

Williamsport Sanitary Authority and Tributary Communities Joint Act 537 Sewage Facilities Planning Process



Results and Findings

Act 537 Planning Process Participants

- WSA
- City of Williamsport
- Tributary Communities that discharge to WSA plants:
 - Armstrong Township
 - Borough of Duboistown
 - Loyalsock Township
 - Lycoming Township
 - Old Lycoming Township
 - South Williamsport
 - Woodward Township

Act 537 Planning Process Used to Address WSA's New Operating Permit Requirements

Strategy Developed for Central and West Treatment Plants to Comply with:

1. **EPA and DEP's Combined Sewer Overflow Regulations** = Revise the existing Long-Term Control Plan for Combined Sewer Overflow (CSO) Abatement
5. **DEP's Chesapeake Bay Strategy** = Develop a Nutrient (nitrogen and phosphorus) Removal Plan

CSO and Nutrient Requirements – Interconnected & Difficult to Balance

CSO

Treat More Flow and Minimize Untreated Sewer System Overflows (bacteria)

Nutrient Removal

Treat Flow to Higher Standards (remove nitrogen & phosphorus)

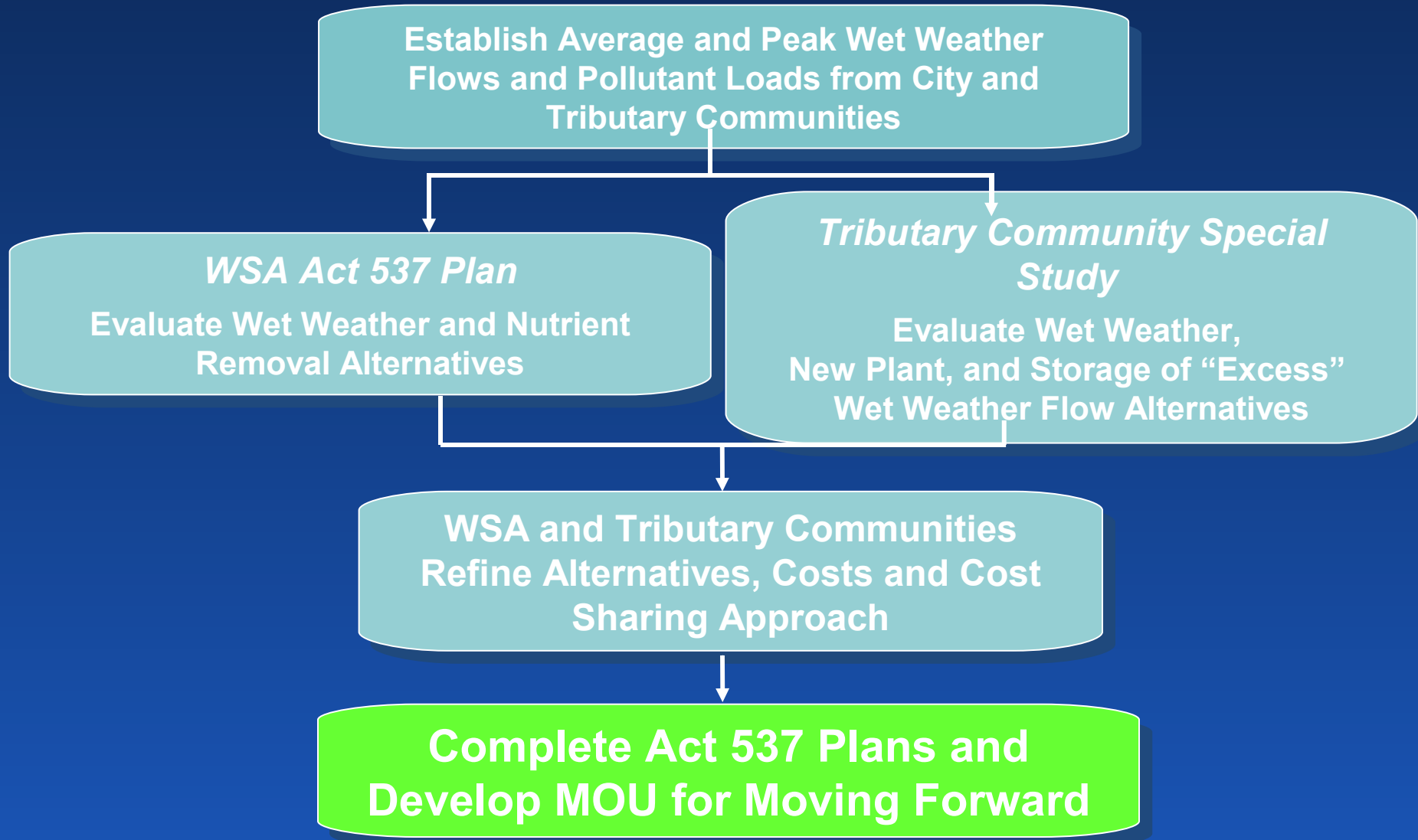
Act 537 Process Also Used to Assess WWTP Options and Wet Weather Flow Management in the Tributary Communities

