

West Lafayette CSO Long Term Control Plan City Council Presentation January 3, 2012 6:30pm

1. Introduction - What is a Combined Sewer Overflow (CSO) and why do we have them?
2. IDEM CSO Policy Timeline and West Lafayette Implementation
 - a. 1993 - **Wastewater Treatment Plant Facilities Plan**
 - i. Identifies CSO and wet-weather deficiencies
 - b. 1996 – IDEM Issues Combined Sewer Overflow Strategy
 - i. **Combined Sewer Operational Plan**
 - ii. **Stream Reach Characterization and Evaluation**
 - iii. Requires CSO Long Term Control Plan (LTCP) as part of NPDES permit renewal process
 - Characterization, Monitoring, and Modeling of the Combined Sewer System
 - Public Participation
 - Consideration of Sensitive Areas
 - Evaluation of CSO Control Alternatives
 - Cost/Performance Evaluation
 - C.S. Operational Plan Revisions
 - Maximizing Treatment of Wet Weather flows at the WWTP
 - Implementation Schedule
 - Post-Construction Compliance Monitoring Program
 - c. 1996 – **West Lafayette Amends Wastewater Treatment Plant Facilities Plan to meet IDEM CSO LTCP goals**
 - d. 1999 – **River Road Interceptor Constructed**
 - e. 2000 – SEA 431 passes, legal mechanism to allow CSOs with approved LTCP and Use Attainability Analysis
 - f. 2001 – **Wet Weather Treatment Facility Construction Begins**
 - g. 2001 – **LTCP Updated to include revised wet weather treatment recommendations**
 - h. 2001 – IDEM CSO LTCP & Use Attainability Analysis (UAA) Guidance Document
 - i. 2003 – **Western Interceptor Construction Begins**
 - j. 2007 – **West Lafayette CSO LTCP approved through State Judicial Agreement (SJA)**
 - k. 2007 - “Combined Sewer Overflow Treatment Facility Design Criteria Nonrule Policy Water-16” defines Design Storm Approach eliminating the need for UAA
 - l. 2010 – IDEM requests West Lafayette analyze Design Storm Approach
 - m. 2011 - **CSO LTCP Amendment**
 - i. Update and re-calibrate combined sewer system model
 - ii. Analyze 1-year and 10-year design storms
 - iii. Prepare alternatives based on 2007 guidance document
3. Two method of Analysis: Presumptive Approach vs. Design Storm Approach
 - a. **Presumptive Approach**
 - i. Alternatives with goal of limiting CSO’s to 4 overflows/year
 - Requires Use Attainability Analysis
 - ii. “Combined Sewer Overflow (CSO) Long-Term Control Plan & Use Attainability Analysis Guidance Document” – IDEM September 2001

- Purpose is prepare a plan to enact controls that will reduce CSO discharges to meet the Clean Water Act
- iii. Use Attainability Analysis (UAA)
 - Establishes a limited-use subcategory for the water body which temporarily suspends the designated use during wet weather.
 - All waters in state designated for recreational use
 - Does not apply to an “existing use” – no suspension
 - City must have an approved LTCP and be implementing it on schedule
 - Guidance document has very specific procedures for conducting UAA and affordability analyses
 - 6 options in UAA to suspend use - Most likely is to show widespread economic and social impact
 - Based on wastewater costs vs. MHI
 - If >1.8%, a temporary suspension is approved
 - iv. **Presumptive Approach Cost Estimate: \$50 million**
 - b. **Design Storm Approach**
 - i. Based on NRCS design storm data for West Lafayette:
 - 10 year/1 hour Storm: 2.1 inches of rain in 1 hour
 - 1 year/1 hour Storm: 1.2 inches of rain in 1 hour
 - ii. Full treatment at WWTP required for 1 year/1 hour storm, primary treatment and disinfection required for flows greater than 1 year up to 10 year/1 hour storm.
 - iii. Does not require Use Attainability Analysis
 - iv. “Combined Sewer Overflow (CSO) Treatment Facility Design Criteria Nonrule Policy Water-16” – IDEM October 2007
 - Purpose is to prepare a plan to enact controls that will reduce CSO discharges to meet the Clean Water Act without suspending designated use
 - v. **Design Storm Approach Cost Estimate: \$24.5 million**
4. Selected Approach and Plan
 - a. Design Storm Approach with no untreated overflows during the 10-year, 1-hour storm, no UAA required.
 - b. Four primary alternatives were analyzed
 - i. Full Transport and Treat
 - ii. Sewer Separation
 - iii. Interceptor and Partial Sewer Separation
 - iv. Deep Tunnel Storage
 - c. Alternative 1a was selected for recommended LTCP
 - i. Wet Weather Treatment Facility Minor Improvements
 - ii. New Combined Sewer Interceptor to WWTP
 - iii. Wet Weather Treatment Facility Expansion
 - Store 1/1 storm, treat up to 10/1 storm
 - d. 15-year implementation schedule (attached) consistent with 2007 SJA
 - e. Post Construction Monitoring after key milestone projects

