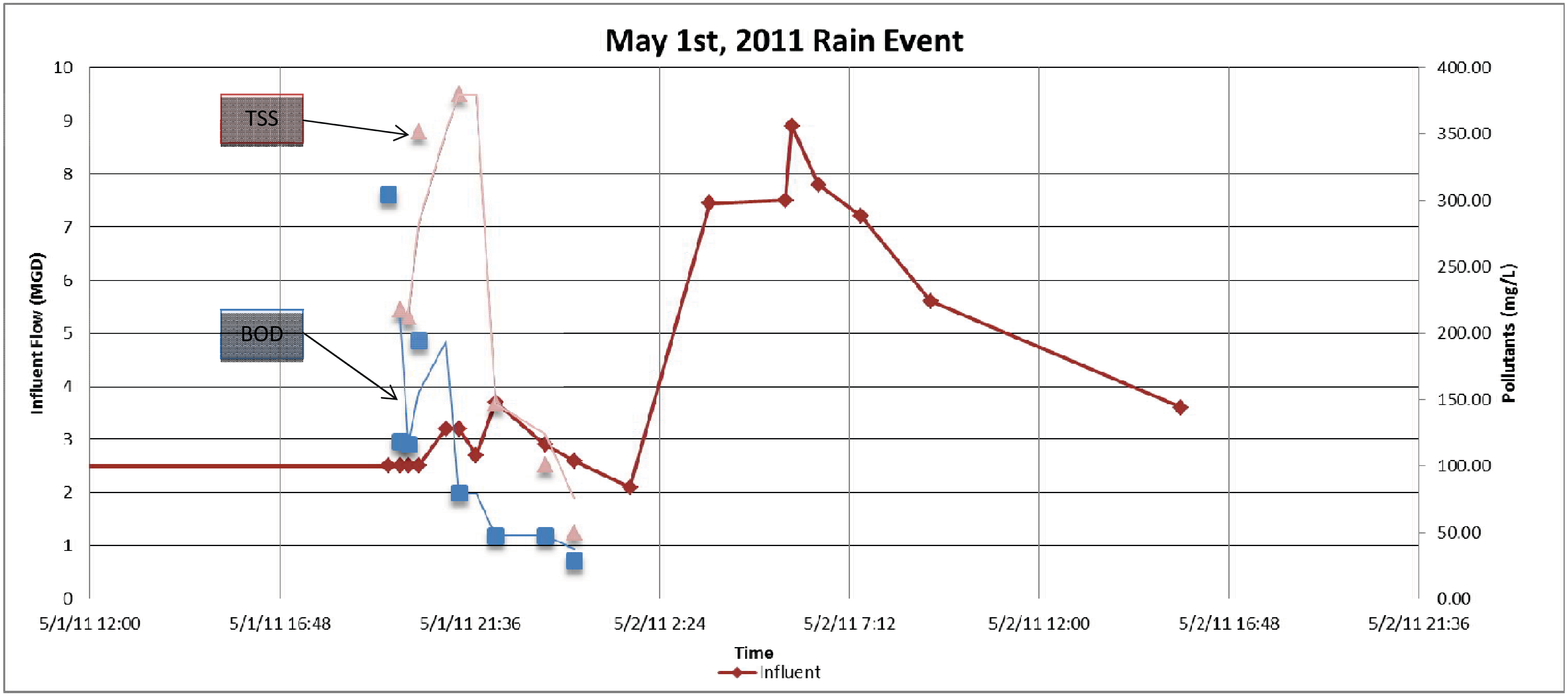
# POLLUTOGRAPHS



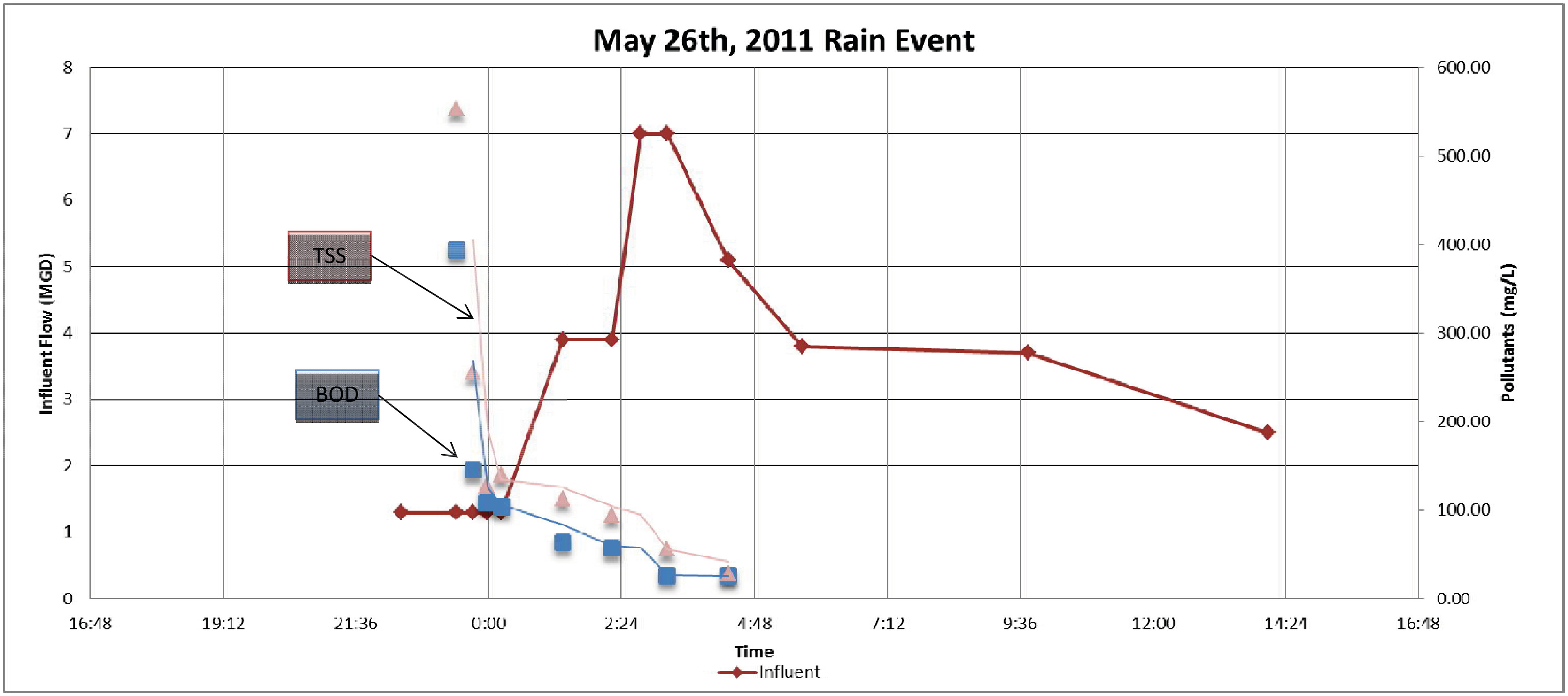


April 11th, 2011 Rain Event
Influent Flow (MGD)
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Pollutants (mg/L)
500.00
450.00
400.00
350.00
300.00
250.00
200.00
150.00
100.00
50.00
0.00
TSS
BOD
0:00
2:24
4:48
7:12
9:36
12:00
14:24
16:48
Time
Influent

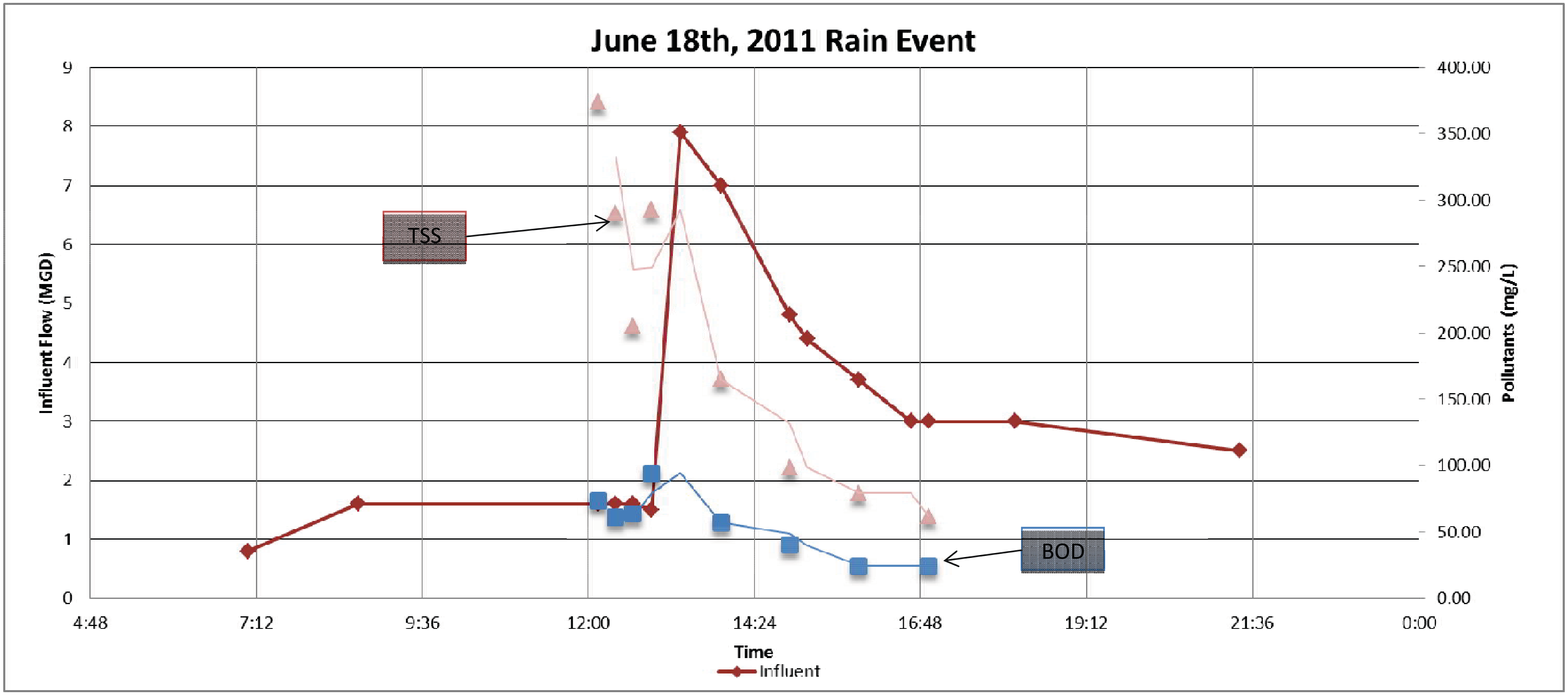

April 27th, 2011 Rain Event
Influent Flow (MGD)
Pollutants (mg/L)
20
18
16
14
12
10
8
6
4
2
0
300.00
250.00
200.00
150.00
100.00
50.00
0.00
0:00
1:12
2:24
3:36
4:48
6:00
7:12
8:24
9:36
10:48
12:00
Time
TSS
BOD
Influent

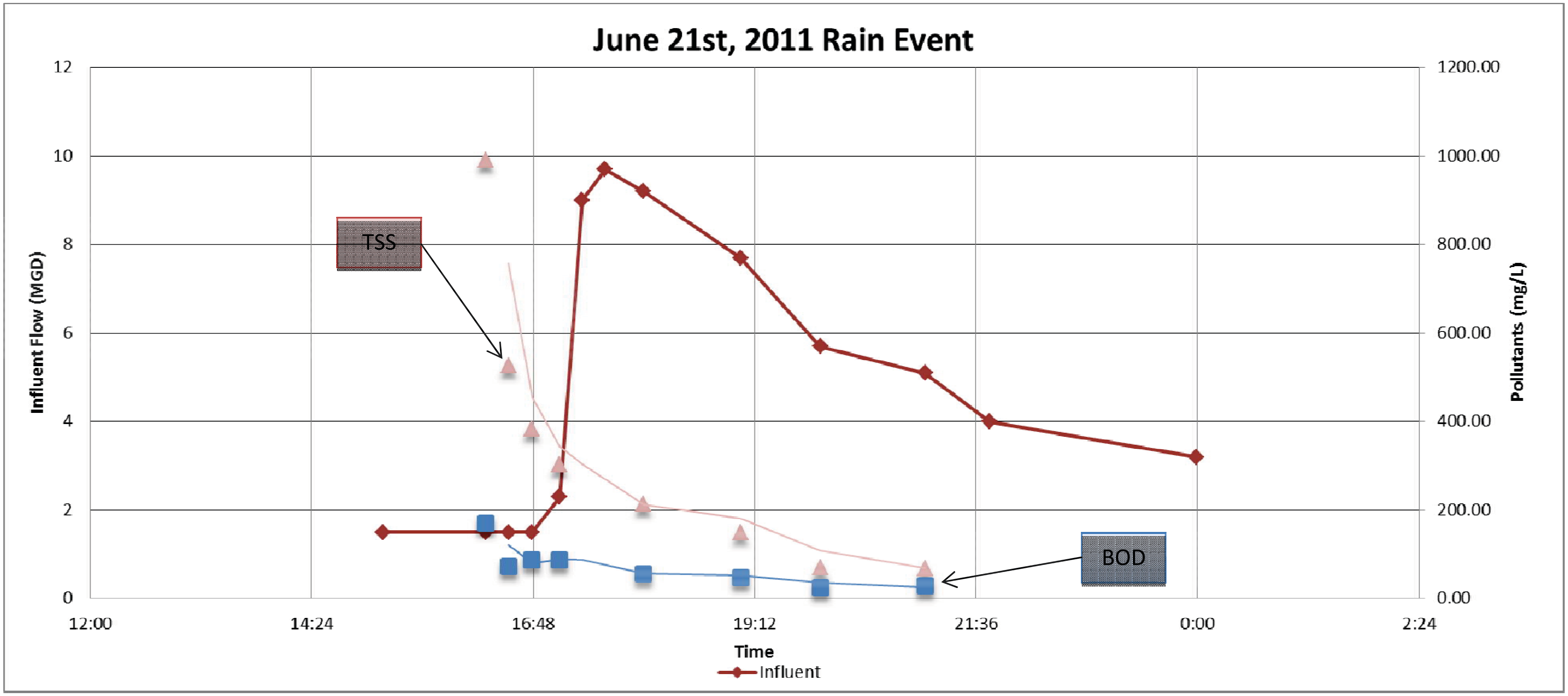


May 1st, 2011 Rain Event
TSS
BOD
Influent Flow (MGD)
Pollutants (mg/L)
10
9
8
7
6
5
4
3
2
1
0
400.00
350.00
300.00
250.00
200.00
150.00
100.00
50.00
0.00
5/1/11 12:00
5/1/11 16:48
5/1/11 21:36
5/2/11 2:24
5/2/11 7:12
5/2/11 12:00
5/2/11 16:48
5/2/11 21:36
Time
Influent

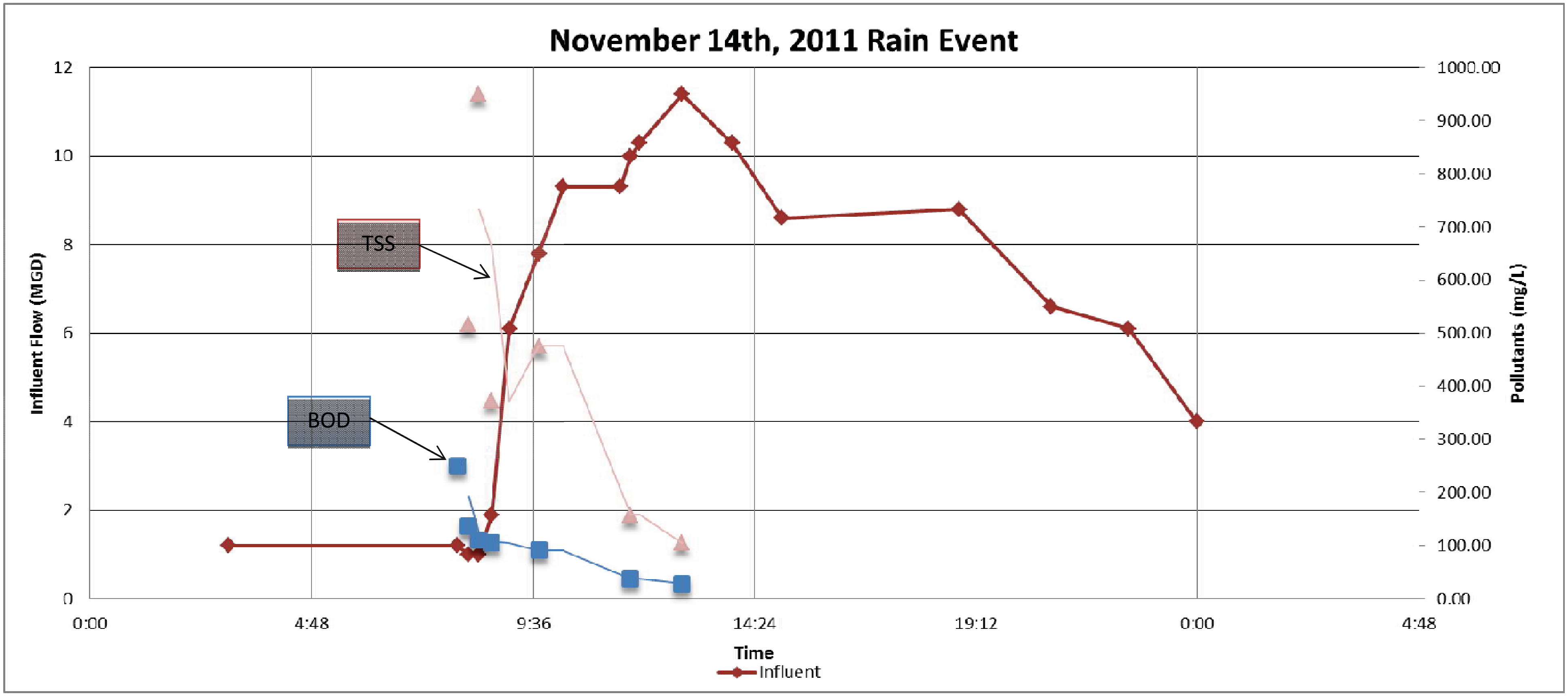


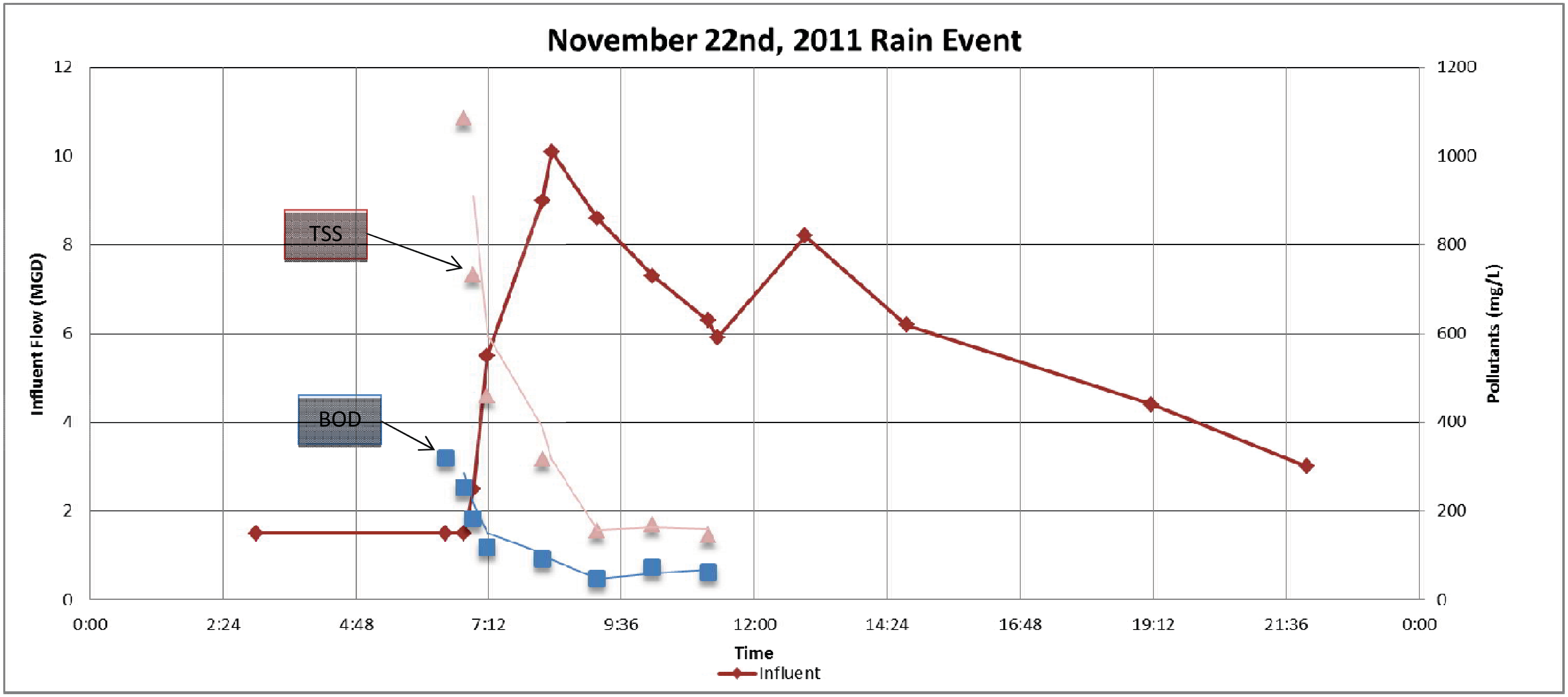
May 26th, 2011 Rain Event
Influent Flow (MGD)
Pollutants (mg/L)
Time
TSS
BOD
Influent
0
1
2
3
4
5
6
7
8
0.00
100.00
200.00
300.00
400.00
500.00
600.00
16:48
19:12
21:36
0:00
2:24
4:48
7:12
9:36
12:00
14:24
16:48


June 18th, 2011 Rain Event
Influent Flow (MGD)
Pollutants (mg/L)
TSS
BOD
Time
Influent
0
1
2
3
4
5
6
7
8
9
0.00
50.00
100.00
150.00
200.00
250.00
300.00
350.00
400.00
4:48
7:12
9:36
12:00
14:24
16:48
19:12
21:36
0:00



June 21st, 2011 Rain Event
Influent Flow (MGD)
Pollutants (mg/L)
12
10
8
6
4
2
0
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
12:00
14:24
16:48
19:12
21:36
0:00
2:24
Time
Influent
TSS
BOD


November 14th, 2011 Rain Event
Influent Flow (MGD)
Pollutants (mg/L)
12
10
8
6
4
2
0
1000.00
900.00
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
TSS
BOD
0:00
4:48
9:36
14:24
19:12
0:00
4:48
Time
Influent


November 22nd, 2011 Rain Event
Influent Flow (MGD)
Pollutants (mg/L)
TSS
BOD
12
10
8
6
4
2
0
1200
1000
800
600
400
200
0
0:00
2:24
4:48
7:12
9:36
12:00
14:24
16:48
19:12
21:36
0:00
Time
Influent

# Appendix C

| Date | Bottle # | Time | Ammonia | CBOD | TSS | CSO Discharge TSS | CSO Discharge CBOD | CSO Ammonia Discharge |
|---|---|---|---|---|---|---|---|---|
| 2/25/2000 | 1 | 8:40 PM | 5.97  mg/L | 222 mg/L | 298 mg/L | 113 mg/L | 25.3 mg/L | |
| | 2 | 8:59 PM | 5.17 mg/L | 214 mg/L | 336 mg/L | | | |
| | 3 | 9:14 PM | 5.10 mg/L | 212 mg/L | 213 mg/L | | | |
| | 4 | 9:29 PM | 5.59 mg/L | 78.6 mg/L | 153 mg/L | | | |
| | 5 | 10:30 PM | 1.48 mg/L | 146 mg/L | 200 mg/L | | | |
| | 6 | 11:30 PM | 0.68 mg/L | 22.8 mg/L | 82.7 mg/L | | | |
| | 7 | 12:30 AM | 0.933 mg/L | 53.8 mg/L | 231 mg/L | | | |
| | 8 | 1:30 AM | .669 mg/L | 27.8 mg/L | 128 mg/L | | | |
| 2/27/2011 | 1 | 19:46 | 5.18 mg//L | 573 mg/L | 490 mg/L | | | |
| | 2 | 20:00 | 4.58 mg/L | 83.2 mg/L | 127 mg/L | | | |
| | 3 | 20:15 | 4.45 mg/L | 75.4 mg/L | 131 mg/L | | | |
| | 4 | 20:30 | 4.52 mg/L | 63.6 mg/L | 108 mg/L | | | |
| | 5 | 21:32 | 3.70 mg/L | 63.6 mg/L | 95 mg/L | | | |
| | 6 | 22:32 | 3.01 mg/L | 52.5 mg/L | 192 mg/L | | | |
| | 7 | 23:32 | 2.54 mg/L | 44.2 mg/L | 79.2 mg/L | | | |
| | 8 | 0:32 | 2.33 mg/L | 28.1 mg/L | 35 mg/L | | | |
| 3/5/2011 | 1 | 6:29 a.m | 2.39 mg/L | 37.3 mg/L | 122 mg/L | 7.5 mg/L | 9.95 mg/L | |
| | 2 | 6:43 AM | 2.08 mg/L | 28.3 mg /L | 96 mg/L | | | |
| | 3 | 6:58 AM | 1.79 mg/L | 35.3 mg /L | 94.7 mg/L | | | |
| | 4 | 7:13 AM | 1.08 mg/L | 31.2 mg/L | 92.5 mg/L | | | |
| | 5 | 8:14 AM | 1.34 mg/L | 22.4 mg/L | 57.5 mg/L | | | |
| | 6 | 9:14 AM | 1.02 mg/L | 14.1 mg/L | 43.6 mg/L | | | |
| | 7 | 10:14 AM | .597 mg/L | 22.2 mg/L | 39.6 mg/L | | | |
| | 8 | 11:14 AM | .718 mg/L | 27.5 mg/L | 40 mg/L | | | |
| 3/9/2011 | 1 | 12:14 AM | 5.89 mg/L | 749 mg/L | 760 mg/L | 29.0 mg/L | 10.2 mg/L | 1.58 mg/L |
| | 2 | 12:28 AM | 4.60 mg/L | 80.5 mg/L | 22.4 mg/L | | | |
| | 3 | 12:43 AM | 3.73 mg/L | 159 mg/L | 294 mg/L | | | |
| | 4 | 12:58 AM | 3.37 mg/L | 72.7 mg/L | 184 mg/L | | | |
| | 5 | 1:59 AM | 2.10 mg/L | 59.3 mg/L | 165 mg/L | | | |
| | 6 | 2:59 AM | 2.00 mg/L | 59.2 mg/L | 132 mg/L | | | |
| | 7 | 3:59 AM | 1.57 mg/L | 36.4 mg/L | 91.3 mg/L | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 8 | 4:59 AM | 1.06 mg/L | 33.7 mg/L | 82 mg/L | | | |
| 3/18/2011 | 1 | 16:56 | 17.2 mg/L | 523 mg/L | 520 mg/L | | | |
| | 2 | 17:11 | 16.3 mg/L | 367 mg/L | 444 mg/L | | | |
| | 3 | 17:26 | 15.6 mg/L | 458 mg/L | 284 mg/L | | | |
| | 4 | 17:41 | 14.0 mg/L | 347 mg/L | 335 mg/L | NO CSO | | |
| | 5 | 18:42 | 14.6 mg/L | 322 mg/L | 156 mg/L | | | |
| | 6 | 19:42 | 12.9 mg/L | 266 mg/L | 180 mg/L | | | |
| | 7 | 20:42 | 11.3mg/L | 246 mg/L | 170 mg/L | | | |
| | 8 | 21:42 | 12.3 mg/L | 301 mg/L | 116 mg/L | | | |
| 4/4/2011 | 1 | 12:51 | | 1152 mg/L | 2420 mg/L | | | |
| | 2 | 13:05 | | 274 mg/L | 920 mg/L | No CSO | | |
| | 3 | | | | | | | |
| | 4 | | | | | | | |
| | 5 | | | | | | | |
| | 6 | | | | | | | |
| | 7 | | | | | | | |
| | 8 | | | | | | | |
| 4/9/2011 | 1 | 10:49 | 7.12 mg/L | <200 mg/L | 480 mg/L | NO CSO | | |
| | 2 | 11:04 | 6.07 mg/L | <200 mg/L | 426 mg/L | | | |
| | 3 | 11:19 | 6.92 mg/L | 79.3 mg/L | 268 mg/L | | | |
| | 4 | 11:34 | 8.25 mg/L | 215 mg/L | 228 mg/L | | | |
| | 5 | 12:34 | 3.92 mg/L | 60.7 mg/L | 194 mg/L | | | |
| | 6 | 13:34 | 1.50 mg/L | 77.6 mg/L | 196 mg/L | | | |
| | 7 | 14:34 | 1.75 mg/L | 52.3 mg/L | 90 mg/L | | | |
| | 8 | 15:34 | 2.05 mg/L | 20.9 mg/L | 72 mg/L | | | |
| 4/11/2011 | 1 | 6:44 | 3.15 mg/L | 31.0 mg/L | 83.3 mg/L | | | |
| | 2 | 6:59 | 3.14 mg/L | 26.0 mg/L | 82.7 mg/L | 8.8 mg/L | <10.0 mg/L | .618 mg/L |
| | 3 | 7:15 | 2.49 mg/L | 27.6 mg/L | 101 mg/L | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 4 | 7:29 | 2.74 mg/L | 25.8 mg/L | 105 mg/L | | | |
| | 5 | 8:30 | 3.94 mg/L | 65.4 mg/L | 131 mg/L | | | |
| | 6 | 9:30 | 3.18 mg/L | 23.2 mg/L | 74.7 mg/L | | | |
| | 7 | 10:30 | 3.24 mg/L | 23.5 mg/L | 62.0 mg/L | | | |
| | 8 | 11:30 | 2.46 mg/L | 16.1 mg/L | 49.3 mg/L | | | |
| 4/19/2011 | 1 | 8:58 | 1.36 mg/L | 25.3 mg/L | 114 mg/L | | | |
| | 2 | 9:13 | 1.54 mg/L | 26.1 mg/L | 89.0 mg/L | | | |
| | 3 | 9:28 | 1.84 mg/L | 20.9 mg/L | 71.0 mg/L | | | |
| | 4 | 9:43 | 1.70 mg/L | 29.6 mg/L | 75.0 mg/L | | | |
| | 5 | 10:44 | 1.54 mg/L | 22.5 mg/L | 50.0 mg/L | | | |
| | 6 | 11:44 | 1.80 mg/L | 23.1 mg/L | 41.0 mg/L | | | |
| | 7 | 12:44 | 2.39 mg/L | 27.7 mg/L | 45.0 mg/L | | | |
| | 8 | 13:44 | 2.38 mg/L | 46.2 mg/L | 43.0 mg/L | | | |
| 4/19/2011 | 1 | 8:58 | 1.36 mg/L | 25.3 mg/L | 114 mg/L | | | |
| 2nd sample | 2 | 9:13 | 1.54 mg/L | 26.1 mg/L | 89.0 mg/L | 29.0 mg/L | 9.8 mg/L | 0.947 |
| | 3 | 9:28 | 1.84 mg/L | 20.9 mg/L | 71.0 mg/L | | | |
| | 4 | 9:43 | 1.70 mg/L | 29.6 mg/L | 75.0 mg/L | | | |
| | 5 | 10:44 | 1.54 mg/L | 22.5 mg/L | 50.0 mg/L | | | |
| | 6 | 11:44 | 1.80 mg/L | 23.1 mg/L | 41.0 mg/L | | | |
| | 7 | 12:44 | 2.39 mg/L | 27.7 mg/L | 45.0 mg/L | | | |
| | 8 | 13:44 | 2.38 mg/L | 46.2 mg/L | 43.0 mg/L | | | |
| 4/20/2011 | 1 | 1:02 | .976mg/L | 18.8 mg/L | 42.0 mg/L | | | |
| | 2 | 1:17 | .827 mg/L | 13.7 mg/L | 52.0 mg/L | | | |
| | 3 | 1:32 | .844 mg/L | 17.2mg/L | 46.0 mg/L | | | |
| | 4 | 1:47 | .981 mg/L | 19.0 mg/L | 51.0 mg/L | 21.3 mg/L | 12.6 mg/L | 2.54 |
| | 5 | 2:47 | .186 mg/L | 11.4 mg/L | 67.0mg/L | | | |
| | 6 | 3:47 | .210 mg/L | 11.0 mg/L | 75.0 mg/L | | | |
| | 7 | 4:47 | .310 mg/L | 9.16mg/L | 53.0 mg/L | | | |
| | 8 | 5:47 | .601 mg/L | 10.0 mg/L | 32.0 mg/L | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 4/27/2011 | 1 | 0:45 | 1 mg/L | 43.0 mg/L | 256 mg/L | | | |
| | 2 | 0:59 | 0.991 mg/L | 24.1 mg/L | 143 mg/L | | | |
| | 3 | 1:14 | 0.991 mg/L | 18.4 mg/L | 96.8 mg/L | | | |
| | 4 | 1:29 | 1mg/L | 29.8 mg/L | 122 mg/L | 40.0 mg/L | 4.16 mg/L | .334 mg/L |
| | 5 | 2:30 | 0.359 mg/L | 24.5 mg/L | 101 mg/L | | | |
| | 6 | 3:30 | 0.318 mg/L | 8.88 mg/L | 53 mg/L | | | |
| | 7 | 4:30 | 0.321 mg/L | 9.20 mg/L | 50 mg/L | | | |
| | 8 | 5:30 | 0.379 mg/L | 8.04 mg/L | 54 mg/L | | | |

| Date | Bottle # | Time | Ammonia | CBOD | TSS | CSO Discharge TSS | CSO Discharge CBOD | CSO Ammonia Discharge |
|---|---|---|---|---|---|---|---|---|
| 5/1/2011 | 1 | 19:33 | 5.61 mg/L | 304 mg/L | 980 mg/L | | | |
| | 2 | 19:48 | 5.29 mg/L | 118 mg/L | 218 mg/L | NO CSO | | |
| | 3 | 20:03 | 5.02 mg/L | 116 mg/L | 212 mg/L | | | |
| | 4 | 20:18 | 7.05 mg/L | 194 mg/L | 352 mg/L | | | |
| | 5 | 21:19 | 5.58 mg/L | 79.4 mg/L | 380 mg/L | | | |
| | 6 | 22:19 | 2.73 mg/L | 47.2 mg/L | 147 mg/L | | | |
| | 7 | 23:19 | 2.45 mg/L | 47.2 mg/L | 101 mg/L | | | |
| | 8 | 0:19 | 2.45 mg/L | 28.2 mg/L | 50mg/L | | | |

| Date | Bottle # | Time | Ammonia | CBOD | TSS |
|---|---|---|---|---|---|
| 5/23/2011 | 1 | 17:37 | 8.77 mg/L | 297 mg/L | 697 mg/L |
| | 2 | 17:51 | 6.06 mg/L | 115.0 mg/L | 265 mg/L |
| | 3 | 18:06 | 6.23 mg/L | 162 mg/L | 326 mg/L |
| | 4 | 18:21 | 6.40 mg/L | 136 mg/L | 212 mg/L |
| | 5 | 19:22 | 3.12 mg/L | 298 mg/L | 748 mg/L |
| | 6 | 20:22 | 1.88 mg/L | 65.5 mg/L | 180 mg/L |
| | 7 | 21:22 | 1.81 mg/L | 70.2 mg/L | 201 mg/L |
| | 8 | 22:22 | 1.60 mg/L | 50.7 mg/L | 204 mg/L |

| Date | Bottle # | Time | Ammonia | CBOD | TSS |
|---|---|---|---|---|---|
| 5/26/2011 | 1 | 23:28 | 3.87 mg/L | 394 mg/L | 554 mg/L |
| | 2 | 23:43 | 3.44 mg/L | 145 mg/L | 256 mg/L |
| | 3 | 23:58 | 3.03 mg/L | 108 mg/L | 128 mg/L |
| | 4 | 0:13 | 3.59 mg/L | 104 mg/L | 140 mg/L |
| | 5 | 1:14 | 1.33 mg/L | 63.3 mg/L | 113 mg/L |
| | 6 | 2:14 | .962 mg/L | 57.3 mg/L | 94.7 mg/L |

| | | | | | | |
|---|---|---|---|---|---|---|
| | 7 | 3:14 | .750 mg/L | 26.2 mg/L | 56.0 mg/L | |
| | 8 | 4:14 | 1.14 mg/L | 25.7 mg/L | 28.0 mg/L | |

| Date | Bottle # | Time | Ammonia | CBOD | TSS | |
|---|---|---|---|---|---|---|
| 6/11/2011 | 1 | 2:08 | 6.81 mg/L | 208 mg/L | 1127 mg/L | |
| | 2 | 2:22 | 5.82 mg/L | 155mg/L | 497 mg/L | NO CSO |
| | 3 | 2:37 | 5.84 mg/L | 125 mg/L | 737 mg/L | |
| | 4 | 2:52 | 6.56 mg/L | 125 mg/L | 530 mg/L | |
| | 5 | 3:53 | 7.70 mg/L | 76.8 mg/L | 510 mg/L | |
| | 6 | 4:53 | 5.25 mg/L | 99.0 mg/L | 605 mg/L | |
| | 7 | 5:53 | 5.10 mg/L | 157mg/L | 490 mg/L | |
| | 8 | 6:53 | 3.78 mg/L | 83.9 mg/L | 207mg/L | |

| Date | Bottle # | Time | Ammonia | CBOD | TSS | |
|---|---|---|---|---|---|---|
| 6/15/2011 | 1 | 12:59 | 11.5 mg/L | 84.4 mg/L | 493 mg/L | |
| | 2 | 13:13 | 7.7 mg/L | 68.7mg/L | 182 mg/L | NO CSO |
| | 3 | 13:28 | 7.22 mg/L | 70.6 mg/L | 216 mg/L | |
| | 4 | 13:43 | 7.09 mg/L | 80.1 mg/L | 224 mg/L | |
| | 5 | 14:44 | 5.10 mg/L | 75.5 mg/L | 222 mg/L | |
| | 6 | 15:44 | 3.07 mg/L | 43.6 mg/L | 113mg/L | |
| | 7 | 16:44 | 3.61 mg/L | 33.6mg/L | 867 mg/L | |
| | 8 | 17:44 | 4.05 mg/L | 27.4 mg/L | 207mg/L | |

| Date | Bottle # | Time | Ammonia | CBOD | TSS | |
|---|---|---|---|---|---|---|
| 6/18/2011 | 1 | 12:09 | 10.4 mg/L | 73.6 mg/L | 374 mg/L | |
| | 2 | 12:24 | 8.79 mg/L | 60.8mg/L | 290 mg/L | NO CSO |
| | 3 | 12:39 | 7.52 mg/L | 63.7 mg/L | 205 mg/L | |
| | 4 | 12:54 | 7.01 mg/L | 94.3 mg/L | 293 mg/L | |
| | 5 | 13:55 | 5.23 mg/L | 57.1mg/L | 165 mg/L | |
| | 6 | 14:55 | 5.28 mg/L | 40.2 mg/L | 98.3 mg/L | |
| | 7 | 15:55 | 3.31 mg/L | 24.6mg/L | 79.1 mg/L | |
| | 8 | 16:55 | 3.17 mg/L | 24.6 mg/L | 61.9 mg/L | |

| Date | Bottle # | Time | Ammonia | CBOD | TSS |
|---|---|---|---|---|---|
| 6/21/2011 | 1 | 16:17 | 6.24 mg/L | 170 mg/L | 990 mg/L |
| | 2 | 16:32 | 3.99 mg/L | 72.2 mg/L | 527 mg/L |

| | | | | | |
|---|---|---|---|---|---|
| 3 | 16:47 | 5.14 mg/L | 87.6 mg/L | 383 mg/L | |
| 4 | 17:02 | 5.75 mg/L | 88.2 mg/L | 303 mg/L | |
| 5 | 18:03 | 2.28 mg/L | 57.3 mg/L | 213 mg/L | NO CSO |
| 6 | 19:03 | 2.51 mg/L | 47.8 mg/L | 149 mg/L | |
| 7 | 20:03 | 2.64 mg/L | 24.6 mg/L | 70.8 mg/L | |
| 8 | 21:03 | 2.18 mg/L | 29.3 mg/L | 68.5 mg/L | |

# Appendix D

# NORTH VERNON LIFT STATIONS

**Figure 1. Northeast Pump Station Basin**

**Figure 2. Northeast Pump Station Overflow Point**

**Figure 3.  Northeast Pump Station**

**Figure 4.  Northwest Pump Station Wet Well**

**Figure 5. Northwest Pump Station Overflow Point**

**Figure 6. Northwest Pump Station Wet Well and Valve Vault**


**Figure 7. Northwest Pump Station**

**Figure 8. Southwest Pump Station Overflow Point**

**Figure 9. Southwest Pump Station Valve Vault**

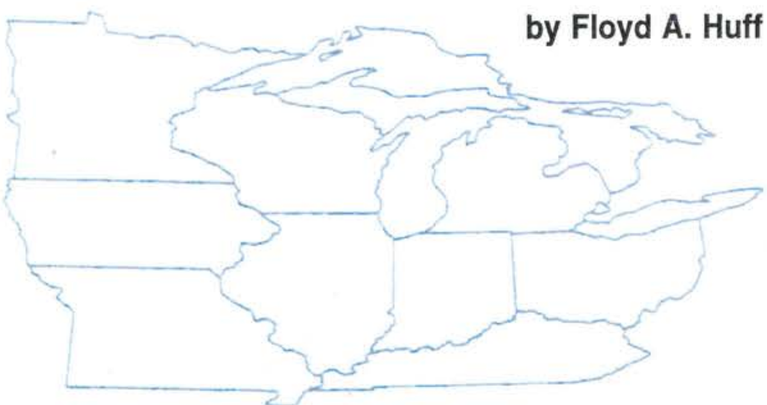
**Figure 10. Southwest Pump Station Wet Well**

# Appendix E

Bulletin 71
(MCC Research Report 92-03)

# RAINFALL FREQUENCY ATLAS OF THE MIDWEST

by Floyd A. Huff and James R. Angel



Midwestern Climate Center
Climate Analysis Center
National Weather Service
National Oceanic and Atmospheric Administration

and

Illinois State Water Survey
A Division of the Illinois Department of Energy and Natural Resources

1992

(MCC) with Stanley Changnon and Peter J. Lamb as the co-principal investigators. The work was continued and completed under the general direction of Kenneth Kunkel, present MCC Director.

Special appreciation goes to Stan Changnon for his foresight, guidance, and encouragement in establishing and accomplishing the program objectives. He and Ken Kunkel reviewed the report and made useful comments and suggestions. Special thanks go to Richard Katz, National Center for Atmospheric Research; Tibor Farago, Hungarian Meteorological Service; and J.R.M. Hosking, IBM Research Division, for providing software for some of the extreme rainfall analyses. Fred Nurnberger, Michigan State Climatologist, provided valuable long-term precipitation data for his state as well as comments on the manuscript. We also thank the following state climatologists for their review and comments on this project: Wayne Wendland, Illinois; Ken Scheeringa, Indiana; Harry Hillaker, Iowa; Glen Conner, Kentucky; Jim Zandlo, Minnesota; Wayne Decker, Missouri; Jeff Rogers, Ohio; and Pam Naber-Knox, Wisconsin.

John Brother and Linda Hascall supervised the extensive drafting work required for the report. Jean Dennison typed and assembled the report, which Eva Kingston edited and formatted.