- Is it economically viable to construct and operate new WWTPs in place of using the WSA Plants?
- Sometimes excess wet weather flows create overflows from the Tributary Communities' sewer systems before reaching the WSA sewer system and plants.
- Some communities have separate compliance orders with the DEP to solve their wet weather issues.

Two Act 537 Planning Documents Were Required to Solve the Regional Compliance Challenges

- Tributary Communities collectively prepared their own separate Act 537 Special Study to evaluate:
 - Wet weather compliance/overflow abatement
 - Building their own treatment plants
 - Staying in WSA system
- WSA prepared a separate Act 537 Plan for compliance at West Plant and Central Plant.

The Separate Plans Were Linked by DEP Funding and Collaboration to Find an Optimum Regional Solution



Act 537 Plan/Special Study Schedule

Jan. 2007 – April 2007	Scope (TAR) Development and Approval
April 2007 – August 2007	Collaborative Planning Process Established with DEP Assistance
Sept. 2007 – Dec. 2007	Flows and design loads established Alternatives evaluated
Jan. 2008 – Feb. 2008	Cost Estimates Reconciled/Refined
March 2008	Regional Solution Selected
March 2008 – June 1, 2008	MOU Developed Act 537 Plan and Special Study written
June 2, 2008	Draft Act 537 Plan and Special Study Published
June 2, 2008 - July 2, 2008	Public Comment Period (30 days)
By August 2008	All Communities Adopt Plans
August 29, 2008	Submit to DEP

Critical Goals and Focus Areas for the Act 537 Planning Process

- **Achieve:** Best solution for all ratepayers
- **Handle:** Industrial flows and loads (current, maximum and problematic)
- **Provide:** Viable tributary community flows and allow growth (through 2030)
- **Preserve:** City growth potential (through 2030)
- **Define:** Acceptable Instantaneous Peak Flow into the WSA system (agreed to cap at 2.5 x dry weather flow)
- **Eliminate:** Wet weather overflows from the Tributary Communities' systems except during "extreme Act of God" wet weather events
- **Consider:** Potential to buy nutrient credits to avoid and/or offset costs of building new plant infrastructure

Projected Flows and Approximate Tributary Growth Allowance

	Current Annual Average Daily Flow	Projected Annual Average Daily Flow	Projected Peak Instantaneous Flow	Approximate Growth Allowed (GPD)	Approximate Growth Allowed (EDUs)	Approximate Growth Allowed (EDUs/yr)
Duboistown	0.224	0.251	0.628	27,000	69	3.5
South Williamsport	0.840	1.000	2.500	160,000	100	5.0
Armstrong	0.012	0.030	0.075	18,000	52	2.6
Loyalsock	1.667	1.901	4.752	234,000	721	36.1
Old Lycoming/Lycoming	0.585	0.763	1.907	178,000	401	20.1
Woodward	0.030	0.075	0.188	45,000	130	6.5
Total	3.358	4.02	10.05	662,000	1,473	74

Capital Cost Comparison

Separate Solutions/New Plants

\$201,200,000

- \$91.6M - Upgrades to WSA WWTPs for City of Williamsport and Woodward Township
- \$7.6M - Collection System Improvements in the City of Williamsport
- \$61.8M – Three new WWTPs to serve Tributary Communities, except Woodward Township
- \$40.2M - Collection System Improvements in the Tributary Communities

Collaborative Regional Solution

\$140,600,000

- \$91.6M - Upgrades to WSA WWTPs for all Tributary Communities
- \$7.6M - Collection System Improvements in the City of Williamsport
- \$41.4M - Collection System Improvements in the Tributary Communities

Regional Solution - Compliance Costs Recommended in the WSA Act 537 Plan

- No CSO improvements necessary at West Plant
- \$ 7.6M – CSO improvements upstream of the Central Plant (City of Williamsport ratepayer only)
- \$ 6.1M – In-plant wet weather-related improvements at the Central Plant
- \$ 12.6M – Nutrient removal improvements at the West Plant
- \$ 45.6M – Nutrient removal improvements at the Central Plant

Regional Solution - Additional Plant Reliability Improvement Costs Through Planning Year (2030)

