# Turkey Creek Regional Sewer District

## Septic Elimination and Wastewater Improvements
## Preliminary Engineering Report
## 2025

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# Executive Summary

## History of the Turkey Creek Regional Sewer District

This Preliminary Engineering Report focuses on septic elimination projects throughout the Turkey Creek Regional Sewer District collection system and the related wastewater plant improvements. These necessary improvements are the result of population growth and the District having reached 90% flows in 2024.

First, a quick history… Turkey Creek Regional Sewer District (TCRSD) is in Kosciusko County, Indiana and was established by the Indiana Stream Pollution Control Board on October 18th, 1977. The service area was defined when the District was established and include Lake Wawasee, Syracuse Lake, Boner Lake, and Papakeechie Lake. The Utility has grown steadily from its inception in 1977. The purpose of the District was further expanded in 1987 by order of the Indiana Stream Pollution Control Board when they were required to take over the failing water and sewer infrastructure of the Wawasee Sewer and Water Company. The District serves property adjacent to the largest natural lake in the state and it protects one of our most beautiful natural recreation areas. The District takes their responsibility to preserve and protect this beautiful Indiana waterway very seriously.

TCRSD has continued to grow and improve both its collection system and treatment processes. In 1988 and 2015 the District expanded the WWTP and installed new sanitary sewer collection systems around a large portion of Lake Wawasee. Additional significant and needed collection system projects followed, as well as improvements to the treatment plant, improved clarifier capacity, and current plans for improvements to the aeration process. The District currently has a service area of approximately 4,300 acres. The area currently has about 2,400 customers and predominantly residential flows with a significant number of seasonal occupants. However, in the post-COVID era, a significant uptick in year-round occupancy and related flows has been witnessed. While 2020 census numbers do not show significant growth, increased flows and recent population growth within the community of Lake Wawasee and the adjacent town of Syracuse has increased the flows to the point that the District has requested and received an increased capacity rating from .37 to .50 mgd.

As a result of the growth and increase in flows, the core project needs and purpose revolve around elimination of existing septic systems through rehabilitation of existing collections and the addition of new collections piping and pump station improvements. These major sewer system improvements will help to eliminate failing septic system waste from leaching into the waterway, reduce inflow and infiltration, provide sanitary sewers to areas that would otherwise be installing new septic systems, and help to avoid overflows of pump stations directly adjacent to the lake. In some cases, this may include consolidating and moving a pump station to provide greater protection to the waterway and surrounding environment. Improvements to the WWTP will provide more effective and efficient aeration and treatment necessitated by growth and increased treatment capacity rating. All these items are being proactively addressed since the District had recognized they were reaching 90% of capacity flows and they wished to avoid IDEM Orders. Residents of the District make constant inquiries and express needs for collections system improvements and expansion in the defined District.

The District expects these projects to eliminate approximately 260 septic tank systems and prevent future additional installation of septic tanks which could exceed 300 units to serve current platted properties within the District. The District also expects the improvements to collection system capacities and pump station rehab to reduce concerns for sanitary sewer overflows at pump stations directly adjacent to the waterways. Pump station review and rehab will also be included to eliminate infiltration and inflow and further tighten the collection system.

The identified projects should provide significant beneficial impact to the drinking water wells that are used by the vast majority of sewer customers.

We expect the projects to provide water quality benefits as part of the continued goal and intent to protect this outstanding resource and individual drinking water wells from the impacts of septic waste and high seasonal and cyclical waste loading periods.

The District has been very successful in improving water quality of the chain of impacted lakes by the continued and relentless elimination of septic systems and prevention of new septic systems installations within the defined District. This reduction of residential septic E-coli should continue to reduce and eliminate pollutants of concern.

Based upon census data, it is known that the TCRSD serves a widely diverse group of constituents. Specific areas within the defined service District most certainly fall below the MRI financial requirements of a DAC. However, being directly adjacent to the greatest lake in the state, and the associated multimillion dollar homes disproportionately skew the financial numbers. It is known from past reports that the area includes a large percentage of the population over age 65 and qualifies for maximum points related to educational attainment. The affordability criteria at this time are unknown but will most certainly affect those in the off-lake property areas of the District.

The green infrastructure components of these projects include natural filtration strips and areas around the hard surface pump stations. The project makes use of high efficiency pumps as well as variable frequency drives to match power consumption more appropriately to the needs of the station. Energy efficiency and climate resiliency is impacted through the reduction of emissions in collection systems monitoring by improved SCADA reporting and recording and redundancy of data transmission. The geography of the TCRSD results in a very large collection system and a lot of potentially unneeded driving and ICE emissions.

The District has pledged funds from a previous SRF loan as well as capital improvement funding as a budgetary item. The District is also reaching out through various other funding sources and support with the AIRW as well as the USRDA. Tim Woodward, the Superintendent and chief operator has been an ally of the wastewater industry and looks forward to continuing to be a part of the search for funding through advocacy and support of the state and the Clean Water Needs Survey.

A summary of the selected projects is as follows:

1. Improvements to the Collections system including six distinct collections projects discussed in the body of this PER to eliminate 260 existing septic systems and eliminate the possibility of 300 future septic system installations. The projects also address issues with existing Asbestos Cement pipe that is nearing or well past the design life.

The selected collections system projects will not only provide significant septic eliminations but will also provide other significant benefits:

2. Collections system projects and pump station improvements will reduce infiltration and inflow through rehabilitation and improvement of a significant amount of the system.
3. The new collection system sewers will not only remove existing septic systems and eliminate the potential of future septic systems, but it will greatly reduce the potential of sanitary sewer overflows that are very rare but not unknown.
4. The pump station relocation and consolidation project further protect the outstanding resource of the Lake Wawasee watershed, and recreational areas.
5. The replacement of old and undoubtedly failing septic systems on the small footprint lots of lake property will help to both maintain and improve water quality of the waterways but also positively impact the drinking water supply of the high density and shallow drinking water wells used in the majority of the TCRSD.
6. Improvements and modifications to the 37 year old WWTP are part of a series of improvements that have been reviewed and approved by IDEM to increase the future design flow from .37 MGD to .60 MGD and will provide both increased environmental protection and eliminate the concerns for present flows reaching 90%. The improvements to the WWTP are critical to address the increasing flows that had the TCRSD bumping up against 90% of the original design flow limit.
7. The projects serve a diverse mix of District rate payers. A subset of the area most likely falls well within the Disadvantage Communities requirements as well as the Aging Population and Educational Attainment requirements for Affordability.
8. The District works hard to serve as both good stewards of their environment as well as their funds. The District has outperformed inflation when comparing the original rate of 40.35 in 1989 to the current rate of 71.85 today. Few utilities can likely boast similar results.
9. The District works hard to implement cost effective GPR through improvements to Pump and VFD efficiencies as well as lighting improvements. They make significant investments in their SCADA as well as redundant monitoring to reduce the amount of driving over their large and expansive collections system. These investments reduce driving and ICE emissions into the environment significantly.
10. Finally, the District intends to invest the small amount of unspent funds from their previous SRF project as well as active pursuit of other funds available through USDA, Rural Development and county co-op and ED funds.