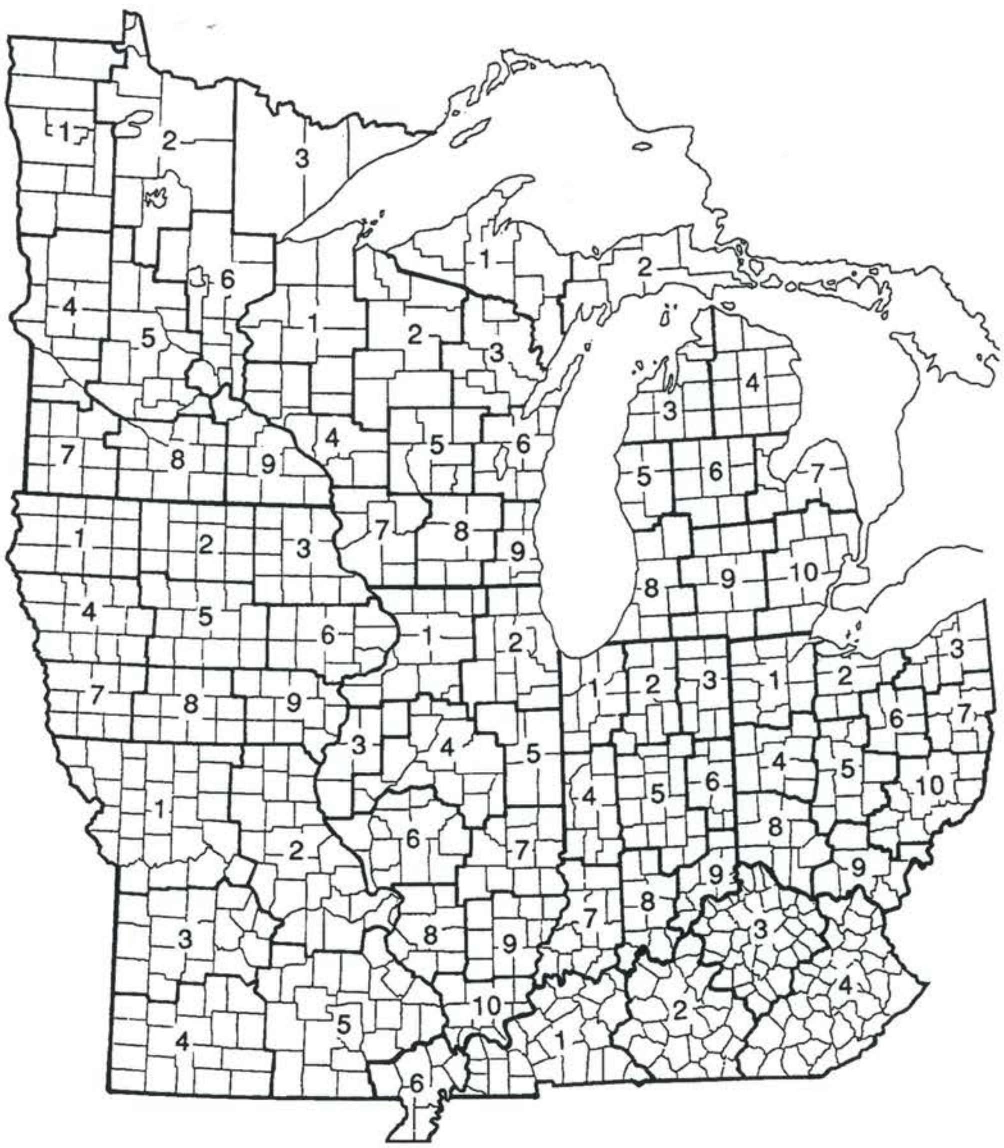


Figure 1. Climatic sections for the Midwest

## Table 2. Sectional Mean Frequency Distributions for Storm Periods of 5 Minutes to 10 Days and Recurrence Intervals of 2 Months to 100 Years in Indiana

*Sectional code (see figure 1 on page 4)*

*01- Northwes*
*02 - North Central*
*03 - Northeast*
*04 - West Central*
*05 - Central*
*06 - East Central*
*07 - Southwest*
*08 - South Central*
*09- Southeast*

*Rainfall (inches) for given recurrence interval*

| *Section* | *Duration* | *2-month* | *3-month* | *4-month* | *6-month* | *9-month* | *1-year* | *2-year* | *5-year* | *10-year* | *25-year* | *50-year* | *100-year* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 10-day | 2.07 | 2.50 | 2.88 | 3.38 | 3.89 | 4.23 | 4.84 | 5.79 | 6.67 | 8.03 | 9.23 | 10.58 |
| 01 | 5-day | 1.68 | 2.01 | 2.27 | 2.63 | 3.03 | 3.29 | 3.84 | 4.70 | 5.50 | 6.81 | 7.99 | 9.37 |
| 01 | 72-hr | 1.53 | 1.80 | 2.04 | 2.36 | 2.71 | 2.95 | 3.46 | 4.24 | 4.97 | 6.10 | 7.17 | 8.38 |
| 01 | 48-hr | 1.40 | 1.64 | 1.83 | 2.12 | 2.44 | 2.65 | 3.12 | 3.87 | 4.56 | 5.58 | 6.52 | 7.58 |
| 01 | 24-hr | 1.33 | 1.55 | 1.69 | 1.96 | 2.23 | 2.42 | 2.89 | 3.61 | 4.22 | 5.22 | 6.10 | 7.12 |
| 01 | 18-hr | 1.25 | 1.45 | 1.59 | 1.84 | 2.09 | 2.27 | 2.72 | 3.39 | 3.97 | 4.91 | 5.73 | 6.69 |
| 01 | 12-hr | 1.16 | 1.35 | 1.48 | 1.71 | 1.94 | 2.11 | 2.51 | 3.14 | 3.67 | 4.54 | 5.31 | 6.19 |
| 01 | 6-hr | 1.00 | 1.16 | 1.27 | 1.47 | 1.67 | 1.82 | 2.17 | 2.71 | 3.16 | 3.91 | 4.57 | 5.34 |
| 01 | 3-hr | 0.85 | 0.99 | 1.08 | 1.26 | 1.43 | 1.55 | 1.85 | 2.31 | 2.70 | 3.34 | 3.90 | 4.56 |
| 01 | 2-hr | 0.77 | 0.90 | 0.98 | 1.13 | 1.29 | 1.40 | 1.68 | 2.09 | 2.45 | 3.03 | 3.54 | 4.13 |
| 01 | 1-hr | 0.63 | 0.73 | 0.80 | 0.92 | 1.05 | 1.14 | 1.36 | 1.70 | 1.98 | 2.45 | 2.87 | 3.35 |
| 01 | 30-min | 0.50 | 0.58 | 0.63 | 0.73 | 0.83 | 0.90 | 1.07 | 1.34 | 1.56 | 1.93 | 2.26 | 2.63 |
| 01 | 15-min | 0.36 | 0.42 | 0.45 | 0.53 | 0.60 | 0.65 | 0.78 | 0.97 | 1.14 | 1.41 | 1.65 | 1.92 |
| 01 | 10-min | 0.28 | 0.33 | 0.36 | 0.41 | 0.47 | 0.51 | 0.61 | 0.76 | 0.89 | 1.10 | 1.28 | 1.50 |
| 01 | 5-min | 0.16 | 0.19 | 0.20 | 0.23 | 0.27 | 0.29 | 0.35 | 0.43 | 0.51 | 0.63 | 0.73 | 0.85 |
| 02 | 10-day | 2.04 | 2.45 | 2.83 | 3.33 | 3.83 | 4.16 | 4.75 | 5.64 | 6.45 | 7.69 | 8.80 | 10.03 |
| 02 | 5-day | 1.68 | 2.01 | 2.28 | 2.64 | 3.04 | 3.30 | 3.80 | 4.62 | 5.38 | 6.57 | 7.63 | 8.85 |
| 02 | 72-hr | 1.48 | 1.74 | 1.97 | 2.28 | 2.62 | 2.85 | 3.33 | 4.10 | 4.79 | 5.88 | 6.86 | 8.00 |
| 02 | 48-hr | 1.37 | 1.60 | 1.78 | 2.06 | 2.37 | 2.58 | 3.02 | 3.73 | 4.36 | 5.36 | 6.25 | 7.28 |
| 02 | 24-hr | 1.30 | 1.51 | 1.65 | 1.91 | 2.17 | 2.36 | 2.78 | 3.43 | 4.00 | 4.90 | 5.67 | 6.54 |
| 02 | 18-hr | 1.22 | 1.42 | 1.55 | 1.80 | 2.04 | 2.22 | 2.61 | 3.22 | 3.76 | 4.61 | 5.33 | 6.15 |
| 02 | 12-hr | 1.13 | 1.31 | 1.43 | 1.66 | 1.89 | 2.05 | 2.42 | 2.98 | 3.48 | 4.26 | 4.93 | 5.69 |
| 02 | 6-hr | 0.97 | 1.13 | 1.24 | 1.43 | 1.63 | 1.77 | 2.09 | 2.57 | 3.00 | 3.68 | 4.25 | 4.90 |
| 02 | 3-hr | 0.83 | 0.97 | 1.06 | 1.22 | 1.39 | 1.51 | 1.78 | 2.20 | 2.56 | 3.14 | 3.63 | 4.19 |
| 02 | 2-hr | 0.75 | 0.88 | 0.96 | 1.11 | 1.26 | 1.37 | 1.61 | 1.99 | 2.32 | 2.84 | 3.29 | 3.79 |
| 02 | 1-hr | 0.61 | 0.71 | 0.78 | 0.90 | 1.02 | 1.11 | 1.31 | 1.61 | 1.88 | 2.30 | 2.66 | 3.07 |
| 02 | 30-min | 0.48 | 0.56 | 0.61 | 0.70 | 0.80 | 0.87 | 1.03 | 1.27 | 1.48 | 1.81 | 2.10 | 2.42 |
| 02 | 15-min | 0.35 | 0.41 | 0.45 | 0.52 | 0.59 | 0.64 | 0.75 | 0.93 | 1.08 | 1.32 | 1.53 | 1.77 |
| 02 | 10-min | 0.28 | 0.32 | 0.35 | 0.41 | 0.46 | 0.50 | 0.58 | 0.72 | 0.84 | 1.03 | 1.19 | 1.37 |
| 02 | 5-min | 0.15 | 0.18 | 0.20 | 0.23 | 0.26 | 0.28 | 0.33 | 0.41 | 0.48 | 0.59 | 0.68 | 0.78 |
| 03 | 10-day | 1.81 | 2.18 | 2.52 | 2.96 | 3.40 | 3.70 | 4.25 | 5.12 | 5.84 | 6.96 | 8.01 | 9.16 |
| 03 | 5-day | 1.52 | 1.82 | 2.06 | 2.38 | 2.74 | 2.98 | 3.46 | 4.18 | 4.81 | 5.83 | 6.76 | 7.80 |
| 03 | 72-hr | 1.35 | 1.59 | 1.79 | 2.08 | 2.39 | 2.60 | 3.01 | 3.68 | 4.27 | 5.21 | 6.06 | 7.01 |
| 03 | 48-hr | 1.27 | 1.48 | 1.65 | 1.91 | 2.20 | 2.39 | 2.77 | 3.38 | 3.92 | 4.78 | 5.57 | 6.45 |
| 03 | 24-hr | 1.19 | 1.38 | 1.51 | 1.75 | 1.99 | 2.16 | 2.52 | 3.04 | 3.52 | 4.29 | 5.02 | 5.77 |
| 03 | 18-hr | 1.12 | 1.30 | 1.42 | 1.64 | 1.87 | 2.03 | 2.37 | 2.86 | 3.31 | 4.03 | 4.72 | 5.42 |
| 03 | 12-hr | 1.03 | 1.20 | 1.32 | 1.52 | 1.73 | 1.68 | 2.19 | 2.64 | 3.06 | 3.73 | 4.37 | 5.02 |
| 03 | 6-hr | 0.89 | 1.04 | 1.13 | 1.31 | 1.49 | 1.62 | 1.89 | 2.28 | 2.64 | 3.22 | 3.76 | 4.33 |
| 03 | 3-hr | 0.76 | 0.88 | 0.97 | 1.12 | 1.27 | 1.38 | 1.61 | 1.95 | 2.25 | 2.75 | 3.21 | 3.69 |
| 03 | 2-hr | 0.69 | 0.80 | 0.88 | 1.01 | 1.15 | 1.25 | 1.46 | 1.76 | 2.04 | 2.49 | 2.91 | 3.35 |
| 03 | 1-hr | 0.56 | 0.65 | 0.71 | 0.83 | 0.94 | 1.02 | 1.18 | 1.43 | 1.65 | 2.02 | 2.36 | 2.71 |
| 03 | 30-min | 0.44 | 0.51 | 0.56 | 0.65 | 0.74 | 0.80 | 0.93 | 1.12 | 1.30 | 1.59 | 1.86 | 2.13 |
| 03 | 15-min | 0.32 | 0.37 | 0.41 | 0.47 | 0.53 | 0.58 | 0.68 | 0.82 | 0.95 | 1.16 | 1.36 | 1.56 |
| 03 | 10-min | 0.25 | 0.29 | 0.31 | 0.36 | 0.41 | 0.45 | 0.53 | 0.64 | 0.74 | 0.90 | 1.05 | 1.21 |
| 03 | 5-min | 0.14 | 0.17 | 0.18 | 0.21 | 0.24 | 0.26 | 0.30 | 0.36 | 0.42 | 0.51 | 0.60 | 0.69 |

## Table 2. Continued

| Section | Duration | *Rainfall (inches) for given recurrence interval* 2-month | 3-month | 4-month | 6-month | 9-month | 1-year | 2-year | 5-year | 10-year | 25-year | 50-year | 100-year |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 04 | 10-day | 2.32 | 2.80 | 3.22 | 3.79 | 4.36 | 4.74 | 5.43 | 6.47 | 7.33 | 8.50 | 9.48 | 10.65 |
| 04 | 5-day | 1.85 | 2.21 | 2.50 | 2.90 | 3.34 | 3.63 | 4.24 | 5.15 | 5.97 | 7.25 | 8.31 | 9.55 |
| 04 | 72-hr | 1.64 | 1.93 | 2.18 | 2.53 | 2.91 | 3.16 | 3.76 | 4.53 | 5.34 | 6.43 | 7.45 | 8.55 |
| 04 | 48-hr | 1.53 | 1.79 | 1.99 | 2.30 | 2.65 | 2.88 | 3.38 | 4.12 | 4.75 | 5.77 | 6.66 | 7.65 |
| 04 | 24-hr | 1.45 | 1.68 | 1.84 | 2.13 | 2.42 | 2.63 | 3.12 | 3.83 | 4.47 | 5.39 | 6.17 | 7.01 |
| 04 | 18-hr | 1.36 | 1.58 | 1.73 | 2.00 | 2.27 | 2.47 | 2.93 | 3.60 | 4.20 | 5.07 | 5.80 | 6.59 |
| 04 | 12-hr | 1.26 | 1.47 | 1.60 | 1.85 | 2.11 | 2.29 | 2.71 | 3.33 | 3.89 | 4.69 | 5.37 | 6.10 |
| 04 | 6-hr | 1.08 | 1.26 | 1.38 | 1.60 | 1.81 | 1.97 | 2.34 | 2.87 | 3.35 | 4.04 | 4.63 | 5.26 |
| 04 | 3-hr | 0.92 | 1.08 | 1.18 | 1.36 | 1.55 | 1.68 | 2.00 | 2.45 | 2.86 | 3.45 | 3.95 | 4.49 |
| 04 | 2-hr | 0.84 | 0.98 | 1.07 | 1.24 | 1.41 | 1.53 | 1.81 | 2.22 | 2.59 | 3.13 | 3.58 | 4.07 |
| 04 | 1-hr | 0.68 | 0.79 | 0.87 | 1.00 | 1.14 | 1.24 | 1.47 | 1.80 | 2.10 | 2.53 | 2.90 | 3.29 |
| 04 | 30-min | 0.53 | 0.62 | 0.68 | 0.79 | 0.89 | 0.97 | 1.15 | 1.42 | 1.65 | 1.99 | 2.28 | 2.59 |
| 04 | 15-min | 0.39 | 0.45 | 0.50 | 0.58 | 0.65 | 0.71 | 0.84 | 1.03 | 1.21 | 1.46 | 1.67 | 1.89 |
| 04 | 10-min | 0.30 | 0.35 | 0.38 | 0.45 | 0.51 | 0.55 | 0.66 | 0.80 | 0.94 | 1.13 | 1.30 | 1.47 |
| 04 | 5-min | 0.18 | 0.20 | 0.22 | 0.26 | 0.29 | 0.32 | 0.37 | 0.46 | 0.54 | 0.65 | 0.74 | 0.84 |
| 05 | 10-day | 2.13 | 2.56 | 2.95 | 3.47 | 3.99 | 4.34 | 5.06 | 6.07 | 6.96 | 8.36 | 9.57 | 10.86 |
| 05 | 5-day | 1.73 | 2.07 | 2.34 | 2.71 | 3.12 | 3.39 | 3.97 | 4.86 | 5.66 | 6.91 | 8.07 | 9.44 |
| 05 | 72-hr | 1.52 | 1.79 | 2.02 | 2.34 | 2.70 | 2.93 | 3.45 | 4.27 | 5.04 | 6.15 | 7.17 | 8.31 |
| 05 | 48-hr | 1.42 | 1.66 | 1.85 | 2.14 | 2.47 | 2.68 | 3.18 | 3.94 | 4.63 | 5.65 | 6.56 | 7.55 |
| 05 | 24-hr | 1.35 | 1.57 | 1.72 | 1.99 | 2.26 | 2.46 | 2.92 | 3.64 | 4.25 | 5.16 | 5.95 | 6.84 |
| 05 | 18-hr | 1.27 | 1.48 | 1.62 | 1.87 | 2.13 | 2.31 | 2.74 | 3.42 | 3.99 | 4.85 | 5.59 | 6.43 |
| 05 | 12-hr | 1.18 | 1.37 | 1.50 | 1.73 | 1.97 | 2.14 | 2.54 | 3.17 | 3.70 | 4.49 | 5.18 | 5.95 |
| 05 | 6-hr | 1.02 | 1.18 | 1.29 | 1.50 | 1.70 | 1.85 | 2.19 | 2.73 | 3.19 | 3.87 | 4.46 | 5.13 |
| 05 | 3-hr | 0.86 | 1.00 | 1.10 | 1.27 | 1.44 | 1.57 | 1.87 | 2.33 | 2.72 | 3.30 | 3.81 | 4.38 |
| 05 | 2-hr | 0.79 | 0.92 | 1.00 | 1.16 | 1.32 | 1.43 | 1.69 | 2.11 | 2.46 | 2.99 | 3.45 | 3.97 |
| 05 | 1-hr | 0.64 | 0.74 | 0.81 | 0.94 | 1.07 | 1.16 | 1.37 | 1.71 | 2.00 | 2.43 | 2.80 | 3.21 |
| 05 | 30-min | 0.50 | 0.58 | 0.64 | 0.74 | 0.84 | 0.91 | 1.08 | 1.35 | 1.57 | 1.91 | 2.20 | 2.53 |
| 05 | 15-min | 0.36 | 0.42 | 0.46 | 0.53 | 0.61 | 0.66 | 0.79 | 0.98 | 1.15 | 1.39 | 1.61 | 1.85 |
| 05 | 10-min | 0.29 | 0.33 | 0.36 | 0.42 | 0.48 | 0.52 | 0.61 | 0.76 | 0.89 | 1.08 | 1.25 | 1.44 |
| 05 | 5-min | 0.17 | 0.19 | 0.21 | 0.24 | 0.28 | 0.30 | 0.35 | 0.44 | 0.51 | 0.62 | 0.71 | 0.82 |
| 06 | 10-day | 2.13 | 2.57 | 2.96 | 3.48 | 4.00 | 4.35 | 5.00 | 6.00 | 6.82 | 8.30 | 9.55 | 11.05 |
| 06 | 5-day | 1.62 | 1.93 | 2.19 | 2.54 | 2.92 | 3.17 | 3.75 | 4.68 | 5.50 | 6.90 | 8.20 | 9.68 |
| 06 | 72-hr | 1.45 | 1.70 | 1.92 | 2.22 | 2.56 | 2.78 | 3.30 | 4.15 | 4.98 | 6.06 | 7.25 | 8.55 |
| 06 | 48-hr | 1.36 | 1.59 | 1.77 | 2.06 | 2.36 | 2.57 | 3.01 | 3.73 | 4.40 | 5.54 | 6.55 | 7.70 |
| 06 | 24-hr | 1.26 | 1.47 | 1.61 | 1.66 | 2.12 | 2.30 | 2.76 | 3.37 | 3.89 | 4.65 | 5.29 | 6.05 |
| 06 | 18-hr | 1.19 | 1.38 | 1.51 | 1.75 | 1.99 | 2.16 | 2.59 | 3.17 | 3.66 | 4.37 | 4.97 | 5.69 |
| 06 | 12-hr | 1.10 | 1.28 | 1.40 | 1.62 | 1.84 | 2.00 | 2.40 | 2.93 | 3.38 | 4.05 | 4.60 | 5.26 |
| 06 | 6-hr | 0.95 | 1.10 | 1.20 | 1.39 | 1.58 | 1.72 | 2.07 | 2.53 | 2.92 | 3.49 | 3.97 | 4.54 |
| 06 | 3-hr | 0.81 | 0.94 | 1.03 | 1.19 | 1.35 | 1.47 | 1.77 | 2.16 | 2.49 | 2.98 | 3.39 | 3.87 |
| 06 | 2-hr | 0.73 | 0.85 | 0.93 | 1.08 | 1.22 | 1.33 | 1.60 | 1.95 | 2.26 | 2.70 | 3.07 | 3.51 |
| 06 | 1-hr | 0.59 | 0.69 | 0.76 | 0.87 | 0.99 | 1.08 | 1.30 | 1.58 | 1.83 | 2.19 | 2.49 | 2.84 |
| 06 | 30-min | 0.47 | 0.54 | 0.60 | 0.69 | 0.78 | 0.85 | 1.02 | 1.25 | 1.44 | 1.72 | 1.96 | 2.24 |
| 06 | 15-min | 0.34 | 0.40 | 0.43 | 0.50 | 0.57 | 0.62 | 0.75 | 0.91 | 1.05 | 1.26 | 1.43 | 1.63 |
| 06 | 10-min | 0.26 | 0.31 | 0.34 | 0.39 | 0.44 | 0.48 | 0.58 | 0.71 | 0.82 | 0.98 | 1.11 | 1.27 |
| 06 | 5-min | 0.15 | 0.18 | 0.20 | 0.23 | 0.26 | 0.28 | 0.33 | 0.40 | 0.47 | 0.56 | 0.63 | 0.73 |

## Table 2. Continued

*Rainfall (inches) for given recurrence interval*

| *Section* | *Duration* | *2-month* | *3-month* | *4-month* | *6-month* | *9-month* | *1-year* | *2-year* | *5-year* | *10-year* | *25-year* | *50-year* | *100-year* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 07 | 10-day | 2.53 | 3.05 | 3.52 | 4.14 | 4.76 | 5.17 | 5.99 | 7.29 | 8.46 | 10.28 | 11.91 | 13.74 |
| 07 | 5-day | 1.96 | 2.35 | 2.66 | 3.08 | 3.54 | 3.85 | 4.54 | 5.64 | 6.66 | 8.25 | 9.72 | 11.32 |
| 07 | 72-hr | 1.80 | 2.11 | 2.39 | 2.77 | 3.18 | 3.46 | 4.10 | 5.12 | 6.02 | 7.49 | 8.79 | 10.28 |
| 07 | 48-hr | 1.65 | 1.93 | 2.15 | 2.50 | 2.87 | 3.12 | 3.68 | 4.56 | 5.35 | 6.62 | 7.77 | 9.08 |
| 07 | 24-hr | 1.52 | 1.77 | 1.93 | 2.24 | 2.54 | 2.76 | 3.27 | 4.00 | 4.65 | 5.66 | 6.52 | 7.47 |
| 07 | 18-hr | 1.42 | 1.66 | 1.81 | 2.10 | 2.38 | 2.59 | 3.07 | 3.76 | 4.37 | 5.32 | 6.13 | 7.02 |
| 07 | 12-hr | 1.32 | 1.54 | 1.68 | 1.94 | 2.21 | 2.40 | 2.84 | 3.48 | 4.05 | 4.92 | 5.67 | 6.50 |
| 07 | 6-hr | 1.14 | 1.32 | 1.45 | 1.68 | 1.90 | 2.07 | 2.45 | 3.00 | 3.49 | 4.24 | 4.89 | 5.60 |
| 07 | 3-hr | 0.97 | 1.13 | 1.24 | 1.43 | 1.63 | 1.77 | 2.09 | 2.56 | 2.98 | 3.62 | 4.17 | 4.78 |
| 07 | 2-hr | 0.88 | 1.02 | 1.12 | 1.30 | 1.47 | 1.60 | 1.90 | 2.32 | 2.70 | 3.28 | 3.78 | 4.33 |
| 07 | 1-hr | 0.71 | 0.83 | 0.91 | 1.05 | 1.20 | 1.30 | 1.54 | 1.88 | 2.19 | 2.66 | 3.06 | 3.51 |
| 07 | 30-min | 0.56 | 0.65 | 0.71 | 0.83 | 0.94 | 1.02 | 1.21 | 1.48 | 1.72 | 2.09 | 2.41 | 2.76 |
| 07 | 15-min | 0.41 | 0.48 | 0.52 | 0.61 | 0.69 | 0.75 | 0.88 | 1.08 | 1.26 | 1.53 | 1.76 | 2.02 |
| 07 | 10-min | 0.32 | 0.37 | 0.41 | 0.47 | 0.53 | 0.58 | 0.69 | 0.84 | 0.98 | 1.19 | 1.37 | 1.57 |
| 07 | 5-min | 0.18 | 0.21 | 0.23 | 0.27 | 0.30 | 0.33 | 0.39 | 0.48 | 0.56 | 0.68 | 0.78 | 0.90 |
| 08 | 10-day | 2.39 | 2.88 | 3.32 | 3.90 | 4.49 | 4.88 | 5.74 | 6.95 | 7.99 | 9.60 | 11.04 | 12.64 |
| 08 | 5-day | 1.90 | 2.27 | 2.57 | 2.98 | 3.42 | 3.72 | 4.50 | 5.54 | 6.43 | 7.71 | 8.88 | 10.18 |
| 08 | 72-hr | 1.70 | 1.99 | 2.25 | 2.61 | 3.00 | 3.26 | 3.88 | 4.82 | 5.65 | 6.92 | 7.99 | 9.14 |
| 08 | 48-hr | 1.61 | 1.88 | 2.10 | 2.43 | 2.80 | 3.04 | 3.61 | 4.41 | 5.13 | 6.18 | 7.14 | 8.13 |
| 08 | 24-hr | 1.48 | 1.72 | 1.88 | 2.18 | 2.47 | 2.69 | 3.17 | 3.90 | 4.49 | 5.40 | 6.15 | 7.06 |
| 08 | 18-hr | 1.39 | 1.62 | 1.77 | 2.05 | 2.33 | 2.53 | 2.98 | 3.67 | 4.22 | 5.08 | 5.78 | 6.64 |
| 08 | 12-hr | 1.29 | 1.50 | 1.64 | 1.90 | 2.15 | 2.34 | 2.76 | 3.39 | 3.91 | 4.70 | 5.35 | 6.14 |
| 08 | 6-hr | 1.11 | 1.29 | 1.41 | 1.64 | 1.66 | 2.02 | 2.38 | 2.93 | 3.37 | 4.05 | 4.61 | 5.30 |
| 08 | 3-hr | 0.95 | 1.10 | 1.20 | 1.39 | 1.58 | 1.72 | 2.03 | 2.50 | 2.87 | 3.46 | 3.94 | 4.52 |
| 08 | 2-hr | 0.86 | 1.00 | 1.09 | 1.26 | 1.44 | 1.56 | 1.84 | 2.26 | 2.60 | 3.13 | 3.57 | 4.09 |
| 08 | 1-hr | 0.69 | 0.81 | 0.88 | 1.02 | 1.16 | 1.26 | 1.49 | 1.83 | 2.11 | 2.54 | 2.89 | 3.32 |
| 08 | 30-min | 0.55 | 0.64 | 0.70 | 0.81 | 0.92 | 1.00 | 1.17 | 1.44 | 1.66 | 2.00 | 2.28 | 2.61 |
| 08 | 15-min | 0.40 | 0.47 | 0.51 | 0.59 | 0.67 | 0.73 | 0.86 | 1.05 | 1.21 | 1.46 | 1.66 | 1.91 |
| 08 | 10-min | 0.31 | 0.36 | 0.39 | 0.45 | 0.52 | 0.56 | 0.67 | 0.82 | 0.94 | 1.13 | 1.29 | 1.48 |
| 08 | 5-min | 0.18 | 0.20 | 0.22 | 0.26 | 0.29 | 0.32 | 0.38 | 0.47 | 0.54 | 0.65 | 0.74 | 0.85 |
| 09 | 10-day | 2.35 | 2.83 | 3.26 | 3.83 | 4.41 | 4.79 | 5.62 | 6.85 | 7.87 | 9.42 | 10.90 | 12.33 |
| 09 | 5-day | 1.86 | 2.23 | 2.52 | 2.92 | 3.36 | 3.65 | 4.29 | 5.22 | 6.06 | 7.39 | 8.54 | 9.90 |
| 09 | 72-hr | 1.67 | 1.96 | 2.22 | 2.58 | 2.96 | 3.22 | 3.87 | 4.77 | 5.53 | 6.75 | 7.80 | 8.95 |
| 09 | 48-hr | 1.55 | 1.82 | 2.02 | 2.34 | 2.70 | 2.93 | 3.53 | 4.40 | 5.13 | 6.22 | 7.19 | 8.20 |
| 09 | 24-hr | 1.36 | 1.58 | 1.73 | 2.00 | 2.27 | 2.47 | 3.03 | 3.81 | 4.42 | 5.39 | 6.20 | 7.12 |
| 09 | 18-hr | 1.28 | 1.48 | 1.62 | 1.88 | 2.13 | 2.32 | 2.85 | 3.58 | 4.15 | 5.07 | 5.83 | 6.69 |
| 09 | 12-hr | 1.18 | 1.38 | 1.50 | 1.74 | 1.98 | 2.15 | 2.64 | 3.31 | 3.85 | 4.69 | 5.39 | 6.19 |
| 09 | 6-hr | 1.02 | 1.18 | 1.29 | 1.50 | 1.70 | 1.85 | 2.27 | 2.86 | 3.32 | 4.04 | 4.65 | 5.34 |
| 09 | 3-hr | 0.87 | 1.01 | 1.11 | 1.28 | 1.45 | 1.58 | 1.94 | 2.44 | 2.83 | 3.45 | 3.97 | 4.56 |
| 09 | 2-hr | 0.79 | 0.92 | 1.00 | 1.16 | 1.32 | [illegible] | 1.76 | 2.21 | [illegible] | 3.13 | 3.60 | 4.13 |
| 09 | 1-hr | 0.64 | 0.74 | 0.81 | 0.94 | 1.07 | 1.16 | 1.42 | 1.79 | 2.08 | 2.53 | 2.91 | 3.35 |
| 09 | 30-min | 0.50 | 0.58 | 0.64 | 0.74 | 0.84 | 0.91 | 1.12 | 1.41 | 1.64 | 1.99 | 2.29 | 2.63 |
| 09 | 15-min | 0.37 | 0.43 | 0.47 | 0.54 | 0.62 | 0.67 | 0.82 | 1.03 | 1.19 | 1.46 | 1.67 | 1.92 |
| 09 | 10-min | 0.29 | 0.33 | 0.36 | 0.42 | 0.48 | 0.52 | 0.64 | 0.80 | 0.93 | 1.13 | 1.30 | 1.50 |
| 09 | 5-min | 0.17 | 0.19 | 0.21 | 0.24 | 0.26 | 0.30 | 0.36 | 0.46 | 0.53 | 0.65 | 0.74 | 0.85 |

# Appendix F

**IDEM**

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

*We Protect Hoosiers and Our Environment.*

*Mitchell E. Daniels, Jr.*
**Governor**

*Thomas W. Easterly*
**Commissioner**

100 North Senate Avenue
Indianapolis, Indiana 46204
(317) 232-8603
Toll Free (800) 451-6027
www.idem.IN.gov

VIA E MAIL January 7, 2010

The Honorable Harold Campbell, Mayor
City of North Vernon
275 North Main Street
North Vernon, Indiana

Dear Mayor Campbell:

Re: Final NPDES Permit No. IN0020451
City of North Vernon Wastewater Treatment Plant
Jennings County

Your application for a National Pollutant Discharge Elimination System (NPDES) permit has been processed in accordance with Sections 402 and 405 of the Federal Water Pollution Control Act as amended, (33 U.S.C. 1251, et seq.), and IDEM's permitting authority under IC 13-15. The enclosed NPDES permit covers your discharges to the Vernon Fork of the Muscatatuck River. All discharges from this facility shall be consistent with the terms and conditions of this permit.

One condition of your permit requires monthly reporting of several effluent parameters. Reporting is to be done on the Monthly Report of Operation (MRO) form. This form is available on the internet at the following web site:

http://www.in.gov/idem/5104.htm

You should duplicate this form as needed for future reporting.

Another condition which needs to be clearly understood concerns violation of the effluent limitations in the permit. Exceeding the limitations constitutes a violation of the permit and may bring criminal or civil penalties upon the permittee. (See Part II.A.1 and II.A.11 of this permit). It is very important that your office and treatment operator understand this part of the permit.

Please note that this permit issuance can be appealed. An appeal must be filed under procedures outlined in IC 13-15-6, IC 4-21.5, and the enclosed public notice. The appeal must be initiated by you within 18 days from the date this letter is postmarked, by filing a request for an adjudicatory hearing with the Office of Environmental Adjudication (OEA), at the following address:

Office of Environmental Adjudication
Indiana Government Center North
100 North Senate Avenue, Room 501
Indianapolis, IN 46204

Please send a copy of any such appeal to me at IDEM, Office of Water Quality-Mail Code 65-42, 100 North Senate Avenue, Indianapolis, Indiana 46204-2251.

Please reference the Post Public Notice Addendum on the final pages of the Fact Sheet for this Office's response to comments submitted during the public notice period.

The permit should be read and studied. It requires certain action at specific times by you, the discharger, or your authorized representative. One copy of this permit is also being sent to your operator to be kept at the treatment facility. You may wish to call this permit to the attention of your consulting engineer and/or attorney.

If you have any questions concerning your NPDES permit, please contact Bill Stenner at 317/233-1449. Questions concerning appeal procedures should be directed to the Office of Environmental Adjudication, at 317/232-8591.

Sincerely,

Bruno Pigott
Assistant Commissioner
Office of Water Quality

Enclosures
cc: Jennings County Health Department
Mr. Russell Vaught, Certified Operator
U.S. EPA, Region 5
SERO

STATE OF INDIANA

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

AUTHORIZATION TO DISCHARGE UNDER THE

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Water Pollution Control Act, as amended, (33 U.S.C. 1251 et seq., the "Act"), Title 13 of the Indiana Code, and regulations adopted by the Water Pollution Control Board, the Indiana Department of Environmental Management (IDEM) is issuing this permit to the

**CITY OF NORTH VERNON**

hereinafter referred to as "the permittee." The permittee owns and/or operates the **City of North Vernon Wastewater Treatment Plant**, a major municipal wastewater treatment plant located at 725 North Greensburg Road, North Vernon, Indiana, Jennings County. The permittee is hereby authorized to discharge from the outfalls identified in Part I of this permit to receiving waters named the Vernon Fork of the Muscatatuck River in accordance with the effluent limitations, monitoring requirements, and other conditions set forth in the permit. The permittee is also authorized to discharge from combined sewer overflow outfalls listed in Attachment A of this permit, to receiving waters named the Vernon Fork of the Muscatatuck River in accordance with the effluent limitations, monitoring requirements, and other conditions set forth in this permit. This permit may be revoked for the nonpayment of applicable fees in accordance with IC 13-18-20.

Effective Date: February 1, 2010.

Expiration Date: January 31, 2015.

In order to receive authorization to discharge beyond the date of expiration, the permittee shall submit such information and application forms as are required by the Indiana Department of Environmental Management. The application shall be submitted to IDEM at least 180 days prior to the expiration date of this permit, unless a later date is allowed by the Commissioner in accordance with 327 IAC 5-3-2 and Part II.A.4 of this permit.

Issued on January 7, 2010, for the Indiana Department of Environmental Management.

Bruno Pigott
Assistant Commissioner
Office of Water Quality

TREATMENT FACILITY DESCRIPTION

The permittee currently operates a Class III, 2.2 MGD single stage nitrification activated sludge treatment facility consisting of grit removal, influent screening, secondary clarification, rapid sand filtration, chlorination/dechlorination facilities, and influent and effluent flow metering. Solids are treated with aeration and aerobic digestion, prior to being dewatered and land applied under land application permit No. INLA000458.

The collection system is comprised of combined sanitary and storm sewers with one Combined Sewer Overflow (CSO) location. The CSO location has been identified and permitted with provisions in Attachment A of the permit.

The mass limits for $CBOD_5$, TSS and Ammonia-nitrogen have been calculated utilizing the peak design flow of 4.76 MGD. This is to facilitate the maximization of flow through the treatment facility in accordance with this Office's CSO policy.

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to discharge from the outfall listed below in accordance with the terms and conditions of this permit. The permittee shall take samples and measurements at a location representative of each discharge to determine whether the effluent limitations have been met. Refer to Part I.B of this permit for additional monitoring and reporting requirements.

1. Beginning on the effective date of this permit, the permittee is authorized to discharge from Outfall 001, which is located at Latitude: 39° 00' 16", Longitude: 85° 36' 00". The discharge is subject to the following requirements:

TABLE 1

| | **Quantity or Loading** | | | **Quality or Concentration** | | | **Monitoring Requirements** | |
|---|---|---|---|---|---|---|---|---|
| Parameter | Monthly Average | Weekly Average | Units | Monthly Average | Weekly Average | Units | Measurement Frequency | Sample Type |
| Flow [1] | Report | ---- | MGD | ---- | ---- | ---- | 5 X Weekly | 24-Hr. Total |
| $CBOD_5$ | 993 | 1,589 | lbs/day | 25 | 40 | mg/l | 5 X Weekly | 24-Hr. Composite |
| TSS | 1,192 | 1,788 | lbs/day | 30 | 45 | mg/l | 5 X Weekly | 24-Hr. Composite |
| Ammonia-nitrogen | | | | | | | | |
| Summer [2] | 60 | 87 | lbs/day | 1.5 | 2.2 | mg/l | 5 X Weekly | 24-Hr. Composite |
| Winter [3] | 87 | 131 | lbs/day | 2.2 | 3.3 | mg/l | 5 X Weekly | 24-Hr. Composite |

TABLE 2

| Parameter | Quality or Concentration: Daily Minimum | Monthly Average | Daily Maximum | Units | Monitoring Requirements: Measurement Frequency | Sample Type |
|---|---|---|---|---|---|---|
| pH [4] | 6.0 | ---- | 9.0 | s.u. | 5 X Weekly | Grab |
| Dissolved Oxygen [5] | | | | | | |
| Summer [2] | 6.0 | ---- | ---- | mg/l | 5 X Weekly | 3 Grabs/24-Hrs. |
| Winter [3] | 5.0 | ---- | ---- | mg/l | 5 X Weekly | 3 Grabs/24-Hrs. |
| Total Residual Chlorine [6] | | | | | | |
| Final Effluent [7] | ---- | 0.01 | 0.02 | mg/l | 5 X Weekly | Grab |
| *E. coli* [8] | ---- | 125 [9] | 235 [10] | colonies/100 ml | 5 X Weekly | Grab |

[1] Effluent flow measurement is required per 327 IAC 5-2-13. The flow meter(s) shall be calibrated at least once annually.

[2] Summer limitations apply from May 1 through November 30 of each year.

[3] Winter limitations apply from December 1 through April 30 of each year.

[4] If the permittee collects more than one grab sample on a given day for pH, the values shall not be averaged for reporting daily maximums or daily minimums. The permittee must report the minimum or maximum pH value of any individual sample during the month on the Discharge Monitoring Report forms.

[5] The daily minimum concentration of dissolved oxygen in the effluent shall be reported as the arithmetic mean determined by summation of the three (3) daily grab sample results divided by the number of daily grab samples. These samples are to be collected over equal time intervals.

[6] The effluent shall be disinfected on a continuous basis such that violations of the applicable bacteriological limitations (fecal coliform or *E. coli*) do not occur from April 1 through October 31, annually. If the permittee uses chlorine for any reason, at any time including the period from November 1 through March 31, then the limits and monitoring requirements in Table 2 for total residual chlorine shall be in effect whenever chlorine is used.

[7] In accordance with 327 IAC 5-2-11.1(f), compliance with this permit will be demonstrated if the measured effluent concentrations are less than the limit of quantitation (0.06 mg/l). If the measured effluent concentrations are above the water quality-based permit limitations and above the limit of detection (LOD) specified by the permit in any of three (3) consecutive analyses or any five (5) out of nine (9) analyses, the permittee is required to reevaluate its chlorination/dechlorination practices to make any necessary changes to assure compliance with the permit limitation for TRC. These records must be retained in accordance with the record retention requirements of Part I.B.8 of this permit.

Effluent concentrations greater than or equal to the LOD but less than the limit of quantitation (LOQ), shall be reported on the discharge monitoring report forms as the measured value. A note must be included with the DMR indicating that the value is not quantifiable. Effluent concentrations less than the limit of detection shall be reported on the discharge monitoring report forms as less than the value of the limit of detection. For example, if a substance is not detected at a concentration of 0.01 mg/l, report the value as < 0.01 mg/l. At present, two methods are considered to be acceptable to IDEM, amperometric and DPD colorimetric methods, for chlorine concentrations at the level of 0.06 mg/l.

| Parameter | LOD | LOQ |
|---|---|---|
| Chlorine | 0.02 mg/l | 0.06 mg/l |

Case-Specific MDL

The permittee may determine a case-specific method detection level (MDL) using one of the analytical methods specified above, or any other test method which is approved by IDEM prior to use. The MDL shall be derived by the procedure specified for MDLs contained in 40 CFR Part 136, Appendix B, and the limit of quantitation shall be set equal to 3.18 times the MDL. Other methods may be used if first approved by the U.S. EPA and IDEM.

[8] The *Escherichia coli (E. coli)* limitations apply from April 1 through October 31 annually. IDEM has specified the following methods as allowable for the detection and enumeration of *Escherichia coli (E. coli)*:

1. Coliscan MF® Method
2. EPA Method 1103.1 using original m-TEC agar.
3. EPA revised Method 1103.1 using modified m-TEC agar.
4. *Standard Methods* 20th Edition Method 9223 B using Colilert®

[9] The monthly average *E. coli* value shall be calculated as a geometric mean. Per 327 IAC 5-10-6, the concentration of *E. coli* shall not exceed one hundred twenty-five (125) cfu or mpn per 100 milliliters as a geometric mean of the effluent samples taken in a calendar month. No samples may be excluded when calculating the monthly geometric mean.

[10]If less than ten samples are taken and analyzed for *E. coli* in a calendar month, no samples may exceed two hundred thirty-five (235) cfu or mpn as a daily maximum. However, when ten (10) or more samples are taken and analyzed for *E. coli* in a calendar month, not more than ten percent (10%) of those samples may exceed two hundred thirty-five (235) cfu or mpn as a daily maximum. When calculating ten percent, the result must not be rounded up. In reporting for compliance purposes on the Discharge Monitoring Report (DMR) form, the permittee shall record the highest non-excluded value for the daily maximum.

2. Minimum Narrative Limitations

At all times the discharge from any and all point sources specified within this permit shall not cause receiving waters:

a. including the mixing zone, to contain substances, materials, floating debris, oil, scum or other pollutants:

(1) that will settle to form putrescent or otherwise objectionable deposits;

(2) that are in amounts sufficient to be unsightly or deleterious;

(3) that produce color, visible oil sheen, odor, or other conditions in such degree as to create a nuisance;

(4) which are in amounts sufficient to be acutely toxic to, or to otherwise severely injure or kill aquatic life, other animals, plants, or humans;

(5) which are in concentrations or combinations that will cause or contribute to the growth of aquatic plants or algae to such a degree as to create a nuisance, be unsightly, or otherwise impair the designated uses.

b. outside the mixing zone, to contain substances in concentrations which on the basis of available scientific data are believed to be sufficient to injure, be chronically toxic to, or be carcinogenic, mutagenic, or teratogenic to humans, animals, aquatic life, or plants.