- \$ 9.8M for West Plant
- \$ 17.5M for Central Plant

Regional Solution - Total Estimated WSA Program Cost

- \$ 22.4M for West Plant
- \$ 76.8M for Central Plant

Total = \$99.2 Million

Shared = \$91.6 Million

City Residents Only = \$7.6 million

Regional Solution – Collection System Improvement Costs Recommended in the Tributary Communities Special Study

- Duboistown - \$0
- South Williamsport - \$12.2M
 - Rehabilitation Project No. 1
 - Property Inspection and Enforcement Program
 - Main Street Bypass Pump Station Improvements
 - Charles Street Pump Station Improvements
 - 3.5 to 4.4 MG Charles Street Wet Weather Storage Facility
- Armstrong Township - \$0

Regional Solution – Collection System Improvement Costs Recommended in the Tributary Communities Special Study

➤ Loyalsock Township - \$20M

- River Avenue Subarea Rehabilitation
- Structural Repairs in the Faxon, Golden Strip, and East Hills Village Subareas
- Lincoln Drive Bypass Conveyance Improvements
- Bull Run Pump Station Improvements
- Bull Run Force Main from Bull Run PS to McClure's Run PS
- 2.1 to 3.3 MG Bull Run Wet Weather Storage Facility
- Abandon 24-inch Bull Run Interceptor from the Bull Run PS to Miller's Run
- Rehabilitate 18-inch Bull Run Interceptor from Miller's Run to McClure's Run
- New McClure's Run Pump Station
- New Force Main from McClure's Run PS to the WSA's Central WWTP
- 5.5 to 7.1 MG McClure's Run Wet Weather Storage Facility
- Complete collection system investigations in the Faxon and East Hills Village subareas
- Property inspection and enforcement program in the River Avenue, Faxon, Golden Strip, and East Hills Village subareas

Regional Solution – Collection System Improvement Costs Recommended in the Tributary Communities Special Study

- Old Lycoming / Lycoming Townships - \$9.3M
 - Conduct sewage collection and conveyance system investigation
 - Conduct sewage collection and conveyance system rehabilitation in Flexer Court area
 - Interceptor rehabilitation from Flexer Court Metering Station to the WSA's West WWTP, if necessary
 - Utilize the Tannery Tank or construct a new 1.3 to 1.8 MG tank at the WSA's West WWTP as a wet weather storage facility
 - Implement a property inspection and enforcement program

- Woodward Township - \$0

Regional Solution - Total Estimated
Tributary Community Collection System
Improvement Cost

Total = \$41.4 Million

Regional Solution

Agreed Upon Program Cost Sharing

Regional Alliance Partner	CSO Improvements	Tributary Wet Weather Costs	Design Annual Average Flow MGD	% Share	Share of WSA's Plant Improvement Costs	Total Cost
City of Williamsport	\$7,600,000	\$0	8.300	67.4%	\$61,711,039	\$69,311,039
South Williamsport	\$0	\$12,160,000	1.000	8.1%	\$7,435,065	\$19,595,065
Armstrong	\$0	\$0	0.030	0.2%	\$223,052	\$223,052
Boyalsock	\$0	\$19,990,000	1.901	15.4%	\$14,134,058	\$34,124,058
Lycoming/Lycoming	\$0	\$9,260,000	0.763	6.2%	\$5,672,955	\$14,932,955
Woodward	\$0	\$0	0.075	0.6%	\$557,630	\$557,630
Duboistown	\$0	\$0	0.251	2.0%	\$1,866,201	\$1,866,201
TOTAL	\$7,600,000	\$41,410,000	12.320	100.0%	\$91,600,000	\$140,610,000

Act 537 Plans Provide Equitable Solutions for All with Long-Term Compliance Flexibility

- **Regional Solution Achieved:** Equitable capital cost-sharing approach with lowest overall ratepayer impact selected!
- **Compliance Balance Attained:** The CSO plan, tributary wet weather flows allowed into WSA system and nutrient removal solutions – capacities and capabilities are all in balance.
- **Excess Tributary Flows Resolved:** Tributary Communities resolve their wet weather flow issues separately.
- **More Stringent Regulations Planned For:** Recommended improvements are expandable to achieve stricter future limits if necessary (nutrient removal & CSO).
- **Future Growth Preserved:** Space preserved on plant sites if future growth causes wastewater flow increases beyond projections. MOU allows for inter-municipal flow trading.