# Introduction:

## A brief history of Turkey Creek Regional Sewer District

The study area is in Kosciusko County, Indiana; Lake Wawasee USGS Quadrangle, Turkey Creek Township, Section 9; T34N, R7E, see Figure 1, County Location Map and Figure 2 District Location Map. The Turkey Creek Regional Sewer District (TCRSD) was established by the Indiana Stream Pollution Control Board in October 18, 1977. The service area that was defined when the District was established includes Lake Wawasee, Syracuse Lake, Boner Lake, and Papakeechie Lake. The District received requests for service for the eastern and northern portion of Syracuse Lake, see Figure 3, District Boundary and Sewer Area Map.


Figure 1 – County Location Map

This preliminary engineering report focuses on septic elimination collection system modeling, and the required wastewater treatment plant improvements needed to handle the additional flows. The collections report will focus on the following: septic elimination at the following subdivisions Enchanted Hills, Papakeechie No. 5 (Circle Drive) & Papakeechie No. 6 (Hiawatha Lane). The report will review relocating Buttermilk & Sunset lift stations away from Lake Wawasee shoreline. The wastewater treatment plant report will focus on the following: flow capacity upgrades, bio-solids handling, and administration building improvements.

The TCRSD has continued to grow and improve both its' collection system and treatment processes. In 1988 and 2015, the TCRSD expanded the wastewater treatment plant (WWTP) and installed a new sanitary sewer collection system around a large portion of Lake Wawasee. The District currently has a service area of approximately 4,300 acres (not counting water surface). These areas currently have a total of 2,400 sewer use customers. Sewer use customers are predominantly residential, and a significant number are seasonal. There are pockets within the sewered areas without service. These areas were not developed enough or had newer septic systems at the time. Enchanted Hills, Papakeechie No. 5 and Hiawatha Street were such developments. Enchanted Hills had little development when the sewers were installed. As the area developed, they were granted septic systems. These septic systems are now failing. There are many lots in the Enchanted Hills development that are waiting and needed sewers. Areas around Lake Papakeechie (Circle Drive & Hiawatha Lane) were not included in the original sewer expansion due to cost and the age of the septic system.

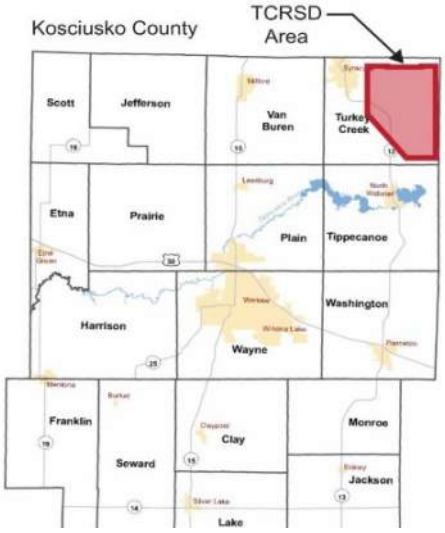



Figure 2 – District Location Map

These properties were granted septic system waivers and their septic systems are past their useful life now.

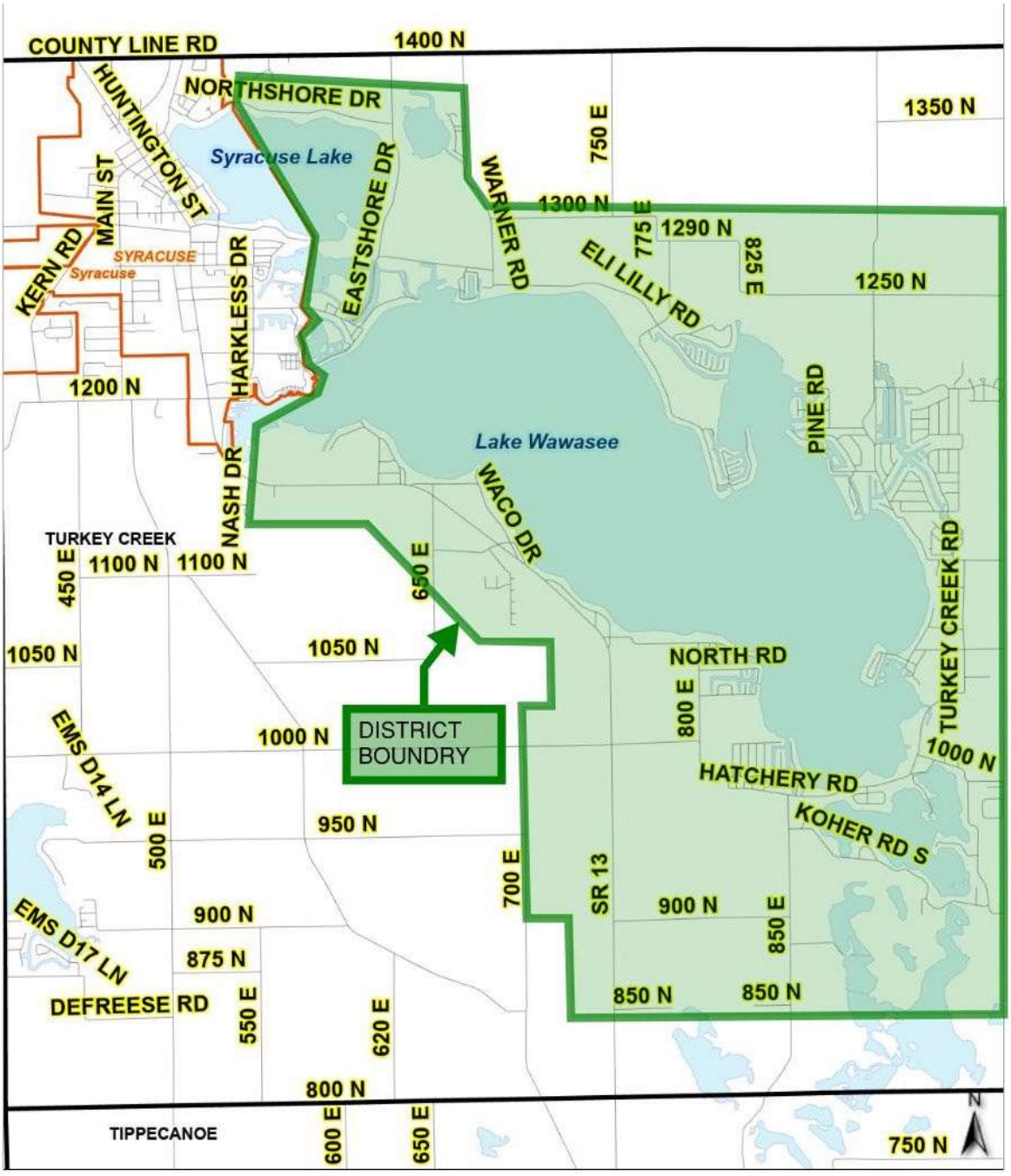



Figure 3 – District Boundary and Sewer Area Map

# Chapter 1 – Current Situations

## Collection System

The District has several areas within their system that need to be reviewed for upgrades or