3. Additional Discharge Limitations and Monitoring Requirements

a. Beginning on the effective date of the permit, the effluent from Outfall 001 shall be limited and monitored by the permittee as follows:

TABLE 3

| | **Quality or Concentration** | | | **Monitoring Requirements** | |
|---|---|---|---|---|---|
| Pollutant | Monthly Average | Daily Maximum | Unit | Measurement Frequency | Sample Type |
| Copper [1] | 0.019 | 0.031 | mg/l | 1 X Weekly | 24 Hr. Comp. |
| Lead [1] | ---- | Report | mg/l | Quarterly | 24 Hr. Comp. |
| Zinc [1] | ---- | Report | mg/l | Quarterly | 24 Hr. Comp. |

Note: For measurement frequencies less than once per month, the permittee shall report the result from the monitoring period on the Discharge Monitoring Report (DMR) for the final month of the reporting timeframe, beginning with January of each year. For example, for quarterly monitoring, the permittee may conduct sampling within the month of January, February or March. The result from this reporting timeframe shall be reported on the March DMR, regardless of which of the months within the quarter the sample was taken.

[1] The permittee shall measure and report this parameter as Total Recoverable Metal. Concentrations less than the limit of quantitation shall be reported by the permittee on the discharge monitoring report forms as the actual measured value. Concentrations less than the limit of detection shall be reported on the discharge monitoring report forms as less than the value of the limit of detection. For example, if a substance is not detected and the LOD is 0.1 mg/l, report the value as < 0.1 mg/l.

The following EPA test methods and/or Standard Methods and associated LODs and LOQs are recommended for use in the analysis of the effluent samples. Alternative 40 CFR 136 approved methods may be used provided the LOD is less than the monthly average and/or daily maximum effluent limitations.

The permittee may determine a case-specific method detection level (MDL) using one of the analytical methods specified below, or any other test method which is approved by IDEM prior to use. The MDL shall be derived by the procedure specified for MDLs contained in 40 CFR Part 136, Appendix B, and the limit of quantitation shall be set equal to 3.18 times the MDL. NOTE: The MDL for purposes of this document, is synonymous with the "limit of detection" or "LOD" as defined in 327 IAC 5-1.5-26: "the minimum concentration of a substance that can be measured and reported with ninety-nine percent (99%) confidence that the analyte concentration is greater than zero (0) for a particular analytical method and sample matrix".

| Parameter | EPA Method | LOD | LOQ |
|---|---|---|---|
| Copper | 3113 B | 1.0 ug/l | 3.2 ug/l |
| Lead | 3113 B | 1.0 ug/l | 3.2 ug/l |
| Zinc | 200.7, Revision 4.4 or 3120 B | 2.0 ug/l | 6.4 ug/l |

4. Additional Monitoring Requirements

Beginning on the effective date of this permit, the permittee shall conduct the following monitoring activities:

a. Influent Monitoring

The permittee shall monitor the influent to its wastewater treatment facility for the following pollutants. Samples shall be representative of the raw influent in accordance with 327 IAC 5-2-13(b).

TABLE 4

| Parameter | Quality or Concentration Monthly Average | Daily Maximum | Unit | Monitoring Requirements Measurement Frequency | Sample Type |
|---|---|---|---|---|---|
| Copper [1] | Report | Report | mg/l | 2 X Monthly | 24 Hr. Comp. |
| Lead [1] | Report | Report | mg/l | Quarterly | 24 Hr. Comp. |
| Zinc [1] | Report | Report | mg/l | Quarterly | 24 Hr. Comp. |

Note: For measurement frequencies less than once per month, the permittee shall report the result from the monitoring period on the Discharge Monitoring Report (DMR) for the final month of the reporting timeframe, beginning with January of each year. For example, for quarterly monitoring, the permittee may conduct sampling within the month of January, February or March. The result from this reporting timeframe shall be reported on the March DMR, regardless of which of the months within the quarter the sample was taken.

[1] The permittee shall measure and report this parameter as Total Recoverable Metal. Concentrations less than the limit of quantitation shall be reported by the permittee on the discharge monitoring report forms as the actual measured value. Concentrations less than the limit of detection shall be reported on the discharge monitoring report forms as less than the value of the limit of detection. For example, if a substance is not detected and the LOD is 0.1 mg/l, report the value as < 0.1 mg/l.

b. Organic Pollutant Monitoring

The permittee shall conduct an annual inventory of organic pollutants (see 40 CFR 423, Appendix A) and shall identify and quantify additional organic compounds which occur in the influent, effluent, and sludge. The analytical report shall be sent to the Pretreatment Group. This report is due in December of each year. The inventory shall consist of:

(1) Sampling and Analysis of Influent and Effluent

Sampling shall be conducted on a day when industrial discharges are occurring at normal or maximum levels. The samples shall be 24-hour flow proportional composites, except for volatile organics, which shall be taken by appropriate grab sampling techniques. Analysis for the U.S. EPA organic priority pollutants shall be performed using U.S. EPA methods 624, 625 and 608 in 40 CFR 136, or other equivalent methods approved by U.S. EPA. Equivalent methods must be at least as sensitive and specific as methods 624, 625 and 608.

All samples must be collected, preserved and stored in accordance with 40 CFR 136, Appendix A. Samples for volatile organics must be analyzed within 14 days of collection. Samples for semivolatile organics, PCBs and pesticides must be extracted within 7 days of collection and analyzed within 40 days of extraction. For composite samples, the collection date shall be the date at the end of the daily collection period.

(2) Sampling and Analysis of Sludge

Sampling collection, storage, and analysis shall conform to the U.S. EPA recommended procedures equivalent to methods 624, 625 and 608 in 40 CFR 136. Special sampling and/or preservation techniques will be required for those pollutants which deteriorate rapidly.

Sludge samples for volatile organics must be analyzed within 14 days of collection. Sludge samples for semivolatile organics, PCBs and pesticides must be extracted within 14 days of collection and analyzed within 40 days of extraction.

(3) Additional Pollutant Identification

In addition to the priority pollutants, a reasonable attempt shall be made to identify and quantify the ten most abundant constituents of each fraction (excluding priority pollutants and unsubstituted aliphatic compounds) shown to be present by peaks on the total ion plots (reconstructed gas chromatograms) more than ten times higher than the adjacent background noise. Identification shall be attempted through the use of U.S. EPA/NIH computerized library of mass spectra, with visual confirmation by an experienced analyst. Quantification may be based on an order of magnitude estimate based upon comparison with an internal standard.

The annual pretreatment program report required by Part III.A.7. of this permit, should identify the additional steps necessary to determine whether the pollutants that are present interfere, pass through, or otherwise violate 40 CFR 403.2. Upon such determination, the report must also identify the steps taken to develop and enforce local limitations on industrial discharges for those pollutants. This is a requirement of 40 CFR 403.5.

B. MONITORING AND REPORTING

1. Representative Sampling

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge flow and shall be taken at times which reflect the full range and concentration of effluent parameters normally expected to be present. Samples shall not be taken at times to avoid showing elevated levels of any parameters.

2. Data on Plant Operation

The raw influent and the wastewater from intermediate unit treatment processes, as well as the final effluent shall be sampled and analyzed for the pollutants and operational parameters specified by the applicable Monthly Report of Operation Form, as appropriate, in accordance with 327 IAC 5-2-13. Except where the permit specifically states otherwise, the sample frequency for the raw influent and intermediate unit treatment process shall be at a minimum the same frequency as that for the final effluent. The measurement frequencies specified in each of the tables in Part I.A. are the minimum frequencies required by this permit.

3. Monthly Reporting

The permittee shall submit monitoring reports to the Indiana Department of Environmental Management containing results obtained during the previous month and shall be postmarked no later than the 28th day of the month following each completed monitoring period. The first report shall be submitted by the 28th day of the month following the month in which the permit becomes effective. These reports shall include, but not necessarily be limited to, the Discharge Monitoring Report (DMR) and the Monthly Report of Operation (MRO). Permittees with metals monitoring requirements shall also complete and submit the Indiana Monthly Monitoring Report Form (MMR-State Form 30530) to report their influent and/or effluent data for metals and other toxics. All reports shall be mailed to IDEM, Office of Water Quality – Mail Code 65-42, Data & Information Services Section, 100 North Senate Ave., Indianapolis, Indiana 46204-2251. Permittees with combined sewer overflow discharges must also submit the CSO Discharge Monitoring Report to IDEM by the 28th day of the month following each completed monitoring period. CSO DMRs shall be mailed to IDEM, Office of Water Quality – Mail Code 65-42, Compliance Evaluation Section, 100 North Senate Ave., Indianapolis, Indiana 46204-2251. The Regional Administrator may request the permittee to submit monitoring reports to the Environmental Protection Agency if it is deemed necessary to assure compliance with the permit.

A calendar week will begin on Sunday and end on Saturday. Partial weeks consisting of four or more days at the end of any month will include the remaining days of the week, which occur in the following month in order to calculate a consecutive seven-day average. This value will be reported as a weekly average or seven-day average on the MRO for the month containing the partial week of four or more days. Partial calendar weeks consisting of less than four days at the end of any month will be carried forward to the succeeding month and reported as a weekly average or a seven-day average for the calendar week that ends with the first Saturday of that month.

4. Definitions

a. Calculation of Averages

Pursuant to 327 IAC 5-2-11(a)(5), the calculation of the average of discharge data shall be determined as follows: For all parameters except fecal coliform and *E. coli*, calculations that require averaging of sample analyses or measurements of daily discharges shall use an arithmetic mean unless otherwise specified in this permit. For fecal coliform, the monthly average discharge and weekly average discharge, as concentrations, shall be calculated as a geometric mean. For *E. coli*, the monthly average discharge, as a concentration, shall be calculated as a geometric mean.

b. Terms

(1) "Monthly Average" -The monthly average discharge means the total mass or flow-weighted concentration of all daily discharges during a calendar month on which daily discharges are sampled or measured, divided by the number of daily discharges sampled and/or measured during such calendar month. The monthly average discharge limitation is the highest allowable average monthly discharge for any calendar month.

(2) "Weekly Average" - The weekly average discharge means the total mass or flow weighted concentration of all daily discharges during any calendar week for which daily discharges are sampled or measured, divided by the number of daily discharges sampled and/or measured during such calendar week. The average weekly discharge limitation is the maximum allowable average weekly discharge for any calendar week.

(3) "Daily Maximum" - The daily maximum discharge limitation is the maximum allowable daily discharge for any calendar day. The "daily discharge" means the total mass of a pollutant discharged during the calendar day or, in the case of a pollutant limited in terms other than mass pursuant to 327 IAC 5-2-11(e), the average concentration or other measurement of the pollutant specified over the calendar day or any twenty-four hour period that represents the calendar day for purposes of sampling.

(4) "24-hour Composite" - A 24-hour composite sample consists of at least four (4) individual flow-proportioned samples of wastewater, taken by the grab sample method over equal time intervals during the period of operator attendance or by an automatic sampler, which are taken at approximately equally spaced time intervals for the duration of the discharge within a 24-hour period and which are combined prior to analysis. A flow proportioned composite sample shall be obtained by:

(a) recording the discharge flow rate at the time each individual sample is taken,

(b) adding together the discharge flow rates recorded from each individual sampling time to formulate the "total flow value,"

(c) dividing the discharge flow rate of each individual sampling time by the total flow value to determine its percentage of the total flow value, and

(d) multiplying the volume of the total composite sample by each individual sample's percentage to determine the volume of that individual sample which will be included in the total composite sample.

(5) $CBOD_5$: Five-day Carbonaceous Biochemical Oxygen Demand

(6) TSS: Total Suspended Solids

(7) *E. coli*: Escherichia coli bacteria

(8) The "Regional Administrator" is defined as the Region V Administrator, U.S. EPA, located at 77 West Jackson Boulevard, Chicago, Illinois 60604.

(9) The "Commissioner" is defined as the Commissioner of the Indiana Department of Environmental Management, located at the following address: 100 North Senate Avenue, Indianapolis, Indiana 46204-2251.

(10) Limit of Detection or LOD is defined as a measurement of the concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero (0) for a particular analytical method and sample matrix. The LOD is equivalent to the method detection level or MDL.

(11) Limit of Quantitation or LOQ is defined as a measurement of the concentration of a contaminant obtained by using a specified laboratory procedure calibrated at a specified concentration about the method detection level. It is considered the lowest concentration at which a particular contaminant can be quantitatively measured using a specified laboratory procedure for monitoring of the contaminant. This term is also called the limit of quantification or quantification level.

(12) Method Detection Level or MDL is defined as the minimum concentration of an analyte (substance) that can be measured and reported with a ninety-nine percent (99%) confidence that the analyte concentration is greater than zero (0) as determined by the procedure set forth in 40 CFR Part 136, Appendix B. The method detection level or MDL is equivalent to the LOD.

5. Test Procedures

The analytical and sampling methods used shall conform to the current version of 40 CFR, Part 136, unless otherwise specified within this permit. Multiple editions of Standard Methods for the Examination of Water and Wastewater are currently approved for most methods, however, 40 CFR Part 136 should be checked to ascertain if a particular method is approved for a particular analyte. The approved methods may be included in the texts listed below. However, different but equivalent methods are allowable if they receive the prior written approval of the State agency and the U.S. Environmental Protection Agency.

a. Standard Methods for the Examination of Water and Wastewater
18$^{th}$, 19$^{th}$, or 20$^{th}$ Editions, 1992, 1995 or 1998 American Public Health Association, Washington, D.C. 20005.

b. A.S.T.M. Standards, Part 23, Water; Atmospheric Analysis
1972 American Society for Testing and Materials, Philadelphia, PA 19103.

c. Methods for Chemical Analysis of Water and Wastes
June 1974, Revised, March 1983, Environmental Protection Agency, Water Quality Office, Analytical Quality Control Laboratory, 1014 Broadway, Cincinnati, OH 45202.

6. Recording of Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record and maintain records of all monitoring information on activities under this permit, including the following information:

a. The exact place, date, and time of sampling or measurements;

b. The person(s) who performed the sampling or measurements;

c. The dates and times the analyses were performed;

d. The person(s) who performed the analyses;

e. The analytical techniques or methods used; and

f. The results of all required analyses and measurements.

7. Additional Monitoring by Permittee

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Monthly Discharge Monitoring Report and on the Monthly Report of Operation form. Such increased frequency shall also be indicated on these forms. Any such additional monitoring data which indicates a violation of a permit limitation shall be followed up by the permittee, whenever feasible, with a monitoring sample obtained and analyzed pursuant to approved analytical methods. The results of the follow-up sample shall be reported to the Commissioner in the Monthly Discharge Monitoring Report.

8. Records Retention

All records and information resulting from the monitoring activities required by this permit, including all records of analyses performed and calibration and maintenance of instrumentation and recording from continuous monitoring instrumentation, shall be retained for a minimum of three (3) years. In cases where the original records are kept at another location, a copy of all such records shall be kept at the permitted facility. The three-year period shall be extended:

a. automatically during the course of any unresolved litigation regarding the discharge of pollutants by the permittee or regarding promulgated effluent guidelines applicable to the permittee; or

b. as requested by the Regional Administrator or the Indiana Department of Environmental Management.

C. REOPENING CLAUSES

In addition to the reopening clause provisions cited at 327 IAC 5-2-16, the following reopening clauses are incorporated into this permit:

1. This permit may be modified or, alternately, revoked and reissued after public notice and opportunity for hearing to incorporate effluent limitations reflecting the results of a wasteload allocation if the Department of Environmental Management determines that such effluent limitations are needed to assure that State Water Quality Standards are met in the receiving stream.

2. This permit may be modified due to a change in sludge disposal standards pursuant to Section 405(d) of the Clean Water Act, if the standards when promulgated contain different conditions, are otherwise more stringent, or control pollutants not addressed by this permit.

3. This permit may be modified, or, alternately, revoked and reissued, to comply with any applicable effluent limitation or standard issued or approved under section 301(b)(2)(C), (D) and (E), 304(b)(2), and 307(a)(2) of the Clean Water Act, if the effluent limitation or standard so issued or approved:

   a. contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or

   b. controls any pollutant not limited in the permit.

4. This permit may be modified, or alternately, revoked and reissued after public notice and opportunity for hearing to include whole effluent toxicity limitations or to include limitations for specific toxicants if the results of the biomonitoring and/or the TRE study indicate that such limitations are necessary.

5. This permit may be modified, or alternately, revoked and reissued, after public notice and opportunity for hearing, to include a case-specific Method Detection Level (MDL). The permittee must demonstrate that such action is warranted in accordance with the procedure specified under Appendix B, 40 CFR Part 136, or approved by the Indiana Department of Environmental Management.

6. This permit may be modified or, alternatively, revoked and reissued after public notice and opportunity for hearing to incorporate additional requirements or limitations for specific toxicants if the required additional analyses in Part I.A. indicate that such additional requirements and/or limitations are necessary to assure that State Water Quality Standards are met in the receiving stream.

7. This permit may be modified, or alternately, revoked and reissued, after public notice and opportunity for hearing, to increase the monitoring frequency for whole effluent toxicity testing to twice annually in the event that information submitted under Part II.A.3. of the permit during the permit's term (i.e., additional industrial flow) warrants such an increase.

D. WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS

The 1977 Clean Water Act explicitly states, in Section 101(3) that it is the national policy that the discharge of toxic pollutants in toxic amounts be prohibited. In support of this policy the U.S. EPA in 1995 amended the 40 CFR 136.3 (Tables IA and II) by adding testing methods for measuring acute and short-term chronic toxicity of whole effluents and receiving waters. To adequately assess the character of the effluent, and the effects of the effluent on aquatic life, the permittee shall conduct Whole Effluent Toxicity Testing. Part 1 of this section describes the testing procedures, Part 2 describes the Toxicity Reduction Evaluation which is only required if the effluent demonstrates toxicity, as described in paragraph f.

1. Whole Effluent Toxicity Tests

The permittee shall conduct the series of bioassay tests described below to monitor the toxicity of the discharge from Outfall 001.

If toxicity is demonstrated as defined under paragraph f below, the permittee is required to conduct a toxicity reduction evaluation (TRE).

a. Bioassay Test Procedures and Data Analysis

(1) All test organisms, test procedures and quality assurance criteria used shall be in accordance with the Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms; Fourth Edition Section 13, Cladoceran (*Ceriodaphnia dubia*) Survival and Reproduction Test Method 1002.0; and Section 11, Fathead Minnow (*Pimephales promelas*) Larval Survival and Growth Test Method, (1000.0) EPA 821-R-02-013, October 2002, or most recent update.

(2) Any circumstances not covered by the above methods, or that require deviation from the specified methods shall first be approved by the IDEM's Environmental Toxicology and Chemistry Section.

(3) The determination of effluent toxicity shall be made in accordance with the Data Analysis general procedures for chronic toxicity endpoints as outlined in Section 9, and in Sections 11 and 13 of the respective Test Method (1000.0 and 1002.0) of Short-term Methods of Estimating the Chronic Toxicity of Effluent and Receiving Water to Freshwater Organisms (EPA 821-R-02-013), Fourth Edition, October 2002 or most recent update.

b. Types of Bioassay Tests

The permittee shall conduct a 7-day Cladoceran (*Ceriodaphnia dubia*) Survival and Reproduction Test and a 7-day Fathead Minnow (*Pimephales promelas*) Larval Survival and Growth Test on samples of the final effluent. All tests will be conducted on 24-hour composite samples of final effluent. All test solutions shall be renewed daily. On days three and five fresh 24-hour composite samples of the effluent collected on alternate days shall be used to renew the test solutions.

If in any control more than 10% of the test organisms die in 96 hours, or more than 20% of the test organisms die in 7 days, that test shall be repeated. In addition, if in the *Ceriodaphnia* test control the number of newborns produced per surviving female is less than 15, or if 60% of surviving control females have less than three broods; and in the fathead minnow test if the mean dry weight of surviving fish in the control group is less than 0.25 mg, that test shall also be repeated. Such testing will determine whether the effluent affects the survival, reproduction, and/or growth of the test organisms. Results of all tests regardless of completion must be reported to IDEM.

c. Effluent Sample Collection and Chemical Analysis

(1) Samples for the purposes of Whole Effluent Toxicity Testing will be taken at a point that is representative of the discharge, but prior to discharge. The maximum holding time for whole effluent is 36 hours for a 24 hour composite sample. Bioassay tests must be started within 36 hours after termination of the 24 hour composite sample collection. Bioassay of effluent sampling may be coordinated with other permit sampling requirements as appropriate to avoid duplication.

(2) Chemical analysis must accompany each effluent sample taken for bioassay test. The analysis detailed under Part I.A. should be conducted for the effluent sample. Chemical analysis must comply with approved EPA test methods.

d. Frequency and Duration

The toxicity tests specified in paragraph b. shall be conducted <u>once **annually** for the duration of the permit</u>. The results of the toxicity tests are due once within each twelve month period as calculated from twelve months after the effective date of the permit.

If toxicity is demonstrated as defined under paragraph f (1), (2) or (3), the permittee is required to conduct a toxicity reduction evaluation (TRE) as specified in Section 2.

e. Reporting

(1) Results shall be reported according to EPA 821-R-02-013, Section 10 (Report Preparation). Two copies of the completed report for each test shall be submitted to the Compliance Evaluation Section of the IDEM <u>no later than sixty days after completion of the test</u>.

(2) For quality control, the report shall include the results of appropriate standard reference toxic pollutant tests for chronic endpoints and historical reference toxic pollutant data with mean values and appropriate ranges for the respective test species *Ceriodaphnia dubia* and *Pimephales promelas*. Biomonitoring reports must also include copies of Chain-of-Custody Records and Laboratory raw data sheets.

(3) Statistical procedures used to analyze and interpret toxicity data including critical values of significance used to evaluate each point of toxicity should be described and included as part of the biomonitoring report.

f. Demonstration of Toxicity

(1) Acute toxicity will be demonstrated if the effluent is observed to have exceeded 1.0 $TU_a$(acute toxic units) based on 100% effluent for the test organism in 48 and 96 hours for *Ceriodaphnia dubia* or *Pimephales promelas*, respectively.
(2) Chronic toxicity will be demonstrated if the effluent is observed to have exceeded 1.02 $TU_c$ (chronic toxic units) for *Ceriodaphnia dubia* or *Pimephales promelas* .

(3) If toxicity is found in any of the tests specified above, a confirmation toxicity test using the specified methodology and same test species shall be conducted within two weeks of receiving the chronic toxicity test results. If any two (2) consecutive tests, <u>including any and all confirmation tests</u>, indicate the presence of toxicity, the permittee must begin the implementation of a Toxicity Reduction Evaluation (TRE) as described below. The whole effluent toxicity tests required above may be suspended (upon approval from IDEM) while the TRE is being conducted.

g. Definitions

(1) $TU_c$ is defined as 100/NOEC or $100/IC_{25}$, where the NOEC or $IC_{25}$ is expressed as a percent effluent in the test medium.

(2) $TU_a$ is defined as $100/LC_{50}$ where the $LC_{50}$ is expressed as a percent effluent in the test medium of an acute whole effluent toxicity (WET) test that is statistically or graphically estimated to be lethal to fifty percent (50%) of the test organisms.

(3)"Inhibition concentration 25" or "$IC_{25}$" means the toxicant (effluent) concentration that would cause a twenty-five percent (25%) reduction in a nonquantal biological measurement for the test population. For example, the $IC_{25}$ is the concentration of toxicant (effluent) that would cause a twenty-five percent (25%) reduction in mean young per female or in growth for the test population.

(4)"No observed effect concentration" or "NOEC" is the highest concentration of toxicant (effluent) to which organisms are exposed in a full life cycle or partial life cycle (short term) test, that causes no observable adverse effects on the test organisms, that is, the highest concentration of toxicant (effluent) in which the values for the observed responses are not statistically significantly different from the controls.

2. Toxicity Reduction Evaluation (TRE)

The development and implementation of a TRE (including any post-TRE biomonitoring requirements) is only required if toxicity is demonstrated as defined by Paragraph 1.f.

| | |
|---|---|
| Development of TRE Plan | Within 90 days of two failed toxicity tests. |
| Initiate Effluent TRE | Within 30 days of TRE Plan submittal to IDEM. |
| Progress Reports | Every 90 days from the initiation date of the TRE. |
| Submit Final TRE Results | Within 90 days of the completion of the TRE, not to exceed 3 years from the date of the initial determination of toxicity (two failed toxicity tests). |
| Post-TRE Biomonitoring Requirements | Immediately upon completion of the TRE, conduct 3 consecutive months of toxicity tests, if no toxicity is shown, reduce toxicity tests to once every 6 months for the duration of the permit term. If post – TRE biomonitoring demonstrates toxicity, revert to implementation of a TRE. |

a. Development of TRE Plan

Within 90 days of determination of toxicity, the permittee shall submit plans for an effluent toxicity reduction evaluation (TRE) to the Compliance Evaluation Section of the IDEM. The TRE plan shall include appropriate measures to characterize the causative toxicant and the variability associated with these compounds. Guidance on conducting effluent toxicity reduction evaluations is available from EPA and from the EPA publications listed below:

(1) Methods for Aquatic Toxicity Identification Evaluations:

Phase I Toxicity Characterization Procedures, Second Edition (EPA/600/6-91/003), February 1991.

Phase II Toxicity Identification Procedures (EPA 600/R-92/080), September 1993.

Phase III Toxicity Confirmation Procedures (EPA/600/R-92/081), September 1993.

(2) Methods for Chronic Toxicity Identification Evaluations
Phase I Characterization of Chronically Toxic Effluents EPA/600/6-91/005F, May 1992.

(3) Generalized Methodology for Conducting Industrial Toxicity Reduction Evaluations (EPA/600/2-88/070), April 1989.

(4) Toxicity Reduction Evaluation Protocol for Municipal Wastewater Treatment Plants (EPA/833-B-99-022), August 1999.

b. Conduct the TRE

Within 30 days after submission of the TRE plan to the IDEM, the permittee must initiate an effluent TRE consistent with the TRE plan. Progress reports shall be submitted every 90 days to the Compliance Evaluation Section of the Office of Water Quality (OWQ) beginning 90 days after initiation of the TRE.

c. Reporting

Within 90 days of the TRE completion, the permittee shall submit to the Compliance Evaluation Section of the Office of Water Quality (OWQ) the final study results and a schedule for reducing the toxicity to acceptable levels through control of the toxicant source or treatment of whole effluent.

d. Compliance Date

The permittee shall complete items a, b, and c from Section 2 and reduce the toxicity to acceptable levels as soon as possible but no later than three years after the date of determination of toxicity.

e. Post-TRE Biomonitoring Requirements (Only Required After Completion of a TRE)

After the TRE, the permittee shall conduct monthly toxicity tests with 2 or more species for a period of three months. Should three consecutive monthly tests demonstrate no toxicity, the permittee shall conduct chronic tests every six months for the duration of the permit. These tests shall be conducted in accordance with the procedures under the Whole Effluent Toxicity Tests Section. The results of these tests shall be submitted to the Compliance Evaluation Section of the Office of Water Quality (OWQ).

If toxicity is demonstrated as defined in paragraph 1.f after the initial three month period, testing must revert to a TRE as in Part 2 (TRE).

# PART II

## STANDARD CONDITIONS FOR NPDES PERMITS

### A. GENERAL CONDITIONS

1. Duty to Comply

The permittee shall comply with all terms and conditions of this permit in accordance with 327 IAC 5-2-8(1) and all other requirements of 327 IAC 5-2-8. Any permit noncompliance constitutes a violation of the Clean Water Act and IC 13 and is grounds for enforcement action or permit termination, revocation and reissuance, modification, or denial of a permit renewal application.

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of the permit.

2. Duty to Mitigate

In accordance with 327 IAC 5-2-8(3), the permittee shall take all reasonable steps to minimize or correct any adverse impact to the environment resulting from noncompliance with this permit. During periods of noncompliance, the permittee shall conduct such accelerated or additional monitoring for the affected parameters, as appropriate or as requested by IDEM, to determine the nature and impact of the noncompliance.

3. Duty to Provide Information

The permittee shall submit any information that the permittee knows or has reason to believe would constitute cause for modification or revocation and reissuance of the permit at the earliest time such information becomes available, such as plans for physical alterations or additions to the facility that:

a. could significantly change the nature of, or increase the quantity of, pollutants discharged; or

b. the Commissioner may request to evaluate whether such cause exists.

In accordance with 327 IAC 5-1-3(a)(5), the permittee must also provide any information reasonably requested by the Commissioner.

4. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must obtain and submit a renewal of this permit in accordance with 327 IAC 5-3-2(a)(2). It is the permittee's responsibility to obtain and submit the application. In accordance with 327 IAC 5-2-3(c), the owner of the facility or operation from which a discharge of pollutants occurs is responsible for applying for and obtaining the NPDES permit, except where the facility or operation is operated by a person other than an employee of the owner in which case it is the operator's responsibility to apply for and obtain the permit. The application must be submitted at least 180 days before the expiration date of this permit. This deadline may be extended if:

a. permission is requested in writing before such deadline;

b. IDEM grants permission to submit the application after the deadline; and

c. the application is received no later than the permit expiration date.

As required under 327 IAC 5-2-3(g)(1) and (2), POTWs with design influent flows equal to or greater than one million (1,000,000) gallons per day and POTWs with an approved pretreatment program or that are required to develop a pretreatment program, will be required to provide the results of whole effluent toxicity testing as part of their NPDES renewal application.

5. Transfers

In accordance with 327 IAC 5-2-8(4)(D), this permit is nontransferable to any person except in accordance with 327 IAC 5-2-6(c). This permit may be transferred to another person by the permittee, without modification or revocation and reissuance being required under 327 IAC 5-2-16(c)(1) or 16(e)(4), if the following occurs:

a. the current permittee notified the Commissioner at least thirty (30) days in advance of the proposed transfer date.

b. a written agreement containing a specific date of transfer of permit responsibility and coverage between the current permittee and the transferee (including acknowledgment that the existing permittee is liable for violations up to that date, and the transferee is liable for violations from that date on) is submitted to the Commissioner.

c. the transferee certifies in writing to the Commissioner their intent to operate the facility without making such material and substantial alterations or additions to the facility as would significantly change the nature or quantities of pollutants discharged and thus constitute cause for permit modification under 327 IAC 5-2-16(d). However, the Commissioner may allow a temporary transfer of the permit without permit modification for good cause, e.g., to enable the transferee to purge and empty the facility's treatment system prior to making alterations, despite the transferee's intent to make such material and substantial alterations or additions to the facility.

d. the Commissioner, within thirty (30) days, does not notify the current permittee and the transferee of the intent to modify, revoke and reissue, or terminate the permit and to require that a new application be filed rather than agreeing to the transfer of the permit.

The Commissioner may require modification or revocation and reissuance of the permit to identify the new permittee and incorporate such other requirements as may be necessary under the Clean Water Act or state law.

6. Permit Actions

In accordance with 327 IAC 5-2-16(b) and 327 IAC 5-2-8(4), this permit may be modified, revoked and reissued, or terminated for cause, including, but not limited to, the following:

a. Violation of any terms or conditions of this permit;

b. Failure of the permittee to disclose fully all relevant facts or misrepresentation of any relevant facts in the application, or during the permit issuance process; or

c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge controlled by the permittee (e.g., plant closure, termination of the discharge by connecting to a POTW, a change in state law or information indicating the discharge poses a substantial threat to human health or welfare).

Filing of either of the following items does not stay or suspend any permit condition: (1) a request by the permittee for a permit modification, revocation and reissuance, or termination, or (2) submittal of information specified in Part II.A.3 of the permit including planned changes or anticipated noncompliance.

The permittee shall submit any information that the permittee knows or has reason to believe would constitute cause for modification or revocation and reissuance of the permit at the earliest time such information becomes available, such as plans for physical alterations or additions to the permitted facility that:

1. could significantly change the nature of, or increase the quantity of, pollutants discharged; or

2. the commissioner may request to evaluate whether such cause exists.

7. Property Rights

Pursuant to 327 IAC 5-2-8(6) and 327 IAC 5-2-5(b), the issuance of this permit does not convey any property rights of any sort or any exclusive privileges, nor does it authorize any injury to persons or private property or an invasion of rights, any infringement of federal, state, or local laws or regulations. The issuance of the permit also does not preempt any duty to obtain any other state, or local assent required by law for the discharge or for the construction or operation of the facility from which a discharge is made.

8. Severability

In accordance with 327 IAC 1-1-3, the provisions of this permit are severable and, if any provision of this permit or the application of any provision of this permit to any person or circumstance is held invalid, the invalidity shall not affect any other provisions or applications of the permit which can be given effect without the invalid provision or application.

9. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject to under Section 311 of the Clean Water Act.

10. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation under authority preserved by Section 510 of the Clean Water Act or state law.

11. Penalties for Violation of Permit Conditions

Pursuant to IC 13-30-4, a person who violates any provision of this permit, the water pollution control laws; environmental management laws; or a rule or standard adopted by the Water Pollution Control Board is liable for a civil penalty not to exceed twenty-five thousand dollars ($25,000) per day of any violation. Pursuant to IC 13-30-5, a person who obstructs, delays, resists, prevents, or interferes with (1) the department; or (2) the department's personnel or designated agent in the performance of an inspection or investigation commits a class C infraction.

Pursuant to IC 13-30-10, a person who intentionally, knowingly, or recklessly violates any provision of this permit, the water pollution control laws or a rule or standard adopted by the Water Pollution Control Board commits a class D felony punishable by the term of imprisonment established under IC 35-50-2-7(a) (up to one year), and/or by a fine of not less than five thousand dollars ($5,000) and not more than fifty thousand dollars ($50,000) per day of violation. A person convicted for a violation committed after a first conviction of such person under this provision is subject to a fine of not more than one hundred thousand dollars ($100,000) per day of violation, or by imprisonment for not more than two (2) years, or both.

12. Penalties for Tampering or Falsification

In accordance with 327 IAC 5-2-8(9), the permittee shall comply with monitoring, recording, and reporting requirements of this permit. The Clean Water Act, as well as IC 13-30-10, provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under a permit shall, upon conviction, be punished by a fine of not more than ten thousand dollars ($10,000) per violation, or by imprisonment for not more than one hundred eighty (180) days per violation, or by both.

13. Toxic Pollutants

If any applicable effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the Clean Water Act for a toxic pollutant injurious to human health, and that standard or prohibition is more stringent than any limitation for such pollutant in this permit, this permit shall be modified or revoked and reissued to conform to the toxic effluent standard or prohibition in accordance with 327 IAC 5-2-8(5). Effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants injurious to human health are effective and must be complied with, if applicable to the permittee, within the time provided in the implementing regulations, even absent permit modification.

14. Operator Certification

The permittee shall have the wastewater treatment facilities under the responsible charge of an operator certified by the Commissioner in a classification corresponding to the classification of the wastewater treatment plant as required by IC 13-18-11-11 and 327 IAC 5-22. In order to operate a wastewater treatment plant the operator shall have qualifications as established in 327 IAC 5-22-7. The permittee shall designate one (1) person as the certified operator with complete responsibility for the proper operations of the wastewater facility.

327 IAC 5-22-10(b) provides that a certified operator may be designated as being in responsible charge of more than one (1) wastewater treatment plant, if it can be shown that he will give adequate supervision to all units involved. Adequate supervision means that sufficient time is spent at the plant on a regular basis to assure that the certified operator is knowledgeable of the actual operations and that test reports and results are representative of the actual operations conditions. In accordance with 327 IAC 5-22-3(10), “responsible charge” means the person responsible for the overall daily operation, supervision, or management of a wastewater facility.

Pursuant to 327 IAC 5-22-10(a), the permittee shall notify IDEM when there is a change of the person serving as the certified operator in responsible charge of the wastewater treatment facility. The notification shall be made no later than thirty (30) days after a change in the operator.

15. Construction Permit

Except in accordance with 327 IAC 3, the permittee shall not construct, install, or modify any water pollution treatment/control facility as defined in 327 IAC 3-1-2(24). Upon completion of any construction, the permittee must notify the Compliance Evaluation Section of the Office of Water Quality in writing.

16. Inspection and Entry

In accordance with 327 IAC 5-2-8(7), the permittee shall allow the Commissioner, or an authorized representative, (including an authorized contractor acting as a representative of the Commissioner) upon the presentation of credentials and other documents as may be required by law, to:

a. Enter upon the permittee’s premises where a point source, regulated facility, or activity is located or conducted, or where records must be kept pursuant to the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the terms and conditions of this permit;

c. Inspect at reasonable times any facilities, equipment or methods (including monitoring and control equipment), practices, or operations regulated or required pursuant to this permit; and

d. Sample or monitor at reasonable times, any discharge of pollutants or internal wastestreams for the purposes of evaluating compliance with the permit or as otherwise authorized.

B. MANAGEMENT REQUIREMENTS

1. Facility Operation, Maintenance and Quality Control

   a. In accordance with 327 IAC 5-2-8(8), the permittee shall at all times maintain in good working order and efficiently operate all facilities and systems (and related appurtenances) for collection and treatment that are:

      (1) installed or used by the permittee; and

      (2) necessary for achieving compliance with the terms and conditions of the permit.

      Neither 327 IAC 5-2-8(8), nor this provision, shall be construed to require the operation of installed treatment facilities that are unnecessary for achieving compliance with the terms and conditions of the permit.

   b. The permittee shall operate the permitted facility in a manner which will minimize upsets and discharges of excessive pollutants. The permittee shall properly remove and dispose of excessive solids and sludges.

   c. The permittee shall provide an adequate operating staff which is duly qualified to carry out the operation, maintenance, and testing functions required to ensure compliance with the conditions of this permit.

   d. Maintenance of all waste collection, control, treatment, and disposal facilities shall be conducted in a manner that complies with the bypass provisions set forth below.

   e. Any extensions to the sewer system must continue to be constructed on a separated basis. Plans and specifications, when required, for extension of the sanitary system must be submitted to the Facility Construction Section, Office of Water Quality in accordance with 327 IAC 3-2-1. There shall also be an ongoing preventative maintenance program for the sanitary sewer system.

2. Bypass of Treatment Facilities

   Pursuant to 327 IAC 5-2-8(11):

   a. Terms as defined in 327 IAC 5-2-8(11)(A):

      (1) "Bypass" means the intentional diversion of a waste stream from any portion of a treatment facility.

(2) "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which would cause them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Bypasses, as defined above, are prohibited, and the Commissioner may take enforcement action against a permittee for bypass, unless:

(1) The bypass was unavoidable to prevent loss of life, personal injury, or severe property damage, as defined above;

(2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance; and

(3) The permittee submitted notices as required under Part II.B.2.d; or

(4) The condition under Part II.B.2.f below is met.

c. Bypasses that result in death or acute injury or illness to animals or humans must be reported in accordance with the "Spill Response and Reporting Requirements" in 327 IAC 2-6.1, including calling 888/233-7745 as soon as possible, but within two (2) hours of discovery.

d. The permittee must provide the Commissioner with the following notice:

(1) If the permittee knows or should have known in advance of the need for a bypass (anticipated bypass), it shall submit prior written notice. If possible, such notice shall be provided at least ten (10) days before the date of the bypass for approval by the Commissioner.

(2) The permittee shall orally report or fax a report of an unanticipated bypass within 24 hours of becoming aware of the bypass event. The permittee must also provide a written report within five (5) days of the time the permittee becomes aware of the bypass event. The written report must contain a description of the noncompliance (i.e. the bypass) and its cause; the period of noncompliance, including exact dates and times; if the cause of noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate and prevent recurrence of the bypass event.

e. The Commissioner may approve an anticipated bypass, after considering its adverse effects, if the Commissioner determines that it will meet the conditions listed above in Part II.B.2.b. The Commissioner may impose any conditions determined to be necessary to minimize any adverse effects.

f. The permittee may allow any bypass to occur that does not cause a violation of the effluent limitations in the permit, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of Part II.B.2.b.,d and e of this permit.

3. Upset Conditions

Pursuant to 327 IAC 5-2-8(12):

a. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

b. An upset shall constitute an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of Paragraph c of this subsection, are met.

c. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence, that:

(1) An upset occurred and the permittee has identified the specific cause(s) of the upset, if possible;

(2) The permitted facility was at the time being operated in compliance with proper operation and maintenance procedures;

(3) The permittee complied with any remedial measures required under "Duty to Mitigate", Part II.A.2; and

(4) The permittee submitted notice of the upset as required in the "Twenty-Four Hour Reporting Requirements," Part II.C.3, or 327 IAC 2-6.1, whichever is applicable.

4. Removed Substances

Solids, sludges, filter backwash, or other pollutants removed from or resulting from treatment or control of wastewaters shall be disposed of in a manner such as to prevent any pollutant from such materials from entering waters of the State and to be in compliance with all Indiana statutes and regulations relative to liquid and/or solid waste disposal.

a. Collected screenings, slurries, sludges, and other such pollutants shall be disposed of in accordance with provisions set forth in 329 IAC 10, 327 IAC 6.1, or another method approved by the Commissioner.

b. The permittee shall comply with existing federal regulations governing solids disposal, and with applicable provisions of 40 CFR Part 503, the federal sludge disposal regulation standards.

c. The permittee shall notify the Commissioner prior to any changes in sludge use or disposal practices.

d. The permittee shall maintain records to demonstrate its compliance with the above disposal requirements.

5. Power Failures

In accordance with 327 IAC 5-2-10 and 327 IAC 5-2-8(13) in order to maintain compliance with the effluent limitations and prohibitions of this permit, the permittee shall either:

a. provide an alternative power source sufficient to operate facilities utilized by the permittee to maintain compliance with the effluent limitations and conditions of this permit, or

b. shall halt, reduce or otherwise control all discharge in order to maintain compliance with the effluent limitations and conditions of this permit upon the reduction, loss, or failure of one or more of the primary sources of power to facilities utilized by the permittee to maintain compliance with the effluent limitations and conditions of this permit.

C. REPORTING REQUIREMENTS

1. Planned Changes in Facility or Discharge

   Pursuant to 327 IAC 5-2-8(10)(F) and 5-2-16(d), the permittee shall give notice to the Commissioner as soon as possible of any planned alterations or additions to the facility (which includes any point source) that could significantly change the nature of, or increase the quantity of, pollutants discharged. Following such notice, the permit may be modified to revise existing pollutant limitations and/or to specify and limit any pollutants not previously limited. Material and substantial alterations or additions to the permittee's operation that were not covered in the permit (e.g., production changes, relocation or combination of discharge points, changes in the nature or mix of products produced) are also cause for modification of the permit. However those alterations which constitute total replacement of the process or the production equipment causing the discharge converts it into a new source, which requires the submittal of a new NPDES application.

2. Monitoring Reports

   Pursuant to 327 IAC 5-2-8(9), 327 IAC 5-2-13, and 327 IAC 5-2-15, monitoring results shall be reported at the intervals and in the form specified in "Data On Plant Operation", Part I.B.2.

3. Twenty-Four Hour Reporting Requirements

   Pursuant to 327 IAC 5-2-8(10), the permittee shall orally report to the Commissioner information on the following types of noncompliance within 24 hours from the time permittee becomes aware of such noncompliance. If the noncompliance meets the requirements of item b (Part II.C.3.b) or 327 IAC 2-6.1, then the report shall be made within those prescribed time frames.

   a. Any unanticipated bypass which exceeds any effluent limitation in the permit;

   b. Any noncompliance which may pose a significant danger to human health or the environment. Reports under this item shall be made as soon as the permittee becomes aware of the noncomplying circumstances by calling 317/233-7745 (888/233-7745 toll free in Indiana);

   c. Any upset (as defined in Part II.B.3 above) that exceeds any technology-based effluent limitations in the permit;

   d. Any discharge from the sanitary sewer system;

   e. Any dry weather discharge from a combined sewer overflow which is identified in this permit; or

f. Violation of a maximum daily discharge limitation for any of the following toxic pollutants: copper

The permittee can make the oral reports by calling 317/232-8670 during regular business hours or by calling 317/233-7745 (888/233-7745 toll free in Indiana) during non-business hours. A written submission shall also be provided within five (5) days of the time the permittee becomes aware of the circumstances. The written submission shall contain: a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and, if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce and eliminate the noncompliance and prevent its recurrence. The Commissioner may waive the written report on a case-by-case basis if the oral report has been received within 24 hours. Alternatively the permittee may submit a "Bypass Overflow/Incident Report" or a "Noncompliance Notification Report", whichever is applicable, to IDEM at 317/232-8637 or 317/232-8406. If a complete fax submittal is sent within 24 hours of the time that the permittee became aware of the occurrence, then the fax report will satisfy both the oral and written reporting requirements.