Estimated Rate Impact

City of Williamsport

Estimated Number of City Residential Households	10,650
Estimated Annual Future Collection System Improvements Cost Per Household	Included in Existing Rate
Estimated Annual Future CSO Control Cost Per Household (Total Capital and Operating Cost)	\$30
Estimated Annual Future Capital Upgrade Costs for WSA WWTPs per Household	\$245
Estimated Annual Future Additional Operation and Maintenance Cost for WSA WWTPs per Household	\$84
Existing Annual Cost per Household	\$179
Total Future Estimated Annual Cost Per Household	\$538

Estimated Rate Impact South Williamsport

Estimated Number of EDUs	3,291
Estimated Annual Future Collection System Improvements Cost Per EDU	\$210
Estimated Annual Future Additional Collection System Operation and Maintenance Cost per EDU	\$28
Estimated Annual Future Capital Contribution for Upgrades to WSA WWTPs per EDU	\$147
Estimated Annual Future Additional Operation and Maintenance Cost for WSA WWTPs per EDU	\$52
Existing Annual Cost per EDU	\$360
Total Future Estimated Annual Cost Per EDU	\$797

Estimated Rate Impact Loyalsock Township

Estimated Number of EDUs	5,717
Estimated Annual Future Collection System Improvements Cost Per EDU	\$199
Estimated Annual Future Additional Collection System Operation and Maintenance Cost per EDU	\$35
Estimated Annual Future Capital Contribution for Upgrades to WSA WWTPs per EDU	\$161
Estimated Annual Future Additional Operation and Maintenance Cost for WSA WWTPs per EDU	\$57
Existing Annual Cost per EDU	\$346
Total Future Estimated Annual Cost Per EDU	\$798

Estimated Rate Impact Old Lycoming & Lycoming Townships

Estimated Number of EDUs	2,241
Estimated Annual Future Collection System Improvements Cost Per EDU	\$235
Estimated Annual Future Additional Collection System Operation and Maintenance Cost per EDU	\$40
Estimated Annual Future Capital Contribution for Upgrades to WSA WWTPs per EDU	\$165
Estimated Annual Future Additional Operation and Maintenance Cost for WSA WWTPs per EDU	\$59
Existing Annual Cost per EDU	\$360
Total Future Estimated Annual Cost Per EDU	\$859

Estimated Rate Impact Armstrong Township

Estimated Number of EDUs	95
Estimated Annual Future Collection System Improvements Cost Per EDU	\$0
Estimated Annual Future Additional Collection System Operation and Maintenance Cost per EDU	\$0
Estimated Annual Future Capital Contribution for Upgrades to WSA WWTPs per EDU	\$158
Estimated Annual Future Additional Operation and Maintenance Cost for WSA WWTPs per EDU	\$44
Existing Annual Cost per EDU	\$504
Total Future Estimated Annual Cost Per EDU	\$706

Estimated Rate Impact Duboisstown

Estimated Number of EDUs	581
Estimated Annual Future Collection System Improvements Cost Per EDU	\$0
Estimated Annual Future Additional Collection System Operation and Maintenance Cost per EDU	\$0
Estimated Annual Future Capital Contribution for Upgrades to WSA WWTPs per EDU	\$210
Estimated Annual Future Additional Operation and Maintenance Cost for WSA WWTPs per EDU	\$73
Existing Annual Cost per EDU	\$500
Total Future Estimated Annual Cost Per EDU	\$783

Estimated Rate Impact Woodward Township

Estimated Number of EDUs	530
Estimated Annual Future Collection System Improvements Cost Per EDU	\$0
Estimated Annual Future Additional Collection System Operation and Maintenance Cost per EDU	\$0
Estimated Annual Future Capital Contribution for Upgrades to WSA WWTPs per EDU	\$69
Estimated Annual Future Additional Operation and Maintenance Cost for WSA WWTPs per EDU	\$24
Existing Annual Cost per EDU	\$660
Total Future Estimated Annual Cost Per EDU	\$753

Tributary Community Cost Impact From WSA Potential Bonding Schedule

Potential Treatment Plant Improvement Borrowing Schedule

- FY' 09 - At least \$10 million
- FY' 10 - Up to \$5 million or line of credit
- FY' 11 - \$50 million or more TBD
- FY'12 – Remaining as necessary

Important Points

8. Actual amount of borrowing depends on grants received.
9. Approximately 1/3 of WSA borrowing directly impacts tributary rates.
10. WSA's borrowing associated with CSO work will **NOT** be passed to Tributary Communities.
11. Actual bonding schedule and amounts will depend on market conditions and advice of bond consultant in order to obtain optimum rates. WSA is already reviewing current market conditions and will move quickly if necessary to secure best financing option available.
12. Tributary Communities also need to consider their own costs, which are not included in WSA's borrowing.

