Binghamton-Johnson City Wastewater Treatment Plant

5 Year Plan 2025-2029

The Binghamton-Johnson City Wastewater Treatment Plant is a publicly owned treatment facility. This plan was put together by the Plant Superintendent, Management and staff. Approved by the Binghamton-Johnson City Joint Sewage Board.

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Mission Statement :

Our goal at the Binghamton-Johnson City Wastewater Treatment Plant (BJCWWTP) is to provide innovative, sustainable solutions to meet regulatory requirements in an efficient, cost-effective manner to protect the Susquehanna River and The Chesapeake Bay.

Executive Summary:

The Facility is operating 24/7/365 and plays a crucial role in safeguarding public health and preserving natural ecosystems by treating wastewater before its discharge into receiving waters. Our goal is to provide the best possible effluent to the Susquehanna River and communities all the way to Chesapeake Bay. We consider transparency, safety, adaptability and accountability as corner stones of our philosophy. We believe in keeping our workforce trained and appreciated. Being one of the largest facilities on the Susquehanna River, we service Binghamton, Johnson City, Town of Binghamton, Binghamton University, Town of Vestal, Village of Port Dickinson, Town of Kirkwood, Town of Conklin, Town of Fenton, Town of Dickinson, SUNY Broome, and part of the Town of Union.

By removing harmful substances and pathogens, we minimize environmental pollution and mitigate the risk of waterborne diseases. Additionally, we adhere to stringent regulatory standards to ensure compliance with New York State Department of Environmental Conservation (NYSDEC) permit requirements.

The Facility is dedicated to providing reliable and environmentally responsible wastewater management solutions. By continually improving our processes and embracing innovation, we strive to contribute to a cleaner and healthier future for our communities and ecosystems.

Introduction:

Our wastewater treatment plant is poised for a transformative journey over the next five years. With a commitment to sustainability, efficiency, and innovation, we aim to elevate our plant into a model of excellence within the industry. This plan outlines our key objectives and strategies to achieve our vision.

1. **Enhancing Efficiency:**
    - Implementing advanced technologies for improved pollutant removal.
    - Optimizing processes to minimize energy consumption and chemical costs.
    - Utilizing real-time monitoring for enhanced control.
2. **Resource Recovery:**
    - Extracting value from wastewater byproducts through recovery technologies.
    - Exploring biogas production via anaerobic digestion.
3. **Community Engagement:**
    - Raising awareness about wastewater treatment and conservation.
    - Collaborating with educational institutions to promote environmental careers.
4. **Continuous Improvement:**
    - Regular performance assessments and benchmarking.
    - Soliciting feedback for ongoing improvement.

With dedication and collaboration, we are committed to realizing our vision of a sustainable, resilient, and efficient wastewater treatment plant that serves as a model for the industry and a beacon of environmental stewardship.

SWOT Analysis

INTERNAL FACTORS

STRENGTHS +	WEAKNESSES –
State-of-the-art equipment Highly skilled and trained personnel Strong track record of adherence to environmental regulations and standards. Well-maintained facilities with reliable infrastructure for effective treatment operations. Ability to recover energy from wastewater treatment process, contributing to sustainability goals.	Significant maintenance, energy, and labor costs. Capacity constraints may limit the facility's ability to handle increasing wastewater volumes, especially during wet weather events. Some aging components of the facility, requiring frequent repairs or upgrades. Potential mechanical failures that could harm reputation and incur penalties.

EXTERNAL FACTORS

OPPORTUNITIES +	THREATS –
Potential for upgrading aging infrastructure to meet growing demand or regulatory requirements. Engaging in public outreach programs to raise awareness about the importance of proper wastewater treatment. Taking advantage of government incentives or grants for upgrading infrastructure or implementing eco-friendly practices.	Changes in environmental regulations or policies could necessitate costly upgrades or modifications to maintain compliance. Local community opposition or public perceptions regarding wastewater treatment facilities could hinder expansion or development plans.

Goals and Objectives:

Goal: TPS Project (Replacing In-Line Grinders with Bar Screens)

Objective: To remove flushable wipes in an efficient, cost-effective manner.

Quantifiable by weight of Screenings at fine screens vs screenings weight removed at TPS, by tracking maintenance between Grinders, Screens, and cleanup at the fine screens during high flow events. See Descriptive Pics Appendix 4.

Goal: Sealing Digesters (1 & 2 Evaluation and Repair)

Objective: To increase the useful lifespan of aging infrastructure and create a safer more efficient workplace.

