Goal: Develop a hypothetical case study for building a POPP in a small town in Massachusetts

Objectives
1. Choose a small town in MA that could benefit from a POPPs system
2. Define what the capabilities of the POPP would need to be, in order to attract high tech industries.
3. Research the potential costs and benefits of the project for the different stakeholders: the town, the citizens, and the firm.
4. Provide recommendations on how communities can advocate for the construction of a POPP
5. Compile the findings into a hypothetical grant/loan application

Selected Methods
- Examine U.S. Government census data to compare demographic statistics
- Observe trends in unemployment rates for various towns using the U.S. Bureau of Labor Statistics
- Compile a list of common regulated industrial pollutants from the Environmental Protection Agency’s water standards and the MWRA’s standards
- Analyze case studies that deal with the construction of wastewater facilities.
- Study how industrial development affects the local area.
- Utilize the EPA’s website and the Massachusetts Water Resource Authority’s website to learn about current and future regulations.
- Show the state grant/loan application process and research other organizations that may be willing to fund the projects.
- Draft grant/loan application and review with group, Professor Plater, other project experts.

Problems with Industrial Wastewater

Wastewater Issues in Easthampton, MA
1. Direct discharge of industrial wastewater into the Manhan River
2-3. Industrial facilities discharge effluent into local sewer system
4. Residential area wastewater mixes with industrial wastewater

TOWN
The town of Easthampton is at risk for habitat loss and impaired drinking water if the publicly owned wastewater treatment plant (WWTP) is overwhelmed with more effluent than it is permitted to handle.

FIRMS
Firms (1, 2, 3) suffer from the cost of purchasing and maintaining pretreatment equipment. Firms that apply for their own NPDES permit must incur an even greater cost to meet stringent standards.

COMMUNITY MEMBERS
Citizens suffer from a stagnant economy and water impairment. Some firms in the town are direct polluters and others discharge effluent into the sewer system that flows through residential areas.

Additional Costs

- Start-up costs: 1%
- Construction: 15%
- Site Preparation: 5%
- Construction: 85%
- Start-up: 1.25%
- Additional Costs: 2%

Opportunities to Improve Water Quality
- Limitations on levels of certain pollutants
- Prevent interference of operation of treatment plant
- Block pollutants that could pass through other filter types
- Improve opportunities for reuse of wastewater or sludge
- Prevent introduction of pollutants which could cause health or safety issues

Investment Costs

1. Building the POPP facility
2. Updating associated infrastructure
3. Staffing and maintaining the POPP
4. Regulating water quality

Benefits
1. Increased tax revenue from new businesses
2. Efficient land use
3. Opportunities for improving water quality

Penalties Assessed for Wastewater Noncompliance
by the Massachusetts Water Resource Authority

Total Penalties Assessed in FY13: $226,440

Recommendations to Towns:
1. Inquire which chemicals each firm interested in moving to the area needs filtered
2. Work with local construction companies to design a plan that meets these needs
3. Include the final cost estimate provided by the construction company in grant/loan applications

Conclusion

This innovative solution is to encourage businesses that generate toxic waste to discharge into a centralized, well-designed treatment system rather than directly into a water source or the public sewer. This municipal facility could be extremely advantageous for businesses, towns, and habitats. By absorbing the costs for pretreatment and standardizing the pretreatment process in an industrial park, a POPPs system (as depicted to the left) could significantly reduce costs for businesses. This reduction in overhead costs will encourage businesses to expand into towns in need of economic stimulus where the POPP systems can be implemented. Meanwhile, effluent from these companies will be treated with state-of-the-art technology, ensuring the protection of our waterways. By yielding job growth for impoverished communities, higher profit margins for businesses, and more stringent protection of at-risk habitats, this cutting-edge solution is economically feasible, logistically attainable, and morally admirable.

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