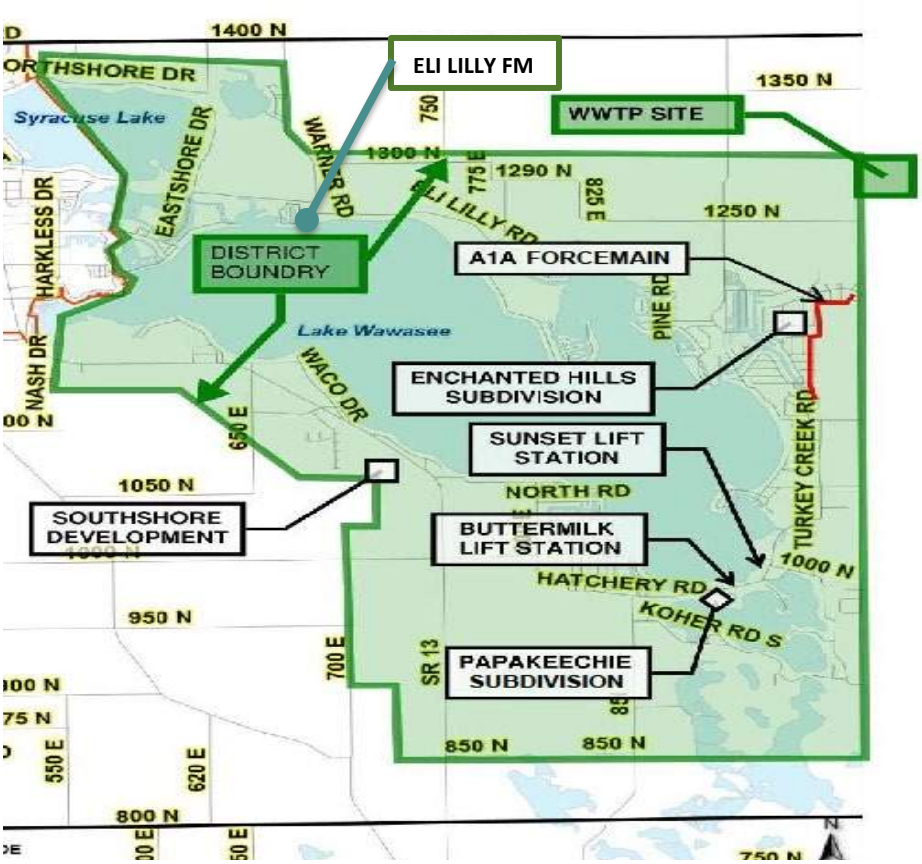



Figure 4 - Collection System Project Map

replacement due to increased demand for service requests. There are some subdivisions that were not sewered in the past. The properties either had septic systems in good order or were not developed. These areas are the remaining portions of Enchanted Hills and Papakeechie No. 5 & No. 6 to sewer Enchanted Hills, TCRSD needs to review its A1A forcemain. This forcemain was constructed in the late 1960's. It is an asbestos cement (AC) pipe and is nearing its expected lifespan. TCRSD has two lift stations, Buttermilk & Sunset that are also nearing their useful lifespan. The current locations of these stations present concern during power outages or pump failures. They are both within 10 feet of the water of Lake Wawasee. Figure 4 shows the project site within the District's boundaries.

The existing collection system is a 100% separate sanitary sewer with no permitted overflow points. The system is composed of septic tank effluent gravity sewers, conventional gravity sewers and low-pressure sewers with grinder pumps. The collection system is currently composed of:

- 30 pump stations
- Approximately 55,000 ft. of 4 to 12-inch sewers
- Approximately 46,000 ft of 3 to 10-inch low-pressure pipes & forcemains

TCRSD intends to incrementally construct sewers in the remaining areas of the District as the State mandate requires. When development occurs, or the need for sewer service arises, projects are reviewed for financial feasibility.

If sewer service is requested within the District's boundaries and TCRSD can reasonably provide sewer service, the TCRSD will follow the State mandate to protect the waterways and public health. In the past, these projects have been constructed in phases. To meet requests for needed service in areas of failing septic, the District has undertaken several collection system expansion projects over the last decade. These projects include:

1. Southshore – Waco Septic Elimination 2015 (288 septic removals)
2. Improvements to the Buttermilk PS & Forcemain 2015
3. WWTP upgrades 2015
4. Northwest flow diversion and collection system improvements 2018
5. WWTP upgrades 2018
6. Northshore - Eastshore septic elimination project 2022 (190 septic removals)
7. Vawter Park septic elimination project 2023 (18 septic removals)
8. WWTP upgrades 2024-2025

Many variables in the design of septic systems for, site and soils, loading, installation, and maintenance impact the lifespan of each individual treatment system. The Kosciusko County Health Department allows residents with an existing septic system that is inspected and approved, to make an application for a waiver to connect through the health department. The waiver will initially provide a 10-year deferral with the potential to renew for two additional 5-year periods based upon a recognized professional review and approval. Thus, the waiver system can provide a theoretical 20-year delay in the requirement to connect.

The industry accepted standards for septic system lifespan acknowledge that without regular maintenance and care, the majority, if not all systems, would be experiencing some degree of failure 20 years after installation. Further, the vast majority of the systems would not meet current design and treatment standards. In addition, many systems are likely within 200 ft of Lake Wawasee or Papakeechie Lake or within 100 feet of their, or a neighboring property's well and would be disallowed. Per Section 410 IAC 6-10.1-61 - Minimum separation distances, septic systems shall be 100 ft from any private well; 200 ft from any public drinking supply well, lake, or reservoir; and 50 ft from any other type of pond, lake, or reservoir. Though no specific testing has been done, it is highly likely that a significant number of the existing septic systems are to some degree failing or discharge pollutants to the environment and waterways of the Lake Wawasee and Papakeechie Lake area. As a result of both recognized industry

standards and the requests of property owners within the affected areas, the TCRSD has a responsibility to install sanitary sewers as mandated by the State of Indiana.

The Northshore Drive & Eastshore Road project was completed in 2023, and service connections continue to be made throughout the first half of 2024. The next project to be undertaken by the District will likely involve septic elimination in the Enchanted Hills area and service preparation to serve the areas of Papakeechie Lake. The preliminary review identifies approximately 260 homes. The District also expects to make needed improvements to Buttermilk and Sunset Lift Stations. Buttermilk is a major station for the District; all the flow from the southwest system goes through Buttermilk. It was originally constructed in the 1960's. It has been upgraded several times over the years, but it needs a larger wet well and valve pit. Sunset Lift Station is a minor station but needs several improvements. It needs new pumps, a control panel with modern alarms, and a backup generator. Buttermilk & Sunset are close enough to be able to combine Sunset with a relocated Buttermilk station. A new Buttermilk station would provide for future flows from the west, if the remaining portion of Papakeechie Lake needed sewer service.

The District has received requests for development in the area of the old South Shore Golf Course. Current needs and review are based on an estimate of 300 equivalent EDU. Ultimately, the District will be able to serve and handle their flows, but the updates and upgrades as discussed throughout this report are needed.