Quantifiable by extending the lifespan, seeing less gas monitor alarms and being able to produce electricity with gas not leaking into the environment.

Goal: Upsizing Microturbine Pumps & Variable Frequency Drives (VFDs)

Objective: To utilize all five microturbines with minimal infrastructure disturbance.

Upsizing the microturbine pumps and VFDs will provide the increased flow to the microturbine heat recovery units required to satisfy all five units. Measured by number of kilowatts produced monthly.

Strategies and Action Plans:

1. TPS Project (Replacing In-Line Grinders with Bar Screens):

Year 1: Work with lead Agency

- Establish timelines, submittals, inspection, who is doing what (assigned)

Year 2: Construction planning

- Maintaining treatment
- Coordinating with contractor/engineers and DEC

Year 3: Building begins and ends

- Building keeping everything cohesive
- Making sure everything is being done to Plant standards
- Staying in touch with contractors, engineers and all involved weekly

Year 4: Fully integrate

- Ensure all work is completed and done to satisfaction of the Owners and Plant

2. Sealing Digesters (1 & 2 Evaluation and Repair):

Year 1: RFP/RFQ Digesters 1 & 2.

- Initial Assessment: Conduct a detailed inspection of the current state of the digester, including the condition of the sealant, any existing leaks, structural integrity, and overall performance. One of the two half million-gallon digesters will need to be taken out of service for cleaning and evaluation. Engineering will coordinate advertisement of RFP/RFQ for Evaluation with Operations to minimize down time and quickly return the tank to service. Proposals will only be accepted from those that have participated in the Evaluation.
- Engineer Review: Review federal, state, and local regulations that apply to digester sealing and maintenance to ensure compliance with environmental and safety standards that need to be met.
- Budget Planning: Develop a budget for the entire project, including costs for materials, labor, inspection, and ongoing maintenance. Secure funding and ensure financial resources are allocated for each year of the plan. Risk assessment: the farther out this project is pushed the more costly it will be (Could be 2 million more per year)

- Develop Detailed Plan: Create a detailed project plan outlining the steps, timelines, and milestones for sealing the digesters.
- Include contingency plans for unexpected issues.

Year 2: Award to contractor, coordinate schedule.

- Engineering and the Board will evaluate proposals to determine the best plan and price for our needs and engage the winning Bidder in a contract to seal both digesters.

Year 3: Initial sealing and testing.

- The Plant will coordinate with the Contractor to sequentially remove digesters 1 & 2 from service, seal, test, and put back into service. Coordination will need to be made with a Nitrogen hauler as well for the purpose of putting each digester back into service safely.
- Initial sealing and testing, monitor drain and clean out digester prior to work being performed.

Year 4: Monitor and maintain.

- The Plant will monitor the areas outside each tank for ground saturation and signs of liquid leakage. The Plant will also continue to monitor for LEL inside the digester complex.

3. Upsizing Microturbine Pumps & Variable Frequency Drives (VFDs):

Year 1: Secure funding in following years budget.

- Initial cost estimates are between $17k and $25k for bigger pumps and VFDs. A substantial cost buffer should be included to account for today's inflationary climate.

Year 2: Fund a study to verify pump curves.

- An expert in boiler loop sizing and HVAC demand shall be commissioned for a study to verify the appropriately sized pumps and VFDs to meet the demand of all 5 microturbines.

Year 3: Purchase and install new pumps and VFDs.

- Plant staff is fully capable of purchasing and installing new pumps and VFDs. New cabling, piping may need to be installed to accommodate larger equipment.

Year 4: Verify and monitor flow rates.

- Individual flow meters shall be installed on each unit to ensure they are always supplied with adequate water. Success can be measured in kilowatt hours generated.

Infrastructure Plan:

*The timeline is flexible and will be adapted to reflect the evolving needs of each project.

1. TPS Project (Replacing In-Line Grinders with Bar Screens):

Year 1: Coordination and Planning

- Collaborate with EDR Engineering, City of Binghamton, and DEC to finalize the design solution for debris removal at TPS.
- Plan the integration of the new system to align with the plant's existing infrastructure.

Year 2: Equipment Selection and Procurement

- Procure the necessary bar screens and compactor to meet the 6mm screening requirement.
- Ensure that the equipment is compatible with the current system and meets all regulatory standards.

Year 3: Installation During Construction

- Install the new bar screens and compactor at TPS.
- Conduct testing to ensure the system effectively removes debris and maintains 6mm screening during rain events.