4. Other Noncompliance

Pursuant to 327 IAC 5-2-8(10)(D), the permittee shall report any instance of noncompliance not reported under the "Twenty-Four Hour Reporting Requirements" in Part II.C.3, not related to the failure to report planned changes in the permitted facility, or not relating to any compliance schedules at the time the pertinent Discharge Monitoring Report is submitted. The written submission shall contain: a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and, if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate and prevent the noncompliance.

5. Other Information

Pursuant to 327 IAC 5-2-8(10)(E), where the permittee becomes aware that it failed to submit any relevant facts or submitted incorrect information in a permit application or in any report to the Commissioner, the permittee shall promptly submit such facts or corrected information to the Commissioner.

6. Signatory Requirements

Pursuant to 327 IAC 5-2-22 and 327 IAC 5-2-8(14):

a. All reports required by the permit and other information requested by the Commissioner shall be signed and certified by a person described below or by a duly authorized representative of that person:

(1) For a corporation: by a principal executive defined as a president, secretary, treasurer, any vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy-making functions for the corporation or the manager of one or more manufacturing, production, or operating facilities employing more than two hundred fifty (250) persons or having gross annual sales or expenditures exceeding twenty-five million dollars ($25,000,000) (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

(2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

(3) For a federal, state, or local governmental body or any agency or political subdivision thereof: by either a principal executive officer or ranking elected official.

b. A person is a duly authorized representative only if:

(1) The authorization is made in writing by a person described above.

(2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, or position of equivalent responsibility. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.); and

(3) The authorization is submitted to the Commissioner.

c. Certification. Any person signing a document identified under paragraphs a and b of this section, shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

7. Availability of Reports

Except for data determined to be confidential under 327 IAC 12.1, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Indiana Department of Environmental Management and the Regional Administrator. As required by the Clean Water Act, permit applications, permits, and effluent data shall not be considered confidential.

8. Penalties for Falsification of Reports

IC 13-30 and 327 IAC 5-2-8(14) provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance, shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 180 days per violation, or by both.

9. Progress Reports

In accordance with 327 IAC 5-2-8(10)(A), reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than fourteen (14) days following each schedule date.

10. Advance Notice for Planned Changes

In accordance with 327 IAC 5-2-8(10)(B), the permittee shall give advance notice to IDEM of any planned changes in the permitted facility, any activity, or other circumstances that the permittee has reason to believe may result in noncompliance with permit requirements.

11. Additional Requirements for POTWs and/or Treatment Works Treating Domestic Sewage

a. All POTWs shall identify, in terms of character and volume of pollutants, any significant indirect discharges into the POTW which are subject to pretreatment standards under section 307(b) and 307 (c) of the CWA.

b. All POTWs must provide adequate notice to the Commissioner of the following:

(1) Any new introduction of pollutants into the POTW from an indirect discharger that would be subject to section 301 or 306 of the CWA if it were directly discharging those pollutants.

(2) Any substantial change in the volume or character of pollutants being introduced into that POTW by any source where such change would render the source subject to pretreatment standards under section 307(b) or 307(c) of the CWA or would result in a modified application of such standards.

As used in this clause, "adequate notice" includes information on the quality and quantity of effluent introduced into the POTW, and any anticipated impact of the change on the quantity or quality of the effluent to be discharged from the POTW.

c. This permit incorporates any conditions imposed in grants made by the U.S. EPA and/or IDEM to a POTW pursuant to Sections 201 and 204 of the Clean Water Act, that are reasonably necessary for the achievement of effluent limitations required by Section 301 of the Clean Water Act.

d. This permit incorporates any requirements of Section 405 of the Clean Water Act governing the disposal of sewage sludge from POTWs or any other treatment works treating domestic sewage for any use for which rules have been established in accordance with any applicable rules.

e. POTWs must develop and submit to the Commissioner a POTW pretreatment program when required by 40 CFR 403 and 327 IAC 5-19-1, in order to assure compliance by industrial users of the POTW with applicable pretreatment standards established under Sections 307(b) and 307(c) of the Clean Water Act. The pretreatment program shall meet the criteria of 327 IAC 5-19-3 and, once approved, shall be incorporated into the POTW's NPDES permit.

D. ADDRESSES

1. <u>Cashiers Office</u>

Indiana Department of Environmental Management
Cashiers Office – Mail Code 50-10C
100 N. Senate Avenue
Indianapolis, Indiana 46204-2251

The following correspondence shall be sent to the Cashiers Office:

a. NPDES permit applications (new, renewal or modifications) with fee

b. Construction permit applications with fee

2. Municipal Permits Section

   Indiana Department of Environmental Management
   Office of Water Quality – Mail Code 65-42
   Municipal Permits Section
   100 N. Senate Avenue
   Indianapolis, Indiana 46204-2251

   The following correspondence shall be sent to the Municipal Permits Section:

   a. Preliminary Effluent Limits request letters

   b. Comment letters pertaining to draft NPDES permits

   c. NPDES permit transfer of ownership requests

   d. NPDES permit termination requests

   e. Notifications of substantial changes to a treatment facility, including new industrial sources

3. Data & Information Services Section

   Indiana Department of Environmental Management
   Office of Water Quality – Mail Code 65-42
   Data & Information Services Section
   100 N. Senate Avenue
   Indianapolis, Indiana 46204-2251

   The following correspondence shall be sent to the Data & Information Services Section:

   a. Discharge Monitoring Reports (DMRs)

   b. Monthly Reports of Operation (MROs)

   c. Monthly Monitoring Reports (MMRs)

4. Compliance Evaluation Section

   Indiana Department of Environmental Management
   Office of Water Quality – Mail Code 65-42
   Compliance Evaluation Section
   100 N. Senate Avenue
   Indianapolis, Indiana 46204-2251

The following correspondence shall be sent to the Compliance Evaluation Section:

a. Gauging station and flow meter calibration documentation

b. Compliance schedule progress reports

c. Completion of Construction notifications

d. Whole Effluent Toxicity Testing reports

e. Toxicity Reduction Evaluation (TRE) plans and progress reports

f. Bypass/Overflow reports

g. Anticipated Bypass Reports

h. CSO Discharge Monitoring Reports

5. Wet Weather Section

Indiana Department of Environmental Management
Office of Water Quality – Mail Code 65-42
Wet Weather Section
100 N. Senate Avenue
Indianapolis, Indiana 46204-2251

The following correspondence shall be sent to the Wet Weather Section:

a. Combined Sewer Overflow (CSO) Operational Plans

b. CSO Long Term Control Plans (LTCP)

c. Stream Reach Characterization and Evaluation Reports (SRCER)

6. Pretreatment Group

Indiana Department of Environmental Management
Office of Water Quality – Mail Code 65-42
Compliance Evaluation Section – Pretreatment Group
100 N. Senate Avenue
Indianapolis, Indiana 46204-2251

The following correspondence shall be sent to the Pretreatment Group:

a. Organic Pollutant Monitoring Reports

b. Significant Industrial User (SIU) Quarterly Noncompliance Reports

c. Pretreatment Program Annual Reports

d. Sewer Use Ordinances

e. Enforcement Response Plans (ERP)

f. Sludge analytical results

# PART III

# REQUIREMENT TO OPERATE A PRETREATMENT PROGRAM

## A. CONDITIONS

The permittee, hereinafter referred to as the "Control Authority," is required to operate its approved industrial pretreatment program approved on September 28, 1984, and any subsequent modifications approved up to the issuance of this permit. To ensure the program is operated as approved and consistent with 327 IAC 5-16 through 5-21, the following conditions and reporting requirements are hereby established. The Control Authority (CA) shall:

1. <u>Legal Authority</u>

   The CA shall develop, enforce and maintain adequate legal authority in its Sewer Use Ordinance (SUO) to fully implement the pretreatment program in compliance with State and local law. As part of this requirement, the CA shall develop and maintain local limits as necessary to implement the prohibitions and standards in 327 IAC 5-18.

2. <u>Permit Issuance</u>

   In accordance with 327 IAC 5-19-3(1) the CA is required to issue/reissue permits to Significant Industrial User(s) (SIU) as stated in the SUO. The CA must issue permits to new SIUs prior to the commencement of discharge. A SIU is defined in the SUO.

3. <u>Industrial Compliance Monitoring</u>

   The CA is required to conduct inspection, surveillance, and monitoring activities to determine SIU compliance status with the approved program and the SUO independent of data supplied by the SIU. SIU compliance monitoring performed by the CA will be conducted in accordance with the program plan or yearly program plan. SIUs will be inspected once per year, at a minimum.

4. <u>Enforcement</u>

   The CA is required to initiate the appropriate enforcement action against a SIU violating any provision of the SUO and/or discharge permit in accordance with the Enforcement Response Procedures (ERP) adopted by the CA. The CA must investigate violations by collecting and analyzing samples and collecting other information with sufficient care to produce evidence admissible in enforcement proceedings or in judicial actions in accordance with 40 CFR 403.8(f)(1)(iii) and 327 IAC 5-19-3(1)(F).

5. SIU Quarterly Noncompliance Report

   The CA is required to report the compliance status of each SIU quarterly. The report is due by the 28th of the following months: April, July, October, and January of each year. The report shall include a description of corrective actions that have or will be taken by the CA and SIU to resolve the noncompliance situations. This report is to be sent to the Compliance Branch of the Office of Water Quality.

6. Public Participation and Annual Publishing of SIUs in Significant Noncompliance

   The CA is required to comply with the public participation requirements under 40 CFR 25 and 327 IAC 5-19-3(2)(L). The CA must publish annually, by January 28, in the largest daily newspaper in the area, a list of SIUs that have been in significant noncompliance (SNC) with the SUO during the calendar year. The CA shall include in the ANNUAL REPORT a list of the SIUs published along with the newspaper clipping.

7. Annual Report

   The CA is required to submit an annual report to the Pretreatment Group by April 1, of each year. The annual report will be submitted in accordance with the State supplied "POTW PRETREATMENT PROGRAM ANNUAL REPORT GUIDANCE."

8. Records Retention

   Pursuant to 327 IAC 5-16-5(d), the CA shall retain any pretreatment reports from an industrial user a minimum of three (3) years and shall make such reports available for inspection and copying by IDEM or the U.S. EPA. This period of retention shall be extended during the course of any unresolved litigation regarding the discharge of pollutants by the industrial user, the operation of the POTW pretreatment program or when requested by IDEM or the U.S. EPA.

9. Confidentiality

   The CA is required to comply with all confidentiality requirements set forth in 40 CFR 403.14, as well as the procedures established in the SUO.

10. Program Resources

    Pursuant to 327 IAC 5-19-3(3), The CA shall maintain sufficient resources and qualified personnel to carry out the pretreatment program requirements.

11. Interjurisdictional Agreements

The CA must maintain sufficient legal authority to ensure compliance with all applicable pretreatment limits and requirements by all SIUs discharging to the POTW, including SIUs within governmental jurisdictions outside the immediate jurisdiction of the POTW. The CA must maintain the interjurisdictional agreements necessary to ensure full compliance by SIUs located within other jurisdictions as discussed in 40 CFR 403.8(f)(1).

12. POTW Pretreatment Program Revision Requirements

Unless already completed, the CA is required to update its pretreatment program and SUO in accordance with the Pretreatment Implementation Review Task Force (PIRT) revisions and the Domestic Sewage Study (DSS) rule. The updating shall be completed according to the following schedule:

a. The CA shall re-evaluate its pretreatment program for consistency with 40 CFR 403, particularly the PIRT and DSS revisions, then submit a draft of any program modification, with a request for approval of the modification under 40 CFR 403.18, to the Pretreatment Group and the U.S. EPA, Region 5, within nine months of the effective date of this permit. The pretreatment program modification shall include a technical evaluation of the need to revise local pretreatment limitations in accordance with 40 CFR 122.44(j)(2)(ii). The CA is to conduct the local limitations technical evaluation consistent with U.S. EPA's Local Limits Development Guidance (July 2004) document.

   The request must identify or highlight the new provisions in the modification (or pre-existing provisions in the original program) that fulfill the requirements of the PIRT and DSS revisions. A guidance document is available from the Pretreatment Group that outlines the procedures for modifying POTW pretreatment programs and the PIRT and DSS provisions that must be in the programs.

b. The CA shall make any changes to its pretreatment program necessary for the program to be consistent with 40 CFR 403, particularly the PIRT and DSS revisions, within 90 days after approval by the approval authority.

c. The CA shall issue pretreatment permits to all SIUs (or modify existing SIU permits) that are affected by the revisions within one year after approval of the revisions by the approval authority.

d. No later than 6 months after the effective date of this permit, the permittee shall submit to EPA Region 5 and IDEM pretreatment group, a program modification request to incorporate the pretreatment streamlining revisions in 327 IAC 5-16 through 327 IAC 5-21 of Indiana Administrative Code, which became effective on May 3, 2009. The modification request shall highlight all changes to the approved program, the sewer use ordinance (SUO) and the enforcement response plan (ERP) necessary to incorporate the revisions of 327 IAC 5-16 through 327 IAC 5-21 of Indiana Administrative Code required to be implemented by all delegated pretreatment programs. Any of the optional changes must be included with this submission. The required changes are described in USEPA's Pretreatment Streamlining Rule Fact Sheet 2.0: Required Changes, available at: http://cfpub.epa.gov/npdes/home.cfm?program_id=3.

13. Program Modification

Pursuant to 327 IAC 5-19-6 and 40 CFR 403.18, any significant proposed program modification shall be submitted to the Pretreatment Group and the U.S. EPA for approval. A significant modification shall include, but not be limited to, any change in the SUO, major modification in the approval program's administrative procedures, a significant reduction in monitoring procedures, a significant change in the financial/revenue system, a significant change in the local limitations contained in the SUO, and a change in the industrial survey.

NOTE: A summary of the revisions to the General Pretreatment Regulations (40 CFR 403) is available from the Pretreatment Group of the Compliance Evaluation Section.

ATTACHMENT A

Precipitation Related Combined Sewer Overflow Discharge Authorization Requirements

I. Discharge Authorization

A.

| Outfall | Location | Receiving Water |
|---|---|---|
| 002 | Control structure is located prior to the headworks of the WWTP; Outfall 002 is 3 feet east of the WWTP outfall (001). N 39° 00' 16" W 85° 36' 00" | Vernon Fork of the Muscatatuck River |

1. During the period beginning on the effective date of this permit and lasting 30 days following completion of construction of the wet weather disinfection facilities (phase II), or by April 1, 2012, whichever occurs first, Outfall 002 is authorized to have wet weather discharges in accordance with the requirements and provisions of this permit, including provisions in Attachment A.

2. Beginning 30 days following completion of construction of the wet weather disinfection facilities, or by April 1, 2012, whichever occurs first, the permittee is authorized to discharge treated combined sewage from Outfall 002 when influent flows exceed the wastewater treatment plant peak hydraulic capacity, and the storage capacity of the wet weather EQ tank. **Any** discharge from 002 is subject to the requirements and provisions of this permit including the following requirements:

TABLE 1

| | **Quantity or Loading** | | | **Quality or Concentration** | | | **Monitoring Requirements** | |
|---|---|---|---|---|---|---|---|---|
| Parameter [6] | Daily Maximum | Monthly Average | Units | Monthly Average | Daily Maximum | Unit | Measurement Frequency | Sample Type |
| Flow [1] | Report | Report | MGD | ---- | ---- | ---- | Daily | 24-Hr. Total |
| $CBOD_5$ | ---- | ---- | ---- | Report | Report | mg/l | Daily | Composite [5] |
| TSS | ---- | ---- | ---- | Report | Report | mg/l | Daily | Composite [5] |
| Ammonia-Nitrogen | ---- | ---- | ---- | Report | Report | mg/l | Daily | Composite [5] |

TABLE 2

| Parameter [5] | Quality or Concentration: Daily Minimum | Daily Maximum | Monthly Average | Units | Monitoring Requirements: Measurement Frequency | Sample Type |
|---|---|---|---|---|---|---|
| pH [7] | Report | Report | ---- | s.u. | Daily | Grab |
| Dissolved Oxygen [8] | Report | ---- | ---- | mg/l | Daily | Grab |
| *E. coli* [2] [3] [4] | ---- | 235 | 125 | colonies/100 ml | Daily | Grab |

NOTE- The permittee shall submit a written notice to the Data & Information Services Section of the Office of Water Quality at 100 N. Senate Avenue, Indianapolis, IN 46204-2251 which specifies the expected completion date of disinfection facilities on discharges from the CSO Treatment Facility. This notice shall be submitted a minimum of thirty (30) days **prior** to completion of construction. Any deviation from the completion date specified in this notice will require a revised notice to be submitted to the same office. Notification of the construction completion date is necessary to ensure that the effluent limitations and monitoring requirements for 002 become effective at the correct time.

[1] Effluent flow measurement is required per 327 IAC 5-2-13. If a flow meter is utilized for flow measurement, the flow meter(s) shall be calibrated at least once annually.

[2] The effluent shall be disinfected on a continuous basis during any discharge such that violations of the applicable bacteriological limitations do not occur from April 1 through October 31, annually.

[3] The *E. coli* limitations and monitoring requirements apply from April 1 through October 31 annually. The monthly average *E. coli* value shall be calculated as a geometric mean. IDEM has specified the following methods as allowable for the detection and enumeration of *Escherichia coli (E. coli)*:

1. Coliscan MF® Method
2. EPA Method 1103.1 using original m-TEC agar.
3. EPA revised Method 1103.1 using modified m-TEC agar.
4. *Standard Methods* 20$^{th}$ Edition Method 9223 B using Colilert®

[4] For *E. coli*, the daily maximum shall be the geometric mean of all grab samples on any discharge day, provided that 3 or more grab samples are collected. The *E. coli* monthly average shall be the geometric mean of all grab samples collected during the month, provided that 5 or more grab samples are collected. The goal of the effluent monitoring program is to collect at least 3 grab samples during each discharge event, and the samples shall be collected at shorter intervals at the onset of the event, if the permittee estimates that the event duration may be less than 6 hours.

If there are less than five (5) discharges in a calendar month, then the monthly average does not need to be reported on the Discharge Monitoring Report (DMR). If Outfall 002 discharges five (5) times or more during a calendar month, then the monthly average *E. coli* value shall be calculated as a geometric mean and reported on the DMR.

[5] Effluent composite sampling, either by automatic sampler collecting samples at set intervals or by grab samples collected during discharges from the wet weather treatment component, shall be representative of the discharge and of sufficient quantity to ensure that the parameters of Table 1 of Attachment A can be measured; shall be initiated within 30 minutes from the beginning of a discharge event; and shall continue at intervals determined by the permittee, but no less than every 2 hours during the duration of the event. If an event lasts for more than 24 hours a new sampling period shall be initiated. Analysis for the parameters identified in Table 1 of Attachment A shall be from the composite sample collected as described above.

[6] For purposes of reporting on a discharge event which lasts less than 24 hours, but occurs during two calendar days, the pollutant concentrations for the event shall be reported as daily values on the day when the majority of the discharge occurred.

[7] If the permittee collects more than one grab sample on a given day for pH, the values shall not be averaged for reporting daily maximums or daily minimums. The permittee must report the minimum or maximum pH value of any individual sample during the month on the Discharge Monitoring Report forms.

[8] The daily minimum concentration of dissolved oxygen in the effluent shall be reported as the arithmetic mean determined by summation of daily grab sample results divided by the number of daily grab samples. These samples are to be collected over equal time intervals.

B. Combined Sewer Overflows are point sources subject to both technology-based and water quality-based requirements of the Clean Water Act and state law.

C. At all times the discharge from any and all CSO outfalls herein shall not cause receiving waters:

1. including the mixing zone, to contain substances, materials, floating debris, oil, scum, or other pollutants:
   a. that will settle to form putrescent or otherwise objectionable deposits;
   b. that are in amounts sufficient to be unsightly or deleterious;
   c. that produce color, visible oil sheen, odor, or other conditions in such a degree as to create a nuisance;
   d. which are in amounts sufficient to be acutely toxic to, or otherwise severely injure or kill aquatic life, other animals, plants, or humans;
   e. which are in concentrations or combinations that will cause or contribute to the growth of aquatic plants or algae to such a degree as to create a nuisance, be unsightly, or otherwise impair the designated uses.
2. outside the mixing zone, to contain substances in concentrations which on the basis of available scientific data are believed to be sufficient to injure, be chronically toxic to, or be carcinogenic, mutagenic, or teratogenic to humans, animals, aquatic life, or plants.

D. Dry weather discharges from any portion of the sewer collection system, including the outfall listed in Part I.A of this Attachment A, are prohibited. If a dry weather discharge occurs, the permittee shall notify the Office of Water Quality, Compliance Evaluation Section, by phone within 24 hours and in writing within five days of the occurrence. The correspondence shall include the duration and cause of the discharge as well as the remedial action taken to end the discharge.

II. Monitoring Report Requirements

A. The permittee is required to monitor the flow from CSO outfall No. 002. This monitoring shall include:

1. measurement of the flow volume,
2. the time that the CSO discharge began,
3. the flow duration, and
4. rainfall amount and duration.

The requirement for the measurement of flow volume may be accomplished by installing a flow measurement device or by utilizing a reliable method of estimating the flow volume. Within 120 days from the effective date of this permit, the permittee shall submit to IDEM their monitoring plan which describes the permittee's method of accomplishing this permit requirement. The permittee shall also update its CSO Operational Plan to incorporate the flow monitoring plan.

The permittee shall also report the amount of precipitation for each day of the month. A rain gauge must be used that measures amount (depth) and duration. If multiple rain gauges are used, the information from each rain gauge shall be reported.

All of the information described in this subsection shall be reported on the CSO Discharge Monitoring Report (CSO DMR) form provided by IDEM and submitted to IDEM prior to the 28th day of the following month. All submittals under this provision shall be subject to the reporting requirements of this permit, including, but not limited to, Part II, Section C.6 ("Signatory Requirements"), C.7 ("Availability of Reports"), and C.8 ("Penalties for Falsification of Reports") of this permit.

B. Beginning 30 days from the completion of construction of the disinfection system at the CSO Treatment Facility, the permittee shall monitor and report discharges from Outfall 002 in accordance with Part I.A.2., of Attachment A of this permit.

III. CSO Operational Plan

A. The permittee shall comply with the following minimum technology-based controls, in accordance with the federal CSO Control Policy:

1. The permittee shall implement proper operation and regular maintenance programs for the sewer system and the CSOs. The purpose of the operation and maintenance programs is to reduce the magnitude, frequency and duration of CSOs. The program shall consider regular sewer inspections; sewer, catch basin, and regulator cleaning; equipment and sewer collection system repair or replacement, where necessary; and disconnection of illegal connections.
2. The permittee shall implement procedures that will maximize the use of the collection system for wastewater storage that can be accommodated by the storage capacity of the collection system in order to reduce the magnitude, frequency and duration of CSOs.
3. The permittee shall review and modify, as appropriate, its existing pretreatment program to minimize CSO impacts from non-domestic users. The permittee shall identify all industrial users that discharge to the collection system upstream of any CSO outfalls; this identification shall also include the pollutants in the industrial user's wastewater and the specific CSO outfall(s) that are likely to discharge the wastewater.
4. The permittee shall operate the POTW at the maximum treatable flow during all wet weather flow conditions to reduce the magnitude, frequency and duration of CSOs. The permittee shall deliver all flows to the treatment plant within the constraints of the treatment capacity of the POTW.

5. Dry weather overflows from CSO outfalls are prohibited. Each dry weather overflow must be reported to IDEM as soon as the permittee becomes aware of the overflow. When the permittee detects a dry weather overflow, it shall begin corrective action immediately. The permittee shall inspect the dry weather overflow each subsequent day until the overflow has been eliminated.
6. The permittee shall implement measures to control solid and floatable materials in CSO discharges.
7. The permittee shall implement a pollution prevention program focused on reducing the impact of CSOs on receiving waters.
8. The permittee shall implement a public notification process to inform citizens of when and where CSO discharges occur and their impacts. This notification must also be done in accordance with 327 IAC 5-2.1.
9. The permittee shall monitor to effectively characterize CSO impacts and the efficacy of CSO controls.

B. The permittee's implementation of each of the minimum controls in Part III.A of this Attachment A shall be documented in its CSO Operational Plan (CSOOP), which was approved on April 22, 2000. The permittee shall update the CSOOP to reflect changes in its operation or maintenance practices; measures taken to implement the above minimum requirements; and changes to the treatment plant or collection system, including changes in collection system flow characteristics, collection system or WWTP capacity or discharge characteristics (including volume, duration, frequency and pollutant concentration). Beginning twelve (12) months from the effective date of this permit renewal, the permittee shall annually evaluate its CSOOP and update it, as necessary. The permittee shall submit the CSOOP updates to IDEM, Office of Water Quality, Wet Weather Section.

The CSOOP update(s) shall include a summary of the proposed revisions to the CSOOP as well as a reference to the page(s) that have been modified. Any CSOOP updates shall not result in:

1. a lower amount of flow being sent to and through the plant for treatment, or
2. more discharges (measured either by volume, duration, frequency, or pollutant concentration) occurring from the CSO outfalls.

The permittee shall maintain a current CSO Operational Plan, including all approved updates, on file at the POTW.

IV. CSO Long-Term Control Plan

The Indiana Department of Environmental Management (IDEM) has conducted a substantive review of the City of North Vernon's Long-Term Control Plan (LTCP).

The North Vernon LTCP will be implemented in two phases, over a 5-year period. Phase I involves a collection system evaluation (via TV equipment) and repair program to reduce wet weather flows to the WWTP. Flow monitoring will be conducted to evaluate reductions of wet weather flow to the WWTP, and to size the wet weather disinfection facility at the WWTP. Phase I will be completed within four years from IDEM's approval of the LTCP. Phase II involves sizing and constructing the wet weather disinfection facilities (UV system) for all remaining CSO events from outfall 002. Phase II will be completed within five years from IDEM's approval of the LTCP.

By utilizing existing wet weather screening units, settling within the wet weather EQ tank, combined with the new wet weather disinfection facilities, all wet weather flow will receive at a minimum, solids and floatables removal, primary treatment, and disinfection. Construction of the wet weather disinfection facilities will be completed within the five-year term of this NPDES permit.

Based on this information, IDEM has determined that the North Vernon LTCP is expected to result in compliance with Indiana's bacteriological water quality criteria, and therefore formally approved the City of North Vernon's LTCP in February 2007. The LTCP is incorporated herein. A detailed scope of projects may be found in the North Vernon LTCP. The LTCP shall be implemented in accordance with the approved schedule outlined below:

| Project | Date |
|---|---|
| Phase I | March 1, 2007 through February 2011 |
| Phase II | March 1, 2011 to March 1, 2012 |

In accordance with IC 13-18-3-2.6, this NPDES permit recognizes that the schedule of compliance outlined above exceeds the term of this permit. IC 13-18-3-2.6 establishes that when a schedule of compliance exceeds the term of a permit, implementation of the schedule of compliance shall continue before and during successive permit terms, and in accordance with the community's approved LTCP.

V. Sewer Use Ordinance Review/Revision and Enforcement

The permittee's Sewer Use Ordinance must contain provisions which: (1) prohibit introduction of inflow sources to any sanitary sewer; (2) prohibit construction of new combined sewers outside of the existing combined sewer service area; and (3) provide that for any new building the inflow/clear water connection to a combined sewer shall be made separate and distinct from sanitary waste connection to facilitate disconnection of the former if a separate storm sewer subsequently becomes available. The permittee shall continuously enforce these provisions.

VI. Reopening Clauses

A. After LTCP implementation, if IDEM has evidence that a CSO discharge is causing or contributing to exceedances of water quality standards, then additional control measures, effluent limitations, and/or monitoring requirements may be imposed on the CSO through a modification of this permit, after public notice and opportunity for hearing.
B. This permit may be reopened to address changes in the EPA National CSO Policy or state or federal law.
C. The permit may be reopened, after public notice and opportunity for hearing, to incorporate elements of an approved LTCP.
D. The permit may be reopened, after public notice and opportunity for hearing, to incorporate applicable provisions of IC 13-18.

**Fact Sheet**
July 10, 2009
Revised December 4, 2009

City of North Vernon Wastewater Treatment Plant
located at 725 North Greensburg Road
North Vernon, Indiana
Jennings County

| | | |
|---|---|---|
| Outfall Location | Latitude: | 30° 00' 16" |
| | Longitude: | 85° 36' 00" |

NPDES Permit No. IN0020451

## Background

This is the proposed renewal of the NPDES permit for the City of North Vernon Wastewater Treatment Plant which was issued on August 19, 2004 and has an expiration date of August 31, 2009. The permittee submitted an application for renewal which was received on March 3, 2009. The permittee currently operates a Class III, 2.2 MGD single stage nitrification activated sludge treatment facility consisting of grit removal, influent screening, secondary clarification, rapid sand filtration, chlorination/dechlorination facilities, and influent and effluent flow metering. Solids are treated with aeration and aerobic digestion, prior to being dewatered and land applied under land application permit No. INLA000458.

## Collection System

The collection system is comprised of combined sanitary and storm sewers with one Combined Sewer Overflow (CSO) location at a point prior to the headworks of the WWTP. The CSO outfall has been identified and permitted with provisions in Attachment A of the permit.

### CSO Statutory or Regulatory Basis for Permit Provisions

CSOs are point sources subject to NPDES permit requirements, including both technology-based and water quality-based requirements of the CWA and state law. Thus the permit contains provisions IDEM deems necessary to meet water quality standards, as well as technology-based treatment requirements, operation and maintenance requirements, and best management practices. This permit is based on various provisions of state and federal law, including (1) Title 13 of the Indiana Code; (2) the water quality standards set forth in 327 IAC 2-1.5; (3) the NPDES rules set forth in 327 IAC 2 and 327 IAC 5, including 327 IAC 5-2-8 and 327 IAC 5-2-10; and (4) section 402(q) of the CWA (33 USC § 1342), which requires all permits or orders issued for discharges from municipal CSOs to conform with the provisions of EPA's National CSO Control Policy (58 Fed. Reg. 18688, April 19, 1994).

EPA's CSO Policy contains provisions that, among other things, require permittees to develop and implement minimum technological and operational controls and long term control plans to meet state water quality standards. The permit's penalty provisions are based in large part on IC 13-30. In addition to the regulatory provisions previously cited, the data collection and reporting requirements are based in part on 327 IAC 5-1-3, 327 IAC 5-2-13 and section 402(q) of the CWA.

IDEM has conducted a substantive review of the City of North Vernon's Long-Term Control Plan (LTCP). IDEM has determined that the plan is expected to result in compliance with Indiana's bacteriological water quality criteria, and therefore approved the plan in February 2007. Since the LTCP will be implemented within a five-year timeframe, enforcement of the LTCP will be through this NPDES permit.

The North Vernon LTCP will be implemented in two phases, over a 5-year period. Phase I involves a collection system repair and monitoring program to reduce and then evaluate wet weather flows to the WWTP. Phase I will be completed within four years from IDEM's approval of the LTCP. Phase II involves sizing and constructing wet weather disinfection facilities for all remaining CSO events from outfall 002. Phase II will be completed within five years from IDEM's approval of the LTCP.

**Spill Reporting Requirements**

Reporting requirements associated with the Spill Reporting, Containment, and Response requirements of 327 IAC 2-6.1 are included in Part II.B.2.c. and Part II.C.3. of the NPDES permit. Spills from the permitted facility meeting the definition of a spill under 327 IAC 2-6.1-4(15), the applicability requirements of 327 IAC 2-6.1-1, and the Reportable Spills requirements of 327 IAC 2-6.1-5 (other than those meeting an exclusion under 327 IAC 2-6.1-3 or the criteria outlined below) are subject to the Reporting Responsibilities of 327 IAC 2-6.1-7.

It should be noted that the reporting requirements of 327 IAC 2-6.1 do not apply to those discharges or exceedences that are under the jurisdiction of an applicable permit when the substance in question is covered by the permit and death or acute injury or illness to animals or humans does not occur. In order for a discharge or exceedence to be under the jurisdiction of this NPDES permit, the substance in question (a) must have been discharged in the normal course of operation from an outfall listed in this permit, and (b) must have been discharged from an outfall for which the permittee has authorization to discharge that substance.

**Solids Disposal**

The permittee is required to dispose of its sludge in accordance with 329 IAC 10, 327 IAC 6.1, or 40 CFR Part 503. The permittee maintains a land application permit INLA000458 for the disposal of solids.

## Receiving Stream

The facility discharges to the Vernon Fork of the Muscatatuck River via Outfall 001. The Vernon Fork of the Muscatatuck River has a seven day, ten year low flow ($Q_{7,10}$) of 0.2 cubic feet per second (0.13 MGD) at the outfall location. This provides a dilution ratio of receiving stream flow to treated effluent of 0.06:1. The receiving stream is designated for full body contact recreational use and shall be capable of supporting a well-balanced warm water aquatic community in accordance with 327 IAC 2-1.

## Industrial Contributions

The permittee accepts industrial flow from Hilex Poly Co., LLC Plant 2, Martinrea Industries, Inc., Kromat America, and Webster West Packaging, Inc. Based on the industrial flow received by the treatment facility, the permittee is required to operate its approved industrial pretreatment program approved on September 28, 1984. Provisions for the industrial pretreatment program are included in Part III of this permit renewal. In addition, effluent limitations for copper, and monitoring requirements for lead and zinc, are being included in the permit renewal.

## Effluent Limitations and Rationale

The effluent limitations proposed herein are based on Indiana Water Quality Standards, NPDES regulations, and Wasteload Allocation (WLA) analyses performed by this Office's Permits Technical Support Section staff on October 23, 1995, March 11, 2004 and June 18, 2009. These limits are in accordance with antibacksliding regulations specified in 327 IAC 5-2-10(11)(A). Monitoring frequencies are based upon facility size and type. The number of grab samples required to make up a composite sample has been reduced from 10 grab samples per day to 4 grab samples per day in Part I.B.4.b.(4) of the renewal permit. Four grab samples per composite sample is consistent with the number of grab samples required by IDEM for a facility with a design flow of 2.2 MGD.

The final effluent limitations to be limited and/or monitored include: Flow, Carbonaceous Biochemical Oxygen Demand ($CBOD_5$), Total Suspended Solids (TSS), Ammonia-nitrogen ($NH_3$-N), pH, Dissolved Oxygen (DO), Total Residual Chlorine (TRC), *Escherichia coli* (*E. coli),* copper, lead and zinc.

## Final Effluent Limitations

The summer monitoring period runs from May 1 through November 30 of each year and the winter monitoring period runs from December 1 through April 30 of each year. The disinfection season runs from April 1 through October 31 of each year. The mass limits for $CBOD_5$, TSS and Ammonia-nitrogen have been calculated utilizing the peak design flow of 4.76 MGD. This is to facilitate the maximization of flow through the treatment facility in accordance with this Office's CSO policy.

Flow

Flow is to be measured five times weekly as a 24-hour total. Reporting of flow is required by 327 IAC 5-2-13.

$CBOD_5$

$CBOD_5$ is limited to 25 mg/l (993 lbs/day) as a monthly average and 40 mg/l (1,589 lbs/day) as a weekly average. Monitoring is to be conducted five times weekly by 24-hour composite sampling. The $CBOD_5$ concentration limitations included in this permit are set in accordance with the Wasteload Allocation (WLA) analysis performed by this Office's Permits Technical Support Section staff on March 11, 2004 and are the same as the concentration limitations found in the facility's previous permit.

TSS

TSS is limited to 30 mg/l (1,192 lbs/day) as a monthly average and 45 mg/l (1,788 lbs/day) as a weekly average. Monitoring is to be conducted five times weekly by 24-hour composite sampling. The TSS concentration limitations included in this permit are set in accordance with the Wasteload Allocation (WLA) analysis performed by this Office's Permits Technical Support Section staff on March 11, 2004 and are the same as the concentration limitations found in the facility's previous permit.

Ammonia-nitrogen

Ammonia-nitrogen is limited to 1.5 mg/l (60 lbs/day) as a monthly average and 2.2 mg/l (87 lbs/day) as a weekly average during the summer monitoring period. During the winter monitoring period, ammonia-nitrogen is limited to 2.2 mg/l (87 lbs/day) as a monthly average and 3.3 mg/l (131 lbs/day) as a weekly average. Monitoring is to be conducted five times weekly by 24-hour composite sampling.

The ammonia-nitrogen concentration limitations included in this permit are set in accordance with the Wasteload Allocation (WLA) analysis performed by this Office's Permits Technical Support Section staff on October 23, 1995 and are the same as the concentration limitations found in the facility's previous permit. The antibacksliding regulations specified in 327 IAC 5-2-10(11)(A) prevent these limits from being increased to the concentrations specified in the WLA performed by this Office's Permits Technical Support Section staff on March 11, 2004.

pH

The pH limitations have been based on 40 CFR 133.102 which is cross-referenced in 327 IAC 5-5-3. To ensure conditions necessary for the maintenance of a well-balanced aquatic community, the pH of the final effluent must be between 6.0 and 9.0 standard units in accordance with provisions in 327 IAC 2-1-6(b)(2). pH must be measured five times weekly by grab sampling. These pH limitations are the same as the limitations found in the facility's previous permit.

Dissolved Oxygen

Dissolved oxygen shall not fall below 6.0 mg/l as a daily minimum average during the summer monitoring period. During the winter monitoring period, dissolved oxygen shall not fall below 5.0 mg/l as a daily minimum average. These dissolved oxygen limitations are based on the Wasteload Allocation (WLA) analysis performed by this Office's Permits Technical Support Section staff on March 11, 2004 and are the same as the concentration limitations found in the facility's previous permit. Dissolved oxygen measurements must be based on the average of three (3) grab samples taken within a 24-hr. period. This reduced number of required grab samples used to determine the dissolved oxygen reporting value has been retained from the previous permit based on the facility's compliance history for this parameter. Monitoring for dissolved oxygen is to be conducted five times weekly.

Total Residual Chlorine

Disinfection of the effluent is required from April 1 through October 31, annually. Effluent dechlorination will be required in order to protect aquatic life. In accordance with Indiana Water Quality Standards, the final effluent limits (end-of-pipe) for TRC are 0.01 mg/l monthly average and 0.02 mg/l daily maximum. Compliance will be demonstrated if the observed effluent concentrations are less than the limit of quantitation (0.06 mg/l). Disinfection requirements are established in 327 IAC 5-10-6. This monitoring is to be conducted five times weekly by grab sampling.

*E. coli*

The *E. coli* limitations and monitoring requirements apply from April 1 through October 31, annually. *E. coli* is limited to 125 count/100 ml as a monthly average, and 235 count/100 ml as a daily maximum. The monthly average *E. coli* value shall be calculated as a geometric mean. This monitoring is to be conducted five times weekly by grab sampling. These *E. coli* limitations are set in accordance with the Wasteload Allocation (WLA) analysis performed by this Office's Permits Technical Support Section staff on March 11, 2004.

Metals/Non-conventional Pollutants

The RPE performed by this Office's Permits Technical Support Section staff on June 18, 2009 revealed that the projected effluent quality (PEQ) for copper was greater than the projected effluent limitations (PELs). Therefore, effluent limitations for copper are being retained in this permit. Copper is limited to 0.019 mg/l as a monthly average and 0.031 mg/l as a daily maximum. The copper concentration limitations included in this permit are set in accordance with the Wasteload Allocation (WLA) analysis performed by this Office's Permits Technical Support Section staff on June 18, 2009 and are more stringent than the concentration limitations found in the facility's previous permit. As a review of effluent data indicates that the permittee will be able to comply with the more stringent copper limits with permit reissuance, no schedule of compliance has been included with the renewal permit. Monitoring for copper is to be conducted one time weekly by 24-Hr. composite sampling.

Additionally, monitoring requirements for lead and zinc are being retained from the previous permit. Monitoring for lead and zinc is to be conducted on a quarterly basis by 24-Hr. composite sampling. Monitoring requirements for these metals has been retained in the renewal permit because they have been detected in the effluent in quantities sufficient to warrant continued assessment.

Mercury

The previous permit included a monitoring requirement for mercury. A Reasonable Potential Evaluation (RPE) was performed by NPDES Permits Branch staff as part of the June 18, 2009 WLA on the accumulated mercury data. In reviewing the RPE, the projected effluent quality (PEQ) for mercury was less than the corresponding projected effluent limitations (PEL). Therefore, monitoring requirements for mercury have been removed from the permit.

Whole Effluent Toxicity Testing

The permittee shall conduct the whole effluent toxicity tests described in Part I.D. of the permit to monitor the toxicity of the discharge from Outfall 001. This toxicity testing is to be performed once annually for the duration of this NPDES permit. Acute toxicity will be demonstrated if the effluent is observed to have exceeded 1.0 $TU_a$(acute toxic units) based on 100% effluent for the test organism in 48 and 96 hours for *Ceriodaphnia dubia* or *Pimephales promelas*, which ever is more sensitive. Chronic toxicity will be demonstrated if the effluent is observed to have exceeded 1.02 $TU_c$ (chronic toxic units) for *Ceriodaphnia dubia* or *Pimephales promelas*. If acute or chronic toxicity is found in any of the tests specified above, another toxicity test using the specified methodology and same test species shall be conducted within two weeks. If any two tests indicate the presence of toxicity, the permittee must begin the implementation of a toxicity reduction evaluation (TRE) as is described in Part I.D.2. of the permit.

**Backsliding**

None of the concentration limits included in this permit conflict with antibacksliding regulations found in 327 IAC 5-2-10(11)(A), therefore, backsliding is not an issue.

**Reopening Clauses**

Seven reopening clauses were incorporated into the permit in Part I.C. One clause is to incorporate effluent limits from any further wasteload allocations performed, a second clause is to allow for changes in the sludge disposal standards, a third clause is to incorporate any applicable effluent limitation or standard issued or approved under section 301(b)(2)(C), (D) and (E), 304(b)(2), and 307(a)(2) of the Clean Water Act, a fourth clause is to include such conditions and requirements as will ensure that the pretreatment program is implemented and operated as approved, a fifth clause is to include whole effluent toxicity limitations or to include limitations for specific toxicants, a sixth clause is to include a case-specific Method Detection Level (MDL), and a seventh is to increase the monitoring frequency for whole effluent toxicity to twice annually.

**Compliance Status**

The permittee has no enforcement actions at the time of this permit preparation.

**Expiration Date**

A five-year NPDES permit is proposed.

Drafted by: Bill Stenner
July 10, 2009

## POST PUBLIC NOTICE ADDENDUM: December 9, 2009

The draft NPDES permit renewal for the City of North Vernon Wastewater Treatment Plant was made available for public comment from August 6, 2009 through September 7, 2009, with a two week extension for the City of North Vernon through September 21, 2009, as part of Public Notice No. 2009-8B-RD. During this comment period, a comment letter from Mayor Harold Campbell was received by IDEM on September 23, 2009. Subsequent to the public comment period, the permittee provided additional information pertaining to industrial waste contributions. The comments and this Office's corresponding responses are summarized below: Any changes to the permit and/or Fact Sheet are noted below.

Comment 1: The City of North Vernon requests that the effluent monitoring frequency for copper be reduced from one time weekly to one time monthly and that the influent monitoring frequency for copper be reduced from two times monthly to one time monthly. The permittee bases their request on the following: (1) the monitoring frequency for copper in the current permit is one time monthly and the treatment plant's size and type has not changed since the current permit was issued in 2004; (2) the average concentration value for copper from January 2007 to present is less than the proposed monthly average limitation; and (3) the Fact Sheet for the draft permit indicates that no schedule of compliance was included for copper because a review of the effluent data indicates that the City of North Vernon will be able to comply with the more stringent copper limits with permit reissuance. The permittee also requests that IDEM provide further explanation including new policy documents which would justify the increased monitoring frequencies for copper.

Response 1: The request for a reduction in the monitoring frequency for copper has not been granted. The one time weekly effluent monitoring frequency requirement for copper is consistent with the monitoring frequency currently applied by IDEM to similarly sized POTWs discharging a metal that has demonstrated the reasonable potential to exceed, with one or more of the data points for that metal at or above the proposed effluent limitation(s). IDEM does not believe that a monthly monitoring frequency (that accounts for only 3% of the days that a discharge occurs each year) is sufficient to adequately evaluate compliance with the metal limitations under such scenarios. IDEM does not have a policy document addressing this issue available for public view.