## Wastewater Treatment Plant

### Wastewater Treatment Plant Report

The WWTP had an average design flow of 0.37 mgd and a design peak flow of 1.5 mgd (max.day). In 2022 a waste load allocation analysis was performed, and the plant was rerated by IDEM to .60mgd upon completion of necessary identified improvements. The WWTP is a Class II oxidation ditch treatment facility consisting of an influent flow meter, a rotary screen with bypass bar screen, raw sewage pump station, two Teacup grit removal systems, two oxidation ditches, four secondary clarifiers, two aerobic digesters, a septic sludge receiving tank, sand drying beds, ultra-violet light disinfection, post aeration and an effluent flow meter, See Figure 5, Aerial photograph of Wastewater Treatment Plant. The wastewater plant discharges treated effluent into the Cromwell Ditch.

The current WWTP flows and loadings are presented in Chapter 3 of this report along with the projected flows and loadings. The current review of the plant includes the following: flow capacity upgrades, bio-solids handling, and administration building improvements. The plant is near the design capacity of 0.37 mgd. The District currently has a construction permit for increasing the plant design capacity from 0.37 mgd to 0.50 mgd. The District sludge handling consists of land applying in liquid and dry form. This report will look at alternative ways for sludge handling if regulations change. The District has expanded its employee base and is expected to continue expanding employees per the Asset Management Plan, Appendix K. This report will review the existing administration building for additional office spaces.

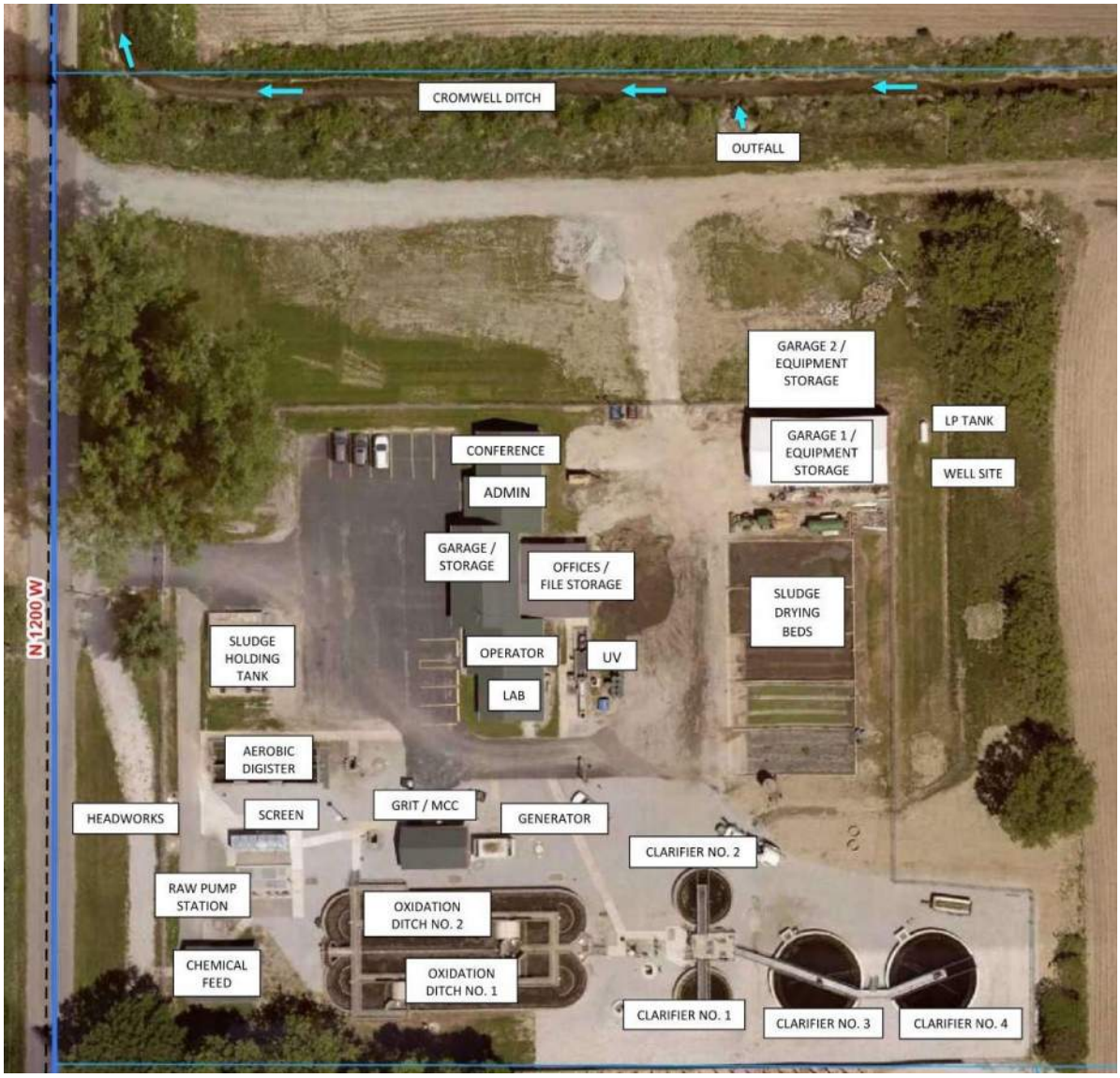



Figure 5 - Aerial Photograph of Wastewater Treatment Plant

## Wastewater Capacity Issues

The District has received a Waste Load Allocation from IDEM for a revised discharge of 0.60 mgd. Subsequently, the District has received a construction permit for additional aeration in the oxidation ditches that would allow the increase in design capacity from 0.37 mgd to 0.60 mgd with a peak hourly design flow of 1.5 mgd. The capacity of each unit process is presented in the following table.

Table 1
Rated Capacity

| Process Description | Rated Capacity | Comments |
|---|---|---|
| Headworks<br>(1) ¼" Rotary Screen & Parshall Flume with Bypass Manual Screen | 2.3 mgd | |
| Raw Pump Station<br>(6) Submersible Pumps | 2.3 mgd with 5 submersible pumps operating. | Each pump has a VFD |
| Grit Removal<br>Two Tea Cup grit removal systems in parallel | 1.8 mgd with one tea cup operating, 2.3 mgd operating in parallel | System has a manual bypass valve |
| Oxidation Ditches<br>Two ditches operating in parallel with (4) 15 hp rotor aerators (2 per ditch) | Vol: 0.167 MG each ditch | Additional aeration is needed to meet the new design capacity of 0.50 mgd |
| Final Clarifiers<br>(2) 25-ft. dia. Circular clarifiers & (2) 35-ft. dia. Circular clarifiers | SOR 516 gpd/sf @ peak hourly flow of 1.5 mgd | |
| RAS Pumps<br>(4) submersible pumps | 175 gpm/pump | Each pump is VFD driven and interchangeable |
| Disinfection<br>Ultraviolet Disinfection | 1.5 mgd | |
| Cascade post aeration | 1.5 (+) mgd | |
| Sludge Thickeners<br>(1) Gravity sludge thickening tank | 40,600 gal total volume | Has ability to decant |
| Digesters<br>(2) Aerobic digesters | 94,325 gal total volume | Has ability to decant |
| Sludge Holding Tank | 35 day avg. retention | |
| Sludge Drying Beds | (5) basins, 20'x48'/ea. | |
| Sludge Disposal<br>Land application | (5) active sites available | District owns their own equipment |

Additional aeration in the oxidation ditches is necessary to increase the design capacity of the WWTP to 0.50 mgd. All other unit processes are capable of processing the increased flow and loading.