Year 4: System Integration

- Integrate the new screening system with the plant's operations.
- Train staff on operating and maintaining the new equipment.

Year 5: Review and Enhancement

- Conduct a thorough review of the new system's performance.
- Make any necessary adjustments or enhancements to improve system efficiency and reliability.
- Document lessons learned and update the operational procedures accordingly.

2. Sealing Digesters (1 & 2 Evaluation and Repair):

Year 1: Structural Evaluation

- Engage a specialist to perform a comprehensive structural evaluation of Digesters 1 and 2.

- Use non-destructive testing methods to identify potential gas escape points in the concrete structure.
- Develop a detailed report with recommendations for sealing and reinforcing the digesters.

Year 2: Planning and Design

- Based on the evaluation report, work with engineers to design a sealing solution for the digesters.
- Ensure that the design addresses the intermittent elevated Lower Explosion Limit (LEL) levels and potential future degradation.
- Obtain necessary permits and approvals for the planned work.

Year 3: Procurement and Contractor Selection

- Issue an RFP (Request for Proposal) and select a contractor with experience in rehabilitating digesters.
- Procure all necessary materials and ensure that the selected contractor has a clear understanding of the scope of work.

Year 4: Implementation

- Begin the sealing and rehabilitation work on Digesters 1 and 2.
- Monitor the work closely to ensure it is completed on time, within budget, and according to specifications.
- Perform continuous LEL monitoring throughout the project to assess progress.

Year 5: Post-Implementation Review and Monitoring

- Conduct a final inspection to ensure all work has been completed to satisfaction.
- Continue monitoring LEL levels to confirm the effectiveness of the repairs.
- Document the entire process for future reference and planning.

3. Upsizing the Micro-Turbine Pumps & Variable Frequency Drives (VFDs):

Year 1: Assessment and Design

- Conduct an assessment of the current water supply system for the microturbines.
- Design an upgrade plan focusing on upsizing the water pumps and VFDs to meet the required cooling water flow rates.

Year 2: Budgeting and Funding

- Secure budget approval for the upgrades, including equipment and labor costs.
- Explore potential funding sources or grants that could offset the project costs.

Year 3: Procurement

- Procure the required pumps, VFDs, and any additional equipment.
- Ensure all equipment meets the specifications needed to increase the cooling capacity.

Year 4: Implementation

- Install the new pumps and VFDs.
- Install individual flow meters and circuit setters for each microturbine.
- Test the system to ensure that it can now supply adequate water to run all five microturbines.

Year 5: Optimization and Monitoring

- Optimize the system operation for maximum efficiency.
- Monitor the performance of the microturbines and cooling system to ensure the upgrades have resolved the issue.

Financial Planning:

1. Revenue Projections

- **Service Charges**: 3-5% annual growth.
    - Year 1: $25.7M → Year 5: $32.8M
- **Grants/Subsidies**: $500K/year.
- **Other Income**: $250K/year from interest earned.

2. Capital Expenditures (CAPEX)

- **Infrastructure Upgrades**: $1M in Year 1 → $2.5M in Year 5.
- **Equipment Replacement**: $500K in Year 1 → $800K in Year 5.
- **Technology Upgrades**: $200K in Year 1 → $400K in Year 5.

3. Operational Expenditures (OPEX)

- **Staffing Costs**: $2M in Year 1 → $2.4M in Year 5.
- **Maintenance/Repairs**: $7.9M in Year 1 → $10M in Year 5.
- **Utilities/Chemicals**: $3.2M in Year 1 → $4.8M in Year 5.

4. Debt Service

- **Existing Loans**: $3M/year.
- **New Loans (if needed)**: $2M in Year 3, with $300K annual repayment.

This plan ensures financial stability, supports infrastructure upgrades, and manages operational costs effectively over the 5-year period.

Risk Management:

1. TPS Project (Replacing In-Line Grinders with Bar Screens):

Year 1: Coordination and Planning

- **Risk: Misalignment with Stakeholders**
  - **Mitigation**: Hold regular coordination meetings and ensure all stakeholders have a clear understanding of project goals and timelines.
- **Risk: Design Integration Issues**
  - **Mitigation**: Perform a detailed review of the existing infrastructure and conduct simulations of the new system integration.

Year 2: Equipment Selection and Procurement

- **Risk: Selecting Incompatible Equipment**
  - **Mitigation**: Specify requirements clearly and conduct compatibility testing before final procurement.
- **Risk: Procurement Delays**
  - **Mitigation**: Plan for long lead times and have alternative suppliers ready.