The two times monthly influent monitoring frequency for copper is also consistent with the monitoring frequency currently applied by IDEM to similarly sized POTWs discharging a metal that has demonstrated the reasonable potential to exceed, with one or more of the data points for that metal at or above the proposed effluent limitation(s).

IDEM believes that this monitoring frequency is beneficial in providing useful long term information on WWTP processes with regards to variations in residential, commercial and industrial contributions, treatment removal rates, and other factors essential to the efficient operation and maintenance of the WWTP.

A schedule of compliance for the newly imposed copper limitation was not included in the draft permit as it appears, based on a review of effluent data, that indicates that the City of North Vernon can achieve compliance with the limitations without significant treatment system modifications or extensive pollution control measures that would require an extended time period to implement.

Comment 2: The City of North Vernon requests that IDEM clarify or correct the discrepancies between the permit and the Fact Sheet regarding the monitoring frequency for Whole Effluent Toxicity Testing.

Response 2: *(The Whole Effluent Toxicity Testing Requirements were incorrectly identified as Part I.E. in the draft permit. The permit has been amended to identify the Whole Effluent Toxicity Testing Requirements as Part I.D.)*

Part I.D.1.d of the permit has been amended to include a monitoring frequency for Whole Effluent Toxicity Testing of once annually (see Response 6), which is consistent with the monitoring frequency included in the Whole Effluent Toxicity Testing Section on Page 7 of the Fact Sheet.

Comment 3: The City of North Vernon requests that IDEM clarify or correct the contradictory Whole Effluent Toxicity Testing submittal requirements between Part I.D.1 and Part I.D.1.e of the permit.

Response 3: Part I.D.1 of the permit has been amended to remove the requirement to conduct Whole Effluent Toxicity Testing within four months of the effective date of the permit and to submit the results within six months of the effective date of the permit. Part I.D.1.d has been amended to require that the tests be submitted once within each twelve month period as calculated from twelve months after the effective date of the permit. The intent of the amended language is to allow the tests to be conducted at any time during each six month period as long as the results of the tests are submitted by the end of the six month period, but no later than sixty days after the completion of the tests (Part I.D.1.e).

Comment 4: The City of North Vernon requests that language from its current NPDES be included in the final NPDES allowing the City to continue on the current monitoring schedule for Whole Effluent Toxicity Testing.

Response 4: As stated in Response 3, the language in Part I.D.1 and Part I.D.1.d has been amended to allow the permittee more flexibility as to when the required tests are conducted.

Comment 5: The City of North Vernon requests that only the species most sensitive to toxicity under Whole Effluent Toxicity Testing requirements be tested for the duration of the permit (unless toxicity is demonstrated) as is the case in the current permit.

Response 5: The request to require testing of only the species most sensitive to toxicity under Whole Effluent Toxicity Testing requirements has not been granted. IDEM expects the sensitivity of both species (*Ceriodaphnia dubia* and *Pimephales promelas*) to toxicity testing to vary in conjunction with the normal variability expected in the admixture of pollutants discharged from the permitted facility. The determination to require testing of both species for the term of the permit is consistent with the current Whole Effluent Toxicity Testing requirements established by IDEM for similarly sized POTWs with industrial contributions.

Comment 6: The City of North Vernon requests that IDEM return the Whole Effluent Toxicity Testing schedule to once annually or give a reasonable justification for the increase. The City bases this request on a daily industrial contribution (as reported in the NPDES application) to the North Vernon Wastewater Treatment Plant of 2.8% of the dry weather design flow (even less with the economic downturn experienced by local industries).

Response 6: Subsequent to the receipt of the comment letter, the permittee provided additional information indicating that process wastewater received from major industrial facilities is considerably less than that identified in the initial NPDES application, accounting for approximately 1% of the average flow from the City of North Vernon WWTP. Based on this information, the monitoring frequency for Whole Effluent Toxicity Testing in Part I.D.1.d. of the permit has been reduced from twice yearly to once yearly. A reopening clause has been added to Part I.C. of the permit authorizing IDEM to increase the monitoring frequency for Whole Effluent Toxicity Testing to twice annually in the event that information submitted under Part II.A.3. of the permit during the permit's term (i.e., additional industrial flow) warrants such an increase. Additionally, the Whole Effluent Toxicity Testing, Reopening Clause and Industrial Contribution sections of the Fact Sheet have been revised to reflect the referenced changes.

Comment 7: Under the heading of Whole Effluent Toxicity Testing on Page 7 of the Fact Sheet, it states TRE implementation procedures are found in Part I.D. of the permit. As there is no Part I.D. of the permit, the City requests correction to the Fact Sheet.

Response 7: The Whole Effluent Toxicity Testing Requirements were incorrectly identified as Part I.E. in the draft permit. The permit has been amended to identify the Whole Effluent Toxicity Testing Requirements as Part I.D.

Comment 8: As the City of North Vernon has chosen ultra violet light as the mode of effluent disinfection for the discharge from Outfall 002 in accordance with the approved LTCP, the City requests that the total residual chlorine (TRC) requirements be removed from Attachment A of the permit.

Response 8: Attachment A has been amended to eliminate the monitoring requirements, effluent limitations and associated footnotes for TRC.

Comment 9: The City of North Vernon requests that Footnote [1] on Page 43 be revised to reflect the requirements of Section II.A., which state that the City may employ a reliable method of estimating flow volume.

Response 9: Footnote [1] in Attachment A has been amended to require calibration of a flow meter only in situations where a flow meter is utilized for flow measurement.

Revisions to draft NPDES Permit No. IN0020451 as a result of the comments received include a decrease in the monitoring frequency for whole effluent toxicity testing (Part I.D.1.d.), the addition of a reopening clause authorizing IDEM to increase the monitoring frequency for whole effluent toxicity testing (Part I.C.7.), and the removal of TRC monitoring requirements and effluent limits, and a revision to footnote [1] in Attachment A. Revisions to the accompanying Fact Sheet include amendments to the "Whole Effluent Toxicity Testing", "Reopening Clause" and "Industrial Contribution" sections that reflect the referenced permit revisions.

IDEM has determined that a re-public notice of NPDES Permit No. IN0020451 will not be required as a result of the referenced amendments to the permit.

Drafted by: Bill Stenner
December 4, 2009

**STATE OF INDIANA**
**DEPARTMENT OF ENVIRONMENTAL MANAGEMENT**

**PUBLIC NOTICE NO. 2010 – 1B – F**

**DATE OF NOTICE: JANUARY 7, 2010**

**The Office of Water Quality issues the following NPDES FINAL PERMIT.**

**MAJOR – RENEWAL**

**CITY OF NORTH VERNON WWTP**, Permit No. IN0020451, JENNINGS COUNTY, 725 N Greensburg Rd, North Vernon, IN. This municipal facility discharges 2.2 million gallons per day of sanitary, industrial, and combined sewer wastewater into Vernon Fork of the Muscatatuck River. Permit Writer: Bill Stenner at 317/233-1449, bstenner@idem.in.gov.

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## APPEAL PROCEDURES FOR FINAL PERMITS

The Final Permits are available for review & copies at IDEM, Indiana Government Center, North Bldg, 100 N Senate Ave, Indianapolis, IN, Rm 1203, Office of Water Quality/NPDES Permit Section, from 9 – 4, M - F (copies 10¢ per page). Each Final Permit is available at the respective, local County Health Department. **Please tell others you think would be interested in this matter.** Regarding your rights and responsibilities pertaining to the Public Notice process and timeframes, please refer to IDEM websites: http://www.in.gov/idem/5474.htm and IDEM Permit Guide (Public Participation): http://www.in.gov/idem/4172.htm. **To view the Citizen Guide go to:** http://www.in.gov/idem/5803.htm.

**Appeal Procedure:** Any person affected by the issuance of the Final Permit may appeal by filing a Petition for Administrative Review with the Office of Environmental Adjudication **within** eighteen (18) days of the date of this Public Notice. Any appeal request must be filed in accordance with IC 4-21.5-3-7 and must include facts demonstrating that the party requesting appeal is the applicant; a person aggrieved or adversely affected or is otherwise entitled to review by law.
**Timely filing:** The Petition for Administrative Review must be received by the Office of Environmental Adjudication (OEA) **within** 18 days of the date of this Public Notice; either by U.S. Mail postmark or by private carrier with dated receipt. This Petition for Administrative Review represents a request for an Adjudicatory Hearing, therefore must:

- state the name and address of the person making the request;
- identify the interest of the person making the request;
- identify any persons represented by the person making the request;
- state specifically the reasons for the request;
- state specifically the issues proposed for consideration at the hearing;
- identify the Final Permit Rule terms and conditions which, in the judgment of the person making the request, would be appropriate to satisfy the requirements of the law governing this NPDES Permit rule.

If the person filing the Petition for Administrative Review desires any part of the NPDES Final Permit Rule to be stayed pending the outcome of the appeal, a Petition for Stay must be included in the appeal request, identifying those parts to be stayed. Both Petitions shall be mailed or delivered to the address here:
**Phone: 317/232-8591.**

Environmental Law Judge
Office of Environmental Adjudication
IGC – North Building- Rm 501
100 N. Senate Avenue
Indianapolis IN 46204

**Stay Time frame:** If the Petition (s) is filed **within** eighteen (18) days of the mailing of this Public Notice, the effective date of any part of the permit, within the scope of the Petition for Stay is suspended for fifteen (15) days. The Permit will become effective again upon expiration of the fifteen (15) days, unless or until an Environmental Law Judge stays the permit action in whole or in part.

**Hearing Notification:** Pursuant to Indiana Code, when a written request is submitted, the OEA will provide the petitioner or any person wanting notification, with the Notice of pre-hearing conferences, preliminary hearings, hearing stays or orders disposing of the Petition for Administrative Review. Petition for Administrative Review must be filed in compliance with the procedures and time frames outlined above. Procedural or scheduling questions should be directed to the OEA at the phone listed above.

# Appendix G

# Appendix G
# Financial Capabilities Worksheets

COST PER HOUSEHOLD
Worksheet 1

| | | Line No. |
|---|---|---|
| **Current WWT Costs** | | |
| Annual O&M Expenses (Excluding Depreciation) | $2,135,276 | 100 |
| Annual Debt Service (Principal & Interest) | $280,000 | 101 |
| Subtotal (Line 100 + line 101) | $2,415,276 | 102 |
| **Projected WWT & CSO Costs (Current Dollars)** | | |
| Estimated Annual O&M Expenses (Excluding Depreciation) | $62,400 | 103 |
| Annual Debt Service (Principal & Interest) | $285,000 | 104 |
| Subtotal (Line 103 + Line 104) | $347,400 | 105 |
| Total & Projected WWT Costs & CSO Costs (Line 102 + Line 105) | $2,762,676 | 106 |
| Residential Share of Total WWT & CSO Costs | $1,381,338 | 107 |
| Total Number of Households in Service Area | 2394 | 108 |
| Cost per Household (Line 107/Line 108) | $577 | 109 |

RESIDENTIAL INDICATOR
Worksheet 2

| | | Line No. |
|---|---|---|
| Median Household Income (MHI) | | |
| Census Year MHI | $38,659 | 201 |
| MHI Adjustment Factor | 1.04 | 202 |
| Adjusted MHI (Line 201 x Line 202) | $40,205 | 203 |
| Annual WWT & CSO Control Cost per Household (CPH) (Line 109) | $577 | 204 |
| Residential Indicator | | |
| Annual Wastewater & CSO Control Costs per Household as a % of Adjusted Median Household Income (CPH as MHI) (Line 204/Line 203 x100) | 1.43% | 205 |

BOND RATING
Worksheet 3

| | | Line No. |
|---|---|---|
| Most Recent General Obligation Bond Rating | NA | |
| Date | | |
| Rating Agency | S&P | |
| Rating | | 301 |
| Most Recent Revenue (Water & Sewer) Bond | | |
| Date | NA | |
| Rating Agency | S&P | |
| Bond Insurance | | |
| Rating | | 302 |
| Summary Bond Rating | BBB- | 303 |

OVERALL NET DEBT AS A PERCENT OF FULL MARKET PROPERTY VALUE
Worksheet 4

| | | Line No. |
|---|---|---|
| Direct Net Debt (GO Bonds Excluding Double-Barrel Bonds) | NA | 401 |
| Debt of Overlapping Entities (Proportionate Share of Multijurisdictional Debt) | $7,103,782 | 402 |
| Overall Net Debt (Line 401 + Line 402) | $7,103,782 | 403 |
| Market Value of Property | $215,132,297 | 404 |
| Overall Net Debt as % of Full Market Property Value (Line 403/Line 404 x 100) | 3.3% | 405 |

UNEMPLOYEMNT RATE
Worksheet 5

| | | Line No. |
|---|---|---|
| Unemployment Rate-Permittee | 11.3% | 501 |
| Source | census (3/2011) | |
| Unemployment Rate-County | 11.3% | 502 |
| Source | census (4/2010) | |
| Benchmark | | |
| National Average Unemployment Rate | 9.1% | 503 |
| Source | US Dept of Labor | |

MEDIAN HOUSEHOLD INCOME
Worksheet 6

| | | Line No. |
|---|---|---|
| Median Household Income-<br>Permittee (line 203) | $40,205 | 601 |
| Source | | |
| Benchmark | | |
| Census Year MHI | $50,221 | 602 |
| MHI Adjustment Factor<br>(Line 202) | 1.04 | 603 |
| Adjusted National MHI<br>(Line 602 x Line 603) | $52,229 | 604 |
| Source | US Census | |

PROPERTY TAX REVENUES AS A PERCENT OF FULL MARKET PROPERTY VALUE
Worksheet 7

| | | Line No. |
|---|---|---|
| Full Market Value of Real Property (Line 404) | $215,132,297 | 701 |
| Property Tax Revenues | $4,854,201 | 702 |
| Property Tax Revenues as a % of Real Market Property Value (Line 702/701 x 100) | 2.2% | 703 |

PROPERTY TAX REVENUE COLLECTION RATE
Worksheet 8

| | | Line No. |
|---|---|---|
| Property Tax Revenue Collected (Line 702) | $4,854,201 | 801 |
| Property Taxes Levied | $5,772,443 | 802 |
| Property Tax Revenue Collection Rate (Line 801/Line 802 x 100) | 84.1% | 803 |

SUMMARY OF PERMITTEE FINANCIAL CAPABILITY INDICATORS
Worksheet 9

| | Column A<br>Actual Value | Column B<br>Score | Line No. |
|---|---|---|---|
| Bond Rating (Line 303) | BBB- | 2 | 901 |
| Overall Net Debt as a % of Full Market Property Value (Line 405) | 3.3 | 2 | 902 |
| Unemployment Rate (Line 501) | 11.3% | 1 | 903 |
| Median Household Income (Line 601) | $40,205 | 2 | 904 |
| Property Tax Revenues as a % of Full Market Property Value (Line 703) | 2.2% | 2 | 905 |
| Property Tax Revenue Collection Rate (Line 803) | 84.1% | 1 | 906 |
| Permittee Indicators Score (Sum of Column B/Number of Entries) | | 1.66 | 907 |

FINANCIAL CAPABILITIY MATRIX SCORE
Worksheet 10

| | | Line No. |
|---|---|---|
| Residential Indicator Score (Line 205) | 1.43 | 1001 |
| Permittee Financial Capability Indicator Score (Line 907) | 1.66 | 1002 |
| Financial Capability Matrix Category | Medium Burden | 1003 |

# Appendix H

F P B H, Inc.
Engineers ◆ Surveyors ◆ Planners ◆ Inspectors

December 12, 2006

Approved Copy

Mr. David Tennis
CSO Project Manager
Wet Weather Section
Office of Water Quality
Indiana Dept. of Environmental Management
100 North Senate Ave.
MC 65-42 IGNC 1255
Indianapolis, IN 46204-2251

Dear Mr. Tennis:

Please find attached the final revision of the City of North Vernon CSO Long Term Control Plan. While this document is based on our previously emailed revisions, should you have any questions or comments, please feel free to contact me directly at the telephone number or email address listed below.

It has been a pleasure working with you. I wish to thank you for your patience, guidance and assistance to resolve this matter.

Sincerely,

Daniel W. Wright

Geologist/Environmental Specialist
(812)346-2045 ext. 105
dwright@fpbhonline.com

CC: Mr. David McCorvie

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Toll Free: 1-866-ENG-FPBH

*THE CITY of NORTH VERNON, INDIANA*
*UTILITY SERVICE BOARD*
*WASTEWATER DEPARTMENT*

# *CSO LONG TERM CONTROL PLAN*

*SUBMITTED*
*December 11, 2006*

*TO*

*US EPA, REGION 5*
*And*
*INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT*

# The CSO Long-Term Control Plan

# For

# The City of North Vernon, Indiana

**By**
**Daniel W. Wright**
**Environmental Specialist**

**FPBH, Inc.**

**72 Henry Street**
**P.O. Box 47**
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**1-866-ENG-FPBH**

**Project No. 04-6699**

# CSO Long-Term Control Plan

**Table of Contents**

# Executive Summary

## Purpose

This report presents a plan for controlling the discharge of combined sewer overflows (CSOs) from the City of North Vernon, Indiana, sewer system to the Muscatatuck River. As defined in the US EPA's CSO control policy.

**Phase I (Technology Based Standards) of the long-term control plan (LTCP) should contain the Nine Minimum Controls listed below to maximize the existing structures and policies.**

1. Proper Operation and Maintenance of the Collection System
2. Maximize Use of Collection System for Storage of excess flows
3. Review and Modify Pretreatment Requirements
4. Maximize Flow to Publicly Owned Treatment Works (POTW) for Treatment
5. Eliminate Dry Weather Overflows
6. Control Solid and Floatable Materials in CSO discharges
7. Pollution Prevention Programs (source control and source reduction)
8. Public Notification to ensure the public receives adequate notification of CSO occurrences and impacts
9. Monitoring to characterize CSO impacts, identify problems CS points and identify the effectiveness of the previous eight controls. This control implemented through the Stream Reach Characterization and Evaluation Protocol and Report (SRCER)

The City of North Vernon has met or is in the process of meeting all nine minimum controls.

**Phase II (Water Quality Based Standards)**

1. Give highest priority for CSO control to sensitive areas
2. Solicit public participation in the selection and identification of priority areas and CSO control measures
3. Characterization and monitoring for presumptive approach in selection of CSO control alternatives
4. Evaluation of alternatives ranging from "no action" to "complete elimination or capture" of CSO discharges

5. Evaluation of maximization of wet weather flows at the existing treatment plant

6. Cost vs. performance consideration for screening and ranking of control alternatives

7. Implementation schedule for CSO controls

8. Affordability analysis (ability of municipality to pay for CSO controls over a designated period of time)

9 Post-construction compliance monitoring program

10. CSO Operation Plan revision to reflect changes resulting from construction of CSO controls.

The Combined Sewer Overflow (CSO) Long-Term Control Plan (LTCP) Use Attainability Analysis Guidance document states the overall LTCP planning approach must consist of the following major elements:

1. Consider impacts to sensitive areas near CSO discharge points
2. Establish public participation process
3. Characterize, monitor and model CSO system (however North Vernon is exempt from modeling due to size)
4. Evaluate CSO control alternatives
5. Maximize flow to and through the POTW
6. Establish a CSO Cost/Performance Curve
7. Provide an implementation schedule
8. Implement CSO controls on an approved schedule
9. Develop post-construction monitoring and sampling protocol

## Background

The preamble to the 1972 Clean Water Act (Public Law 92-500) states that the principal objective of this legislation is to "restore and maintain the chemical, physical, and biological integrity of the nation's waters."

In December of 1992, USEPA signed the draft Combined Sewer Overflow control policy. The main purpose of this policy is to expand on the National CSO Control Strategy published on September 8, 1989, and to expedite compliance with the Clean Water Act. The final CSO Control Policy was approved in April 1994.

CSOs are mixtures of sanitary sewage, industrial wastewater, and storm water runoff, which often contain high concentrations of suspended solids, bacteria, heavy metals, floatables, nutrients, oxygen-demanding compounds, oil and grease, and other pollutants. Discharges of these materials can degrade water quality, pose risks to human health, threaten aquatic habitat, and impair the use and enjoyment of the nation's waterways.

As flows to the combined sewers exceeded their conveyance capacity, overflows to the receiving streams were provided. The issues associated with controlling CSO's have always been very complex and costly. To deal with these, EPA established in 1994 a CSO control policy which mandated that a long-term control plan be developed to minimize the impacts of CSO discharges on receiving streams.

In 1996 the City of North Vernon completed a preliminary stream reach characterization, the result of which is being used in part as the basis or the City's Long Term Control Plan (LTCP).

## Long-Term Control Plan

The North Vernon, Indiana, long-term CSO control plan is based on the City's NPDES permit, which requires that the nine minimum controls be implemented and that the efforts regarding CSO control be reported annually to IDEM. A copy of the permit is provided in Appendix A.

Previous monitoring– Stream Reach Characterization Report, 1996, indicated the biological information collected was not adversely effected from the CSOs in place at the time. In fact, the data and information indicated that severe scouring from high water levels and stream velocities of the Vernon Fork during and after wet weather events as the biggest threats to aquatic biota.

In addition, there was no evidence of negative water quality impacts. To the contrary, many clean water organisms were observed in the microinvertabrates and macroinvertabrates collected (e.g., bass, bluegill and caddis fly larvae were observed downstream from Outfall 001 and 002)

The City has planned and eliminated all but one CSO outfall and has since increased the plant capacity from a daily average flow of 1.75 MGD to 2.2 MGD, with an increased peak hydraulic capacity of 4.7 MGD. In addition the upgrades provide for the proper operation of the EQ basin and storage of up to 1 Million gallons of wet weather flows.

## Scope of Work

The scope of this project expands on the work and data collection previously completed by the City of North Vernon, and updates the results of the Stream Reach Characterization Study done by Beckmar Environmental Laboratory in 1996. In addition, the City submitted its nine minimum controls as a part of the Combined Sewer System Operating Plan (CSSOP). Any additional requirement to the water quality standards will be identified and additional information will be gathered on topography, land use, recreational area, soil geology, vegetation, natural resources, precipitation, temperature (air and water), storm drainage system, wastewater collection system map, population, zoning, point discharge locations, any salt storage facilities, physiographic and bathymetric data, sediment data, and federal and state water quality standards.

Included in this project will be meetings with the local community to obtain the user's views. Additional educational materials will be developed to inform the public about the CSO challenges faced by the City. The river will be examined to determine the current uses and how that compares to designated uses in the water quality standards. Modeling of the system was waived by IDEM as requested by the City on June 2004 per the provision set forth for small communities (less than 10,000) since the City population is 6,500.

## Nine Minimum Controls

Upon the completion of this report the following Nine Minimum Controls (NMC) should all be identified and addressed in direct relation to the City of North Vernon.

1.) The City of North Vernon shall implement proper operation and maintenance programs for the sewer system and all CSO outfalls to reduce the magnitude, frequency, and duration of CSOs. The program shall consider regular sewer inspections; sewer, catch basin, regulator cleaning; equipment and sewer collection system repair or replacement, where necessary; and disconnection of illegal connections.

2.) The City of North Vernon shall implement procedures that will maximize use of the collection system for wastewater storage that can be accommodated by the storage capacity of the collection system in order to reduce the magnitude, frequency and duration of CSOs.

3.) The City of North Vernon shall review and modify, as appropriate, its existing pretreatment program to minimize CSO impacts from the discharges from non-domestic users.

4.) The City of North Vernon shall operate the POTW treatment plant at maximum treatable flow during all wet weather flow conditions to reduce the magnitude, frequency and duration of CSOs. All flows shall be delivered to the treatment plant within the constraints of the treatment capacity of the POTW and collection system.

5.) Dry weather overflows from CSO outfalls are prohibited. Each dry weather overflow must be reported to IDEM as soon as discovered. When a dry weather overflow is detected corrective action shall begin immediately. The City of North Vernon shall inspect the dry weather overflow each subsequent day until the overflow has been eliminated.

6.) The City of North Vernon shall implement measures to control solid floatable materials in the CSOs.

7.) The City of North Vernon shall implement a pollution prevention program focused on reducing the impact of CSOs on receiving waters.

8.) The City of North Vernon shall implement a public notification process to inform citizens of when and where CSOs occur. The process will include a mechanism to alert persons of the occurrence of CSOs and a system to determine the nature and duration of conditions that potentially harmful for users of receiving waters due to CSOs.

9.) Monitoring – The City of North Vernon will continue to monitor CSO outfalls to characterize CSO impacts and the efficiency of CSO controls. This shall include collection of data that will be used to document the existing baseline conditions, evaluate the efficiency of the technology-based controls and determine the baseline, conditions upon which the long term control plan will be based. These data shall include:

a. All CSO outfalls have been eliminated with the exception o f CSO #1 located at the head of the treatment plant. When activated the flow is discharged to Outfall 002 and measured through a fixed elevation rectangular weir monitored by an ultrasonic flow meter coupled to a chart recorder with indicator and totalizer functions.

b. Routine reports are filed with IDEM stating the number of CSO evens, the frequency and duration of CSOs.

c. The Vernon Fork of the Muscatatuck River uses include livestock and wildlife watering, protection of aquatic life, boating and canoeing, fishing and warm water aquatic life. Upstream of the plant usage includes municipal drinking water supply and irrigation.

d. Water quality data of the receiving stream is addressed in section 9, The Stream Reach Characterization Study conducted by Beckmar Environmental Laboratory on May 22, 1996, specifically in table 9.3 sample site comparisons are made upstream, at the outflow location and downstream. Site #1 is upstream, Site #2 is located at Outfall 001 and Outfall 002 which are both located in close proximity of the wastewater treatment plant. Site #3 is located downstream from the wastewater treatment plant.

e. Water quality impacts directly related to CSOs is also addressed section 9 which states that the impact from CSOs appears to be relatively minor with a larger impact as a result of high flow and velocity unrelated to the CSO events.

Modeling

- The City of North Vernon requested a waiver to model the system based on a provision to exempt small communities (less than 10,000) which North Vernon does qualify and such a waiver was granted by IDEM.

# Introduction

## Watershed Description

The North Vernon storm water drainage area is located on the east side of the City of North Vernon in Jennings County Indiana, as shown on Figure 1. The entire study area covers approximately 1,250 acres. The land is generally characterized by hills and uplands that rise 650 feet (198m) to 720 feet (220 m) above sea level and approximately 35 feet above the Muscatatuck River at the wastewater treatment plant. During high flows caused by storm events, the CSO discharges directly to the Muscatatuck River

Some of the storm water conveyance systems in North Vernon contain small detention basins; however, since they are not large enough to have a significant effect on controlling storm water flows, they were not included in the analysis of the storm water conveyance system.

## Temperature

The climate of the study area is characterized by wide fluctuations in temperature and precipitation, both daily and seasonal. The coldest monthly is normally January, with an average temperature of 30.1°F (-3.42 °C). The warmest month is July, with an average temperature of 75.5°F (24.17 °C). The monthly distribution of temperature is listed in Table 1.

Table 1 Monthly Temperature Distribution

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Average temp. (°F) | 30.1 | 35.0 | 44.6 | 54.2 | 63.7 | 71.9 | 75.5 | 73.6 | 67.1 | 55.9 | 45.3 | 34.9 |
| High temperature (°F) | 38.5 | 44.6 | 55.0 | 65.7 | 75.0 | 82.7 | 86.0 | 84.1 | 78.4 | 67.4 | 54.4 | 43.0 |
| Low temperature (°F) | 21.6 | 25.4 | 34.1 | 42.6 | 52.3 | 61.1 | 65.0 | 63.0 | 55.7 | 44.3 | 36.1 | 26.8 |
| Precipitation (in) | 3.0 | 2.7 | 3.8 | 4.4 | 4.7 | 3.8 | 4.4 | 4.4 | 2.9 | 3.2 | 3.8 | 3.4 |

## Precipitation

The annual average precipitation in the area is 44.5 inches. The monthly distribution of precipitation is also listed in Table 1. Summer precipitation is generally in the form of high intensity thunderstorms and short duration rains. Hourly rainfall in the range of 1 to 1.5 inches is not uncommon. The maximum 24-hour rainfall reported in North Vernon was 6.5 inches in June 1960.

As indicated in the table, the majority of rainfall occurs between April and August; however the distribution is fairly even throughout the year.

## Vegetation

The density of vegetation varies throughout the area; it is heaviest primarily along the natural creek banks in undeveloped areas outside the city limits, and light to moderate along the natural creek banks in developed area within the city limits. The effect of vegetation on water quality can be substantial. A significant degree of storm water management can be achieved naturally, by preserving buffer zones of vegetation around streams. The vegetation will stabilize the stream banks and reduce erosion by slowing water velocities. Vegetation also acts as a natural filter for runoff by capturing sediment to which fertilizers and other pollutants are attached. Regular maintenance should be performed on the stream banks to prevent overgrowth of vegetation, which can inhibit storm water flow and cause backwater effects.

## Soils

The soils in North Vernon are primarily the Cincinnati-Rossmoyne-Grayford soil Association in the upland areas (approximately 75%) and the Haymond-Wakeland-Wilbur soil Association in the lowland areas (approximately 25%).

The Cincinnati-Rossmoyne-Grayford is characterized by deep, well drained and moderately well drained, nearly level to moderately steep soils formed dominantly in loess and underlying loamy glacial till; on uplands.

The Haymond-Wakeland-Wilbur is characterized by deep, well drained to somewhat poorly drained, nearly level soils formed in recent loamy alluvium; on bottom lands.

## Topography

The City of North Vernon is characterized by rolling hills intertwined with the Muscatatuck River. The elevation is 650 feet (198 m) to 720 feet (220 m) above sea level as shown in the topographical map Fig. 1 and aerial photo Fig. 2.

Fig. 1

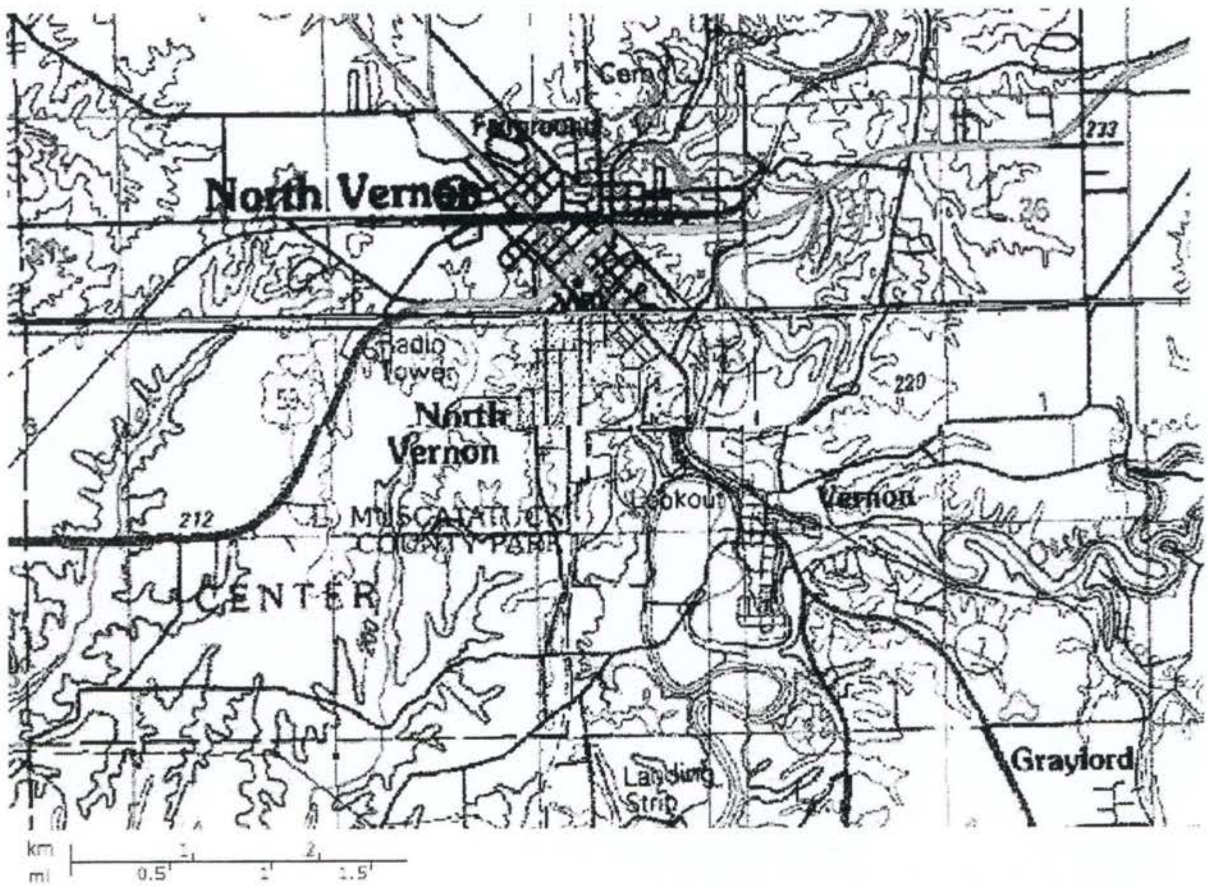


Fig. 2

## Natural Resources

Jennings County, Indiana, is located within the Muscatatuck River Watershed of the White River Basin. Most of the state north of the Jennings County was twice covered by glaciers. Besides having a leveling effect, the glaciers deposited silts, sand, gravels, and boulders, providing parent materials for soil development. The gentle terrain and deep, silty soils are ideal for agriculture use.

Jennings County is rich in fish, forest, and wildlife resources, some of which are available to the public. The Federal and State Departments of Natural Resources manage more than 5 conservation areas totaling just over 10,000 acres in Southeastern Indiana, including many public access points on streams and on the Muscatatuck River.

## Land Use

Native Vegetation in the Muscatatuck River watershed is an upland mixed hardwood forest in varied stages of succession. The U.S. Geological Survey – Biological Resources Division and the U.S. Fish and Wildlife Service are overseeing the National Gap Analysis Program (GAP). In Indiana, Indiana State University and Indiana University are carrying out the Indiana Gap Project which involves an analysis of current vegetative land cover through remote sensing (ISU 2001). This analysis provides vegetative cover date in 30 by 30-meter grids. The following is a summary of vegetative cover in the watershed determined from the GAP image:

2.6% Urban (impervious, low and high density)
55.4% Agricultural Vegetation (row crop and pasture)
35.9% Forest Vegetation (shrubland, woodland, forest)
5.8% Wetland Vegetation (Palustrine: forest, shrubland, herbaceous)
0.4% Open Water

## Recreational Areas

Table 2 lists a number of parks, forests, nature preserves and other recreational areas within Jennings County included in the Muscatatuck River Watershed.

Table 2

| Special Area | Manager |
|---|---|
| | |
| Brush Creek Fish & Wildlife Area | DNR Fish & Wildlife |
| Calli Farm | DNR Nature Preserve |
| Crosley Fish & Wildlife Area | DNR Fish & Wildlife |
| Guthrie Woods | Private – The Nature Conservancy |
| Jefferson Proving Grounds | U.S. Department of Defense |
| Muscatatuck County Park | Jennings County Park & Rec. |
| Muscatatuck National Wildlife Refuge | U.S. Fish & Wildlife Service |
| Muscatatuck River Bluffs | Private – The Nature Conservancy |
| Selmier State Forest | DNR Forestry |
| Tribbets Flatwoods | Private – The Nature Conservancy |
| Wells Woods Nature Preserve | DNR Nature Preserve |

## Endangered Species

Two wildlife species that have been identified as being endangered (Indiana bat and bald eagle) inhabit the Muscatatuck River basin. A wide range of factors impact these species (Table 3).

Table 3

| | | | |
|---|---|---|---|
| Jennings | Indiana bat (Myotis sodalis) | Endangered | Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests |
| | Bald eagle (Haliaeetus leucocephalus) | Threatened | Maternity and foraging habitat = lake environments & river corridors with well developed riparian woods. |

## River Uses

- Irrigation
- Livestock and wildlife watering
- Protection of aquatic life
- Boating and canoeing
- Swimming (No designated areas, incidental to boating, canoeing and/or fishing activities)
- Drinking water supply
- Warm water aquatic life

The Muscatatuck River is not listed on the 303(d) list of impaired streams however more information is available in appendix B FACT SHEET IDEM 32/01/018/1999 Rev March 2001.

Dissolved oxygen readings are commonly used to measure water quality and determine whether the water is able to support desirable aquatic life. The ideal dissolved oxygen levels for fish are between seven and nine mg/l. Most fish can't survive at levels below three mg/l for extended periods of time.

pH is a convenient method of expressing the acidity or alkalinity of a solution. Natural waters usually have a pH between 6.5 and 8.5, with 7.0 being neutral. Values less than 7.0 indicate acidity, and values greater than 7.0 are considered basic or alkaline.

Temperature can adversely affect water quality and aquatic life. Aquatic organisms tend to be poorly adapted to rapid temperature changes and rising water temperatures can have devastating effects.

Specific conductance is related to the type and concentration of ions in solution. It can be used for approximating the total dissolved solids content of water by testing its capacity to carry an electrical current.

Turbidity is a measure of the cloudiness of water. The term "turbid" is applied to waters containing suspended matter that interferes with the passage of light through water or in which visual depth is restricted. Turbidity may be caused by a wide variety of suspended materials, such as clay, silt, finely divided organic and inorganic matter, plankton and other microscopic organisms. Turbidity in water has public health implications due to the possibilities of pathogenic bacteria. Turbidity also interferes with water treatment (filtration) and affects aquatic life.

For the protection of aquatic life, the dissolved oxygen concentration should not be lower than 5 mg/L at any time. Discharges from the CSOs have the potential to adversely impact the aquatic life by increasing organic material

(TBOD) concentration and reducing the dissolved oxygen concentration in the river.

On May 22, 1996, Beckmar Environmental Laboratory conducted a preliminary recreational use attainability analysis of the river upstream, at the wastewater treatment plant and downstream of the City.

The first site known as the Dam site is located approximately 11,000 feet upstream from the wastewater treatment plant at the water treatment plant intake facility. Samples were taken approximately two feet above the dam overflow in the middle of the dam. The estimated flow was 893.29 $ft^3$/min (111.38 gal/sec). The area is a popular fishing spot for local residents. Benthos, plankton and fish samples were taken approximately 150 feet below the dam. Chemical analysis is shown in table 4.

The second site located 100 feet below the wastewater treatment plant discharge, know as the mixing zone between the effluent and the receiving water. The river in this area was approximately 100 feet wide and there was debris and trash in this area. The samples were taken in the middle of the river just above or in the riffles. Chemical analysis is shown in table 4.

The third site was located at the Muscatatuck County Park located approximately 14,000 feet downstream from the wastewater treatment plant discharge. Samples were taken in a riffle area located in the middle of the stream. The river measured 112 feet wide in this location. Plankton, fish and insect samples were taken. Chemical analysis is shown in table 4.

Table 4

| | **Site #1** | **Site #2** | **Site #3** |
|---|---|---|---|
| Alkalinity (mg/l) | 153.20 | 160.40 | 158.00 |
| Cyanide (mg/l) | < 0.01 | < 0.01 | < 0.01 |
| BOD (mg/l) | 5.2 | 4.4 | 4.1 |
| Hardness (total)(mg/l) | 187.4 | 231.2 | 182.1 |
| Ammonia (mg/l) | 0.042 | 0.042 | 0.042 |
| Nitrite (mg/l) | 0.018 | 0.018 | < 0.01 |
| Nitrate (mg/l) | 2.15 | 2.55 | 1.45 |
| pH (S.U.) | 8.72 | 8.54 | 8.58 |
| Temperature (Degrees C) | 19 | 20 | 18 |
| DO (mg/l) | 15.12 | 10.61 | 13.2 |
| Phosphorous (Total) | 0.11 | 1.55 | 0.038 |
| % Total Solids | 0.066 | 0.087 | 0.084 |
| TSS (mg/l) | 14 | 9 | 15 |
| Turbidity (NTU) | 3.3 | 3.3 | 2.6 |
| Cadmium (mg/l) | < 0.002 | < 0.002 | < 0.002 |

| | | | |
|---|---|---|---|
| Chromium (mg/l) | < 0.020 | < 0.020 | < 0.020 |
| Chromium-Hexavalent (mg/l) | < 0.010 | < 0.010 | < 0.010 |
| Copper (mg/l) | < 0.010 | < 0.010 | < 0.010 |
| Lead (mg/l) | < 0.030 | < 0.030 | < 0.030 |
| Mercury (mg/l) | < 0.001 | < 0.001 | <0.001 |
| Nickel (mg/l) | < 0.020 | < 0.020 | < 0.020 |
| Zinc (mg/l) | < 0.010 | < 0.010 | < 0.010 |

## Sensitive Areas Defined

In accordance with the CSO Control Policy, municipalities should give highest priority to controlling overflows to receiving waters considered sensitive. As part of developing the LTCP, municipalities should be required to identify all sensitive water bodies and the CSO outfalls they discharge to them. The designated beneficial uses of the receiving water bodies will help identify sensitive areas (EPA, 1995g). Sensitive areas are identified by the Indiana Department of Environmental Management, in coordination with other State and Federal agencies as appropriate. According to the CSO Control Policy, sensitive areas include:

- Outstanding National Resource Waters
- National Marine Sanctuaries
- Waters with threatened or endangered species or the designated critical habitat
- Primary contact recreation waters, such as bathing beaches
- Public drinking water intakes or their designated protected areas
- Shellfish beds

In accordance with the CSO Control Policy, the LTCP should give highest priority to the prohibition of new or significantly increased overflows (whether treated or untreated) to designated sensitive areas. If physically possible and economically achievable, existing overflows to sensitive areas should be eliminated or relocated unless elimination or relocation creates more environmental impact than continued discharge (with additional treatment necessary to meet WQS) to the sensitive area.

## Sensitive Areas Identified

**Outstanding National Resource Waters** – There are no Outstanding National Resource Waters located within the Vernon Fork of the Muscatatuck River per the Stream Reach Characterization Study conducted by Beckmar Environmental Laboratory (May 22, 1996).

**National Marine Sanctuaries** – There are no National Marine Sanctuaries located on the Vernon Fork of the Muscatatuck River.

**Waters with threatened or endangered species or the designated critical habitat** – The Bald eagle (Haliaeetus leucocephalus) is listed as a threatened species in this area based on maternity and foraging habitat defined as river corridors with well developed riparian woods. While there are some developed riparian woods along the Vernon Fork, there are no known significant Eagle populations in the area neither around the treatment plant nor within the SRCER limits. This is most likely due to the limiting size and flow of the Vernon Fork of the Muscatatuck River.

The Indiana bat (Myotis sodalis) is listed as an endangered species in this area based on maternity and foraging habitat structure of small stream corridors with well developed riparian woods and upland forests and hibernacula environment located in caves and mines. While no formal bat study has been conducted in this area casual observation indicate there are bat colonies located along the SRCER limits.

**Primary contact recreation waters** – There are no bathing beaches located along the Vernon Fork of the Muscatatuck River, however swimming and wading do occur primarily incidentally in conjunction with boating, canoeing and fishing. The Vernon Commons is the first public access site located 3.8 river miles downstream from permitted CSO outfall. The commons area is a playground owned by the Town of Vernon and is used as a canoe access point. There is no formal beach or boat ramp at this site.

The second public access site at the Muscatatuck County Park is located 6.1 river miles downstream from the permitted CSO outfall at the Wastewater Treatment Plant. The access site at the County Park is simply an area that has a trail leading down to the river from the park, but there is no boat or canoe access at this location.

The next public access site is located approximately 9.1 river miles downstream at the boat ramp located next to the iron bridge in Crosley State Fish and Game Area. This is the only maintained boat ramp located on the Muscatatuck River down stream from the wastewater treatment plant for at least 15 river miles. This site is utilized for canoe and small boat access only.

**Public drinking water intakes or their designated protected areas** – The only public drinking water intake located on The Vernon Fork of the Muscatatuck River is for the City of North Vernon and is located upstream to the wastewater treatment plant and the CSO outfall.

**Shellfish beds** – There are no shellfish beds located within the limits of the SRCER on the Vernon Fork of the Muscatatuck River.