## Biosolid Handling

The two aerobic digesters and sludge storage are sufficient for the current design flow of 0.37 mgd. Operational changes may be needed for the future design flow of 0.60 mgd. These changes include the following:

- Raise the weirs in the two digester tanks to increase volume.
- The septage Holding Tank is divided into two tanks. The western tank has five valves with an overflow for decanting the sludge. This tank can be used as a gravity thickener tank and the sludge periodically decanted to achieve approximately 2% solids prior to digestion. The eastern tank can remain for sludge storage.

Aerobic digestion, sludge holding and drying beds will be near capacity at the increased design flow of 0.60 mgd. Consideration should be given to increasing the capacity of these unit processes as the WWTP approaches the revised design capacity of 0.60 mgd. Alternatives to consider are:

- A third aerobic digester located north of the existing digesters
- Additional sludge drying beds
- The use of Geotube bags for sludge dewatering

## Administration Building

The existing TCRSD administration building is a brick and block structure constructed in the 1980's. The structure itself is in a good state of repair and remains generally serviceable and requires no significant modifications or improvements. The building has a small front office for administration and public interaction. The facility has a small meeting room to the north where the monthly District public meetings are held and is generally adequate for the needs of the District. The structure has a large centrally located garage space with two large overhead doors, providing the ability to bring trucks and smaller equipment inside. These bays also serve as a receiving area for parts and large deliveries. The laboratory and superintendent's office are at the south end of the building. Within the last five years the District has re-roofed and improved the structure by adding additional office space to the rear of the building to provide workspace and storage for the employees leading the collection system service, as well as plant maintenance and repair. The District has also constructed a second insulated metal building to the north and east of the administration building to provide storage equipment and, future workspace. The laboratory is considered to be adequate to meet their testing requirements with no significant needs or equipment purchases. The only identified needs or upgrades to the administration building would be fully revamping overhead lighting with high-efficiency LEDs to provide both energy savings and a better, brighter workspace. Replacement of existing office, equipment, and furniture which is dilapidated, along with the mismatch existing equipment would create a more ergonomic and efficient environment. The District has been very frugal with the repair and replacement monies and as a result, some furniture and office equipment replacements are needed.

## Green Alternatives

The TCRSD is continually working to improve and safeguard their workplace and environment through the implementation of improved efficiencies and green projects.

In the areas of energy efficiency, the District is reviewing the viability of solar generation, as well as the implementation of electric vehicles for callout and system inspections. These energy efficiency projects are beneficial to both the TCRSD Water and Wastewater Utilities since they shared facilities. Preliminary work related to solar photovoltaic panels estimates cost to be approximately $300,000 with an 8 - 9-year payback. The solar array would require approximately two acres and will be a considerable component of future planning.
In addition to solar generation, the implementation of an electric vehicle for routine system callouts and inspections is being considered. The District intends to watch improvements in electric vehicle availability & cost arena and will they be considered a component of future planning.

The District maximizes SCADA usage and efficiencies to reduce ice usage and emissions throughout their large collections system and remote pump stations.
The District phases in high efficiency lighting as current equipment fails and needs replacement.
Finally, the District includes high efficiency pumps, VFD's and SCADA efficiencies to reduce utilities costs & greenhouse emissions.

# Chapter 2 - Utility Needs

## Septic Elimination Projects completed in; 1977, 1988, 2015

### Collection System

The District is reviewing several areas in the collection system, including: Enchanted Hills & Papakeechie No.5 & 6 subdivisions for septic eliminations, determining the best solution for the A1A Forcemain, relocating Eli Lilly Forcemain, combining two lift stations (Buttermilk & Sunset), and determining future improvements required for the proposed development on the southwest side of the District. A hydraulic model of the central portion of District's collection system was developed to assist in determining the effects of the future flows to the system. This model will allow TCRSD to evaluate and determine what improvements are needed as these areas develop.

The District is receiving requests for sewer service in areas within their boundaries, mainly in the Enchanted Hills & Papakeechie No 5 & 6 subdivisions.

Enchanted Hills (Figure 6) is located on the southeast side of the District and is about half-sewered since the original sewers were installed at a time when the other half of the subdivision wasn't developed enough to justify extending the sewers. With the condition of the existing septic systems and the potential for growth, TCRSD is evaluating providing sewer services to this area. There are approximately 110 homes out of a potential maximum of 430 homes in the subdivision.