Year 3: Installation

- **Risk: Installation Errors**
  - **Mitigation**: Use experienced contractors and have detailed installation guidelines. Conduct quality checks at each stage.
- **Risk: System Failure During Testing**
  - **Mitigation**: Run extensive tests under various conditions and have backup systems in place.

Year 4: System Integration

- **Risk: Operational Disruptions**
  - **Mitigation**: Schedule integration during low-demand periods and ensure that staff are fully trained before go-live.
- **Risk: Staff Resistance or Misuse**
  - **Mitigation**: Engage staff early in the process and provide comprehensive training on the new system.

Year 5: Review and Enhancement

- **Risk: Unresolved System Issues**
  - **Mitigation**: Conduct a thorough post-implementation review and document any unresolved issues for future enhancements.
- **Risk: Lack of Documentation**
  - **Mitigation**: Ensure thorough documentation throughout the project and share lessons learned with all relevant teams.

2. Sealing Digesters (Digesters 1 & 2 Evaluation and Repair):

Year 1: Structural Evaluation

- **Risk: Inaccurate Evaluation**
    - **Mitigation**: Engage a reputable specialist with a successful track record in digester evaluations. Include peer reviews of the evaluation report.
- **Risk: Discovery of Extensive Damage**
    - **Mitigation**: Prepare contingency plans and budget for potential additional repairs.

Year 2: Planning and Design

- **Risk: Design Flaws**
    - **Mitigation**: Conduct multiple design reviews, and incorporate feedback from operational and safety teams. Use simulation tools to test the design.
- **Risk: Delays in Permitting**
    - **Mitigation**: Start the permitting process early and maintain communication with regulatory bodies.

Year 3: Procurement and Contractor Selection

- **Risk: Selection of Inexperienced Contractors**
    - **Mitigation**: Use a rigorous RFP process with clear selection criteria focused on relevant experience.
- **Risk: Material Shortages or Delays**
    - **Mitigation**: Procure materials well in advance and identify multiple suppliers to avoid dependency on a single source.

Year 4: Implementation

- **Risk: Project Delays**
    - **Mitigation**: Develop a detailed project schedule with milestones and buffer time for unforeseen issues.
- **Risk: Safety Incidents**
    - **Mitigation**: Implement a robust safety plan, including regular safety audits and training.

Year 5: Post-Implementation Review and Monitoring

- **Risk: Ineffective Repairs**
    - **Mitigation**: Conduct thorough inspections and testing post-implementation. Have a warranty and maintenance plan in place with the contractor.

3. Upsizing the Micro-Turbine Pumps & Variable Frequency Drives (VFDs):

Year 1: Assessment and Design

- **Risk: Inaccurate System Assessment**
    - **Mitigation**: Use detailed performance data and simulations to assess current systems accurately for sludge quality and quantity. This directly affects volatile solids and gas production
- **Risk: Design Incompatibility**

    - **Mitigation**: Ensure design compatibility with existing systems through extensive testing and stakeholder engagement.

Year 2: Budgeting and Funding

- **Risk: Budget Overruns**
    - **Mitigation**: Include contingency funding in the budget and regularly review financials.
- **Risk: Inability to Secure Funding**
    - **Mitigation**: Explore multiple funding sources, including grants and partnerships. Prepare a strong business case for the upgrades.

Year 3: Procurement

- **Risk: Equipment Not Meeting Specifications**
    - **Mitigation**: Specify clear technical requirements and conduct rigorous vendor assessments.
- **Risk: Supply Chain Disruptions**
    - **Mitigation**: Develop relationships with multiple suppliers and maintain buffer stocks for critical components.

Year 4: Implementation

- **Risk: Installation Delays**
    - **Mitigation**: Establish a detailed implementation timeline and closely monitor progress.
- **Risk: System Integration Issues**
    - **Mitigation**: Conduct integration testing and have a troubleshooting team on standby.

Year 5: Optimization and Monitoring

- **Risk: Suboptimal System Performance**
    - **Mitigation**: Implement a continuous monitoring system and adjust parameters as needed. Schedule regular maintenance.

Incorporating these risk management strategies will help ensure the success of these infrastructure projects.