## CSO Controls in Sensitive Areas

The City of North Vernon has eliminated all CSO outfalls save one located at the plant listed as CSO outfall # 002. This allows for better control of the CSO discharge since there is now only one discharge point. Discharge in this location will allow travel of approximately 3.1 river miles before arriving at the Commons Playground in Vernon which is the first access point along the river. Signage has been placed at the Commons warning of possible CSO exposure during high water events.

One main objective of the LTCP is to control untreated CSO flows to the Vernon Fork of the Muscatatuck River consistent with the CSO policy for presumptive compliance to minimize impacts to downstream sensitive areas. By meeting this objective North Vernon will eliminate the need to continually perform an updated review of the sensitive areas.

# CSO Locations

## 1.1 Background

The North Vernon, Indiana, combined sewer system consists of several inputs, but now only one discharge location. Flow into the system consists of sanitary sewage, storm water, and combined sewage (storm water and sanitary flow).

## 1.2 CSO Outfall Structures

At this time there is only one location where combined sewage is discharged from the collection system to the Muscatatuck River. This CSO is located south of Greensburg Street in North Vernon just east of the POTW and listed as permitted Outfall #002.

# Wastewater Collection System

## 2.1 Introduction

The North Vernon Wastewater Collection System was originally built in the 1930s with the construction of the "A" trunk sewer line and its tributary sewers. In the late 1950s, the City expanded both its collection and treatment systems by constructing approximately 22,500 linear feet of 12 inch to 36 inch interceptor sewer, two (2) new lift stations, a new "Main Intercepting Chamber", and a new 24 inch interceptor sewer ("Y" line). Seven (7) overflows were constructed: one (1) at each of the two main lift stations; five (5) in the collection system; including the one (1) at the "Main Intercepting Chamber" and one (1) at the treatment plant. The sewers built during this project were designed and constructed as combined sewers.

The City expanded and upgraded the treatment and collection system again in the late 1970s. Overflow structures were removed in the collection system by constructing storm sewers to eliminate the storm water inlets connected to the existing combined sewers. The "N" line was completely replaced and increased in size to handle the discharge from a new 1,400-gpm lift station. A section of the "F" line was abandoned and the flow diverted to the new 1,400-gpm lift station. The Main Intercepting Chamber was modified to eliminate an overflow by the installation of a parallel 24-inch relief sewer from the chamber to the treatment plant. A new storm water pump station and 1,000,000 gallon equalization basin were constructed to handle excess wet weather flow. An overflow from the storm water pump station wet well was constructed that is now designated as CSO No. 1 (Outfall 002).

Three major trunk lines serve North Vernon. Each of these trunk lines represents the major service areas within the City. The "A" line collects flow from the northern portion of North Vernon and the downtown area. The "H" line serves the southern portion of North Vernon and the Town of Vernon. The "N" line serves the central portion of North Vernon. Table 5 summarizes the three major trunk lines and sub basins contributing to each trunk line.

Table 5 Major Basins and Sub basins

| Basin Name | Sub basin | Type of System | Service Area (Acres) |
|---|---|---|---|
| "A" Line | Downtown | Combined | 171 |
| | Norris Ave. | Separate | 101 |

| | | | |
|---|---|---|---|
| | Northeast | Combined | 256 |
| | Northwest | Separate | 704 |
| | Second St. | Combined | 175 |
| "N" Line | East | Combined | 130 |
| | Platter | Combined | 202 |
| | US 50 West | Separate | 176 |
| "H" Line | Southeast | Combined | 319 |
| | Long St. | Combined | 384 |
| | Town of Vernon | Separate | 128 |

## 2.2 Lift Station Operation and Maintenance

North Vernon operates twenty-one (21) pump stations varying in size from 24 gallons per minute (gpm) to 1,400-gpm capacity. A lift station inventory is included in Table 6. Operation and maintenance of the lift stations is the responsibility of the Maintenance Foreman.

Table 6 North Vernon Lift Station Inventory

| LS No. | Lift Station Name | No. of Pumps | Flow (gpm) | Head (ft) | Motor (hp) | Service Area (Ac) | Service Sub basin |
|---|---|---|---|---|---|---|---|
| 1 | Hidden River | 2 | 75 | 66 | 5 | 27 | WWTP |
| 2 | Thompson's | 2 | 30 | 70 | 3 | 11 | Downtown |
| 3 | Summit Street | 2 | 60 | 96 | 5 | 14 | Downtown |
| 4 | Northeast | 2 | 200 | 87 | 15 | 55 | Downtown |
| 5 | Third St. – South | 2 | 45 | 55 | 3 | 4 | Northeast |
| 6 | Third St. – North | 2 | 35 | 33 | 2 | 3 | Northeast |
| 7 | Kreutzjans | 2 | 100 | 21 | 3 | 4 | 2nd Street |
| 8 | Second Street | 2 | 24 | 14 | 2 | 1 | 2nd Street |
| 9 | NVIC | 2 | 105 | | | | Northwest |
| 10 | Northwest | 3 | 500 | 68 | 15 | 275 | Northwest |
| 11 | Middle School | | | | | | Abandoned |
| 12 | Highway 50 West | | | | | | Abandoned |
| 13 | Platter Drive | 1 | 1400 | | 50 | | Southwest |
| 14 | Norris Ave. | 2 | 80 | 112 | 15 | 50 | Norris |
| 15 | Long Street | | | | | | Abandoned |
| 16 | Child's Lane | | | | | | Abandoned |
| 17 | Whitey Miller's | 2 | 32 | 22 | 2 | 2 | Southeast |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 18 | Spring Heights | 2 | 40 | 42 | 3 | 7 | Southeast |
| 19 | Park Ave | 2 | 45 | 58 | 3 | 6 | Southeast |
| 20 | Twin Oaks | 2 | 45 | 30 | 3 | 3 | Southwest |
| 21 | Sand Creek School | 2 | 80 | | | | Northwest |
| 22 | Southwest | 3 | 634 | 165 | 25 | 988 | Southwest |
| 23 | 108 Spring Heights | 1 | 35 | | | | Southeast |
| 24 | 105 Spring Heights | 1 | 35 | | | | Southeast |
| 25 | 380 Park Ave. | 1 | 35 | | | | Southeast |

## 2.3 Flushing and Cleaning Program

The collection system staff uses the "Water Jet" high pressure cleaning equipment or the VACTOR unit, purchased in 1997, when responding to problems or complaints. Now that the City has the VACTOR unit, the projected schedule for flushing and cleaning the complete system is to complete 25 percent of the system each year so that the whole system is cleaned once every 4 years.

## 2.4 Catch Basin Cleaning

There is not a planned and managed program for routine catch basin cleaning. It has been done on an "as needed" basis and is currently managed by the Wastewater Department. The City purchased a VACTOR truck to allow for more routine catch basin cleaning.

## 2.5 Sewer Blockages

Upon receipt of a blockage complaint or notification, a determination of responsibility - City or property owner - is made. If the blockage is a City responsibility, a crew is dispatched as soon as practicable, within four (4) hours, to clear the blockage, dependent on severity. If the responsibility is the owner's, e.g., the lateral house connection, the owner is informed and required to privately contract for the correction. The City is responsible from the main sewer line to the right of way for the respective sewer main.

## 2.6 Sewer Repairs

Problems, real and potential, are routinely identified by a variety of methods including construction inspections, video inspection, smoke testing, flow monitoring and/or complaint response. Each problem is evaluated and prioritized by size, flow volume, need for repair, threat to the environment and public health, and impact to the collection and treatment system. A collection system work order is completed for each identified problem and a prioritized repair date projected - immediate, short term or long term. At least two (2) working days prior to any excavation the "Call Before You Dig" number (1-800-382-5544) is called to identify other underground utilities in the area. Each adjacent property owner is notified of the pending project to minimize inconveniences and to insure good public relations.

The Wastewater Department collection system crew makes minor repairs (e.g., manhole rehabilitation/replacements less than 4 feet deep) in the collection system. Major repairs are performed through contractual services.

## 2.7 Street Cleaning

North Vernon has a street sweeper and conducts routine street-cleaning program. The Street Department picks up large objects dumped along curbs or roadways that could get into catch basins or sewers. The increased environmental awareness in the community and the active maintenance program in the collection system obviate the City from the need to expend a large sum of money to purchase additional street sweeping equipment at this time.

## 2.8 Data/Information/Records Retention

The Wastewater Department keeps records to track the following:

1. Manhole repair requirements;
2. Sewer repairs required;
3. Root problems; and
4. Complaints

## 2.9 Actions Implemented or to be Implemented

1. The Wastewater Department developed and implemented a collection system cleaning program so that all sewers are cleaned at least once every four (4) years, with high maintenance areas cleaned more frequently.

2. The Wastewater Department developed and implemented a program for routine manhole inspection so that all manholes are inspected at least once every five (5) years.

3. The Wastewater Department will clean all lift stations at least two (2) times per year.

4. The Wastewater Department has developed a database to track maintenance activities needed, scheduled, and/or completed.

5. A program for routine catch basin cleaning will be developed to meet the objectives of this plan.

# Treatment Plant

The Wastewater Treatment Plant is the final component of the collection and treatment system. The North Vernon Wastewater Treatment Plant was originally constructed in 1934 at the site on Greensburg Street; modified in 1979; and expanded/upgraded in 1997 to treat increased flows and to be more flexible and reliable in operating modes. The treatment plant provides secondary treatment utilizing activated sludge processes and sand filtration for effluent polishing with chlorination for disinfection. Currently biosolids are contract hauled offsite for disposal.

North Vernon's wastewater treatment plant is intended to treat all dry weather wastewater transported by the collection system. Since the collection system is a combined sewer system, the volume of wastewater transported and treated is dependent on weather conditions and wet weather events.

The wastewater treatment plant has an average daily flow design capacity of 2.2 million gallons per day (MGD) and a peak hydraulic design flow of 4.76 MGD. The treatment plant has an apparent maximum hydraulic capacity of 6.0 MGD, based on observations made since the plant expansion/upgrades were placed on-line.

## 3.1 Flow Monitoring

There are two (2) possible locations to which flow can be directed from the collection system – through the treatment plant and out Outfall 001 or through the CSO at the storm water pump station and out Outfall 002. There is only one discharge location from the plant after treatment and there are no unit process bypasses that could allow wastewater to be discharged to the effluent Outfall (001) once wastewater enters the plant for treatment. Filters, contact basin and the grit channel can all be bypassed, however at this time only the filters are bypassed during extreme high flows as a "no feasible alternative" measure.

During dry weather conditions, wastewater flows directly to the plant's preliminary treatment unit. Wastewater flow is measured through a 12-inch Parshall flume. The influent flume is monitored by an ultrasonic flow meter coupled to a chart recorder with indicator and totalizer functions.

During wet weather conditions, the plant's design capacity is directed to the preliminary treatment unit and excess flow is pumped to the equalization basin (EQ basin) for storage and treatment subsequent to flows receding. Flow pumped to the EQ basin is measured metered and dial up alarms are set based on tank level the first at 10 feet, the second at 14 feet at 16 feet the EQ will start to flow back into the plant.

Wastewater directed to the preliminary treatment unit or the EQ basin must pass through the treatment plant before being discharged. Flow through the treatment plant can only be discharged through the plant's Outfall (001). The effluent flow is measured by a 12-inch Parshall flume installed in the outfall sewer line and is monitored by an ultrasonic flow meter that documents all flow that has passed through the treatment plant. The flow meter is coupled to a chart recorder with indicator and totalizer functions.

During sustained wet weather conditions, after the flow into the preliminary treatment unit has been maximized and the maximum volume of excess flow has been stored in the EQ basin and the influent sluice gate has been partially closed to store flow in the collection system, excess wet weather flow is directed by a diversion structure to CSO No. 1 and is discharged through Outfall 002, located at the headwall of the plant effluent structure. (While extremely rare it should be noted that during an extremely heavy rain event conditions may cause flows at such fast rates that a major portion of what is typically diverted to the EQ Basin can bypass that system and overflow the control gates causing an immediate CSO event).

It must be noted that Outfall 002 is distinct and separate from Outfall 001. Flow discharging through Outfall 002 is measured through a fixed elevation rectangular weir monitored by an ultrasonic flow meter coupled to a chart recorder with indicator and totalizer functions.

Additional flow monitoring is performed at several locations in the plant for process control and process optimization. This is summarized in Table 7.

Table 7 Additional Flow Monitoring

| Location/Flow | Flow Meter Type | Functions | Application |
|---|---|---|---|
| Intermediate Pump Station | Ultrasonic | Indicator; Totalizer | Process Control; Process Performance; Unit Evaluation |
| Return Activated Sludge | Ultrasonic | Indicator | Process Control; Process Performance; Unit Evaluation |
| Waste Activated | This is calculated by | | Process Control; |

| | | | |
|---|---|---|---|
| Sludge | inches added to the re-aeration tanks 1" = approx. 1,183 gals or 1' = 14200 gals | | Process Performance; Unit Evaluation |
| Filter Backwash | Orifice Plate Head Differential | Indicator | Process Control |
| Sludge Disposal | Doppler | Indicator; Totalizer | Land Application Reporting; Drying Bed Management |

## 3.2 Storm Water Pump Station/Equalization Basin

The storm water pump station and equalization basin provide North Vernon the ability to store wet weather flows (up to 1,000,000 gallons) in excess of the treatment plant's hydraulic capacity. Once wet weather flows have subsided, the wastewater stored in the EQ basin will then be returned through the plant for treatment.

Flows in excess of the plant's hydraulic capacity are discharged to the wet well of the storm water pump station. The storm water pump station automatically pumps excess wet weather flow to the EQ basin until the basin is full (1,000,000 gallons). Once full, the EQ basin pumps must be manually terminate the storm water pump station. The stored wastewater is directed to the preliminary treatment component for the initiation of full treatment, once excess influent flow has receded.

In addition to wet weather flow, the EQ basin also receives plant recycle side stream flows that may include filter backwash and aerobic digester supernatant. These flows, on a daily basis, represent less than ten per cent (10%) of the EQ basin storage capacity. The filters are typically shutdown during high flow to prevent continuous backwash conditions from consuming valuable EQ tank capacity as a "no feasible alternative".

## 3.3 Preliminary Treatment Unit Processes

The preliminary treatment unit processes at the North Vernon plant consist of an influent sluice gate, grit removal, flow measurement and a mechanical screening device.

The influent sluice gate regulates wastewater flow to the plant so that the plant's observed peak hydraulic flow is not exceeded. (The plant is frequently able to exceed peak design capacity through the treatment plant during high flow and has processed as much as 6.0 MGD through the plant). The influent sluice gate is manually operated. The open position of the gate is established by the operator and remains the same until manually changed. Opening and/or partially closing the gate valve during wet weather events allows for maximizing storage of wastewater in the collection system and for maximizing flows through the plant without jeopardizing the plant's performance from a hydraulic overload.

Flow through the influent gate passes into a grit removal channel. Grit is removed by reducing flow velocity to one foot per second (1 fps) which allows the grit to settle in the channel, while the organic matter remains in suspension. This process is less effective during high flow events when the velocity exceeds 1 fps. The grit is removed from the channel by operating the chain and flight collection mechanism.

The wastewater flows from the grit removal channel through a 12-inch Parshall flume for influent flow measurement. Discharge from the Parshall flume passes through a downstream channel where the wastewater flows through a rotary drum-screening device that collects and removes debris and particles larger than one-quarter (1/4) inch. Wastewater passing through the rotary screen is conveyed through piping to the secondary treatment process.

## 3.4 Secondary Treatment Process - Activated Sludge Biological Treatment

North Vernon's activated sludge process consists of four (4) parallel aeration tanks operated in a plug flow mode. Each aeration tank has floor mounted, fine bubble aeration system to provide the mixing and oxygen necessary for the biological action and conversion of soluble material into insoluble form. The activated sludge biomass is continually mixed with influent to form the "mixed liquor" (microorganisms, soluble food substrate and wastewater). The mixed liquor is aerated in the aeration tanks allowing the microorganisms to use the biodegradable food substrate.

Flow distribution into the four (4) aeration tanks is controlled by the aeration tanks' influent slide gates located in the junction/splitter box. Air supplied to the tanks is controlled by the blower air supply and aeration system air control valves located on each tank.

Mixed liquor effluent from each tank flows into a common effluent launder. The combined mixed liquor flows by gravity to an intermediate pump station. The intermediate pump station pumps the mixed liquor to the secondary clarifiers, operating continuously, with 100 per cent backup capacity to handle the plant's peak design flow. The mixed liquor pumped to the secondary clarifiers flows into a splitter box which evenly divides the mixed liquor between the two clarifiers.

Two (2) secondary clarifiers provide solids separation and thickening for the activated sludge. Flow received in the center stilling well of the clarifiers flows horizontally toward the outer perimeter of the clarifiers allowing the biomass solids adequate time (approximately 2.5 hours during normal flows, however this time may decrease with high flow) to separate from the liquid phase of the mixed liquor and settle to the bottom. The settled biomass is returned to the aeration tanks to mix with the influent wastewater. The clarified water overflows the effluent weirs and flows by gravity to the next treatment unit process.

The settled activated sludge biomass is removed from the bottom of the clarifier by a rotating sludge collection arm that slowly sweeps the floor of the clarifier forcing the biomass solids to a center drain that flows by gravity back to the junction splitter box ahead of the aeration tank. The re-aeration tanks are used to thicken and dewater WAS prior to pumping to the Digesters for full aerobic digestion. However, if there is a need to reseed the plant due to something killing the biological population, it would most likely come from the re-aeration tanks.

The number of aeration tanks and secondary clarifiers in service at any given time is dependent on the operating conditions at the plant. Under normal operation all 4 aeration tanks are in service at all the times. During wet weather events both clarifiers are to be operated to maximize the hydraulic flow through the plant.

## 3.5 Disinfection

North Vernon uses chlorine for effluent disinfection. Chlorine gas is fed into the wastewater from 1-ton cylinders. Chlorine can be fed to three (3) different points in the plant, depending on need - secondary clarifier effluent, flow to the sand filters, and flow from the sand filters.

Effluent from the secondary clarifiers flows by gravity to the chlorine contact tank. The aqueous chlorine solution is injected into the piping leading to the chlorine contact tank to increase mixing and contact time. Disinfected wastewater flows from the chlorine contact tank to the sand filters. Chlorination for disinfection is only required April 1 through October 31. Additional chlorine can be injected into the piping carrying this flow if conditions warrant. This additional chlorine can help maintain filter performance and condition with disinfection a secondary benefit. Chlorine can also be added to the filter effluent if additional "disinfection polishing" is needed. De-chlorination is accomplished using Sulfur dioxide gas injected at the effluent parshall flume anytime chlorine is used.

## 3.6 Filtration Unit Process (High Rate Sand Filtration)

The rapid sand filters allow North Vernon to exceed minimum performance requirements described in the City's NPDES Permit. Chlorinated wastewater is piped to the rapid sand filters and is automatically divided by weirs between the four- (4) filter cells, during Chlorination Season. The filter cells are composed of graded sand and an under drain system. The sand adsorbs the fine solids and some of the carbonaceous material and the water passes through the under drain system to the filter clear well. When the head loss through the sand filter inhibits the filter's ability to pass flow (based on a predetermined flow rate), the filter cell is backwashed to remove the fine particles adsorbed by the sand which can be done in automatic or manual mode. A backwash pump reverses the flow through the filter at a high rate of flow cleaning the sand and removing the accumulated solids. The backwash water, high in solids, is pumped to the EQ basin to be recycled through the plant for treatment.

## 3.7 Biosolids Management

Excess biomass solids are generated as part of the activated sludge biological treatment process. The excess biosolids, waste activated sludge, are stabilized and concentrated in three (3) aerobic digesters. The aerobic digesters utilize course bubble aeration as the oxygen source for stabilizing the waste sludge. After adequate stabilization, based on the SOP for the digesters, the biosolids are dried via a belt press and disposed of by contacting Merrell Brothers in Kokomo, IN who contract haul and dispose of waste. Their primary disposal method is land application of dried biosolids per the requirements of their Land Application Permit.

# Public Participation

## 4.1 General

Establishing early communication with both the public and the regulator agencies is an important first step in long-term planning and crucial to the success of a CSO control program. By informing the public early in the planning process about the scope and goals of the program and encouraging public involvement during the development, evaluation, and selection of the control strategy, potential conflicts can be identified and addressed more expeditiously, minimizing the likelihood of prolonged delay or additional expenses.
Citizen Advisory Committees (CACs) can serve as liaisons among municipal officials, NPDES permitting agencies, and the general public. Public meetings

and public hearings can serve as a forum for presenting technical information and obtaining input from interested individuals and organizations. Impacts on user fees and tax rates should also be communicated as early as possible in the LTCP development. Particular attention should be given to informing residents and businesses of any construction associated with project implementation that would affect them.

## 4.2 Existing Public Participation Programs

The City has used or proposed a number of public participation efforts relating to the control of pollutants being discharged to the river. These include:

- Friends of the Muscatatuck
- Annual Public Meeting
- County Recycling Program
- Public Broadcast

### 4.2.1 Friends of the Muscatatuck

Friends of the Muscatatuck established a program to conduct bi-annual River clean up days in which they pick up trash along the riverbank both up and downstream from the wastewater treatment plant.

### 4.2.2 Annual Public Meeting

The Annual Public Meeting will allow community members to address their concerns and seek solutions with community leaders to eliminate or reduce debris and storm water runoff issues.

### 4.2.3 County Recycling Program

The City, as part of the county has implemented a recycling program first with a recycling center for paper, plastic, cardboard, aluminum and metal cans, located within and operated by the city, but it is now located on county property located just outside city limits but available for city use.

### 4.2.4 Public Broadcast

In 1996 the city proposed a program to publish in the local newspaper and on radio reports the CSO discharge to the river. This program has been implemented.

The public participation program for this plan will combine elements from existing and new efforts. In addition, information on CSOs will be provided through print and broadcast media and possibly a website in the future. This will allow wide public access to the plan and information collected for this program.

# Long-Term Control Plan

## Description of Plan

The long-term CSO control plan for the City of North Vernon, Indiana, is based on implementing elements under the City's NPDES permit, which requires the nine minimum controls be implemented and efforts regarding CSO control's be reported annually.

# Phase I (Technology Based Standards)

## Implementation of Nine Minimum Controls

The City's current NPDES permit requires the implementation of the nine minimum controls which are described in this report and have been approved by IDEM. The City is required to submit an annual report to IDEM discussing its efforts to control CSOs during the previous year.

The Nine Minimum Controls are addressed as follows:

### 1. PROPER OPERATION AND REGULAR MAINTENANCE PROGRAMS

The City has established procedures for the operation and maintenance of its POTW, collection system, and the lone CSO diversion structure. The CSO structure is inspected for damage weekly and after every rainfall. Inspection reports are submitted to the Superintendent for any needed follow-up or to generate a maintenance work order. If cleaning or repairs are needed, they can often be completed by City staff. The City's sewer maintenance division will be purchasing line televising equipment. POTW maintenance staff keeps the plant, wastewater pumping stations, and the CSO structure in proper working condition. The wastewater treatment plant operations are reviewed annually by IDEM.

The first minimum control, proper operation and regular maintenance of the CSS and CSO outfalls, consists of clearly established operation, maintenance, and inspection procedures to ensure that a CSS and treatment facility will function in a way to maximize treatment of combined sewage and still comply with NPDES permit limitations. Implementation of this minimum control will reduce the magnitude, frequency, and duration of CSOs by enabling existing facilities to perform as effectively as possible. The operation and maintenance (O&M) program includes maintenance of suitable records and identification of O&M as a high management priority.

The North Vernon Wastewater Department already has an established O&M program. It is a formal procedure, with written manuals and operating forms and logs.

1) The Wastewater Superintendent and Utility Service Board annually assess how well the existing O&M program is being implemented.

2) The Wastewater Superintendent and Utility Service Board also determine whether or not the O&M program needs to be improved to satisfy the intent of the CSO Control Policy.

3) Wastewater Superintendent and Utility Service Board develop and implement the improvements to address CSOs.

4) Finally the Wastewater Superintendent and Utility Service Board will document any actions and report them to the NPDES permitting authority.

**1.1 Elements of a Proper Operation and Maintenance Program**

- A flow chart of the organizations and people responsible for various aspects of the O&M program is available at the Utility Service Board offices as well as the Treatment Plant.

-The resources (i.e., people and dollars) allocated to O&M activities are also available for review.

- Planning and budgeting procedures for O&M of the CSS and treatment facilities are in place and available for review.

- A complete inventory of the facilities (e.g., CSO discharge points, overflow weirs) has been completed and available for review.

- Written procedures and schedules for routine, periodic maintenance of major items of equipment and CSO diversion facility, as well as written procedures to ensure that regular training is provided to employees in charge of those operations. Superintendent will check and update SOPs annually.

- A process for periodic inspections of the facilities listed previously has been established.

- Written procedures, including procurement procedures, for responding to emergency situations have been established.

- Policies and procedures for training O&M personnel will be established and implemented.

- A process for periodic review and revision of the O&M program will be established and implemented.

### 1.1.1 Organizational Structure

Utility Service Board (reports to City Council)

Jack Kelley – President (812)346-6816
Patrick York – Vice President (812)346-4619
Ron Doxee – Board Member (812)346-6631
Bill Reichenbach – Board Member (812)346-4329
Roger Hughes – Board Member (812)346-1784

Wastewater Superintendent – Pretreatment Manager (reports to board)
David McCorvie 812/346-1496 Plant (812)592-0839 – Cell
812/346-5018 Home

Collections Systems Manager (reports to superintendent)
Mike Anderson (812)346-1496 Plant (812)525-1620 Cell
(812)346-8970 Home
Plant Operations Manager (reports to superintendent)
Russell Vaught (812)346-1496 Plant (812)528-5981 Cell
(812)346-0811 Home
Maintenance Manager (reports to superintendent)
David Rockey (812)346-1496 Plant (812)352-5630 Pager
(No home number)

### 1.1.2 Budget

The O&M program records show the resources currently available for O&M and the procedures for preparing and approving the annual O&M budgets. The budget provides sufficient funds and personnel for routine O&M and a reasonable contingency amount for emergencies. Individuals responsible for day-to-day O&M (Russell Vaught, Mike Anderson and David Rockey) have the opportunity to submit feedback for the budget preparation process to the Superintendent, David McCorvie who in turn prepares a Budget for the Utility Service Board and the City Council to make them aware of O&M needs.

### 1.1.3 Critical Facilities

The O&M program includes an agreed-upon list of the most critical elements of the CSS to assure they receive the appropriate amount of attention. "Critical elements" are those facilities that affect the performance of the CSS, CSO volumes, or CSO pollutant levels. The list includes regulator structures, pumping stations, diversion structures, retention basins, sections of the sewer system prone to sedimentation, CSO outfall included in the NPDES permit, and the wastewater treatment plant since it is used to treat a significant portion of the wet weather flows. The list and supplemental documents include a physical description of each facility and its location.

### 1.1.4 Procedures for Routine Maintenance

The existing O&M program for the Wastewater Treatment Plant includes documentation of procedures for routine maintenance of the major elements of the CSS. Only the critical elements identified above are included to document implementation of this minimum control. The program focuses on preventative maintenance to avoid failures during critical times, such as a period of heavy rainfall.

### 1.1.5 Non-Routine Maintenance and Emergency Situations

The O&M program describes response procedures for emergency situations, particularly those requiring funds outside the approved annual budget. The Indiana Department of Environmental Management will see that response can be quick, without unnecessary processes and procedures. A protocol for responding to emergencies at night, on holidays, or on weekends has been established. The protocol includes the names and telephone numbers of employees or others designated to respond to the emergency.

The wastewater superintendent does notify IDEM of overflow events. A list of people, organizations, and telephone numbers has been readily located at the Wastewater Treatment Plant and Utilities Office for notification purposes.

### 1.1.6 Inspections

The O&M program describes the procedures for inspecting critical elements of the CSS. The Indiana Department of Environmental Management will note that the North Vernon Wastewater Department has an established program for periodic inspections. The appropriate frequency of inspections depends on the type of facilities, historical records of performance and failure, sensitivity of nearby surface waters to CSO, adequacy of the maintenance program, and other factors.

'The O&M personnel have check sheets, operating logs, and other easy-to-complete forms readily available. The forms prompt field personnel to check critical items, record their observations, and recommend corrective actions, if necessary by way of a work order process.

The inspection identifies whether there has been an overflow, whether debris has accumulated and needs to be removed, whether the device would operate correctly during the next storm, and whether any items need repair. In addition, service calls and a 4 year rotating cleaning plan and inspection are conducted of regulator devices and interceptors, trunks, and combined sewers during dry weather for blockages, excessive deposition of solids, excessive infiltration/inflow, and structural deterioration that needs to be corrected.

The Utility Service Board has an established process for the review of the completed inspection forms by supervisory and management personnel, submittal to IDEM, if required, and retention of the forms. In addition, the Superintendent has established a process for ensuring that necessary follow-up maintenance and repair actions, indicated by the inspection reports and operating logs, are scheduled and carried out.

### 1.1.7 Training

New employees will be trained in operation and safety procedures as soon as they begin duty, and opportunities for training and re-training of long-time employees is available. Training includes an appropriate blend of classroom training and on-the-job training. The objective is to have well-trained employees who know their duties and how to report problems that require attention. A written policy on training has been developed and established.

### 1.1.8 Periodic Review of O&M Plans

O&M practices are reviewed periodically and modified as necessary. Field O&M personnel are involved in this process. The O&M plan will be revised after completion of the LTCP to include agreed-upon long-term CSO controls.

## 1.2 Considerations

The North Vernon Utility Service Board realizes that frequent inspection, regular maintenance, and the timely repair of facilities, are cost-effective ways to improve the control of CSOs. The elimination of obstructions will increase the effective storage capacity of the system and the quantity of wet weather flows that can be delivered to the treatment plant.

They also realize the effective organization of overall O&M operations, a specific commitment of resources for maintenance of the collection system, the assignment of sufficient personnel and equipment for inspection and maintenance at the appropriate frequency, and timely repairs may require increases in O&M budgets; and/or reorganization of the operational structure might be necessary. Ultimately, the effectiveness of an O&M program depends on the resources allocated and the extent to which the CSOs are caused by conditions that can be mitigated by O&M practices.

## 1.3 Implementation

The following list provides examples of O&M program approaches used by The North Vernon Wastewater Department:

- Flushing and cleaning program - The Wastewater Department developed and implemented a collection system cleaning program so that all sewers are cleaned at least once every four (4) years, with high maintenance lines scheduled to be flushed and cleaned on a semi-annual basis. This cleaning is done by water jet high pressure cleaning system attached to a "Vactor" truck purchased for that purpose as well as cleaning other portions of the collection system as needed including but not limited to lesser utilized service lines and manholes.
- The Wastewater Department developed and implemented a program for routine manhole inspection so that all manholes are inspected at least once every five (5) years.

-The Wastewater Department will clean all lift stations at least two (2) times per year.

- Overflow Inspections – With the elimination of all but one CSO overflow, the single overflow point is inspected after each rainfall event. The frequency and duration of any permitted overflow is recorded and reported to the superintendent. The superintendent reports overflow occurrence to the IDEM on the Monthly Report of Operation (MRO). The overflow location is also checked weekly to insure that no dry weather overflows are occurring and to insure that no obstructions are in the proximity of the overflow location which could inadvertently cause an unauthorized overflow or impede an authorized overflow.

- Catch Basin Cleaning – The catch basin system has now been placed under the purview of the Wastewater Department and their approach in the past has been to clean on an "as need" basis but an attempt to implement a regular inspection and cleaning schedule is under discussion.

- Sewer Construction Inspections – All construction (new and repair) on sewer service connections and line installations are inspected by the Wastewater Department for compliance with the _Construction Standards._ Inspection and enforcement of the standards is the responsibility of the Wastewater Department Superintendent. The day to day implementation of the inspection program is delegated to the Collection System Manager.

- Sewer Blockages – Upon receipt of a blockage complaint or notification, a determination of responsibility (City or resident) will be made. If the blockage is a City responsibility, a crew will be dispatched as soon as practicable, within four (4) hours, to clear the blockage, dependent of severity. If the responsibility is the resident's (lateral house connection) the resident will be informed and required to privately contract for the repair.

-Sewer Repairs- Problems, real and potential, are routinely identified by a variety of methods including construction inspections, television inspections, smoke testing, flow monitoring and/or complaint response. Each problem is evaluated and prioritized by size, flow volume, need for repair, threat to the environment and public health, and impact to the collection and treatment system. A collection system work order is completed for each identified problem and prioritized repair date projected (immediate, short term or long term). At least two (2) working days prior to any excavation the "Call Before You Dig" number (1-800-382-5544) is called to identify other underground utilities in the area. Each adjacent property owner is notified of the pending project to minimize inconveniences and to insure good public relations.

-Street Cleaning- The street cleaning schedule in North Vernon is conducted by the North Vernon Street Department on an "as need be" basis, with most major tributaries being cleaned at least every other month and the all streets usually cleaned at least twice a year.

-Data/Information/Records Retention – The North Vernon Wastewater Department does collect data in the following areas:

-Manhole inspection, cleaning and repairs
-Sewer collection system inspection, cleaning and repairs (major and minor lines)
-Root problems in system
-Complaints

# 2. MAXIMIZATION OF STORAGE IN THE COLLECTION SYSTEM

The storage capacity of the sewer system is maximized through regular cleaning of the interceptor sewer and diversion structures. The City purchased a vacuum truck with a line jetter system in 1997 to allow regular cleaning of the wastewater collection system. All but one of the CSO outfalls has been eliminated; the only outfall remaining is located at the head of the plant and listed as Permitted outfall #002. In 1997 a screen was installed at outfall # 002.

As the second minimum control, maximum use of the collection system for storage means making relatively simple modifications to the CSS to enable the system itself to store wet weather flows until downstream sewers and treatment facilities can handle them. The City of North Vernon has over the last seven years made several modifications to the collection system to eliminate CSO discharge points and the addition of a one million gallon holding tank to maximize capacity storage in an effort to meet this goal. Approval is pending for the purchase of a new inline video system to be utilized for evaluation of the CSS to prioritize more complex modifications (e.g., those requiring extensive construction) as part of the LTCP.

The first step will be to identify possible locations where minor modifications can be made to the CSS to increase in-system storage. The collection system personnel with the assistance of the video system will be able to identify these sites. Possible modifications will then be analyzed to ensure that they will not cause other problems such as street or basement flooding. Modifications will then be implemented and efforts documented for the Indiana Department of Environmental Management.

## 2.1 Control Measures

This section will discuss simple measures that can be implemented to increase the storage capacity of a CSS, thus decreasing the magnitude, frequency, and duration of CSOs. Some of these measures are as follows:

-Collection System Inspection-This will enable identification of serious deficiencies that restrict the use of the system's available storage capacity. Deficiencies that can be corrected by proper maintenance or structural repairs, or by modifications that do not require comprehensive engineering design and facility construction, should be remedied as soon as possible. For example, collection system staff can remove accumulations of debris or sediment and replace sections of pipe that are obviously undersized in relation to upstream and downstream line sizes. In addition, inspection programs can identify malfunctioning regulators or broken regulator weirs for repair.

- Adjustment of Regulator Settings-Many regulating devices, with simple modifications, can be used to increase in-system storage of wet weather flows. In some cases, stop planks or brick/concrete weirs can be raised to increase in-system storage. In addition, interactive controls can be used to temporarily induce in-line storage of wet weather flows (e.g., a regulator setting can be manipulated automatically in response to depth or flow in an interceptor). A system wide inventory of these controls and or possible locations for these types of controls will be completed and implemented as determined best practice as soon as practicable.

-Retard Inflows-By using special gratings or Hydrobrakes (or comparable commercial devices), collection system staff can modify catch basin inlets to restrict the rate at which surface runoff is permitted to enter the system. Slowing inflow will enable the CSS to transport more flow overall by spreading out the flow over time. A system wide inventory of these controls and or possible locations for these types of controls will be completed and implemented as determined best practice as soon as practicable.

-A program is currently in place to eliminate the direct connection of roof drains and sump pumps to the collection system. These connections are located either by inspection or smoke testing. Once identified the City Sewer Ordinance does contain a provision to require disconnection from the system.

-Localized Upstream Detention-Using localized detention in appropriate upstream areas could provide effective short-term storage (e.g. upstream parking areas could be used for temporary storage of some storm water during storm events), at this point that does not appear to be a viable option for the City of North Vernon, however the recent utilization of underground detention at new parking lot construction is a viable alternative. As the Sewer Department does continue to evaluate the current system, especially the location of the CSS lines, sizes and condition, a future evaluation of this method of detention may be warranted.

-Upgrade/Adjustment of Pump Operations at Interceptor Lift Stations-Currently the Collection System and Maintenance departments continually evaluate the pumping stations for volume and pump sizes to determine the available capacity in upstream portions of the sewer system. However, any increase in pumping capacity would also depend on the available hydraulic capacity of downstream portions of the collection system, as well as the processing capability of the Wastewater Treatment Plant to accept the increased flow rates.

At this point in time barring any mechanical failure the pumping stations are processing waste at a rate consistent with inflow thus not allowing overflows at the lift station, unless there is a very intense rain over a short period of time. With only one CSO discharge point located close to the Wastewater Treatment Plant, this does not in and of itself address the CSO wet weather discharge problem.

-Removal of Obstructions to Flow-The Collection System Department will take further advantage of the future purchase of an inline video system and the "Vactor" system to schedule maintenance activities to remove and prevent accumulations of debris and sediment that restrict flow. Where flow obstruction is caused by sediment accumulations in sections with low gradients, sewer flushing will be utilized as an effective control measure. When a section of the conveyance system is observed routinely accumulating sediment deposits at a substantial rate, design and installation of a permanent flushing station or an in-line grit chamber or other similar technologies will be studied as the most cost-effective approach and be considered as part of the LTCP.

## 2.2 Considerations

Maximizing the use of existing facilities is a cost-effective way to improve the level of CSO control without the difficulties associated with land acquisition, construction, and community impacts of some other control methods. Appropriate techniques, costs, and the degree of improvement will vary substantially with system characteristics. In cases where collection system maintenance has been neglected, where there are blockages or other hydraulic bottlenecks, or where excess capacity is available, corrective action may provide significant improvements in CSO control.

Risk of upstream (street, basement) flooding goes up with increased use of the collection system for storage. The application of measures to expand storage capacity in the collection system will increase O&M requirements, and for some techniques (e.g., check dams with telemetering and real-time control) the increase may be significant. Storing wet weather flows within the collection system is likely to increase deposition through settling of suspended matter. Additional O&M may be necessary if subsequent flows do not resuspend and remove sedimentation.

Topography and other site conditions will also limit the volume of combined sewage that can be stored in the system regardless of whether simple or more elaborate modifications are undertaken. The City of North Vernon's system is relatively uneven, wet weather flows cannot back up very far into the head of the system. As a result of this topography the system was designed with relatively small combined sewers to convey runoff away from city streets with little storage capacity available in the collection system.

**2. Implementation**

The City has since 1997 built and put on line a one million gallon EQ basin, which will handle a portion of the first flush once the plant has reached capacity. This amount is retained until the overflow has stopped and the EQ can then be drained back into the treatment plant. This was all made possible by the elimination of all but one CSO discharge point, which does allow for better control of any overflow as a result of wet weather events.

**2.4 Documentation**

-An analysis/study of alternatives to maximize collection system storage
-A description of procedures in place for maximizing collection system storage
-A schedule for implementation of minor construction associated with maximization of collection system storage
-Documentation of actions taken to maximize storage
-Identification of any additional potential measures to increase storage in the existing collection system, but which require further analysis, and which will be evaluated in hydraulic studies conducted as part of the LTCP.

# 3. REVIEW AND MODIFICATION OF PRETREATMENT REQUIREMENTS

The City of North Vernon administers its own pretreatment program. Federal industrial pretreatment requirements and a local individual discharge ordinance provide the frame work for controlling the discharge of pollutants to the wastewater collection system. Each significant industrial user is sampled twice per year and inspected once per year as required by the Federal Pretreatment Regulations (40 CFR 403). Enforcement actions are taken by the City as needed to ensure permitted industrial users comply with the discharge requirements. The staff efforts regarding pretreatment issues have enabled the effluent from the treatment plant to meet NPDES requirements.

Pursuant to the permit issued in 1985, North Vernon developed and implemented an industrial pretreatment program, incorporating mandated federal and state requirements. The pretreatment program was approved by IDEM and is implemented and managed by the Pretreatment Program

Manager. By ordinance, the Wastewater Superintendent is designated as the Pretreatment Program Manager.

The intent of the pretreatment regulations is to prohibit the discharge of wastes that are incompatible with wastewater treatment plant processes. Accordingly, the North Vernon Pretreatment Program has three (3) objectives:

1. To prevent the introduction of pollutants into the North Vernon Wastewater System that could interfere with the operation of the treatment plant, including the interference with its use or the disposal of biosolids;

2. To prevent the introduction of pollutants to the North Vernon Wastewater System that could pass through the treatment plant or otherwise be incompatible with the plant; and

3. To improve opportunities to recycle and reclaim municipal and industrial wastewaters and residuals/biosolids.

The Pretreatment Program Manager is responsible for insuring that these objectives are met and that the Sewer Use Ordinance is enforced. The Manager is also responsible for the collection of information and data from all industries discharging to the collection system to determine whether an industry is a Significant Industrial User (SIU) and needs a permit as described in the Sewer Use Ordinance. The Manager is responsible for insuring that all SIUs are in compliance with the permits they are issued.

Under the third minimum control, the City of North Vernon has in place a prertreatment program that will determine whether nondomestic sources are contributing to CSO impacts and, if so, investigate ways to control them. The objective of this control is to minimize the impacts of discharges into CSSs from nondomestic sources (i. e., industrial and commercial sources, such as restaurants and gas stations) during wet weather events, and to minimize CSO occurrences by modifying inspection, reporting, and oversight procedures within the approved pretreatment program. This minimum control does not require additional effort unless CSS characterization and modeling indicate that a pollutant from a nondomestic source is causing a specific health, water quality, or environmental problem.

This review will be conducted as part of The City of North Vernon's pretreatment program. The City of North Vernon does have an approved local pretreatment program. However, that program is currently under review for possible revision to meet the latest standards set for by the Indiana Department of Environmental Management. All documentation is provided to the Indiana Department of Environmental Management on the assessment of nondomestic source impacts and on efforts to mitigate any impacts from such sources, as appropriate.

### 3.1 Control Measures

The following steps were taken by the North Vernon Wastewater Department with regard to the local pretreatment program

#### 3.1.1 Inventory of Nondomestic Discharges

An Inventory of nondomestic discharges to the collection system has been completed. The inventory includes information on the volume of flow and the pollutant types and concentrations in the discharge. The locations where nondomestic discharges enter the CSS are located on the map of the system to help identify the potential impact of the nondomestic discharge on the CSO as a part of the approved pretreatment program (in accordance with 40 CFR 403.8(f)(2)(i)).

#### 3.1.2 Assess the Impact of Nondomestic Discharges on CSOs

The second measure is to assess the impact of nondomestic discharges on CSOs. By comparing the total quantity of nondomestic flow to the total flow from all sources the Wastewater Superintendent can pinpoint and provide a more detailed assessment of cases in which nondomestic discharges contribute significantly to discharge volume and pollutant loading. This is routinely done as a part of the current and expected future pretreatment program.

#### 3.1.3 Evaluation of Feasible Modifications

The third measure utilized is to evaluate feasible modifications to the approved pretreatment program if the assessment indicates that nondomestic sources contribute significantly to CSOs. Both the feasibility and the effectiveness of modifications are site-specific. The prohibition of batch discharges or a requirement for some form of detention to prevent discharges during wet weather events is included in the procedures for the pretreatment program. Once such controls are in place, a procedure for scheduling releases is established to avoid post-event overflows. Scheduled releases will then be included in the semi-annual monitoring reports of significant industrial users and the need for industrial slug discharge control plans as required in 40 CFR 403.8(f)(2)(v).

Since The City of North Vernon has an approved pretreatment program they are required to notify and obtain approval from IDEM for all substantial pretreatment program modifications as well as notify IDEM of any nonsubstantial pretreatment program modification per Section 403.18 of the General Pretreatment Regulations.

The current pretreatment program is being modified and will be submitted to IDEM for approval.