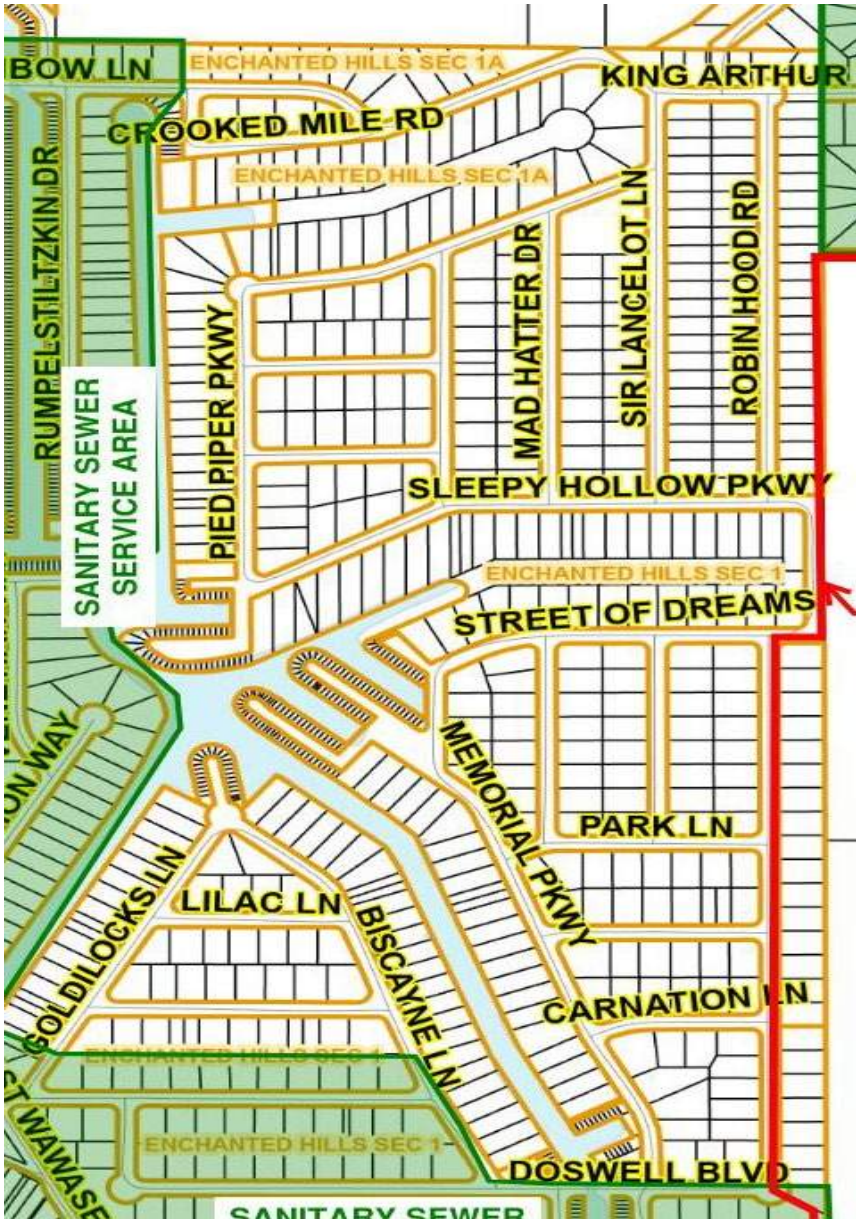



Figure 6 – Enchanted Hills

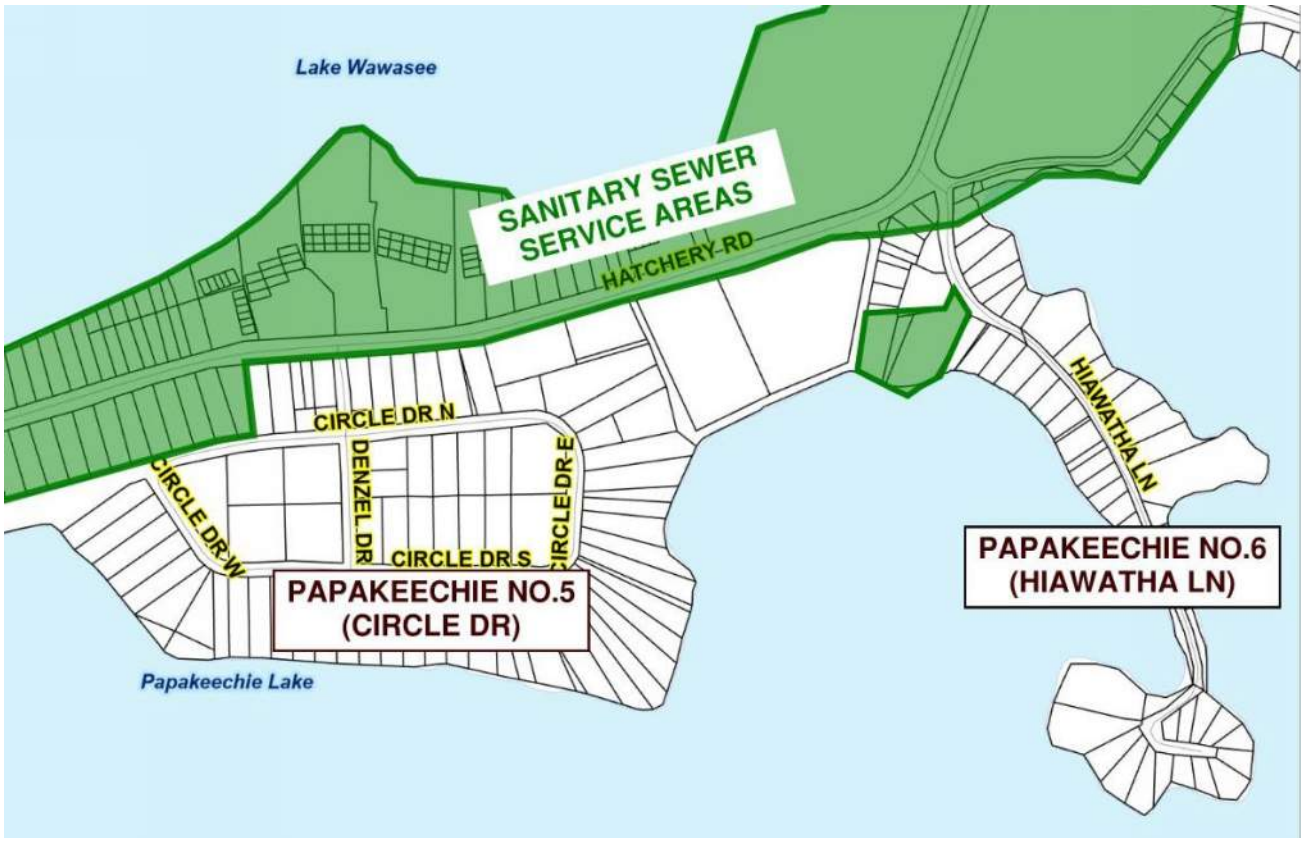



Figure 7 – Papakeechie No. 5 & No. 6

Papakeechie No.5 & Papakeechie No.6 (Figure 7) is in the southern part of the District. There are approximately 80 homes currently serviced by septic systems. It is not known why these areas were not sewered during the original construction in the 1960s. There are several property owners requesting sewer services in the area.

Lift Station A1A (Figure 8) is located along the east side of Enchanted Hills. While the lift station has been upgraded over the years, its forcemain requires evaluation and potential upgrades. The forcemain is a 6-inch asbestos cement pipe that is nearing the end of its useful life. It was installed in the late 1960s without tracer wire. In some areas it has become difficult to locate or identify the location of the forcemain's route. It has recently experienced a break and evidence of significant wear was discovered during repairs.

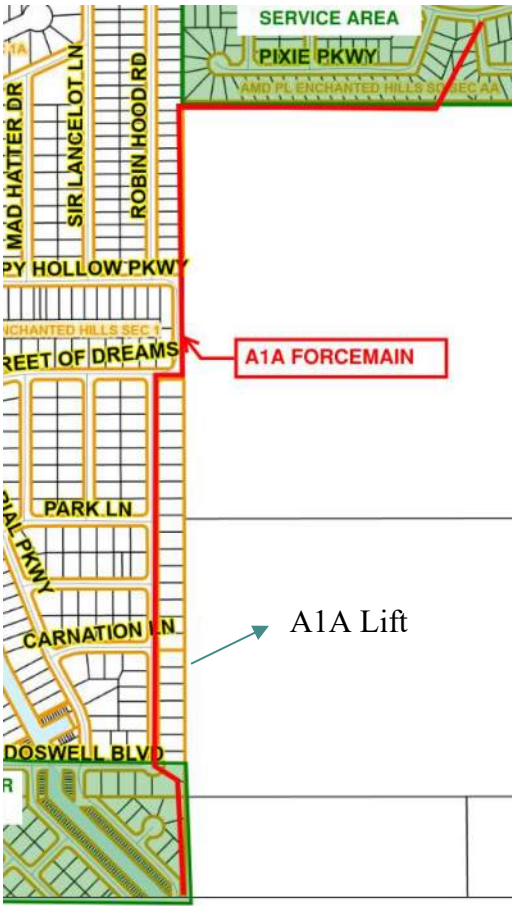



Figure 8 - A1A Lift Station & Forcemain

Buttermilk and Sunset Lift Stations are located near the southeast corner of Lake Wawasee. Buttermilk Lift Station conveys flows from the southwest portion of the TCRSD, via a 10-inch HDPE forcemain to a gravity line south of the WWTP. Over the years the Buttermilk Lift Station has experienced several issues and is due for replacement. Additionally, projected growth in the southwest portion of the region may require additional capacity. Both Sunset and Buttermilk Lift Stations are located within approximately 30 feet of the Lake and any overflows would discharge directly into the lake.