Environmental and Social Responsibility:

1. TPS Project (Replacing In-Line Grinders with Bar Screens):

Environmental Responsibility:

- **Year 1: Coordination and Planning**
  - **Action:** Design the system to reduce the environmental impact of debris removal, including minimizing water pollution.
  - **Benefit:** Protects local water bodies and contributes to a healthier ecosystem.
- **Year 2: Equipment Selection and Procurement**
  - **Action:** Choose equipment that is energy-efficient and has a low environmental footprint.
  - **Benefit:** Reduces operational environmental impact and supports sustainability.
- **Year 3: Installation**
  - **Action:** Implement best practices for installation to minimize disruption to the surrounding environment.
  - **Benefit:** Protects local wildlife and habitats during construction.
- **Year 5: Review and Enhancement**
  - **Action:** Continuously improve the system to enhance its environmental performance.
  - **Benefit:** Ensures long-term sustainability and environmental stewardship.

Social Responsibility:

- **Year 1: Coordination and Planning**
  - **Action:** Engage with local stakeholders, including residents and businesses, to gather input on the project.
  - **Benefit:** Builds community support and ensures the project aligns with local needs.
- **Year 3: Installation**
  - **Action:** Use local contractors and labor to boost the local economy.
  - **Benefit:** Strengthens community ties and provides economic benefits.
- **Year 4: System Integration**
  - **Action:** Provide comprehensive training to operators, focusing on both technical skills and environmental awareness.
  - **Benefit:** Enhances operational efficiency and promotes a culture of responsibility.
- **Year 5: Review and Enhancement**
  - **Action:** Share project outcomes with the community, highlighting social and environmental benefits.
  - **Benefit:** Fosters transparency and community pride in the project.

2. Sealing Digesters (Digesters 1 & 2 Evaluation and Repair)
Environmental Responsibility:

- **Year 1: Structural Evaluation**
  - **Action:** Use non-destructive testing to minimize environmental impact. Avoid disturbing surrounding ecosystems.
  - **Benefit:** Reduces potential contamination risks and preserves local biodiversity.
- **Year 2: Planning and Design**
  - **Action:** Incorporate eco-friendly materials and sealing solutions that have minimal environmental impact.
  - **Benefit:** Reduces carbon footprint and long-term environmental degradation.
- **Year 3: Procurement and Contractor Selection**
  - **Action:** Prioritize contractors with strong environmental credentials and a commitment to sustainability.
  - **Benefit:** Ensures environmentally responsible practices are upheld during the project.
- **Year 4: Implementation**
  - **Action:** Implement strict waste management protocols to handle any hazardous materials.
  - **Benefit:** Prevents environmental contamination and promotes safe disposal practices.
- **Year 5: Post-Implementation Review and Monitoring**
  - **Action:** Continue monitoring for leaks or emissions to ensure ongoing environmental safety.
  - **Benefit:** Protects the local environment and ensures the longevity of the repairs.

Social Responsibility:

- **Year 1: Structural Evaluation**
  - **Action:** Engage local communities to inform them of the evaluation process and any potential disruptions.
  - **Benefit:** Builds trust and ensures transparency with the community.
- **Year 2: Planning and Design**
  - **Action:** Consider community input during the design phase, especially concerning safety and environmental impact.
  - **Benefit:** Ensures the project meets community needs and addresses concerns.
- **Year 4: Implementation**
  - **Action:** Hire locally to support the community and create job opportunities.
  - **Benefit:** Boosts local economy and fosters community goodwill.
- **Year 5: Post-Implementation Review and Monitoring**
  - **Action:** Share the results and benefits of the project with the community.
  - **Benefit:** Enhances community relations and demonstrates accountability.

3. Upsizing the Micro-Turbine Pump & Variable Frequency Drive (VFD)
Environmental Responsibility:

- **Year 1: Assessment and Design**
  - **Action:** Design the system with energy efficiency as a priority, reducing overall energy consumption.
  - **Benefit:** Lowers greenhouse gas emissions and operational costs.
- **Year 3: Procurement**
  - **Action:** Source equipment from suppliers committed to sustainable practices.
  - **Benefit:** Supports the market for environmentally responsible products.
- **Year 4: Implementation**
  - **Action:** Install energy-efficient pumps and VFDs to optimize resource use.
  - **Benefit:** Reduces water and energy wastage, contributing to sustainability goals.
- **Year 5: Optimization and Monitoring**
  - **Action:** Implement regular energy audits to identify and address inefficiencies.
  - **Benefit:** Ensures long-term sustainability and operational efficiency.