Potential Funding and Grants

Planning

- The Act 537 program will pay for up to 50% of the eligible planning costs

Design and Construction

- PENNVEST
- Federal earmarks
- Bonds and Borrowing
- Other State/Federal programs that are under consideration

Ongoing & Future Steps in the Act 537 Planning Process

- Memorandum of Understanding
- Publish Draft Act 537 Plan and Special Study for public comment – June 2
- Public Comment Period – June 2 – July 2
- Planning Agency Review Period – June 2 – July 15
- Approval/Adoption by all parties
- Submit to DEP – August 29

Critical Dates For Receipt of Comments

- **Close of Public Comment period – July 2**

All written comments must be received by July 2, 2008. All comment letters must include the name and address of the individuals submitting the comment. Each municipality should keep a log, including the name, address and telephone number, of those individuals reviewing the plans. Each municipality should submit the log and comments received to LDG with copy to WSA by July 3.

- **Comments due from All Planning Agencies (City, County and Tributary Communities) – by July 15**

If your agency does not have any comments, please submit a letter to WSA with copy to LDG stating that you have reviewed the plan and do not have any comments.

Critical Dates for Plan Comments and Recommendations for Approval

City and Tributary Communities Planning Commissions and WTWSA

Duboistown	Planning Commission:	7/10/08
South Williamsport	Planning Commission:	6/19/08
Armstrong Township	Planning Commission:	before 7/15/08
Loyalsock Township	Planning Commission:	7/10/08
Lycoming Township	Planning Commission:	6/19/08
Old Lycoming Township	Planning Commission:	7/2/08
City of Williamsport	Planning Commission:	7/14/08
Woodward Township	Planning Commission: WTWSA:	7/10/08 6/25/08

Critical Dates For Plan Adoption

City and Tributary Communities Councils and Supervisors

Duboistown	Council:	8/7/08
South Williamsport	Council:	8/11/08
Armstrong Township	Supervisors:	8/12/08
Loyalsock Township	Supervisors:	8/12/08
Lycoming Township	Supervisors:	8/5/08
Old Lycoming Township	Supervisors:	8/12/08
WSA	Special Full Board Mtg.:	8/6/08
City of Williamsport	Council:	8/7/08
Woodward Township	Supervisors:	8/20/08

Operating (NPDES) Permit Required Implementation Schedule

- Submit Act 537 Sewage Facilities Plan
 - Start DesignAugust 29, 2008
November 1, 2008
- Submit Final Design to DEP
January 1, 2010
- Substantial Completion Certification
(Plant Fully Operational)
September 30, 2012
- Compliance with Effluent Limitations
September 30, 2013

End of
Presentation

Extra Slides

- Slides past this point will not be printed or bound in the handouts. They are here in case questions come up.

Summary of Nitrogen Credit Evaluation

Central Plant

- Incremental solutions are not cost-effective – all or nothing
- Central Plant total nitrogen cost competitive with credits: 11 -12 \$/lb as compared to 9 \$/lb
- Building new infrastructure at Central could allow less to be constructed at West
- **Conclusion:** Improve Central for nitrogen removal – too much risk and too many credits required ~ 257,000 lb/yr (\$2.3M/yr) as compared to debt payment of \$2.9 M/yr

West Plant

- Smaller plant with good potential for incremental build-out. Four incremental solutions considered.
- West plant total nitrogen cost = 20-22 \$/lb is more unfavorable to credit cost.
- **Conclusion:** Continue evaluating the Credit Program. Possibility of phased build-out if guaranteed credits become available. Could save ~ \$11.9 million in upfront capital cost while buying 13,800 lbs/yr (\$125,000/yr) credits. Requires Central Plant improvements.