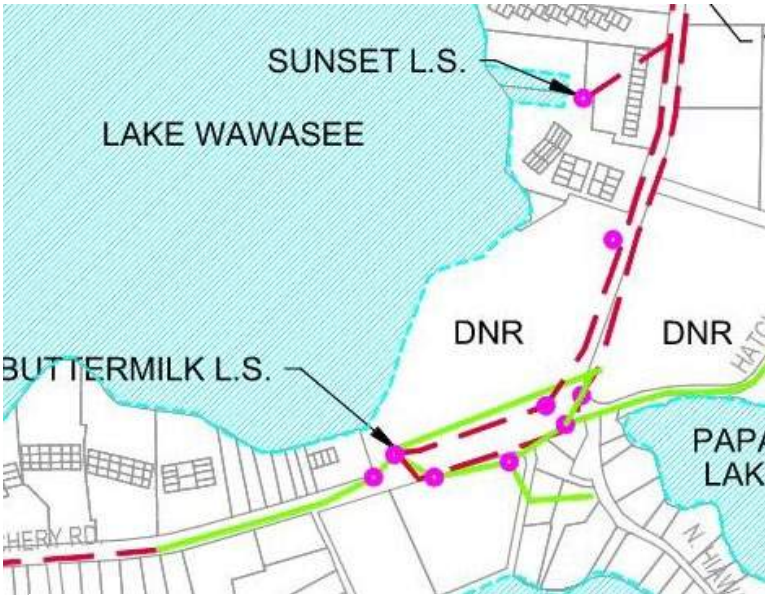



Figure 9 – Buttermilk & Sunset LS

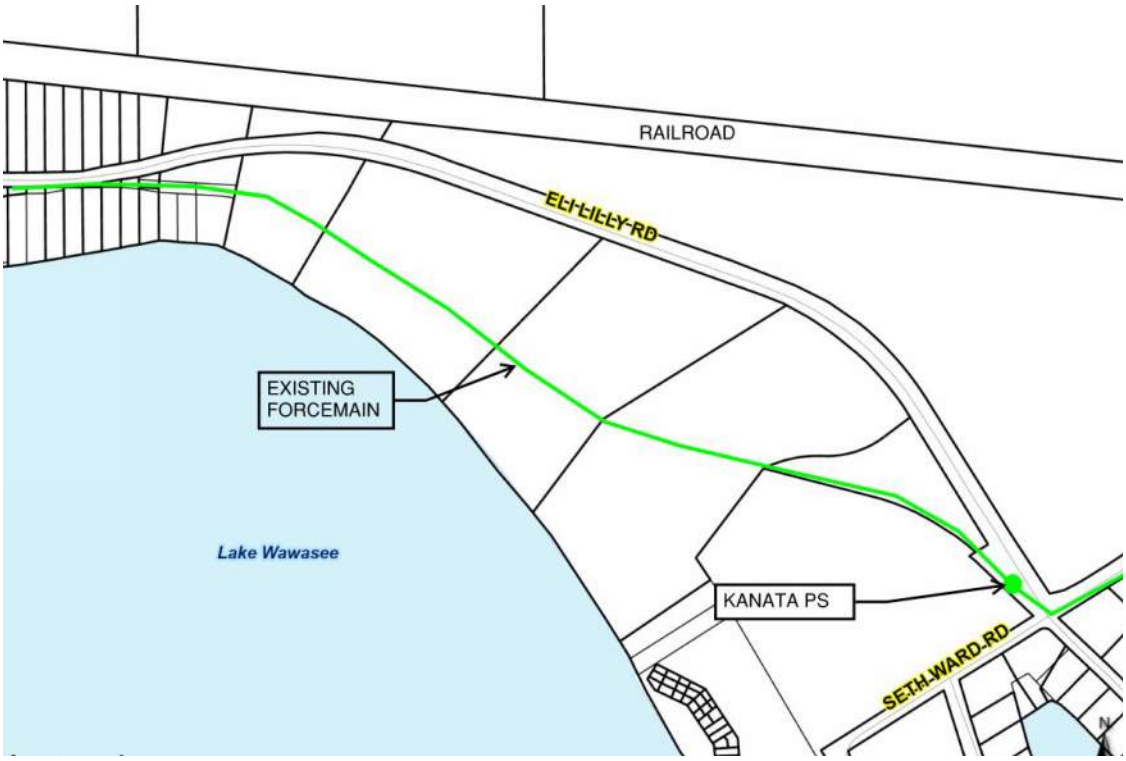



Figure 10 – Eli Lilly Forcemain

The Eli Lilly forcemain was installed in 1988 with the expansion of the District to remove septic systems from the northern part of Lake Wawasee. The forcemain originally served around 200 homeowners. Since then, the areas to the west have been added, approximately 400 homeowners, businesses, and condos. The forcemain is in a gated community, access can be difficult at times and keeping the forcemain located with markers has proven impossible. The main is within 10 feet of the homes. The roadway was moved by resident petition in 2001, but the forcemains near the homes and lakefront.

1. Enchanted Hills Alternatives
    a. Gravity Sewer was considered, but due to challenging topography that would have required three lift stations in the area and was therefore discarded.
    b. Low pressure small diameter sewers do require more expensive pumps than gravity sewers but don't suffer from problems caused by topography and require less surface disturbance and repair. This alternative also allows for tapping into the A1A lift station forcemain once it has been replaced with suitable material, allowing for a less convoluted sewer system flowing to a single point.
    c. Taking no action was not considered a solution due to adverse effects on the environment and public health and safety.

2. Papakeechie SD No. 5 & 6 Alternatives
    a. Gravity Sewer was considered, but due to right-of-way challenges that would have required road reconstruction it was discarded. Further, due to the lower elevations of most residences, pumps would still be required to transport sewage to the gravity sewer.

b. Low pressure small diameter sewer requires all services to have pumps but comes with the advantages of: less surface disturbance/repair, not needing to be deep in some areas to avoid being too shallow in others as based on topography and the terminal sewer elevations. It does not require greatly varying slopes in the lines which would cause some sewers to always flow fuller than others which could surcharge manholes. Further, the grinder pumps required for low pressure forcemain handle trash and debris better than small centrifugal pumps and should have a longer useful service life.
c. Taking no action is not a solution, since sewer service to this area has been requested; only providing service to the residents making the requests was not considered cost effective.

3. Lift Station A1A Forcemain
    a. Replacing the forcemain and abandoning the existing forcemain in place should prevent more forcemain breaks and would also allow the main to be tapped to provide service to the Enchanted Hills subdivision. HDPE, PVC, and ductile iron are materials that could be used. Replacement is likely to be more expensive than lining but will also provide an additional increase in capacity in the forcemain.
    b. Lining the forcemain would prevent forcemain breaks but might not allow for the forcemain to be tapped resulting in reduce capacity.
    c. Taking no action is not a solution because it would not reduce the forcemain breaks and would require operators to continue to be exposed to asbestos.