Social Responsibility:

- **Year 2: Budgeting and Funding**
  - **Action:** Explore funding options that promote social equity, such as grants for underserved communities.
  - **Benefit:** Ensures the project benefits a wider range of stakeholders.
- **Year 4: Implementation**
  - **Action:** Provide training for local workers on the new system, increasing local skill levels.
  - **Benefit:** Enhances local workforce capabilities and long-term employment prospects.
- **Year 5: Optimization and Monitoring**
  - **Action:** Involve the community in monitoring efforts, such as through education programs on energy conservation.
  - **Benefit:** Empowers the community and promotes a culture of sustainability.

Conclusion:

The proposed 5-year infrastructure plan for the Binghamton-Johnson City Joint Wastewater Treatment Plant outlines a strategic approach to enhance operational efficiency, sustainability, and resilience. By prioritizing critical upgrades, such as implementing the TPS project, sealing digesters, and upsizing micro-turbine pumps and VFDs, we are investing in the long-term health and reliability of our wastewater treatment facilities.

These investments align with our broader goals of environmental stewardship and social responsibility, while also addressing immediate maintenance needs and reducing operating costs. The plan's focus on innovation and community engagement will ensure that our infrastructure remains adaptable to future challenges and meets the evolving needs of our community.

While the implementation of this plan requires significant investment, we believe that it is essential for ensuring the continued safety, health, and well-being of our residents. To facilitate the successful execution of this plan, we propose a collaborative approach that involves active participation from both the plant's management team, the Binghamton-Johnson City Joint Sewage Board, and the Municipal Owners.

By working together and leveraging our combined expertise with over 175 years' experience of our Management team, and the Binghamton-Johnson City Joint Sewage Board we can overcome hurdles and secure the necessary funding to implement these essential upgrades. The Board will review and provide regular updates on the plan's progress, including quarterly reports and biyearly revisions as needed. With a clear vision, a commitment to excellence, and a collaborative approach, we can transform our wastewater treatment facilities into a model of sustainability and efficiency.

Appendices:

Development and Improvement Plans:

1. WORKFORCE DEVELOPMENT:

Assessment and Goal Setting

- Workforce Analysis: Evaluate current skills and identify gaps.
- Set Goals: Define SMART objectives aligned with organizational needs.
- Plan Training: Develop a training schedule targeting key areas.
- Improve Recruitment: Enhance hiring processes and onboarding.

Skill Enhancement and Engagement

- Launch Training: Implement training programs to address skill gaps.
- Boost Engagement: Conduct engagement surveys and act on feedback.
- Leadership Training: Develop and implement leadership programs.
- Career Pathing: Create clear career advancement paths.

Process and Technology Optimization

- Optimize Processes: Streamline HR processes and workflows.
- Integrate Technology: Adopt HRIS and AI-driven tools for recruitment.

Advanced Development and Retention

- Expand Training: Offer advanced and specialized skill programs.
- Enhance Retention: Improve benefits, and recognition programs.
- Monitor Progress: Regularly review KPIs and adjust strategies.

Review and Continuous Improvement

- Comprehensive Review: Evaluate the success of strategies and identify improvements.
- Sustain Improvement: Update training programs to reflect industry trends.
- Strengthen Branding: Promote the organization as a top employer.
- Future Planning: Set new goals and develop the next 5-year plan.
- Continue offering training opportunities. Creating more (In-house) Plant related training classes. Leadership training classes. Continue applying for Operator RTC #s Continue reviewing videos of training classes that were offered prior to start-up. Engage with BOCES, reach out to High School Guidance counselors and get the career opportunities

here known to them. Entertain the idea of new temporary positions. Think about re-instating the summer help program. Part-time temporary positions or intern positions with BOCES and or the High Schools. Potentially creating a Grade 4 position and pay structure.

2. CONTINUE MEETING OR EXCEEDING THE PERMIT LIMITS:

Assessment and Planning

- Review Regulations: Understand current permit requirements.
- Identify Gaps: Analyze discrepancies between current practices and regulations.
- Set Goals: Define compliance objectives.
- Continuing Communication: Communicate with relevant parties.

Process Development and Training

- Standardize Processes: Create permit application and compliance procedures.
- Train Staff: Educate employees on new processes.
- Document Management: Implement a system for tracking permits.
- Initial Audits: Conduct internal compliance checks.

Technology Integration and Improvement

- Automate Tracking: Use software for permit tracking and compliance.
- Refine Processes: Improve based on audit feedback.
- Manage Risks: Develop a plan for non-compliance risks.
- External Audits: Validate compliance through external reviews.