Potential for Nitrogen Credit Purchase Considered

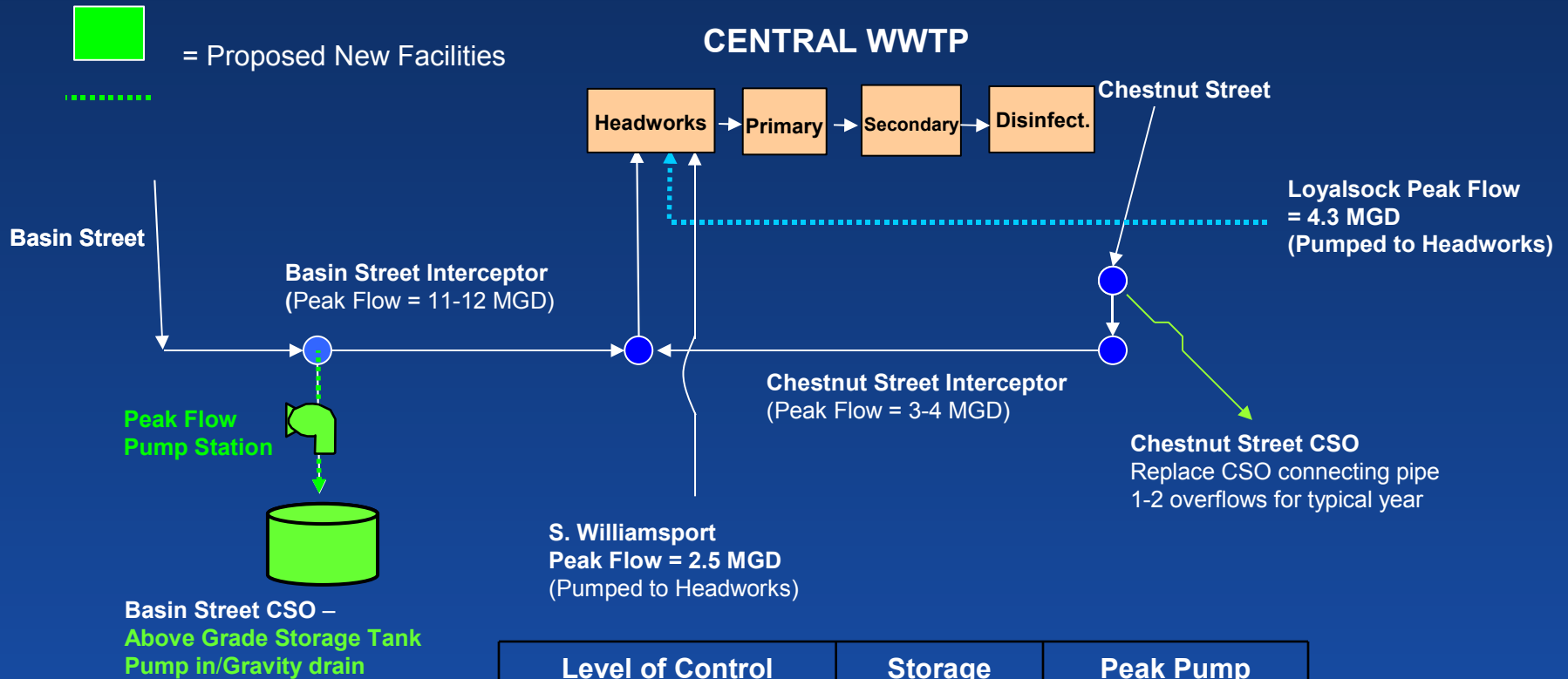
Factors

- **DEP Requires Evaluation:** Credit purchase must be considered to obtain funding.
- **DEP Favors Trading if Feasible:** Program could reduce total nutrient load to Bay by controlling non-point sources.
- **Premise:** Purchasing credits may be less expensive for a community than building and operating new infrastructure.