TABLE 5.3: Proposed LTCP Implementation Schedule

<u>TASK</u>	<u>DURATION*</u>	<u>COMPLETION DATE</u>
Post-Construction Monitoring		
Upon completion of the Western Interceptor – Division V	12 months	March 2012 thru February 2013
Project 1: WWF Minor Improvements		
Study/PER	4 months	July 2013
Design	5 months	December 2013
Permitting	4 months	April 2014
Bidding/Bonds/Financial	5 months	September 2014
Construction	10 months	July 2015
Post-Construction Monitoring	12 months	June 2016
Project 2: New Interceptor – Phase 1		
- Study/PER	6 months	December 2016
- SRF Review/approval*	4 months	April 2017
- Design	8 months	December 2017
- Permitting	4 months	April 2018
- Bidding/Bonds/Financial	5 months	September 2018
- Construction	14 months	November 2019
Project 3: New Interceptor – Phase 2		
- Study/PER update	4 months	April 2020
- SRF Review/approval*	4 months	August 2020
- Design	8 months	April 2021
- Permitting	4 months	August 2021
- Bidding/Bonds/Financial	5 months	January 2022
- Construction	14 months	March 2023
- Post-Construction Monitoring	12 months	February 2024
Project 4: WWF Expansion		
- Study/PER	5 months	July 2024
- SRF Review/approval*	4 months	November 2024
- Design	8 months	July 2025
- Permitting	4 months	November 2025
- Bidding/Bonds/Financial	5 months	April 2026
- Construction	15 months	July 2027
- Post-Construction Monitoring	12 months	June 2028

- Overall schedule assumes IDEM approval of LTCP by July 2012
- *Assumes project funding through State Revolving Fund (SRF) Loan Program
- All project timelines dependent upon timeliness of reviews and schedule limitations of funding agencies
- Per 2007 SJA, LTCP implementation must be complete by September 1, 2027