Advanced Compliance and Optimization

- Enhance Monitoring: Implement real-time compliance tools.
- Optimize Efficiency: Streamline permit processes.
- Update Training: Keep people informed about regulatory changes.

Review and Continuous Improvement

- Conduct Review: Evaluate all compliance processes and status.
- Improve Continuously: Adjust based on review findings.
- Strengthen Relationships: Build ties with regulatory bodies.
- Plan: Set new goals for proactive compliance.

3. OPTIMIZE DATA OPERATIONS:

1. Assessment and Planning

Action Steps:

- **Assess Current Data Management Systems:**
  Conduct an assessment of the current methods used for managing and storing plant permits, test results, and sample data. Identify gaps in accessibility, traceability, and organization.
- **Centralize Plant Permits:**
  Establish a single digital repository for storing all plant permits, ensuring accessibility to relevant staff and stakeholders. This could involve a cloud-based document management system with user-defined access levels.
- **Select and Implement a LIMS:**
  Choose a LIMS software tailored to the plant's testing needs. Ensure the system integrates well with current operations and provides features for automation, tracking, and reporting.

2. LIMS Implementation Strategy

Step-by-Step Process for Certified Testing:

1. **Test Ordered**
   - Ensure all tests requested are logged into the LIMS with test details, client information, and expected timelines.
2. **Sample Identification**
   - Assign a unique identifier to each sample as soon as it is received. Ensure the LIMS generates and tracks these identifiers for traceability.
3. **Sample Preparation**
   - Track the sample preparation stage within the LIMS to monitor the responsible personnel, timeframes, and processes applied.
4. **Task Allocation**
   - Use the LIMS to allocate tasks to qualified staff based on sample requirements and availability. Automate notifications to ensure real-time updates on task assignments.
5. **Sample Testing**
   - Log the testing procedure, equipment used, and staff responsible into the LIMS. Include automated checks for compliance with certification requirements.
6. **Result Input**
   - Input the results directly into the LIMS. The system should automatically flag any inconsistencies or deviations from expected results, ensuring data accuracy.
7. **Result Validation & Approval**

- Designate a validation step where the results are reviewed and approved by authorized personnel before finalization. The LIMS should track the validation process and the personnel involved.

8. **Certificate of Analysis (COA) Generation**
    - Upon validation, the LIMS should automatically generate a COA. Ensure the COA complies with industry standards and plant certification requirements.
9. **COA Released**
    - Release the COA through the LIMS to the client or relevant stakeholders. The system should maintain a log of all issued certificates, ensuring full traceability.

3. Key Milestones & Timeline:

1. **Centralize Permits (Month 1-2):**
    - Collect all existing plant permits.
    - Digitize and store in a central location.
    - Train relevant staff on accessing and updating the permit repository.
2. **LIMS Selection & Setup (Month 2-4):**
    - Research and choose a suitable LIMS provider.
    - Integrate the system with existing plant infrastructure.
    - Train staff on LIMS usage.
3. **Pilot Testing (Month 5):**
    - Begin with a pilot test using the new LIMS on a small scale to identify any initial issues.
    - Adjust workflows and resolve system issues.
4. **Full Implementation (Month 6):**
    - Implement the LIMS for all certified testing.
    - Continuously monitor the system's efficiency and make necessary adjustments.

4. Roles and Responsibilities:

- **Project Manager:**
  Oversees the entire process, coordinates between departments, and ensures project milestones are met.
- **IT Specialist:**
  Responsible for setting up the LIMS, integrating it with existing systems, and troubleshooting any technical issues.
- **Laboratory Staff:**
  Provide feedback during the LIMS selection and pilot testing stages. Responsible for operating the system during testing processes.
- **Compliance Officer:**
  Ensures that all permits are updated and accessible. Verifies that testing procedures and COAs comply with regulatory requirements.

5. Monitoring & Continuous Improvement:

- **Data Audits:**
  Schedule regular audits to ensure the accuracy and traceability of data stored within the LIMS.
- **Performance Metrics:**
  Track key performance indicators (KPIs), such as turnaround time for COA release, data entry errors, and compliance adherence.
- **Feedback Mechanism:**
  Set up a feedback loop where staff can report issues and suggest improvements for the LIMS and data management process.

4. PICTURES

One of the TPS Channel Grinders being removed to unclog.

Channel Grinder being removed from West Channel at Terminal Pump Station (TPS)

One of the Gratings covering the channel grinders.