### 3.2 Performance and Cost

The degree to which pretreatment program modifications can reduce CSOs will be highly variable and site-specific. The costs for conducting an inventory of nondomestic sources and reviewing existing pretreatment program requirements are a part of the O&M responsibilities. The affected nondomestic dischargers will incur most of the costs for implementing modified requirements. Where delayed-release volume control is employed, however, regulating and inspecting release schedules will add to the Wastewater O&M responsibilities.

### 3.3 Considerations

Industrial and commercial sites in CSO areas with limited space available for temporary on-site storage of process wastewaters may warrant development of appropriate release schedules and operational controls. Where the relative contribution of nondomestic flow to the total dry weather flow is small, or where the fraction of the CSS service area dedicated to nondomestic use is small, the effect of increasing pollutant control might be insignificant. When nondomestic users contribute significant flow or a problem pollutant in a substantial quantity and effective pretreatment modifications are feasible, modification of the pretreatment program might improve CSO control significantly.

### 3.4 Documentation of Actions Taken

The IDEM will be provided with documentation demonstrating diligent effort to evaluate this control to arrive at a clear understanding of the planned modifications and expected pollution control benefits.

The following is a list of documentation:

- The City of North Vernon does have significant nondomestic dischargers and has established its own pretreatment program, with provisions for the following:
    - An inventory of nondomestic dischargers
    - An assessment of the value and feasibility of modifications to existing pretreatment programs.

- Since modification of the pretreatment program is appropriate at this time, the City of North Vernon will be providing the following information to IDEM with the revised Pretreatment Program submittal:

- A description of the modification
- A schedule for implementing the modifications, including amending sewer use ordinances, if needed
- An estimate of the loading reduction expected from the modification in pounds of biochemical oxygen demand and suspended solids, or other pollutants of concern.

# 4. MAXIMIZATION OF FLOW TO THE POTW FOR TREATMENT

The POTW has increased the amount of flow it will accept during storm events from 1.75 mgd to 2.2 mgd, with a peak hydraulic design flow to 4.76 mgd with an apparent maximum hydraulic capacity of 6.0 mgd, made on observations made since the plant expansion/upgrades were made. Increasing the flow pumped to the treatment plant during storm events has shortened the duration of the overflow event, and has allowed small events that would in the past have caused a CSO event to be routed through the POTW. In addition, the 1997 treatment plant expansion/upgrade provided for the proper utilization of the EQ basin as a storage unit for up to 1,000,000 gallons of wet weather flow. This allows the POTW to treat and/or store a significant portion of the wet weather flows before the CSO activates.

The fourth minimum control, maximizing flow to the Wastewater Treatment Plant, entails simple modifications to the CSS and treatment plant to enable as much wet weather flow as possible to reach the treatment plant. The objective of this minimum control is to reduce the magnitude, frequency, and duration of CSOs that flow untreated into receiving waters. The City of North Wastewater Department has identified and evaluated the more complex CSS and Wastewater Treatment Plant modifications as part of their LTCPs.

## 4.1 Control Measures

The North Vernon Wastewater Department has determined the capacity of the major interceptors and pumping stations that deliver flows to the treatment plant. By using the O&M suggestions presented previously in this section the North Vernon Wastewater Department is able to ensure that the full capacity is available for utilization.

An analysis of existing records has been completed regarding flows processed by the plant during wet weather events and dry periods to determine the relationships between performance and flow. This analysis reveals that the wastewater treatment plant has an average daily flow design capacity of 2.2

million gallons per day (MGD) and a peak hydraulic design flow of 4.76 MGD. The treatment plant has an apparent maximum hydraulic capacity of 6.0 MGD, based on observations made since the plant expansion/upgrades were placed on-line.

In an effort to address the CSO overflow issue, a (1) one million gallon EQ basin was built and put in service for extra capacity. This does allow the plant to continue capacity operation while allowing the EQ storage to be pumped through the plant once the wet weather event subsides. The EQ is usually processed within the next 24 hours after the wet weather event comes to an end. This method allows the facility to operate acceptably at incremental increases in wet weather flows and with minimal effect on the Wastewater Treatment Plant's compliance with the effluent limits in its permit.

The plant and EQ Basin take first flows of any wet weather event, so the initial flush is being treated. Once the plant and EQ Basin are at capacity and then a CSO event will occur. At this time CSO discharge is screened but no additional treatment is completed. With the addition of the EQ Basin, the Wastewater Treatment Plant facility is being utilized at its full capacity. An effort was discussed of possibly implementing a chlorination process, however due to available space there was no method to complete appropriate contact times prior to discharge. An alternative is now being proposed to utilize UV in an effort to achieve the required disinfection prior to discharge.

### 4.2.1 Regulatory Considerations

The Wastewater Treatment Plant is subject to EPA's secondary treatment regulations (40 CFR Part 133). which specify numeric effluent limits for biochemical oxygen demand and total suspended solids, as well as a minimum removal percentage (85 percent) for secondary treatment. Secondary treatment requirements are enforceable conditions in the permit. Section 133.103(a) and (e), however, provide relief for Wastewater Treatment Plants with CSSs that process elevated flows (and more dilute influents) by allowing for the possibility of a waiver of the percentage removal requirement. (Waivers are not available from effluent concentration limits, however.) The decision to apply a waiver and the recalculation of the removal percentage are made on a case-by-case basis.

The CSO Control Policy states that a bypass of secondary treatment may be justified when the LTCP identifies the cut-off point at which the flow will be diverted from secondary treatment and demonstrates that conveyance of wet weather flow to the Treatment Plant for primary treatment is more beneficial than other CSO abatement alternatives. Section 122.41(m) outlines the criteria under which a bypass may be allowed.

### 4.2.2 Technical Considerations

Maximizing the expansion and use of existing facility to treat wet weather flows that would otherwise overflow without treatment has allowed the Wastewater Department to eliminate all but one CSO discharge points and is a crucial element of this control program.

Plant performance will degrade somewhat at a point, usually at 72 hours of full hydraulic limit because of the increased influent flow. The optimal volume of wet weather flow is also constrained by provisions of existing discharge permits and the ability to obtain modified provisions for increased flows during wet weather events.

### 4.3 Documentation

The City of North Vernon has demonstrated a diligent effort to evaluate alternatives for increasing flow to the Wastewater Treatment Plant; the following list provides examples of documentation:

-Physical changes completed that are part of this control plan include the following:

1. 1997 Upsizing the plant to 2.2 million gallons per day (MGD) with a peak hydraulic design of 4.76 MGD and an apparent maximum hydraulic capacity of 6.0 MGD at a cost of approximately $1,800,000.00.

2. 1997 "Vactor" truck purchased at a cost of $140,000.00 with jetter installed to allow for better cleaning and maintenance of system as prescribed to allow for the maximization in line storage and flow of the system.

3. 1998 Main trunk line rehabilitation and the elimination of all but one CSO discharge points at a cost of $650,000.00.

4. 2006 In line camera system to better inventory combined sewers to allow for separation for sanitary from storm where possible. Anticipated purchase date May 2006 cost $90,000.00.

5. 2005 With the inventory competed the combined sewers will be categorized based on level of impact on volume within the system. The Utility Service Board will then be able to prioritize line replacement and separation at a rate of implementation based on an average of 1 mile per year for the length of the NPDES Permit from the greatest impact (highest priority) to least impact (low priority). This will require an investment of approximately $800,000.00 to $1,000,000.00 over the life of the NPDES Permit.

Additional studies of the capacity increases and system retention as well as an analysis of the effluent and CSO discharges will be performed during LTCP development. Based on these analyses priorities will be altered or eliminated and replaced with better technology and/or practices.

# 5. ELIMINATION OF CSOs DURING DRY WEATHER

The North Vernon sewer system does not experience routine dry weather overflows (DWO) caused by inadequate sewers or system capacity. The DWOs that do occur are caused by mechanical malfunctions or by power loss. Generally such overflows are stopped within 30 minutes. When a CSO or DWO occurs, a report listing the date, time, location, and amount of flow bypassed is completed and sent to IDEM. The City has also installed a standby generator at the Norris Ave. Pump Station and a standby diesel powered 4" pump at the Northwest Pump Station. There is also a standby portable diesel powered 6" pump located at the treatment plant for use either at the plant or at any pump station as needed.

The overflow line from the EQ basin was removed to prevent any bypass from the EQ basin to the CSO. With proper operation of the EQ basin, treatment plant and the implementation of plant alarm/notification systems, the frequency and duration of CSO activations have been drastically reduced.

The fifth minimum control is the elimination of CSOs during dry weather. The City of North Vernon Wastewater Department has taken measures to ensure that the CSS does not overflow during dry weather flow conditions Since the NPDES program prohibits dry weather overflows (DWOs), the requirement for DWO elimination is enforceable independent of any programs for the control of CSOs. DWO control measures.

## 5.1 Control Measures

Control measures implemented by the Wastewater Superintendent to eliminate CSOs during dry weather flow conditions include inspection of the system to identify any DWOs, correction of the DWOs, notification to IDEM when a DWO has occurred, and submittal of a description of the corrective actions taken.

### 5.1.1 Identification

A visual inspection program and the use of dial up alarm are utilized to provide reasonable assurance that any occurrence will be detected. Lift stations are properly sized for their service area and are serviced on a regular basis with weekly inspections to assure no DWO will occur barring any mechanical failure.

When mechanical failure does occur notification is made via dial-up technology to allow for either repair or emergency power generation to be completed to assure no DWO will occur.

The O&M plans include explicit procedures for inspecting DWOs. Although the frequency of inspections depends on site-specific factors; however most are on a weekly inspection schedule, as well as inspections after wet weather events. With the locations of CSO outfall next to the plant permitted outfall both are inspected daily both in wet and dry weather conditions.

### 5.1.2 Correction of DWOs

Dry weather overflows caused by operational problems can generally be alleviated by one or several of the following methods:

-Routine inspection and maintenance will eliminate blockages. Debris and relatively large items can be removed manually. Jet washing with a hose can remove grease, sediment, and fiber buildup from relatively small orifices.

-Interceptor Cleaning-Sediments, tree roots, and other items can restrict flow and result in DWOs at upstream locations in interceptors. Restrictions will be removed through sewer flushing, power rodding, jetting, or other common maintenance methods.

-Sewer Repair-Ground water can enter the sewer system by infiltration and, when combined with peak sanitary sewage flow, can exceed the capacity of the system. Where specific DWO problem locations can be linked to defects in localized sewer segments, repairs will be appropriate as a minimum control measure. For widespread infiltration problems, a comprehensive infiltration/inflow (I/I) control program has been implemented to be a component of the LTCP.

Unlike DWOs caused by operational problems, DWOs caused by structural problems (e.g., insufficient interceptor capacity) will require long-term construction that is addressed through the LTCP.

### 5.1.3 Notification

A procedure has been established as a part of the Operational Plan to promptly notify IDEM that a DWO has occurred. The Operational Plan contains provisions that require North Vernon Utilities to report within 24 hours any noncompliance that can endanger health or the environment per the NPDES regulations (40 CFR122.41(l)(6)).

The Wastewater Superintendent will also prepare and submit DWO summary reports at regularly scheduled intervals to assist in documenting initial conditions and identifying trends including the reporting period, causes and problems noted by the inspections, corrective actions taken, results of such actions, and the status of ongoing inspection and remediation activities.

### 5.2 Implementation

A study by the city of North Vernon determined that DWOs from its CSS were caused primarily by mechanical failure at lift stations but sometimes caused as a result of clogging or blockage of weirs, orifices, and drop pipes. The city implemented a maintenance improvement program in 1996, based on a first phase effort that developed an inventory of the system and problems and recommended actions to reduce DWOs. Implementation of the program reduced DWOs by nearly 100 percent as barring electrical or mechanical failure there are virtually no Dry Weather Overflows.

Principal elements of the program were the reorganization of maintenance operations to clarify the responsibilities between treatment plant and collection system operations, an increase in collection system maintenance staff, and the acquisition of additional vehicles and equipment (jet flushers, vactors). These actions, coupled with timely inspection and maintenance, have improved the city's DWO problem dramatically.

### 5.3 Documentation

Procedures for notifying IDEM of DWOs and reports submitted as a regular part of the Monthly report to IDEM.

# 6. CONTROL OF SOLID AND FLOATABLE MATERIALS IN CSOs

The implementation of other controls (improved sewer cleaning and maintenance and maximizing flow) have helped in controlling solid and floatable materials in the CSO discharges during wet weather events. Other control methods such as baffles, screens, racks and booms were evaluated for incorporation in the Long Term Control Plan.

The City has installed a course moving screen to remove large debris and material on Outfall 002. This CSO will activate after the peak hydraulic capacity is reached and after the EQ Basin has been filled with the "first flush" (up to 1,000,000 gallons). The projected activation is a flow rate in excess of 5 MGD and the wastewater treatment plant will still be processing flow. Any flow in excess of 4.76 MGD that goes to the EQ Basin will be brought back for full treatment when wet weather flow recedes and all flow above that rate will be screened prior to discharge through Outfall 002. The flow is measured upstream of the discharge point by means of a fixed elevation rectangular weir monitor by a flow meter coupled to a chart recorder and totalizer. Flow discharge through Outfall 002 during wet weather events will be monitored for frequency, duration, volume, and water quality parameters.

The City of North Vernon Street Department has purchased a street sweeper which is utilized to help reduce the amount of debris that can enter the combined sewer system as suspended solids. City staff indicates that in their opinion additional street sweeping appears to have reduced the visual quality of solid and floatable material in CSO discharges.

The sixth minimum control is intended to reduce, if not eliminate, visible floatables and solids using relatively simple measures. Simple devices including baffles, screens, and racks can be used to remove coarse solids and floatables from combined sewage.

## 6.1 Methods for Removing Solids and Floatables from Combined Sewage

Several simple measures have been utilized by the City of North Vernon to remove solids and floatables from combined sewage before they reach the receiving stream. These include screens and catch basin modifications.

### 6.1.1 Baffles

Baffles are not currently utilized within the collection system for North Vernon as they have only one CSO overflow discharge location. This location is controlled by screening.

### 6.1.2 Trash Racks

A trash rack is a set of vertical bars designed to remove coarse and floating debris from CSOs. Trash racks are usually used to prevent floatables from exiting storm water detention ponds and from entering and clogging the pond outlet pipes. Trash racks can be used in a similar manner for CSO floatables, as long as enough outfall pipe or land space is available for a small structure and the outfall is high enough above the receiving water to facilitate regular maintenance. At this time The City of North Vernon does not use trash racks as a part of its collection system, however as the city develops this will be considered on any future projects that may include detention ponds.

### 6.1.3 Static Screens

Static screens (usually vertical bar racks) are manually cleaned screens similar to trash racks. Static screens are utilized by the City of North Vernon primarily in the sewage treatment plant for preliminary treatment and at pump stations for the removal of debris to protect facility pumps and other internal working areas. They are used to control coarse solids and floatables.

### 6.1.4 Catch Basin Modifications

Catch basin modifications include the installation of horizontal grating restrictions, catch basin outlet restrictors (e.g., hanging traps, hoods), and vertical throat restrictions. Restricting the amount of flow that enters the catch basins will also reduce the amount of street litter that enters the catch basin and the CSS. Before modifying catch basins, it is necessary to evaluate whether restricting the catch basin inflow rate will cause unacceptable street flooding.

In the past the catch basins within the City of North Vernon fell under the jurisdiction of the Street Department, however that responsibility has been turned over to the Wastewater Department. There is now a concerted effort for planning, modification and maintenance emphasizing the areas with Combined Sewers.

## 6.2 Considerations in Removing Solids and Floatables from Combined Sewage

The principal advantage of the removal devices described in Section 6.1 is that they remove larger visible materials from CSOs. One or more of the illustrated screening methods could be considered as a control measure where physical site conditions permit.

The principal disadvantage of these devices is the demand on existing O&M program personnel and budget resources for regular and timely maintenance to clean the screens and dispose of retained materials. Clogged screens will either result in unplanned discharges at other overflow points or produce backups, which cause street or basement flooding. Clogged screens will also cause head loss in the sewer system or act as a barrier in the system and cause surcharges.

## 6.3 Methods for Removing Floatables from the Surface of the Receiving Water Body

### 6.3.1 Outfall Booms

Simple vinyl oil collection booms, or more elaborate containment systems with specially fabricated flotation structures and suspended curtains, can be placed in the water around outfalls to contain materials with positive buoyancy (which remain on the surface even in turbulent pipeline flows) and materials with neutral buoyancy (which will surface only under the relatively quiescent conditions of the containment zone). Once contained behind booms, floatables can be removed by hand or vacuum trucks. Booming systems can also be deployed downstream of one or several outfalls in a river.

Site-specific conditions should be considered in the evaluation, design, and placement of any boom system. Ambient water velocity, CSO exit velocity, provision for a stilling area, allowance for submerged material to rise to the surface, selection of a cleanup method, and the anchoring of the system are all important factors.

Due to cost and real benefit, the City of North Vernon does not at this time employ any method of floatable removal from the receiving water body.

### 6.4 Methods to Prevent Extraneous Solids and Floatables from Entering the CSS

An extensive monitoring program conducted by the city of North Vernon suggests that most floatables in CSOs originate as street litter. The remainder includes personal hygiene items flushed down toilets.

Accordingly, source control programs that address the prevention or removal of street litter and the proper disposal of personal hygiene materials can contribute greatly to the control of floatables.

### 6.5 Considerations in Preventing Extraneous Solids and Floatables from Entering the CSS

Source control techniques for reducing floatables can offer a relatively cost-effective method for preventing floatable materials from appearing in overflows. Citizen action or education programs such as “Friends of the Muscatatuck and the “Solid Waste District” are actively involved in an effort to raise public awareness of the problems associated with CSOs and of the need for the broader control programs.

### 6.6 Documentation

- An engineering evaluation of procedures or technologies considered for controlling solid and floatable materials will be conducted over the next year to better determine where modifications or procedures may best benefit the elimination of floatables in the system. This evaluation will also include an inventory of catch basins throughout the system.

- An agreement will need to be arrived at between the North Vernon Sewer Department, the North Vernon Street Department and the State Highway Department as these are the entities with responsibility for catch basins and street cleaning throughout the system. An effort has already begun with the City Street Department but as of this date the State Highway Department has not been involved in this process.

- Coordination of these departments to establish responsibility and implement cleaning procedures and schedules should be relatively inexpensive and will help eliminate approximately 65 – 70 percent of the floatables entering the system.

- At the current time there is only one CSO overflow location and it is at the head of the treatment plant. This outfall is only activated when the plant has reached maximum capacity and the EQ basin is at capacity. This overflow is controlled by a bar screen and regularly maintained during wet weather events.

# 7. POLLUTION PREVENTION PROGRAMS TO REDUCE CONTAMINANTS IN CSOs

The City of North Vernon utilizes several means to protect its sewer system against floatables, solids, and pollutants. While these measures are mainly intended to keep out floatables and solids, they will also keep out other pollutants. All of the following measures are implemented through the Public Works and Street Department, except the "Friends of the Muscatatuck" program, which is Community Service Organization.

Street Sweeping - over the last three years, the amount of street sweeping has increased. The street sweeper is now in continuous use whenever weather permits.

Upstream channel cleaning - Over the last 3 years, "Friends of the Muscatatuck" along with probation laborers have cleaned the collection system's upstream ditches and channels. This work, which involves cleaning several miles of ditches and creek beds that drain directly into the City's collection system, will continue for the foreseeable future.

Inlet cleaning - The City has purchased a vacuum truck for removing trash and debris from inlets, sewers, and diversion structures before a heavy rain can wash these materials into the collection system.

The seventh minimum control, pollution prevention, is intended to keep contaminants from entering the CSS and thus receiving waters via CSOs. Congress enacted the Pollution Prevention Act of 1990 to establish a national strategy for pollution prevention. Section 6602(b) of the Act establishes the following hierarchy for pollution management efforts:

- Pollution should be prevented or reduced at the source whenever feasible.
- Pollution that cannot be prevented should be recycled in an environmentally safe manner whenever feasible.
- Pollution that cannot be prevented or recycled should be treated in an environmentally safe manner whenever feasible.
- Disposal or release of pollution into the environment should be employed only as a last resort and should be conducted in an environmentally safe manner.

The objective of this minimum control is to reduce to the greatest extent possible the amount of contaminants that enter the CSS. Most of the suggested measures involve behavioral change rather than construction of storage or treatment devices.

## 7.1 Control Measures

Pollution prevention measures such as street cleaning, public education programs, solid waste collection, and recycling can keep contaminants from entering the CSS.

### 7.1.1 Street Cleaning

The City of North Vernon Street Department cleans the streets on a regular basis. The minimum rate is twice per year in the spring and fall with other major thoroughfares being cleaned more often depending on usage.

The State Highway department is responsible for many roads through North Vernon. They clean at least twice per year in the spring and fall but there is need to clean more often as these are the main roads through town. An effort is underway to coordinate these efforts.

### 7.1.2 Public Education Programs

Anti-litter campaigns and recycling efforts are coordinated in the community by "The Friends of the Muscatatuck" which is a not for profit group that conducts semi annual river cleanups and they have a part time staffer in charge of developing and implementing both public and school system education programs that encourage the proper disposal of sanitary and personal hygiene items advise the public about proper application of fertilizers, pesticides, and herbicides.

### 7.1.3 Solid Waste Collection and Recycling

Trash receptacles are located along city streets and in the parks to reduce the amount of litter on streets. They are properly placed, maintained, and cleaned by city employees.

The city provides for curbside trash pickup once per week with container requirements to assure no litter escape.

The city provides leaf removal by way of vacuum truck to reduce the risk of debris entering the storm drains thus resulting in impact to the CSO.

The county and Solid Waste District have combined to provide a recycling center nearby for items to be dropped off.

### 7.1.4 Illegal Dumping

Public education, notices in appropriate places, and enforcement programs are used to control illegal dumping of tires, used motor oil and other materials into waterways, storm drain inlets, catch basins, or onto the ground.

### 7.1.5 Bulk Refuse Disposal

Designated disposal facilities to accept materials such as home renovation debris that are not accepted by normal curbside garbage collection are provided by the county.

### 7.1.6 Commercial/Industrial Pollution Prevention

The City of North Vernon actively promotes pollution prevention for commercial and industrial establishments located in their combined sewer areas. Such establishments, particularly those with waste oil or hazardous waste storage, are required through the local sewer use ordinance or sewer use rules and regulations to develop and implement an appropriate pollution prevention plan and apply best management practices (BMPs) to minimize pollutant discharges into storm drains in the combined sewer areas.

## 7.2 Implementation

With the implementation of the "Friends of the Muscatatuck" comprehensive public outreach effort to raise community awareness of water quality issues has resulted in less ground pollution and a growing effort for the biannual cleanups.

With community awareness on the rise more groups are becoming involved in like kind activities.

With the Solid Waste District involvement in the community including providing benches throughout town from recycled materials, recycling has become a more viable option than simply dumping the materials elsewhere.

# 8. PUBLIC NOTIFICATION

The sole remaining CSO outfall in North Vernon is located along the Muscatatuck River. Access to the outfall is generally restricted due to location. Public use of the shoreline is usually confined to a limited number of fishermen on private property with some small boat and canoe travel in this area.

In November of 2003 a "Combined Sewer Overflow Public Notification Rule" (327 IAC 5-2.1-1) was enacted and submitted to IDEM for approval. This rule provides as follows:

A. Summary of CSO Public Notification Rule

1) Educate the public, in general, and those persons who, specifically, may come into contact with water that may be affected by a CSO discharge as to the health implications possible from CSO discharge tainted water.
    a. Brochure Developed
    b. Public Meeting conduced each March

2) Alert members of the public who may be immediately affected by a CSO discharge or the potential for a CSO discharge to occur.
    a. Issue public notice in January of each year to solicit information from the public.
    b. Conduct a public meeting in March of each year to address issues identified in the public notice solicitation.
    c. Notify interested individuals, local media, organizations, Jennings County Health Department using a notification system identified during the March meeting.

3) Enable members of the public to protect themselves from possible exposure to waterborne pathogens resulting from contact with or ingestion of water from a waterway that may be affected by a CSO discharge.
    a. Address protection from exposure to waterborne pathogens in educational brochure.

b. Issue public service announcements (PSA)

4) Complement the CSO discharge requirements contained in the NPDES permit but not obviate or supersede any more stringent requirements contained in an NPDES permit.
   - Review all current and applicable NPDES Permit requirements related to CSO Management and public notification during the public meeting.

B. Signage

The North Vernon Wastewater Department has posted requisite signs in prominent locations at CSO outfall. Additional signs have been posted and will be maintained in the following locations:

1) At access points to an affected water, including boat ramps, bridges, parks and school yards.
2) Along parkways and greenways on or adjacent to affected waters at locations most likely to provide direct access.

There are no drinking water intakes within 10 miles downstream of the CSO outfall in the City of North Vernon.

The City has two public participation programs related to CSO control: The annual meeting and ongoing county recycling program. These programs have been very successful in helping reduce materials discharged to the River.

These programs, along with regular street sweeping and regular trash pickup services as well as organizations such as "Friends of the Muscatatuck" provide an effort to stop illegal dumping. In and around the city much of the illegally dumped material ends up in ditches that flow directly into the CSS.

The intent of the eighth minimum control, public notification, is to inform the public of the location of CSO outfalls, the actual occurrences of CSOs, the possible health and environmental effects of CSOs, and the recreational or commercial activities (e.g., swimming and fishing) curtailed as a result of CSOs. Public notification is of particular concern at recreation areas directly or indirectly affected by CSOs. Potential risk is generally indicated by the exceedance of relevant water quality criteria.

### 8.1 Control Measures

-Signs are posted at the CSO Outfall and two other affected areas downstream from the outfall. These areas are accessible to the public.

- Newspapers and Radio notices are issued for situations that are not routine or are unusually severe in terms of impact or public sensitivity including all CSO events.

- Letter Notification to Affected Residents-Letters to affected residents are sent to those residents who have requested such at the public meeting or at anytime during the year they have expressed their desire to be notified at the USB office. Notification is also sent to any organization requesting such including "The Friends of the Muscatatuck".

- Telephone/Fax notification is sent to The Town of Vernon, which is the only municipality located within ten miles downstream of the Wastewater Treatment Plant.

**8.2 Documentation**

- The procedures and protocol for issuing public notice was established with a manual developed and implemented November 1, 2003. A copy is attached in appendix C.

# 9. Monitoring to Characterize CSO Impacts and the Efficiency of CSO Controls

In 1996 the City and Beckmar Environmental Laboratory completed a Stream Reach Characterization Study, which contains information to CSO names, locations, and sizes. This report also relates CSO discharge quality to background contaminant levels in the receiving stream.

CSO discharges from CSO listed on the NPDES as outfall No. 002 are monitored for frequency, duration and volume. In addition, whenever there is a CSO event, samples are collected for water quality analysis. The samples collected are analyzed for BOD, ammonia and TSS. This data is reported on the Monthly Discharge Monitoring Report. North Vernon is committed to continuing this program and will be adding stream sampling to the effort to ascertain what, if any impacts are manifested in the receiving stream.

Post-construction monitoring program: The City of North Vernon Wastewater Department is currently monitoring performance at the treatment plant and CSO events on a monthly basis as required reports are filed by the wastewater Superintendent.

The ninth minimum control involves visual inspections and other simple methods to determine the occurrence and apparent impacts of CSOs.

### 9.1 Characterization Measures

This section describes how to characterize the CSS, determine the frequency of overflows, and identify CSO impacts.

#### 9.1.1 General Characteristics of the Combined Sewer System

Maps, tables, and other general information on the characteristics of the system, the population served, locations of CSO outfalls, and locations and designated uses (e.g., swimming, fishing) of receiving waters.

The layout of the CSS (including percent associated with the combined portion of the system) will be established with the utilization of the new in line video system that the City will soon Purchase. This information provides a spatial reference for records of overflows and use-related incidents developed under this minimum control.

#### 9.1.2 Overflow Occurrences

The City of North Vernon records the number of CSO overflows at the outfall on a regular basis. The Wastewater Department records the date and time of each overflow event through visual observation, flow meters and totalizers. In addition, they measure and record the total daily rainfall, using a rain gage.

### 9.2 Considerations

The information collected under this control will provide a perspective on existing conditions and a basis for identifying progress that has been achieved by the application of other minimum control measures. Reports of receiving water impacts will assist in providing some indication of the actual, potential, or suspected adverse impacts due to CSOs.

### 9.3 Documentation

- Identification of CSO locations in the CSS
- A summary of observed incidents (i.e., the number and location of overflow events as well as duration, volume, and pollutant loadings, if available)
- A summary of existing water quality data for receiving water bodies
- A summary of receiving water impacts that are directly related to CSOs (e.g.,floatables wash-up episodes, fish kills)
- An assessment of the effectiveness of any CSO control measures already implemented (e.g., reduction of floatables, fish kill incidents)
- Development of a long-term monitoring plan for the LTCP, as appropriate.

The purpose of this section is to survey and document the existing operating practices (nine minimum controls, or NMC) used by the City of North Vernon to reduce the strength and volume of CSO discharges to the receiving stream. The City implemented these practices in December1996.

## Phase II (Water Quality Based Standards)

### 1. Give highest priority for CSO control to sensitive areas

Since The City of North Vernon has now eliminated all but one CSO outfalls, this will allow them to focus all attention to this one CSO outfall with the intent to limit if not totally prevent any impact on any sensitive areas as previously discussed on page 14 and 15 of this document.

### 2. Solicit public participation in the selection and identification of priority areas and CSO control measures

This is currently being done with annual meetings and an ongoing relationship with "The Friends of the Muscatatuck" and the "Southeastern Indiana Solid Waste District".

### 3. Characterization and monitoring for presumptive approach in selection of CSO control alternatives

Since there is now only one outfall located at the head of the wastewaster treatment plant, elimination is not feasible due to volume and the quick rise of the water in the CSO, however since there is only one CSO outfall it is easily controlled. Under normal conditions the CSO is not activated until the plant has reached full capacity and the EQ basin is maximized, however during intense rain over a short period of time an overflow could occur prior to filling the EQ basin.

With the elimination of some I&I at the Town of Vernon's collection system and The City of North Vernon's collection system would lead to three or four CSO events based on previous normal rainfall events. The flows will be monitored with the collection system repairs for I&I, there has already been a great deal of improvement based on the repairs for I&I in the Town of Vernon which pumps to the North Vernon Wastewater Treatment Plant.

### 4. Evaluation of alternatives ranging from "no action" to "complete elimination or capture" of CSO discharges

**1. No Action** alternative using the nine minimum controls and the improvements already in place will eliminate dry weather CSO events and will limit wet weather CSO events to less than five (5) events per year. The Indiana Department of Environmental Management has indicated they will only accept one (1) in ten (10) year untreated CSO event. With these criteria in mind this will eliminate the "No Action" alternative as unviable.

2. **Capture for Treatment** alternative was partially fulfilled with the completion of the one (1) million gallon equalization tank installation. While this does capture a great deal of the first flush flow that would normally go to the CSO to be treated later, it does not capture the full amount of CSO volume. In order to capture the full volume of CSO flow would require at least another one (1) million gallons of additional equalization. This would require additional land acquisition and construction of the tank, pumping and piping as requires. The current estimated cost would be approximately $1,285,000.00 to complete.

This alternative would meet the standard set forth by the Indiana Department of Environmental Management, at least for the near future, however the plant is now operating between 50% - 60% capacity. To utilize any additional capacity would also limit the capacity of the plant to handle CSO flows thus as the City increases in population, short term storage will also need to increase to maintain the system in compliance.

3. **Elimination of all Combined Sewers** alternative is another option. Approximately 60% of The City of North Vernon's 38 miles of sewer is combined. To eliminate all combined sewers in the system would require an investment on the part of the city of at least $7,200,000.00. This alternative would meet the requirements set forth by IDEM in regards to the CSO, however without further adjustment and future growth the city may be required to address the storm water runoff as a part of MS4 Phase II.

4. **Chlorination treatment of CSO runoff** alterative would include the injection of chlorine into the CSO pipe then utilizing an abandoned clear well as a chlorine contact tank. This appears not the to be a viable alternative since the estimated clarifier volume of 66,000 to 68,500 gallons this would not be enough volume for chlorine contact time for overflows under normal circumstances. To add additional volume would require acquiring additional land and major renovations including a much larger contact tank all of which makes this alternative unfeasible.

5. **UV treatment of CSO runoff** alternative would include the utilization of Ultra Violet light for sanitization. This appears to be a viable alternative since the first flush is handled by the wastewater treatment plant. Once the plant has reached its limit the flow is directed to the EQ tank which is primarily rain water at this time. The flow is screened at the head of the plant prior to entering the pumping station where it is pumped into the EQ basin. Once the EQ basin has reached its maximum capacity the flow will enter the CSO pipe from the top of the tank and will then be subjected to UV treatment for an effective kill, then discharge to the receiving water of the Muscatatuck River as Outfall #002. The

EQ Basin will effectively act as a primary treatment, allowing for settling within the column and discharging from the middle to UV.

The current measured TSS on the CSO averages 67 mg/l on the year based on January 1, 2005 through December 31, 2005 (Appendix C). Recent testing of the discharge from the current return (from the bottom of the EQ Basin) EQ resulted in TSS of 13 mg/l. These levels are well within the operational performance range of most UV disinfection methods. If the discharged is located at a higher column in the tank, the TSS should in theory be lower than those taken from the bottom.

## 5. Evaluation of maximization of wet weather flows at the existing treatment plant

The wastewater treatment plant has gone through several upgrades over the last 10 years and is now able to handle an average daily flow of 2.2 million gallons per day with a peak of 4.75 MGD and a maximum hydraulic capacity of 6 MGD. Once the plant is maximized the wastewater flow is transferred to the 1 million gallon EQ basin for storage to be treated later. Under normal circumstances only then will there be any discharge in the CSO outfall, however as stated before an intense rain over a short period of time could cause an overflow prior to the completed filling of the EQ basin.

This plant as designed is being operated at maximum capacity during wet weather flows.

## 6. Cost vs. performance consideration for screening and ranking of control alternatives

**Alternative #1** "No Action" is not a viable alternative as it does not reach the goal set forth by IDEM to meet water quality standards for the CSO long term control plan requirements. Alternative # 1 will not be considered.

**Alternative #2** "Capture for Treatment" this alternative does meet the standard set for by IDEM for CSO LTCP but at a cost of $1,585,000.00 is not cost effective for the City of North Vernon and does not adequately address future considerations pertaining to volume especially in light of any growth the city may experience. Alternative #2 will not be considered.

**Alternative #3** "Elimination of Combined Sewers" does meet the standard set for by IDEM, but at an estimated cost in excess of $7,000,000 is not cost effective for the City of North Vernon. Alternative #3 will not be considered at this time.

**Alternative #4** "Chlorination treatment of CSO runoff" this alterative does meet the water quality standards. The first flush will be handled by the plant and the EQ basin, addition flow that will go into the CSO will be screened, however due to plant location and available space contact time to achieve kill could not be achieved without major renovations. The estimated cost of this project would be approximately $1,750,000.00.

**Alternative #5** "UV treatment of CSO runoff" this alternative does meet the water quality standards. The first flush will be handled by the plant. The addition flow be screened then go to the EQ Basin. Only when the Plant and the EQ have achieved maximum capacity will the EQ acting as Primary Treatment allow flow from the middle of the water column to enter the CSO. At this point no additional settling will be required due to first flush elimination, EQ basin settling and the relative dilution of the influent into the EQ. All CSO will then flow to a newly constructed wet well where it will control the effluent flow through Ultra Violet treatment system, this will allow for appropriate kill prior to discharge and should at this point satisfy the conditions set forth for by IDEM and the US EPA.

At an estimated cost of $1,472,000.00 this is more financially feasible for the city and would address long term concerns. Under normal conditions, the CSO would still only be activated less than 5 times per year. This process combined with the Wastewater Department commitment to address I&I elimination throughout the system will result in an acceptable plan for reaching the goal to meet the target set forth by the IDEM regarding CSO LTCP.

## 7. Selected Alternative and Implementation schedule for CSO controls

The Wastewater Dept. is now using previous smoke testing data, current smoke testing data and future video data to begin I&I evaluation and repair. This will be an ongoing process with priority to repair the highest concentration of infiltration first. They have also implemented a policy that in the event major repairs are required on the system they will evaluate the elimination of combined sewers where possible. Complete project implementation should be accomplished within a four (4) year period of time.

Year #1 Purchase inline video equipment to assist in the evaluation of the system and determine where to recommend point repairs to eliminate I&I and possible CSO separation based on a prioritized system. Estimated equipment cost $97,000.00 plus $65,000.00 for labor to video entire collection system.

The intent is to video the majority if not the entire system the first year. The following order based on anticipated areas of poor system condition to better system condition in ascending order will be utilized to complete video inspection.

1. Downtown Subbasin
2. Northeast Subbasin
3. Second Street Subbasin
4. East Subbasin
5. Southeast Subbasin
6. Norris Ave. Subbasin
7. Northwest Subbasin
8. Southwest Subbasin

Evaluation and prioritizing problem areas within collection system will be completed within the first year at an additional cost of $35,000.00. Repair 15% of the most severely identified I&I problems. Estimated cost $105,000.00.

Year #2 Continued I&I evaluation and monitoring with video, flow monitoring and/or smoke testing at a cost of $25,000.00. Repair an additional 30% of the most severely identified I&I problems. Estimated cost $210,000.00.

Year #3 Continued I&I evaluation and monitoring with video, flow monitoring and/or additional smoke testing at a cost of $25,000.00. Repair an additional 30% of the most severely identified I&I problems. Estimated cost $210,000.00.

Year #4 Continued I&I evaluation and monitoring with video, flow monitoring and/or additional smoke testing at a cost of $25,000.00. Repair the final 25% of the most severely identified I&I problems. Estimated cost $175,000.00.

*Flow monitoring mentioned in years #2, #3 and #4 will be pre and post construction to determine effectiveness of repairs. Monitors will be utilized both upstream and downstream from the affected area. Flow monitoring will also be utilized on major users if deemed necessary to determine any intentional or unintentional I&I.

Year #5 Evaluate CSO flows to calculate size and type to implement the UV disinfection. An open channel design with control gates will be designed along with a wet well to allow for regulated flow into the UV chamber. The flow to the UV will come from the current EQ basin. The tank will be cored midway to allow extraction from mid column of the tank. An electronically controlled valve will be installed to allow controlled flow from the tank. The valve will not be activated until the tank is at capacity, thus allowing the EQ to act as primary treatment. Outflow will be regulated to equal inflow to allow full utilization of the EQ. Once the CSO event is concluded the valve will shut to maintain full capacity of the EQ. The EQ will then be transferred back through the plant. The estimated cost would be $500,000.00.

The funding which will total approximately $1,472,000.00 will be provided through a combination of budgeted capital cost and bond refinancing. The construction should be completed by the end of year #5.

This process is evaluated based on first flush capture in the plant allowing primary treatment for CSO within the EQ. A conservative approach to quantifying water is utilizing the rational method. Utilizing the runoff coefficient of 0.75 with a drainage area of 1220 acres; 30% of which is combined sewers a 0.25 inch rain would yield a peak discharge of 68.6 csf or 1,847,260 gallons per hour with anticipated 10% I&I calculated over the system balance producing 15.9 csf or 57,240 gallons per hour for a grand total of 1,904,500 gallons per hour first flush. The plant has an average daily flow capacity of 2.2 MGD with a peak hydraulic capacity of 4.7 MGD with an additional 1 million gallons of EQ.

By utilizing filter bypass the plant observed limit is 6 million gallons. This allows the entire first flush to enter the plant, thus allowing primarily rainwater diversion to the EQ. Only when the EQ reaches capacity then will the CSO diversion equal to inflow to EQ occur. First flush capture based on a normal average daily flow of 1.2 MGD with average normal operational volume of 150,000 gallons per hour. The CSO will continue to divert to UV until the event has concluded maintaining 1 million gallons of EQ. The 1 million gallons of EQ will then be processed through the plant usually within 24 hours of the conclusion of the CSO event.

## 8. Affordability analysis (ability of municipality to pay for CSO controls over a designated period of time)

The cost to implement these improvements based on utilizing the entire current capital improvement budget is as follows:

Alternative #1

No cost as this alternative is a do nothing alternative.

Alternative #2

This alternative at an estimated cost of $1,585,000.00 would represent a sixteen (16) fold increase in the current capital improvement budget of $96,700.00. Plus this alternative does not address additional growth and use of the current facility and the possibility of an event that the facility cannot capture fully.

Alternative #3

This alternative at an estimated cost of $7,000,000.00 would represent a seventy two (72) fold increase in the current capital improvement budget of $96,700.00.

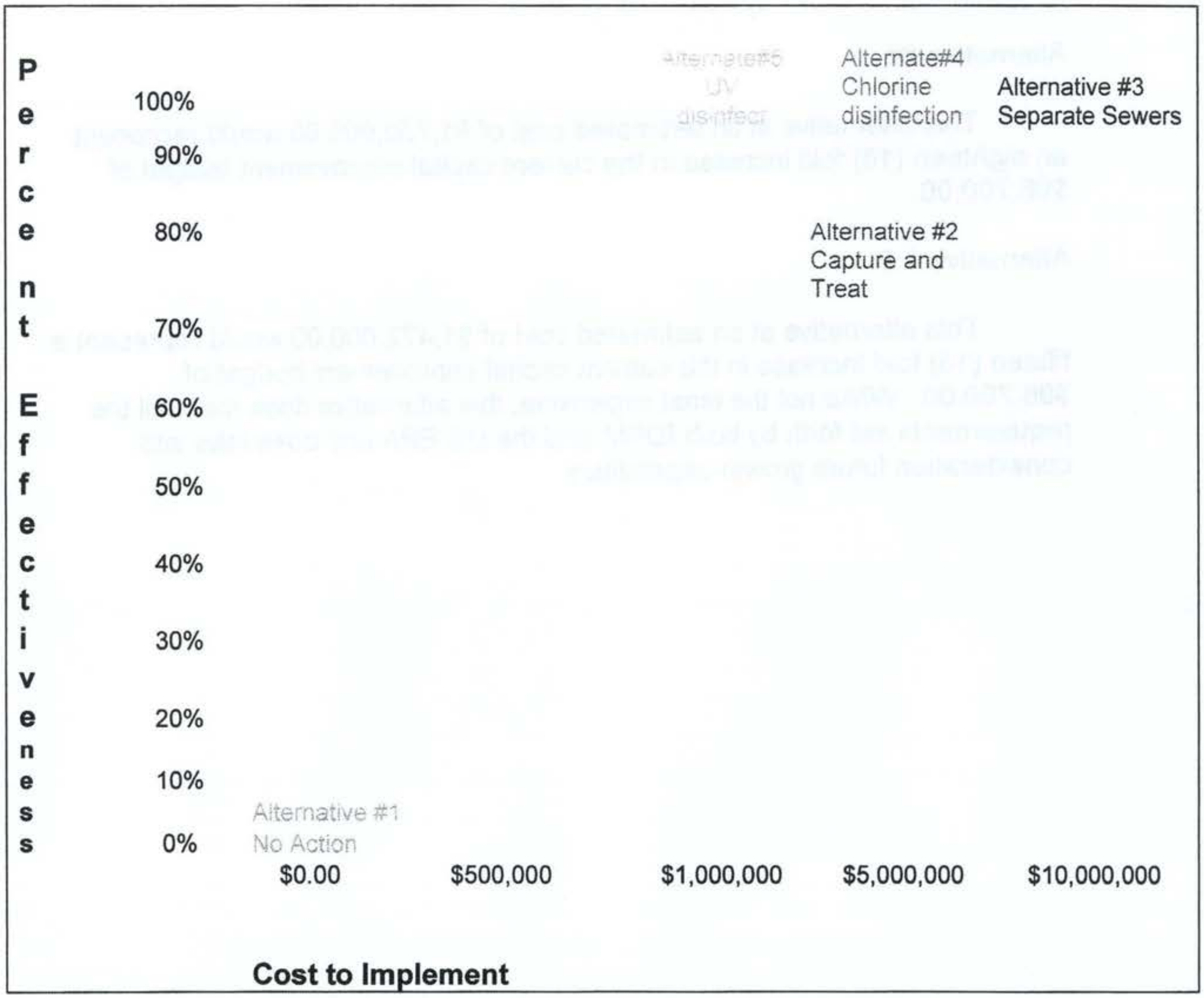
Alternative #4

This alternative at an estimated cost of $1,750,000.00 would represent an eighteen (18) fold increase in the current capital improvement budget of $96,700.00.