West Lafayette CSO Long Term Control Plan

West Lafayette, Indiana

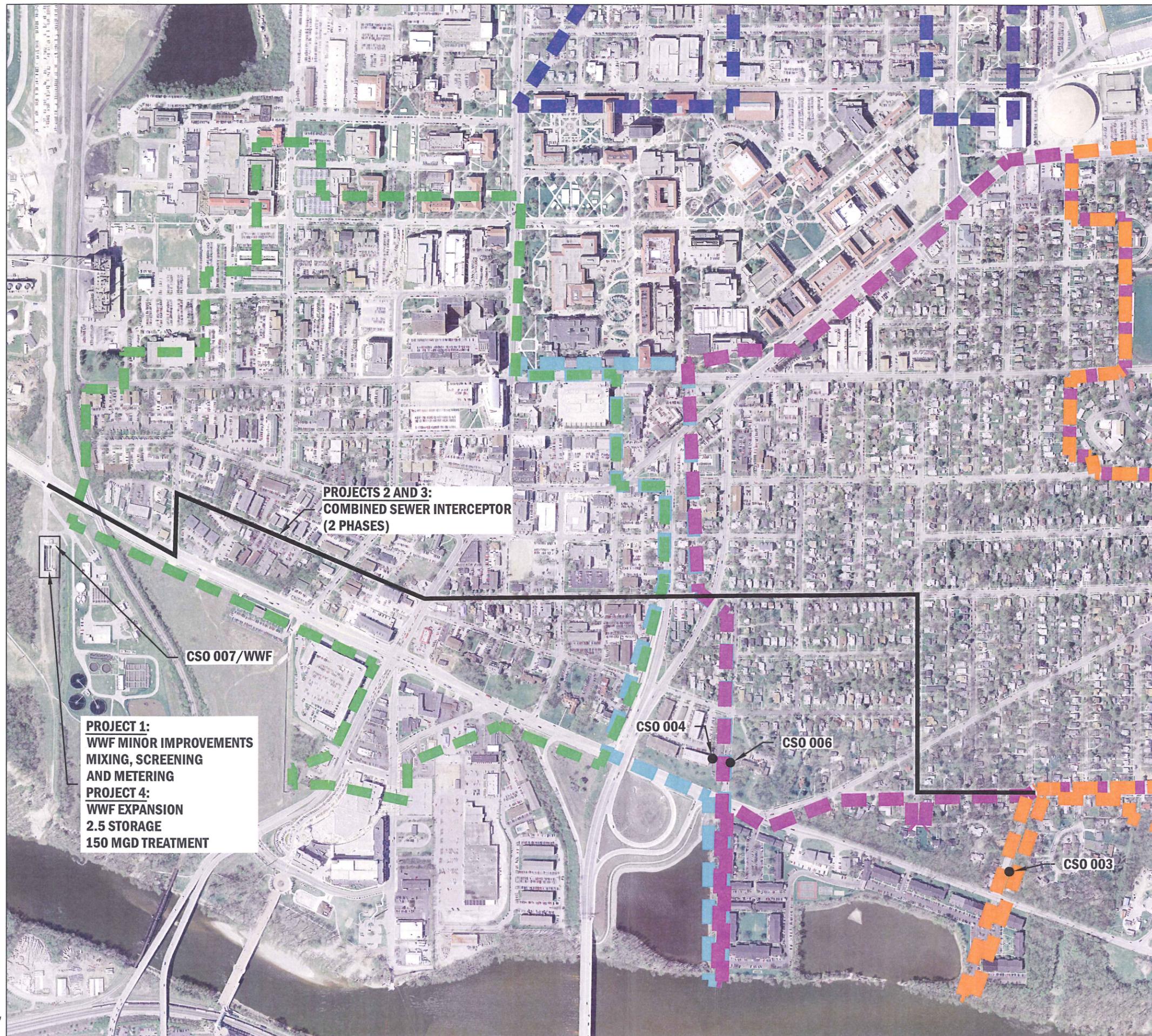
Project No. 138910-01-001

Engineer's Opinion of Probable Project Costs

Summary of Alternatives

Alternative	Description	Total Cost
Alternative 1a	Full Transport and Treat - WWF Storage for 1yr Storm	\$ 24,500,000
Alternative 3a	Interceptor and Partial Sewer Separation - WWF Storage for 1 yr Storm	\$ 28,400,000
Alternative 5a	Green Infrastructure (10% Combined Service Area) - WWF Storage for 1 yr Storm	\$ 33,300,000
Alternative 1b	Full Transport and Treat - WWF Storage for 10 yr Storm	\$ 34,400,000
Alternative 2a	Partial Sewer Separation - WWF Storage for 1 yr Storm	\$ 35,100,000
Alternative 5b	Green Infrastructure (25% Combined Service Area) - WWF Storage for 1 yr Storm	\$ 42,800,000
Alternative 2b	Partial Sewer Separation - WWF Storage for 10 yr Storm	\$ 43,700,000
Alternative 3b	Interceptor and Partial Sewer Separation - WWF Storage for 10 yr Storm	\$ 44,300,000
Alternative 4	Deep Tunnel - Full Storage and Pumping	\$ 47,500,000
Alternative 2c	Complete Sewer Separation - WWF Storage for 1 yr Storm	\$ 54,700,000
Alternative 2d	Complete Sewer Separation - WWF Storage for 10 yr Storm	\$ 59,500,000

Note: All opinions of probable costs are based upon 2011 dollars and will likely increase with time. In providing these cost opinions, Wessler Engineering has no control over costs of labor, equipment, materials, or contractors' methods of pricing. The cost opinions were made without the benefit of design plans and specifications and are provided on the basis of the Engineer's qualifications and experience. Wessler Engineering makes no warranty, expressed or implied, as to the accuracy of such cost opinions as compared to bids or actual costs.



LEGEND:

-  CSO #003 COMBINED SEWER AREA
-  CSO #006 COMBINED SEWER AREA
-  CSO #004 COMBINED SEWER AREA
-  OTHER COMBINED SEWER AREA
-  CSO #007/WWF COMBINED SEWER AREA

PROJECT 1:
 WWF MINOR IMPROVEMENTS
 MIXING, SCREENING
 AND METERING
PROJECT 4:
 WWF EXPANSION
 2.5 STORAGE
 150 MGD TREATMENT

PROJECTS 2 AND 3:
 COMBINED SEWER INTERCEPTOR
 (2 PHASES)

CSO 007/WWF

CSO 004

CSO 006

CSO 003

FIGURE A6
SELECTED PLAN
 CSO LONG-TERM CONTROL PLAN
 WEST LAFAYETTE, INDIANA
 DECEMBER 2011