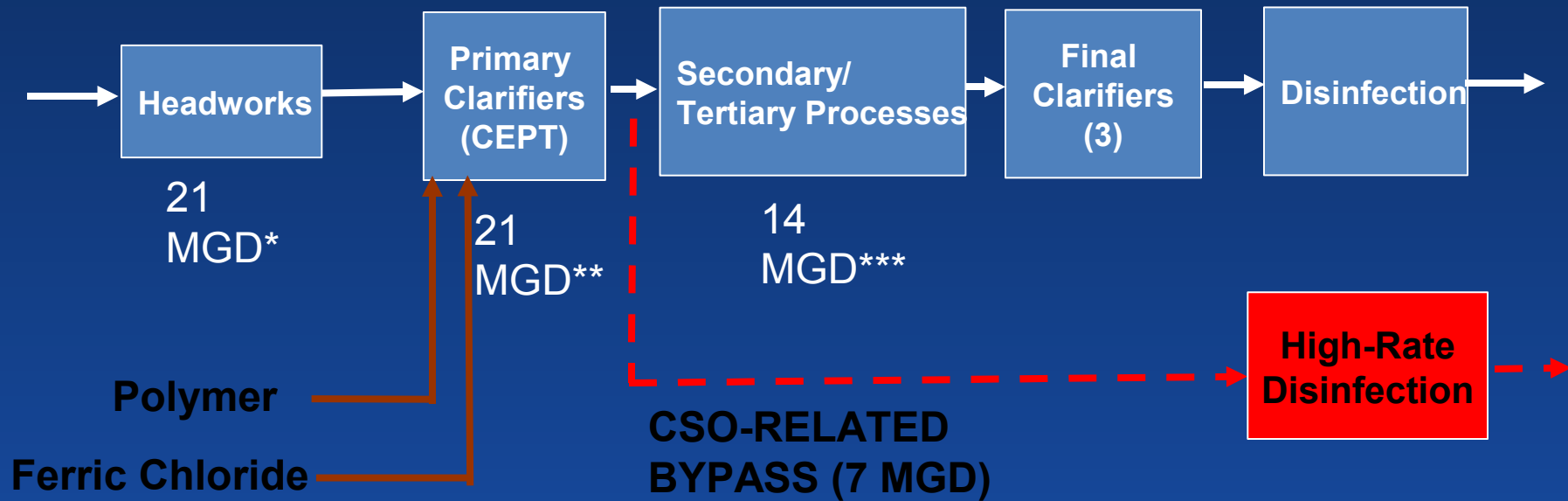
Risks/Issues

- **Credit Program:** is in its infancy. Adequate credits are not available in the market. Some small communities have signed contracts with Credit Brokers.
- **Credit Price:** not guaranteed subject to market variation. Long-term availability uncertain.
- **Cost Comparison:** Current credit price is close to the cost of building our own ~ 9\$/lb versus 11 to 12 \$/lb at Central Plant.
- **Ratepayer Issues?:** Perceived transfer of ratepayer payments to others?

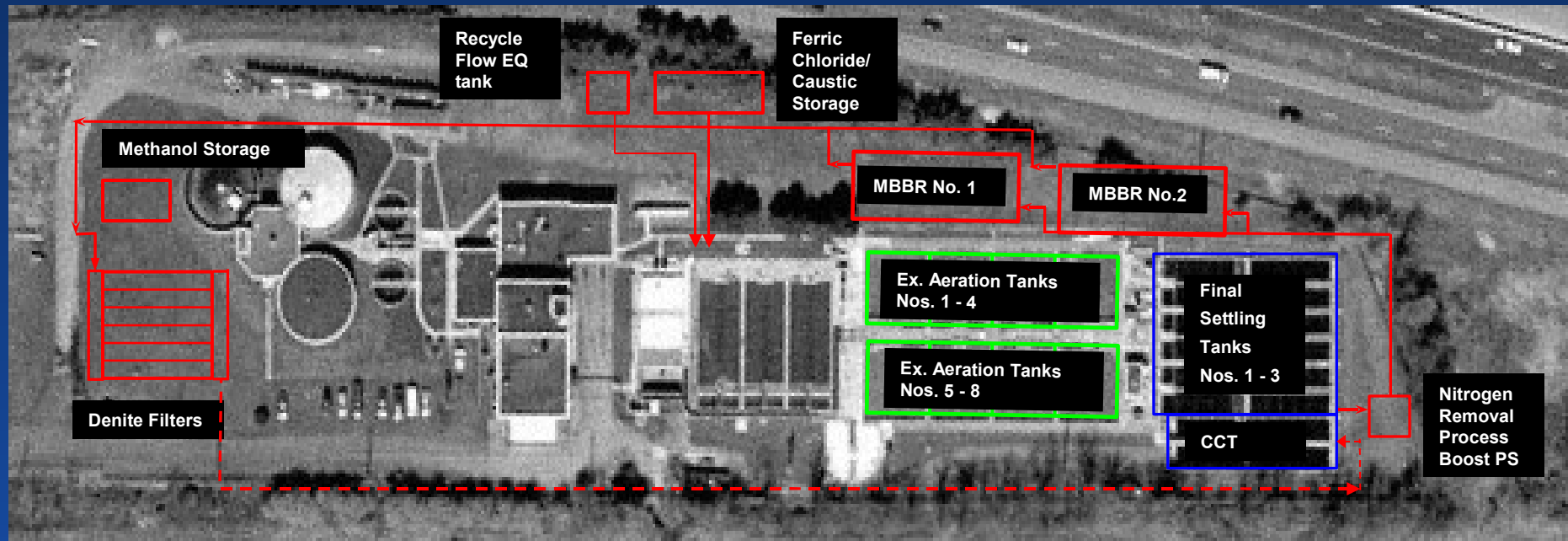
\$7.6 M - Recommended CSO Improvements at Central Plant