Alternative # 5

This alternative at an estimated cost of $1,472,000.00 would represent a fifteen (15) fold increase in the current capital improvement budget of $96,700.00. While not the least expensive, this alternative does meet all the requirements set forth by both IDEM and the US EPA and does take into consideration future growth capabilities.

# Affordability Analysis




## 9. Post-construction compliance monitoring program

Once the construction is completed then wet weather flows will be monitored to see if the I&I repairs assist in bringing down the flow volumes as well as testing of the effluent from the CSO will be monitored for water quality. These tests will be conducted when the CSO is discharging along with flow monitoring to determine system performance. The goal is to have one (1) or maybe two (2) wet weather discharges per year and those to meet water quality standards as set forth by IDEM.

## 10. CSO Operation Plan revision to reflect changes resulting from construction of CSO controls.

Once the CSO Long Term Control Plan is accepted, the CSO Operation Plan will be revised to reflect the changes in the system. This will be completed and forwarded to IDEM for approval and or comment.

The Combined Sewer Overflow (CSO) Long-Term Control Plan (LTCP) Use Attainability Analysis Guidance document states the overall LTCP planning approach must consist of the following major elements:

1. Consider impacts to sensitive areas near CSO discharge points
2. Establish public participation process
3. Characterize, monitor and model CSO system (however North Vernon is exempt from modeling due to size)
4. Evaluate CSO control alternatives
5. Maximize flow to and through the POTW
6. Establish a CSO Cost/Performance Curve
7. Provide an implementation schedule
8. Implement CSO controls on an approved schedule
9. Develop post-construction monitoring and sampling protocol

This plan does address all nine (9) issues of the above issues thus providing the needed documentation and plan approach to the Indiana Department of Environmental Management.

## Conclusion

The City of North Vernon over the past eight years has made a concerted effort by way of construction, operational procedure and public involvement, to severely limit and in most cases eliminate CSO events. By using the Nine Minimum Controls as the framework and the implementation of the improvements listed in Alternative #5 the City's CSO Long Term Control Plan should then meet the requirements set forth by IDEM.

The city will immediately implement the Nine Minimum Controls and will move to secure funding for Alternative #5 improvements. These objectives should be met within five (5) years of the approval of this document.

To maintain compliance with the Clean Water Act, IDEM is required to review use designations and water quality standards. This CSO control plan will be updated in response to changes in use designations or water quality as those regulation changes require.

## DEFINITIONS

**"Affected Public"**, includes the residential and business rate payers and users of the sewer system, persons who reside in municipalities that are downstream from the CSOs that could be affected by CSOs, persons who use and enjoy these waters, user organizations (such as fishing and boating clubs, conservation groups, etc.), and residents and businesses that would be affected by any construction associated with CSO abatement project implementation.

**"Combined Sewage"**, refers to a combination of wastewater (including domestic, commercial, or industrial wastewater) and storm water transported in a combined sewer or combined sewer system.

**"Combined Sewer"**, means a sewer that is designed, constructed, and used to receive and transport combined sewage.

**"Combined Sewer Operational Plan"**, means a plan that contains the minimum technology controls applicable to, and requirements for operation and maintenance of, a combined sewer system.

**"Combined Sewer System"**, means a system of combined sewers that:
(1) is designed, constructed, and used to receive and transport combined sewage to a publicly owned wastewater treatment plant; and

(2) may contain one (1) or more overflow points that discharge combined sewage entering the publicly owned wastewater treatment works when the hydraulic capacity of the system or part of the system is exceeded as a result of a wet weather event.

**"Control Alternative"**, means any of the following measures, or any combination of the following measures, for the control of wet weather flows in a combined sewer system:

(1) Source controls.
(2) Collection system controls.
(3) Storage technologies.
(4) Treatment technologies.

**"CSO Impact Elimination"**, includes (1) the elimination of the CSO impacts through treatment of the discharge or pollution prevention, or (2) the removal, disconnection, plugging or other permanent mean of preventing a discharge from a CSO outfall.

**"Designated Uses"**, are those uses specified in water quality standards for each water body or segment whether or not they are being attained.

**"Existing Use"**, means a use actually attained in the water body on or after November 28, 1975, whether or not it is included in the water quality standards.

**"First Flush"**, means the transport of solids in a combined sewer system that:
(1) have settled in pipes during periods between wet weather events; and
Combined Sewer Overflow (CSO) Long-Term Control Plan
Use Attainability Analysis Guidance
(2) have washed off of impermeable surfaces such as streets and parking lots during the beginning of a wet weather event.

**"Full Body Contact Recreation"**, means swimming and other activities that potentially involve total body immersion. Such activities include, but are not limited to, SCUBA diving, snorkeling, water skiing, and ceremonial uses.

**"Hydraulic Model"**, means a technically acceptable method for assessing the hydraulic response of a combined sewer system to a specific rainfall/runoff event, by quantifying the total volume of discharge and/or peak rate of discharge from one or more CSO points that result from control alternatives ranging from "doing nothing" to "complete CSO elimination".

**"Knee of the Curve"**, the point where the incremental change in the cost of the control alternative per change in performance of the control alternative changes most rapidly.

**"Long Term Control Plan"**, means a plan that:
(1) is consistent with the federal Combined Sewer Overflow Control Policy (59 Fed.Reg. 18688);
(2) is developed in accordance with the recommendations set forth in Combined Sewer
Overflows Guidance for Long Term Control Plan (EPA 832B95002);
(3) describes changes and improvements to be made to a combined sewer system or to a publicly owned wastewater treatment plant for the purpose of meeting the requirements of the federal Clean Water Act and state law;
(4) is developed with public participation using a process that is designed to promote active involvement by the affected public, through opportunities to provide in the decision making to select long term control alternatives:
- (A) information;
- (B) opinions; and
- (C) comments;

(5) is submitted to the department for approval; and
(6) considers the site-specific nature of combined sewer overflow discharges and does the following:

(A) uses characterization, monitoring, and modeling of the combined sewer system to determine:

(i) the response of the combined sewer system to various precipitation events;

(ii) the characteristics of overflows from the combined sewer system; and

(iii) the water quality impacts that result from overflows from the combined sewer system;

(B) considers the impact of combined sewer overflows on sensitive areas and gives highest priority to controlling overflows in those areas;

(C) contains an evaluation of a reasonable range of control alternatives, taking into account expected and projected future growth;

(D) contains cost and performance analyses of the control alternatives evaluated;

Combined Sewer Overflow (CSO) Long-Term Control Plan

(E) maximizes treatment of wet weather flows at a publicly owned treatment works (POTW) plant;

(F) contains a practicable implementation schedule for the selected control alternative;

(G) contains a post-construction compliance monitoring program adequate to ascertain:

(i) the effectiveness of the selected control alternative; and

(ii) the extent to which water quality standards have been attained.

**"Sensitive Areas"**, means waters impacted by CSO discharges which must be given the highest priority for CSO discharge elimination, relocation, or control. Examples of sensitive areas include:

- Habitat for threatened or endangered species,
- Primary Contact Recreational Areas such as beaches and other swimming areas,
- Drinking Water Source Waters,
- Outstanding State Resource Waters and Outstanding National Resource Waters.

**"Use Attainability Analysis"**, refers to a structured scientific assessment of the physical, chemical, biological, and economic factors affecting the attainment of a designated use as provided in 40 CFR 131.3(g).

**"Water Quality Model"**, means a technically acceptable method for assessing the real-time and spatial impacts to the quality of a receiving water body resulting from point and non-point source external inputs of pollutants.

**"Wet Weather Event"**, means storm water runoff, snow melt runoff, or ice melt runoff entering a combined sewer system.

# Appendix

# B

# APPENDIX B

## FACT SHEET IDEM 32/01/018/1999 Rev March 2001

IDEM=s Surface Water Quality Assessment Program
Total Maximum Daily Load (TMDL) Program Objective

The objective of this program is to develop and implement Total Maximum Daily Loads (TMDLs) to achieve state water quality standards. Section 303(d) of the Clean Water Act requires the development of TMDLs for waters that the State has identified as being impaired. These TMDLs must be established at levels necessary to attain and maintain the applicable water quality standards for designated uses. To accomplish this, TMDLs will set Waste Load Allocations (WLAs) for point source discharges and a set of specific requirements and best management practices for non-point source abatement of toxic pollutants. In order to implement the TMDL Program, IDEM will characterize parameters of concern and the extent and magnitude of the impairment in a water body, develop TMDLs that will ensure the attainment of water quality standards in these impaired waters, and finally implement the TMDLs through point and non-point source programs. The TMDL process for each impaired water body will take two to three years and will involve three major steps: Planning, Sampling/Data Collection, Modeling and Implementation. The data collection process will include the compilation and review of existing data, and collection and analysis of additional new data necessary for modeling. The next steps include developing the appropriate models, and implementing the strategies necessary to reduce the pollutant loading from point and non-point sources to achieve water quality standards for designated uses. It is anticipated that the first year will be used in planning and sampling/data collection, the second year for modeling the TMDLs and writing the required reports, and the third year for implementation. Throughout the process, identification of stakeholders, public participation and outreach activities will be important to the successful implementation of the TMDL.

Program Participants

The TMDL Program is operated through the efforts of the Toxicology and Chemistry, Surveys, and Biological Studies Sections of the Assessment Branch in coordination with staff from the Watershed Management and Water Quality Standards Sections of the Planning and Restoration Branch, and with support from the Permit Branch. Primarily, the Assessment Branch will be responsible for the Planning, Sampling/Data Collection and modeling aspects of TMDLs, whereas the Permit Compliance Branch and the Planning and Restoration Branch will direct the Implementation aspects through point and non-point source programs. Initially, contractor support will be used for the development of the first TMDLs with the possibility of augmenting future program activities. TMDL development will also be conducted cooperatively with the U.S. Army Corps of

Engineers (USACOE) and the Ohio River Valley Water Sanitation Commission (ORSANCO). Laboratory support comes from the Indiana State Department of Health (ISDH), the U.S. Geological Survey (USGS) as well as the Office of Water Quality private contract laboratories.

Program Description

Media: Surface Water and Sediments: rivers, streams and lakes.
Study Area: Statewide, select impaired water bodies and watersheds in a major river basin.
Site Selection Type: Impaired water bodies from the 303(d) list. As of 1998, 208 impaired water bodies in 5 major river basins have been identified for TMDL development. Sampling Sites: To be determined by the specific parameter of impairment and locations of impaired water bodies in a watershed. Sampling Frequency: To be determined by the specific parameter of impairment and locations of impaired water bodies in a watershed. Sampling will be limited to the July through October field season. Data Collected: Field Data: pH, temperature, dissolved oxygen, conductivity, turbidity, etc. Water Chemistry Data: Parameter of concern in each watershed. Bacteriological Data: E. coli

Program Product(s)

- Watershed Characterization Report selected for TMDLs.
- Periodic Interim Technical Reports on development of TMDLs.
- TMDL Final Reports for each impaired water body on the 303(d) list.

Technical Notes

- Contributions to the Indiana Biennial 305(b) Report.
- Development of the 303(d) List of Impaired Water bodies.
- Development of appropriate steady-state and dynamic models for TMDL development.

Contact Information

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Indiana Department of Environmental Management
Office of Water Quality – Assessment Branch
Environmental Toxicology and Chemistry Section
P.O. Box 6015 - Shadeland

Indianapolis, IN 46206-6015
(317) 308-3214
fax (317) 308-3219
E-mail: cwagner@dem.state.in.us
IDEM Fact Sheet: TMDL Program IDEM 032/01/018/1999
Rev March 2001


IDEM Information:
(317) 233-1044 or
800-451-6027
800-743-3333(TDD)
toll-free for Indiana residents

EnviroLine:
(317) 232-8603 or
800-451-6027 toll-free for Indiana residents

Fax on Demand:
800-726-8000

Internet:
www.state.in.us/idem

For More Information on IDEM's Office of Quality...

Assessment Branch (Surface water quality: river, streams and lakes) Shadeland Office, Indianapolis (317) 308-3173

Permitting Branch (NPDES permits) Indiana Government Center North, Indianapolis (317) 232-8675

Compliance Branch (facilities assistance, inspections and compliance) Indiana Government Center North, Indianapolis (317) 232-6770

Drinking Water Branch (Public water supply and ground water protection) Shadeland Office, Indianapolis (317) 308-3280

Planning & Restoration Branch (Water quality standards/rules, grants and loans) Indiana Government Center North, Indianapolis (317) 233-8488

# Appendix

# C

**Monthly Report Operation**
*Activated Sludge Treatment*

North Vernon, Indiana
December , 2005
Dave McCorvie
Class IV # 6346

| Day of Month | Day of Week | EQ Basin Precip. inches | EQ Basin Level, feet | Combined Sewer Overflow - *Outfall 002* Flow MGD | C-BOD mg/L | C-BOD lbs | TSS mg/L | TSS lbs | $NH_3$-N** mg/L | $NH_3$-N** lbs |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | T | | 0.3 | | | | | | | |
| 2 | F | | 0.4 | | | | | | | |
| 3 | S | | 0.3 | | | | | | | |
| 4 | S | | 0.3 | | | | | | | |
| 5 | M | | 0.3 | | | | | | | |
| 6 | T | | 0.4 | | | | | | | |
| 7 | W | | 0.4 | | | | | | | |
| 8 | T | | 0.4 | | | | | | | |
| 9 | F | | 0.4 | | | | | | | |
| 10 | S | 0.07 | 0.4 | | | | | | | |
| 11 | S | | 0.3 | | | | | | | |
| 12 | M | | 0.3 | | | | | | | |
| 13 | T | | 0.3 | | | | | | | |
| 14 | W | 0.33 | 0.3 | | | | | | | |
| 15 | T | 1.12 | 0.3 | | | | | | | |
| 16 | F | | 4.6 | | | | | | | |
| 17 | S | 0.02 | 0.4 | | | | | | | |
| 18 | S | | 0.3 | | | | | | | |
| 19 | M | | 0.4 | | | | | | | |
| 20 | T | | 0.5 | | | | | | | |
| 21 | W | | 0.4 | | | | | | | |
| 22 | T | | 0.3 | | | | | | | |
| 23 | F | | 0.3 | | | | | | | |
| 24 | S | 0.09 | 0.3 | | | | | | | |
| 25 | S | 0.73 | 0.2 | | | | | | | |
| 26 | M | | 1.5 | | | | | | | |
| 27 | T | | 1.9 | | | | | | | |
| 28 | W | 0.75 | 0.2 | | | | | | | |
| 29 | T | 0.04 | 0.3 | | | | | | | |
| 30 | F | 0.27 | 0.2 | | | | | | | |
| 31 | S | | 0.2 | | | | | | | |
| | | | | | | | | | | |
| Total | | 3.42 | 17.0 | | | | | | | |
| Avg | | 0.38 | 0.5 | | | | | | | |
| Min | | 0.02 | 0.2 | | | | | | | |
| Max | | 1.12 | 4.6 | | | | | | | |
| # Data | | 9 | 31 | | | | | | | |

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment for knowing violations.

Signature of Principal Executive Officer or Authorized Agent:__________________________ Date:____________

Signature of Certified Operator:______________________________ Date:________________________

** no analytical data not used in calculation
** values report <0.1 report as .05
*** Mercury is report in ng/L

**Monthly Prport Operation**
*Activated Sludge Treatment*

North Vernon, Indiana
November, 2005
Dave McCorvie
Class IV # 6346

| Day of Month | Day of Week | EQ Basin Precip. inches | Level, feet | Combined Sewer Overflow - *Outfall 002* Flow MGD | C-BOD mg/L | C-BOD lbs | TSS mg/L | TSS lbs | $NH_3$-N** mg/L | $NH_3$-N** lbs |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | T | | 0.1 | | | | | | | |
| 2 | W | | 1.7 | | | | | | | |
| 3 | T | | 0.2 | | | | | | | |
| 4 | F | | 0.1 | | | | | | | |
| 5 | S | | 0.1 | | | | | | | |
| 6 | S | 0.37 | 0.1 | | | | | | | |
| 7 | M | | 0.2 | | | | | | | |
| 8 | T | | 0.1 | | | | | | | |
| 9 | W | | 0.1 | | | | | | | |
| 10 | T | | 0.2 | | | | | | | |
| 11 | F | | 0.3 | | | | | | | |
| 12 | S | | 0.2 | | | | | | | |
| 13 | S | 0.03 | 0.1 | | | | | | | |
| 14 | M | 0.76 | 2.5 | | | | | | | |
| 15 | T | 3.76 | 8.1 | | | | | | | |
| 16 | W | | 15.7 | 0.046 | 39 | 15.0 | 36 | 13.8 | 1.47 | 183.8 |
| 17 | T | | 0.3 | | | | | | | |
| 18 | F | | 0.4 | | | | | | | |
| 19 | S | | 0.3 | | | | | | | |
| 20 | S | | 0.3 | | | | | | | |
| 21 | M | 0.02 | 0.3 | | | | | | | |
| 22 | T | | 0.2 | | | | | | | |
| 23 | W | 0.04 | 0.3 | | | | | | | |
| 24 | T | | 0.2 | | | | | | | |
| 25 | F | | 0.4 | | | | | | | |
| 26 | S | | 0.3 | | | | | | | |
| 27 | S | 0.12 | 0.2 | | | | | | | |
| 28 | M | 1.93 | 0.1 | | | | | | | |
| 29 | T | | 10.9 | 0.071 | 84 | 49.7 | 90 | 53.3 | 11.4 | 4729.1 |
| 30 | W | | 0.3 | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| Total | | 7.03 | 43.9 | 0.117 | 123 | 64.7 | 126 | 67.1 | 12.87 | 4912.9 |
| Avg | | 0.88 | 1.5 | 0.059 | 62 | 32.4 | 63 | 33.6 | 6.44 | 2456.4 |
| Min | | 0.02 | 0.1 | 0.046 | 39 | 15.0 | 36 | 13.8 | 1.47 | 183.8 |
| Max | | 3.76 | 15.7 | 0.071 | 84 | 49.7 | 90 | 53.3 | 11.40 | 4729.1 |
| # Data | | 8 | 30 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment for knowing violations.

Signature of Principal Executive Officer or Authorized Agent:____________________ Date:__________

Signature of Certified Operator:____________________ Date:__________

** no analytical data not used in calculation
** values report <0.1 report as .0 5
*** Mercury is report in ng/L

**Monthly Report Operation**
*Activated Sludge Treatment*

North Vernon, Indiana
October, 2005
Dave McCorvie
Class IV # 6346

| Day of Month | Day of Week | EQ Basin Precip. inches | EQ Basin Level, feet | Combined Sewer Overflow - *Outfall 002* Flow MGD | C-BOD mg/L | C-BOD lbs | TSS mg/L | TSS lbs | $NH_3$-N** mg/L | $NH_3$-N** lbs |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | S | | 0.09 | | | | | | | |
| 2 | S | | 0.04 | | | | | | | |
| 3 | M | | 0.02 | | | | | | | |
| 4 | T | | 0.02 | | | | | | | |
| 5 | W | | 0.03 | | | | | | | |
| 6 | T | | 0.04 | | | | | | | |
| 7 | F | 0.03 | 0.07 | | | | | | | |
| 8 | S | | 0.1 | | | | | | | |
| 9 | S | | 0.09 | | | | | | | |
| 10 | M | | 0.08 | | | | | | | |
| 11 | T | | 0.07 | | | | | | | |
| 12 | W | | 0.04 | | | | | | | |
| 13 | T | | 1.04 | | | | | | | |
| 14 | F | | 3.0 | | | | | | | |
| 15 | S | | 1.54 | | | | | | | |
| 16 | S | | 3.57 | | | | | | | |
| 17 | M | | 4.02 | | | | | | | |
| 18 | T | | 2.82 | | | | | | | |
| 19 | W | | 2.00 | | | | | | | |
| 20 | T | 0.60 | 0.06 | | | | | | | |
| 21 | F | 0.32 | 0.1 | | | | | | | |
| 22 | S | | 0.12 | | | | | | | |
| 23 | S | 0.40 | 0.11 | | | | | | | |
| 24 | M | 0.17 | 0.19 | | | | | | | |
| 25 | T | | 0.15 | | | | | | | |
| 26 | W | | 0.38 | | | | | | | |
| 27 | T | | 2.71 | | | | | | | |
| 28 | F | 0.01 | 0.22 | | | | | | | |
| 29 | S | | 0.22 | | | | | | | |
| 30 | S | 0.01 | 0.25 | | | | | | | |
| 31 | M | | 0.15 | | | | | | | |
| | | | | | | | | | | |
| Total | | 1.54 | 23.3 | | | | | | | |
| Avg | | 0.22 | 0.8 | | | | | | | |
| Min | | 0.01 | 0.0 | | | | | | | |
| Max | | 0.60 | 4.0 | | | | | | | |
| # Data | | 7 | 31 | | | | | | | |

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment for knowing violations.

Signature of Principal Executive Officer or Authorized Agent:____________________ Date:__________

Signature of Certified Operator:____________________ Date:__________

** no analytical data not used in calculation
** Values report <0.1 report as .05
***Mercury is report in ng/L

**Monthly Report Operation**
*Activated Sludge Treatment*

North Vernon, Indiana
September, 2005
Dave McCorvie
Class IV # 6346

| Day of Month | Day of Week | EQ Basin Precip. inches | EQ Basin Level, feet | Combined Sewer Overflow - *Outfall 002* Flow MGD | C-BOD mg/L | C-BOD lbs | TSS mg/L | TSS lbs | $NH_3$-N** mg/L | $NH_3$-N** lbs |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | T | | 13.9 | | | | | | | |
| 2 | F | | 4.9 | | | | | | | |
| 3 | S | | 0.12 | | | | | | | |
| 4 | S | | 0.12 | | | | | | | |
| 5 | M | | 0.11 | | | | | | | |
| 6 | T | 0.01 | 0.1 | | | | | | | |
| 7 | W | | 0.1 | | | | | | | |
| 8 | T | | 0.1 | | | | | | | |
| 9 | F | 0.03 | 0.06 | | | | | | | |
| 10 | S | | 0.06 | | | | | | | |
| 11 | S | | 0.08 | | | | | | | |
| 12 | M | | 0.09 | | | | | | | |
| 13 | T | 0.03 | 0.09 | | | | | | | |
| 14 | W | 0.70 | 0.1 | | | | | | | |
| 15 | T | 0.02 | 0.1 | | | | | | | |
| 16 | F | 0.06 | 0.05 | | | | | | | |
| 17 | S | | 0.09 | | | | | | | |
| 18 | S | | 0.11 | | | | | | | |
| 19 | M | 1.85 | 0.1 | | | | | | | |
| 20 | T | 0.50 | 6.8 | | | | | | | |
| 21 | W | 0.01 | 1.96 | | | | | | | |
| 22 | T | | 1.03 | | | | | | | |
| 23 | F | 0.94 | 0.06 | | | | | | | |
| 24 | S | | 0.05 | | | | | | | |
| 25 | S | 1.42 | 0.05 | | | | | | | |
| 26 | M | 0.28 | 0.05 | 0.045 | 75 | 28.1 | 100 | 37.5 | 11.2 | 4.2 |
| 27 | T | | 12 | 0.008 | 24 | 1.6 | 31 | 2.1 | 4.46 | 0.3 |
| 28 | W | 0.27 | 10.4 | | | | | | | |
| 29 | T | 0.13 | 9.8 | | | | | | | |
| 30 | F | 0.01 | 5.3 | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| Total | | 6.26 | 67.9 | | | | | | | |
| Avg | | 0.42 | 2.3 | | | | | | | |
| Min | | 0.01 | 0.1 | | | | | | | |
| Max | | 1.85 | 13.9 | | | | | | | |
| # Data | | 15 | 30 | | | | | | | |

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment for knowing violations.

Signature of Principal Executive Officer or Authorized Agent:____________________ Date:__________

Signature of Certified Operator:____________________ Date:__________



**NO analytical data not used in calculation
** Values report <0.1 report as .05

**Monthly Report Operation**
*Activated Sludge Treatment*

North Vernon, Indiana
August, 2005
Dave McCorvie
Class IV # 6346

| Day of Month | Day of Week | EQ Basin Precip. inches | EQ Basin Level, feet | Combined Sewer Overflow - *Outfall 002* Flow MGD | C-BOD mg/L | C-BOD lbs | TSS mg/L | TSS lbs | $NH_3$-N** mg/L | $NH_3$-N** lbs |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | M | 0.03 | 0.04 | | | | | | | |
| 2 | T | 0.01 | 0.03 | | | | | | | |
| 3 | W | | 0.03 | | | | | | | |
| 4 | T | 0.01 | 0.03 | | | | | | | |
| 5 | F | | 1.88 | | | | | | | |
| 6 | S | 1.72 | 0.03 | | | | | | | |
| 7 | S | 0.01 | 9.85 | | | | | | | |
| 8 | M | | 0.03 | | | | | | | |
| 9 | T | 0.01 | 1.64 | | | | | | | |
| 10 | W | 0.02 | 4.54 | | | | | | | |
| 11 | T | 0.79 | 1.03 | | | | | | | |
| 12 | F | | 0.03 | | | | | | | |
| 13 | S | 0.77 | 0.03 | | | | | | | |
| 14 | S | 0.17 | 0.03 | | | | | | | |
| 15 | M | 0.15 | 0.03 | | | | | | | |
| 16 | T | 0.36 | 0.03 | | | | | | | |
| 17 | W | 0.01 | 0.05 | | | | | | | |
| 18 | T | 0.28 | 0.02 | | | | | | | |
| 19 | F | 4.85 | 1.8 | 0.122 | 24 | 24.4 | 164 | 166.9 | 0.798 | 0.8 |
| 20 | S | | 1.8 | | | | | | | |
| 21 | S | | 1.7 | | | | | | | |
| 22 | M | | 15.8 | | | | | | | |
| 23 | T | | 3.7 | | | | | | | |
| 24 | W | | 0.1 | | | | | | | |
| 25 | T | | 0.1 | | | | | | | |
| 26 | F | 0.08 | 0.04 | | | | | | | |
| 27 | S | | 0.04 | | | | | | | |
| 28 | S | | 0.06 | | | | | | | |
| 29 | M | | 0.04 | | | | | | | |
| 30 | T | 4.00 | 0.06 | | | | | | | |
| 31 | W | 0.06 | 18.72 | 0.338 | 44 | 124.0 | 183 | 515.9 | 5.4 | 15.2 |
| | | | | | | | | | | |
| Total | | 13.33 | 63.3 | | | | | | | |
| Avg | | 0.74 | 2.0 | | | | | | | |
| Min | | 0.01 | 0.0 | | | | | | | |
| Max | | 4.85 | 18.7 | | | | | | | |
| # Data | | 18 | 31 | | | | | | | |

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Signature of Principal Executive Officer or Authorized Agent:____________________ Date:__________

Signature of Certified Operator:____________________ Date:__________

*No analytical data not used in calculation
**values report <0.1 report as .05

**Monthly Report Operation**
*Activated Sludge Treatment*

North Vernon, Indiana
July, 2005
Dave McCorvie
Class IV # 6346

| Day of Month | Day of Week | EQ Basin Precip. inches | EQ Basin Level, feet | Combined Sewer Overflow - *Outfall 002* Flow MGD | C-BOD mg/L | C-BOD lbs | TSS mg/L | TSS lbs | $NH_3$-N** mg/L | $NH_3$-N** lbs |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | F | 0.02 | | | | | | | | |
| 2 | S | 0.01 | | | | | | | | |
| 3 | S | 0.02 | | | | | | | | |
| 4 | M | 0.08 | | | | | | | | |
| 5 | T | 0.01 | | | | | | | | |
| 6 | W | 0.01 | | | | | | | | |
| 7 | T | 0.01 | | | | | | | | |
| 8 | F | | | | | | | | | |
| 9 | S | | | | | | | | | |
| 10 | S | 0.01 | | | | | | | | |
| 11 | M | 0.11 | | | | | | | | |
| 12 | T | 1.11 | | | | | | | | |
| 13 | W | 0.43 | | | | | | | | |
| 14 | T | 0.04 | | | | | | | | |
| 15 | F | 0.09 | | | | | | | | |
| 16 | S | 0.19 | | | | | | | | |
| 17 | S | 0.87 | | | | | | | | |
| 18 | M | | | | | | | | | |
| 19 | T | | | | | | | | | |
| 20 | W | | | | | | | | | |
| 21 | T | 0.71 | | | | | | | | |
| 22 | F | 0.36 | | | | | | | | |
| 23 | S | | | | | | | | | |
| 24 | S | | | | | | | | | |
| 25 | M | | | | | | | | | |
| 26 | T | | | | | | | | | |
| 27 | W | 0.08 | | | | | | | | |
| 28 | T | 0.01 | | | | | | | | |
| 29 | F | | | | | | | | | |
| 30 | S | | | | | | | | | |
| 31 | S | | | | | | | | | |
| | | | | | | | | | | |
| Total | | 4.17 | | | | | | | | |
| Avg | | 0.22 | | | | | | | | |
| Min | | 0.01 | | | | | | | | |
| Max | | 1.11 | | | | | | | | |
| # Data | | 19 | | | | | | | | |

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Signature of Principal Executive Officer or Authorized Agent:______________________ Date:__________

Signature of Certified Operator:______________________ Date:__________

*No analytical data not used in calculation
** values report < 0.1 report as .05

**Monthly Report Operation**
*Activated Sludge Treatment*

North Vernon, Indiana
June, 2005
Dave McCorvie
Class IV # 6346

| Day | Day | EQ Basin | | Combined Sewer Overflow - ***Outfall 002*** | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| of | of | Precip. | Level, | Flow | C-BOD | | TSS | | $NH_3$-N** | |
| Month | Week | inches | feet | MGD | mg/L | lbs | mg/L | lbs | mg/L | lbs |
| 1 | W | | 0.15 | | | | | | | |
| 2 | T | | 0.12 | | | | | | | |
| 3 | F | | 0.11 | | | | | | | |
| 4 | S | | 0.1 | | | | | | | |
| 5 | S | | 0.08 | | | | | | | |
| 6 | M | | 0.05 | | | | | | | |
| 7 | T | | 0.05 | | | | | | | |
| 8 | W | | 0.05 | | | | | | | |
| 9 | T | | 0.04 | | | | | | | |
| 10 | F | | 0.04 | | | | | | | |
| 11 | S | | 0.03 | | | | | | | |
| 12 | S | | 0.03 | | | | | | | |
| 13 | M | | 11.1 | | | | | | | |
| 14 | T | | 6.8 | | | | | | | |
| 15 | W | | 1.61 | | | | | | | |
| 16 | T | 0.01 | 0.09 | | | | | | | |
| 17 | F | 0.02 | 0.14 | | | | | | | |
| 18 | S | 0.02 | 0.05 | | | | | | | |
| 19 | S | 0.01 | 0.1 | | | | | | | |
| 20 | M | | 0.09 | | | | | | | |
| 21 | T | 0.01 | 0.11 | | | | | | | |
| 22 | W | | 0.06 | | | | | | | |
| 23 | T | | 0.1 | | | | | | | |
| 24 | F | 0.01 | 0.9 | | | | | | | |
| 25 | S | | 0.05 | | | | | | | |
| 26 | S | 0.02 | 0.04 | | | | | | | |
| 27 | M | | 0.04 | | | | | | | |
| 28 | T | | 0.02 | | | | | | | |
| 29 | W | | 0.03 | | | | | | | |
| 30 | T | 0.17 | 0.03 | | | | | | | |
| 31 | F | | | | | | | | | |
| | | | | | | | | | | |
| Total | | 0.27 | 22.2 | 0.000 | 0 | 0.0 | 0 | 0.0 | 0.00 | 0.0 |
| Avg | | 0.03 | 0.7 | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! |
| Min | | 0.01 | 0.0 | 0.000 | 0 | 0.0 | 0 | 0.0 | 0.00 | 0.0 |
| Max | | 0.17 | 11.1 | 0.000 | 0 | 0.0 | 0 | 0.0 | 0.00 | 0.0 |
| # Data | | 8 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

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Signature of Principal Executive Officer or Authorized Agent:____________________________ Date:____________

Signature of Certified Operator:________________________________ Date:____________________________

*No analytical data not used in calculation
** values report < 0.1 report as .05

**Monthly Report Operation**
*Activated Sludge Treatment*

North Vernon, Indiana
May, 2005
Dave McCorvie
Class IV # 6346

| Day of Month | Day of Week | EQ Basin Precip. inches | EQ Basin Level, feet | Combined Sewer Overflow - *Outfall 002* Flow MGD | C-BOD mg/L | C-BOD lbs | TSS mg/L | TSS lbs | $NH_3$-N** mg/L | $NH_3$-N** lbs |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | S | | 0.34 | | | | | | | |
| 2 | M | | 0.3 | | | | | | | |
| 3 | T | | 0.32 | | | | | | | |
| 4 | W | | 0.33 | | | | | | | |
| 5 | T | | 0.29 | | | | | | | |
| 6 | F | | 0.29 | | | | | | | |
| 7 | S | 0.17 | 0.25 | | | | | | | |
| 8 | S | 0.02 | 0.018 | | | | | | | |
| 9 | M | | 0.52 | | | | | | | |
| 10 | T | | 0.13 | | | | | | | |
| 11 | W | 0.21 | 0.13 | | | | | | | |
| 12 | T | 0.35 | 0.17 | | | | | | | |
| 13 | F | 0.14 | 0.16 | | | | | | | |
| 14 | S | 1.21 | 0.1 | | | | | | | |
| 15 | S | | 0.22 | | | | | | | |
| 16 | M | | 0.2 | | | | | | | |
| 17 | T | | 0.24 | | | | | | | |
| 18 | W | | 0.22 | | | | | | | |
| 19 | T | 1.85 | 0.14 | | | | | | | |
| 20 | F | 0.18 | 1.11 | 0.240 | 28 | 56.0 | 100 | 46741.4 | 7.12 | 14.3 |
| 21 | S | | 2.75 | | | | | | | |
| 22 | S | | 1.24 | | | | | | | |
| 23 | M | | 0.4 | | | | | | | |
| 24 | T | | 0.18 | | | | | | | |
| 25 | W | | 0.17 | | | | | | | |
| 26 | T | | 0.2 | | | | | | | |
| 27 | F | 0.07 | 0.18 | | | | | | | |
| 28 | S | 0.29 | 0.16 | | | | | | | |
| 29 | S | 0.01 | 0.2 | | | | | | | |
| 30 | M | 0.43 | 0.2 | | | | | | | |
| 31 | T | | 0.2 | | | | | | | |
| | | | | | | | | | | |
| Total | | 4.93 | 11.298 | 0.240 | 28 | 56.0 | 100 | 46741.4 | 7 | 14.3 |
| Avg | | 0.41 | 0.4 | 0.240 | 28 | 56.0 | 100 | 46741.4 | 7 | 14.3 |
| Min | | 0.01 | 0.018 | 0.240 | 28 | 56.0 | 100 | 46741.4 | 7 | 14.3 |
| Max | | 1.85 | 2.75 | 0.240 | 28 | 56.0 | 100 | 46741.4 | 7 | 14.3 |
| # Data | | 12 | 31 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

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Signature of Principal Executive Officer or Authorized Agent:____________________ Date:__________

Signature of Certified Operator:____________________ Date:__________



NPDES Permit No. IN 0020451

*No analytical data not used in calculation
** values reported <0.1 report as .05

**Monthly Report Operation**
*Activated Sludge Treatment*

North Vernon, Indiana
April, 2005
Dave McCorvie
Class IV #6346

| Day | Day | EQ Basin | | Combined Sewer Overflow - ***Outfall 002*** | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| of | of | Precip. | Level, | Flow | C-BOD | | TSS | | $NH_3$-N** | |
| Month | Week | inches | feet | MGD | mg/L | lbs | mg/L | lbs | mg/L | lbs |
| 1 | F | 0.04 | 2.78 | | | | | | | |
| 2 | S | 0.27 | 0.78 | | | | | | | |
| 3 | S | | 0.32 | | | | | | | |
| 4 | M | | 0.33 | | | | | | | |
| 5 | T | | 0.26 | | | | | | | |
| 6 | W | | 0.24 | | | | | | | |
| 7 | T | 0.60 | 0.19 | | | | | | | |
| 8 | F | | 0.25 | | | | | | | |
| 9 | S | | 0.26 | | | | | | | |
| 10 | S | | 0.24 | | | | | | | |
| 11 | M | 0.20 | 0.16 | | | | | | | |
| 12 | T | 0.69 | 0.13 | | | | | | | |
| 13 | W | 0.51 | 0.23 | | | | | | | |
| 14 | T | | 0.3 | | | | | | | |
| 15 | F | | 0.3 | | | | | | | |
| 16 | S | | 0.28 | | | | | | | |
| 17 | S | | 0.24 | | | | | | | |
| 18 | M | | 0.22 | | | | | | | |
| 19 | T | | 0.2 | | | | | | | |
| 20 | W | 0.01 | 0.2 | | | | | | | |
| 21 | T | 0.24 | 0.14 | | | | | | | |
| 22 | F | 1.23 | 0.27 | | | | | | | |
| 23 | S | 0.39 | 0.3 | | | | | | | |
| 24 | S | 0.01 | 0.35 | | | | | | | |
| 25 | M | | 0.3 | | | | | | | |
| 26 | T | 1.01 | 0.22 | | | | | | | |
| 27 | W | | 1.48 | | | | | | | |
| 28 | T | 0.06 | 0.3 | | | | | | | |
| 29 | F | 0.08 | 0.23 | | | | | | | |
| 30 | S | 0.01 | 0.25 | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| Total | | 5.35 | 11.7 | | | | | | | |
| Avg | | 0.36 | 0.4 | | | | | | | |
| Min | | 0.01 | 0.1 | | | | | | | |
| Max | | 1.23 | 2.8 | | | | | | | |
| # Data | | 15 | 30 | | | | | | | |

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Signature of Principal Executive Officer or Authorized Agent:____________________________ Date:____________

Signature of Certified Operator:________________________________ Date:______________________________

* No analytical data not used in calculation
** Values reported < 0.1 report as .05
Mercury results NG/L

**Monthly Report of Operation**
*Activated Sludge Treatment*

**North Vernon. Indiana**
**February, 2005**
**Dave McCorvie**
**Class IV #6346**

| Day of Month | Day of Week | EQ Basin Precip. inches | EQ Basin Level, feet | Combined Sewer Overflow - *Outfall 002* Flow MGD | C-BOD mg/L | C-BOD lbs | TSS mg/L | TSS lbs | $NH_3$-N** mg/L | $NH_3$-N** lbs |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | T | | 0.44 | | | | | | | |
| 2 | W | 0.01 | 0.43 | | | | | | | |
| 3 | T | 0.22 | 0.41 | | | | | | | |
| 4 | F | 0.01 | 0.44 | | | | | | | |
| 5 | S | | 0.42 | | | | | | | |
| 6 | S | | 0.37 | | | | | | | |
| 7 | M | 1.17 | 0.27 | | | | | | | |
| 8 | T | 0.16 | 10.06 | | | | | | | |
| 9 | W | | 4.27 | | | | | | | |
| 10 | T | | 1.02 | | | | | | | |
| 11 | F | | 0.45 | | | | | | | |
| 12 | S | | 0.4 | | | | | | | |
| 13 | S | 0.57 | 0.31 | | | | | | | |
| 14 | M | 0.19 | 0.3 | | | | | | | |
| 15 | T | | 0.36 | | | | | | | |
| 16 | W | | 0.32 | | | | | | | |
| 17 | T | | 0.39 | | | | | | | |
| 18 | F | | 0.42 | | | | | | | |
| 19 | S | | 0.46 | | | | | | | |
| 20 | S | | 0.36 | | | | | | | |
| 21 | M | 0.20 | 0.25 | | | | | | | |
| 22 | T | | 0.81 | | | | | | | |
| 23 | W | | 0.38 | | | | | | | |
| 24 | T | | 0.41 | | | | | | | |
| 25 | F | | 0.45 | | | | | | | |
| 26 | S | | 0.39 | | | | | | | |
| 27 | S | | 0.4 | | | | | | | |
| 28 | M | | 0.33 | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| Total | | 2.53 | | | | | | | | |
| Avg | | 0.32 | | | | | | | | |
| Min | | 0.01 | | | | | | | | |
| Max | | 1.17 | | | | | | | | |
| # Data | | 8 | | | | | | | | |

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Signature of Principal Executive Officer or Authorized Agent:____________________________ Date:______________

Signature of Certified Operator:__________________________________ Date:______________________

* No analytical data not uesed in calculation
**Values reported <0.1 report as .05
Mercury results NG/L

**Monthly Report of Operation**
*Activated Sludge Treatment*

***North Vernon, Indiana***
***January ,2005***
***Dave McCorvie***
***Class IV #6346***

| Day of Month | Day of Week | EQ Basin Precip. inches | EQ Basin Level, feet | Combined Sewer Overflow - *Outfall 002* Flow MGD | C-BOD mg/L | C-BOD lbs | TSS mg/L | TSS lbs | $NH_3$-N** mg/L | $NH_3$-N** lbs |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | S | | 11.1 | 0.328 | 20 | 54.7 | 18 | 49.2 | 1.56 | 4.3 |
| 2 | S | | 4.1 | | | | | | | |
| 3 | M | 0.25 | 4.5 | | | | | | | |
| 4 | T | 1.08 | 11.8 | 1.211 | 8 | 80.8 | 17 | 171.7 | 0.934 | 9.4 |
| 5 | W | 2.24 | 11.8 | 0.666 | 8 | 44.4 | 19 | 105.5 | 0.805 | 4.5 |
| 6 | T | 0.39 | 11.8 | 1.930 | 8 | 128.8 | 39 | 627.8 | 1.42 | 22.9 |
| 7 | F | 0.06 | 9.9 | 0.290 | 11 | 26.6 | 18 | 43.5 | 2.11 | 5.1 |
| 8 | S | 0.39 | 11.02 | | | | | | | |
| 9 | S | | 10.4 | | | | | | | |
| 10 | M | | 6.8 | | | | | | | |
| 11 | T | 1.06 | 9.2 | | | | | | | |
| 12 | W | 0.04 | 8.5 | 0.010 | 40 | 3.3 | 94 | 7.8 | 6.1 | 0.5 |
| 13 | T | 1.07 | 2.5 | | | | | | | |
| 14 | F | | 10.2 | 0.245 | 20.0 | 40.9 | 42 | 85.8 | 3.29 | 6.7 |
| 15 | S | | 3.24 | | | | | | | |
| 16 | S | | 0.39 | | | | | | | |
| 17 | M | | 0.64 | | | | | | | |
| 18 | T | | 0.6 | | | | | | | |
| 19 | W | | 0.43 | | | | | | | |
| 20 | T | 0.01 | 0.41 | | | | | | | |
| 21 | F | | 0.48 | | | | | | | |
| 22 | S | | 0.44 | | | | | | | |
| 23 | S | | 0.6 | | | | | | | |
| 24 | M | | 0.5 | | | | | | | |
| 25 | T | | 0.52 | | | | | | | |
| 26 | W | | 0.38 | | | | | | | |
| 27 | T | | 0.48 | | | | | | | |
| 28 | F | | 0.44 | | | | | | | |
| 29 | S | 0.23 | 0.41 | | | | | | | |
| 30 | S | | 0.4 | | | | | | | |
| 31 | M | | 0.44 | | | | | | | |
| | | | | | | | | | | |
| Total | | 6.82 | 134.41 | 4.680 | 115 | 379.5 | 247 | 1091.4 | 16 | 53.4 |
| Avg | | 0.62 | 4.3 | 0.669 | 16 | 54.2 | 35 | 155.9 | 2 | 7.6 |
| Min | | 0.01 | 0.38 | 0.010 | 8 | 3.3 | 17 | 7.8 | 1 | 0.5 |
| Max | | 2.24 | 11.8 | 1.930 | 40 | 128.8 | 94 | 627.8 | 6 | 22.9 |
| # Data | | 11 | 31 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment for knowing violations.

Signature of Principal Executive Officer or Authorized Agent:____________________ Date:__________

Signature of Certified Operator:____________________ Date:____________________



NPDES Permit No. IN 0020451

* No analytical Data Not Uesed in Calculation
** Values reported <0.1 report as 0.05