Channels are approximately 30 feet down. They are removed with an electric hoist.

5. CURRENT ASSESMENT

As of 8/29/24

Electrical Equipment:

The Main Electric Feeders and Square D switchgear was replaced and or upgraded in 2019. It consists of a parallel set of 4800-volt feeders. Included in the project was the purchase of 2 Cummins 2.1 Megawatt generators with automatic switching and controls system with Voltage boosting transformers.

This equipment is in excellent shape and should last many years with typical maintenance and testing every 5 years.

Most of the Electrical equipment throughout the plant was upgraded in the project and placed into service between 2018 and 2020. Most of this equipment can be serviced in-house except for the 4800-volt service equipment, automatic generator controls and breaker testing.

Main Pumping equipment:

The main pumps at building 10 are from 2006

The ABB VFDs feeding the main pumps were replaced in the project and installed approximately 2018.

This equipment has seen a couple of exhaust fan failures with one of the four having a main drive board failure and factory certified rebuild performed in 2019.

Bar Racks were installed during the project and placed into service in the 2018-time frame.

This equipment is working well with no signs of early failure.

The bar racks come with a single compactor system which has struggled since being place into service in 2018. It was rebuilt twice, and Koester associates came in and replaced the outfeed tube with a new design (At no cost to the plant) in 2023. This equipment has not had an issue since.

Fine Screens were put into service in August of 2019. Over the last five years they have seen rough service conditions with both compactors being rebuilt. This primarily appears to be due to the lack of bar screens at the Terminal Pump Station. During rain events the screens become blinded with rags from TPS, and the by-pass gate needs to be opened when flow hits approx. 40 MGD. These conditions are sure to shorten the life span of the fine screens and compactors. Not to mention any other equipment downstream, namely the CN influent nozzles.

The Primary Sludge pumps and grinders were placed into service in August of 2019 and appear to be in good shape at the present. The addition of the fine screens, and grinders before all pumps has achieved the goal of protecting the pumps. Even as rags get past the fine screens the grinders can deal with them.

The Primary tanks were retrofitted with new fiberglass flights and plastic chain along with new drive units for the flights and cross collectors. 2019 era.

Gravity Thickeners were retrofitted with new Carousel drive equipment and carousels. Along with new electric service and feeders. 2020 era.

Digesters were retrofitted with new covers, and controls. The mixing equipment was reused, gas compressors for the mixers are newer, several have been replaced. Manual gas piping moisture drains were installed.

Gas safety equipment:

Gas scrubbing skid for Micro-Turbines went on-line in May of 2020. This equipment is in its last year of a five-year maintenance contract with RSP in New Jersey. A few parts have had to be replaced over the years.

Micro-Turbines were started in May of 2020 and are serviced by RSP. There is one year left on the service agreement and will expire in May of 2025.

Secondary Treatment:

Secondary treatment facilities were replaced in the project and ran well until a viewport failed on February 18 of 2022. All equipment including pressure gauges, valve actuators, electrical, and Remote I/O panels were flooded and replaced in by August of 2022.

Nozzle decks appear to be in good shape and are taken off-line each year for inspection and replacement of broken or clogged nozzles.

Actiflo System:

This system has been identified as a single point of failure. The equipment mainly consists of large-scale mixing and a small-scale gravity thickener carousel with a lamella deck. This deck does need some minor repairs. The sand pumps, of which there are three, are taken down regularly and inspected with no sign of premature wear.

Tertiary Treatment:

DN facility equipment appears to be in good shape with two actuators having to be replaced. This equipment must be run nearly 24/7 to meet permit. This is a single point of failure as we must treat everything up to 35 MGD to meet permit.

Disinfection:

Wedecco Ultra-Violet disinfection equipment was installed in late 2019. After much maintenance and lamp replacements, due to 24/7 running for 6 months following the viewport failure. This equipment is now running well. It does require maintenance and is quite costly as far as cost of equipment and lamps.

Solids Handling

Mechanical thickeners were installed in 2020 and run every day. We have seen some degradation of shafts augers and bearings because of the sand in the ActiFlo. The company that sold this equipment has offered to come in and replace the damaged equipment at no cost to the owner in 2024.

Centrifuges:

This equipment requires factory authorized maintenance and will be somewhat costly. We are waiting for a quote from the Plant Engineer.

Conveyors: We rarely use the conveyors that run through the pug mill, and a condition assessment will be following shortly, of the one that runs every day.