\$ 6.1M – Additional Central Plant Wet Weather Related Improvements



\$45.6 M - Recommended Nutrient Removal Improvements at Central Plant



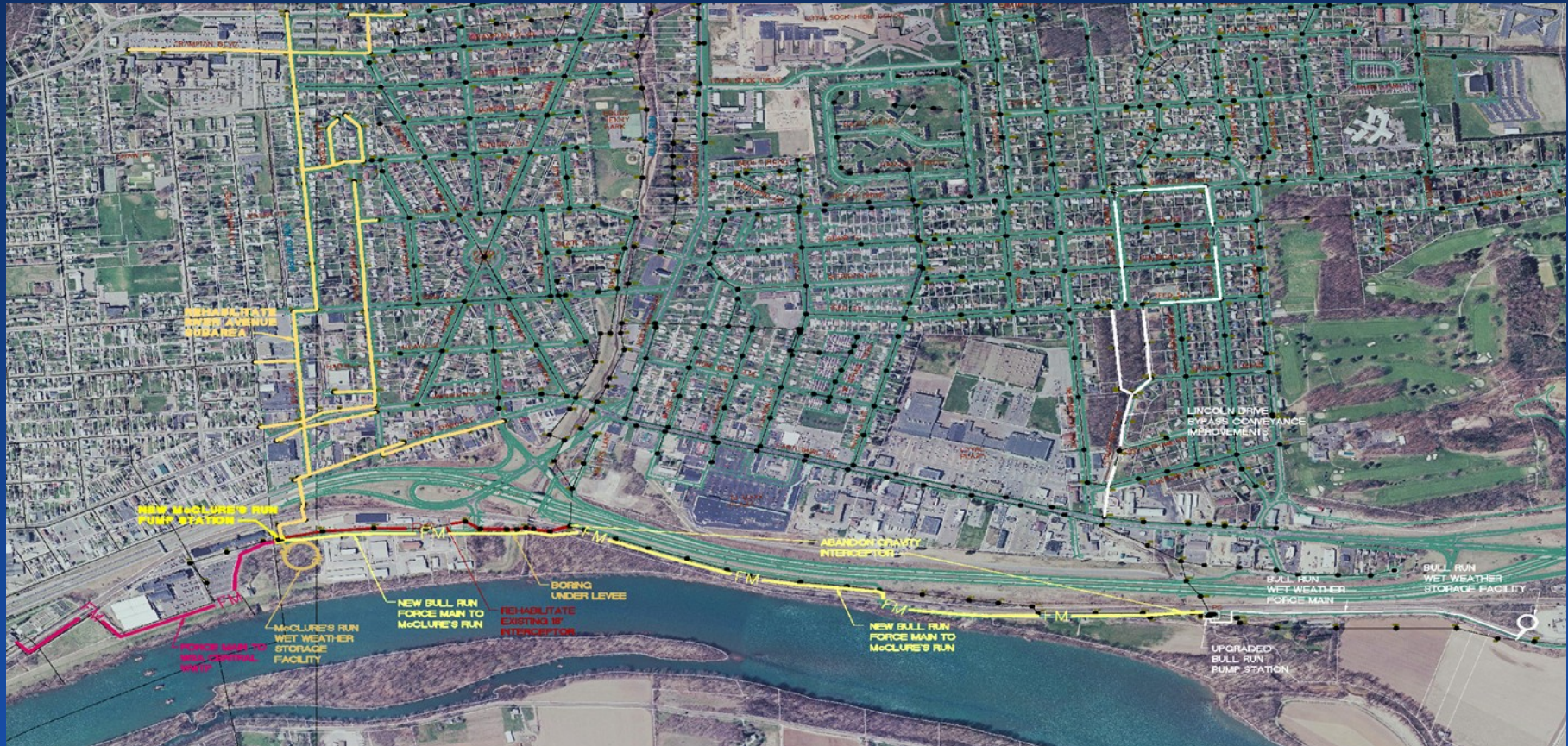
- * Proposed Nitrification Approach: Separate Process (Moving Bed Biological Reactors)
- * Required Modifications: New Biological Tanks, IFAS Media
- * Denitrification Process: Denitrification Filters

\$12.16 M - Recommended Collection System Improvements in South Williamsport



- *Rehabilitation Project No. 1 (not shown)
- *Main Street Bypass Pump Station Improvements
- *Charles Street Pump Station Improvements
- *3.5 to 4.4 MG Charles Street Wet Weather Storage Facility

\$19.99 M - Recommended Collection System Improvements in Loyalsock



- *River Avenue Subarea Rehabilitation
- *Lincoln Drive Bypass Conveyance Improvements
- *Bull Run Pump Station Force Main Improvements
- *2.1 to 3.3 MG Bull Run Wet Weather Storage Facility

- *Abandon Interceptor from Bull Run to Miller's Run
- *Rehabilitate Interceptor from Miller's Run to McClure's Run
- *New McClure's Run Pump Station and Force Main to the WSA's Central WWTP
- *5.5 to 7.1 MG McClure's Run Wet Weather Storage Facility

\$9.26 M - Recommended Collection System Improvements in Old Lycoming



- *Conduct sewage collection and conveyance system rehabilitation in Flexer Court area (not shown)
- *Interceptor rehabilitation from Flexer Court Metering Station to the WSA's West WWTP, if necessary
- *Utilize the Tannery Tank or construct a new 1.3 to 1.8 MG tank at the WSA's West WWTP as a wet weather storage facility