4. Buttermilk & Sunset Lift Station
    a. The District has two lift stations nearing their useful life, Buttermilk and Sunset. They are located along the south between Lake Wawasee and Lake Papakeechie. Buttermilk is a major lift station. All the flow from the southeast part of the system goes through it. It was constructed in the 1960's, and it has had upgrades to the control panel, pumps, and backup generator. The wet well is too small and too close to the water. Sunset Lift Station is near the Buttermilk Lift Station. It serves approximately 36 units, condos, and campground areas. This lift station needs to be upgraded to meet the District's current standards. It needs new pumps, a backup generator and is also too close to the water. The District is looking to replace both lift stations with one station.
    b. Taking no action is not a solution because it would result in high upgrade and maintenance costs. The stations are both located near the waters of Lake Wawasee. If either one had an issue, response time would be quick. The District's liability for an occurrence in Lake Wawasee would be costly.

5. Eli Lilly Forcemain
    a. Replacing the forcemain and abandoning the existing forcemain would allow the District better maintenance and supervision due to the location of the new main
    b. Taking no action is not a solution because the forcemain is located near the waters of Lake Wawasee. The District's liability for an occurrence in Lake Wawasee would be costly.

## Wastewater Treatment Plant completed in; 1977, 1988, 2015

The District's oxidation ditch needs increased oxygen supply capacity to meet future loadings.
The Wastewater Treatment Plant has received multiple upgrades over the last several decades. Currently, the District oxidation ditch needs increased oxygen supply capacity to meet seasonal and future loading.

### Biosolids Handling

The plant has current needs for flexibility for timing of biosolids handling and land application. This could be addressed through construction of a third digester, additional drying bed space, or the use of Geo bags for dewatering.

### Administration Building

The administration building and facilities have received multiple upgrades over the last decade. Currently the building needs high-efficiency lighting, new office equipment and a review of the existing HVAC system.

# Chapter 3 Evaluation of Alternatives

## Collection Systems 1, 2 and 3

### Collection System – Septic elimination areas - Enchanted Hills/Papakeechie No. 5 and No. 6

The Enchanted Hills & Papakeechie areas septic elimination is being proposed due to homeowners' need for sewer service, see Figure 11 Enchanted Hills Alternatives

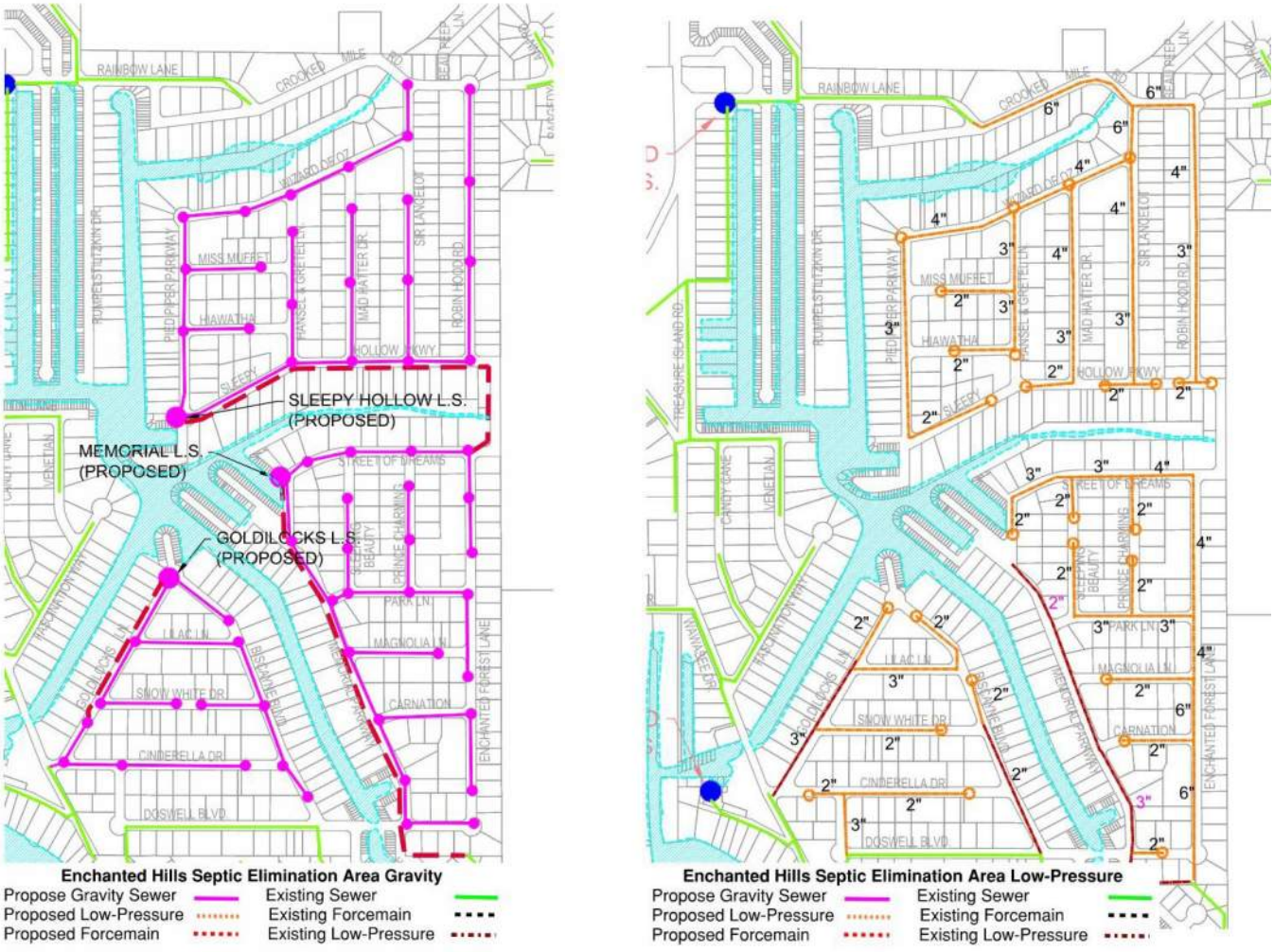



Figure 11 Enchanted Hills Alternatives

A gravity sewer system uses the earth's gravitational force and a downward slope to convey flows. Piping for this system is typically larger in diameter with varying slopes that maintain a minimum velocity of 2 feet per second to keep solids in suspension and prevent build-up. The smallest sewer pipe size is 8-inch. Invert elevations can become deep depending upon existing topography and the need to

maintain a minimum slope; the longer the run of gravity sewer, the deeper the sewer pipe will become. Eventually, when the pipe elevation becomes prohibitively deep, a pump station is required to lift the flow to a more manageable elevation. The process then repeats. Both Enchanted Hills and Papakeechie No. 5 & 6 have topography and road right-of-way issues that would make a gravity sewer infeasible alternative.

Low-pressure small diameter forcemain sewer was selected to overcome the challenges of gravity sewer. Low pressure systems are not as dependent on ground contours as gravity to operate & provide greater flexibility for cost effective installation and maintenance.

The individual grinder pumps have the ability to pump sewage uphill. Each property owner will require a small grinder pump station; these individual grinder stations will pump sewage into the collection system. The piping for this system is smaller in diameter, and mains can be as small as 2-inches. The system depth should be below the known frost line, at approximately 60 inches. There is a limit to how far the individual grinder pumps can pump sewage, so both the Enchanted Hills and Papakeechie SD No. 5 systems will pump through a combined forcemain to a downstream gravity sewer.

Existing septic tank pumps will likely need replaced since they will not be able to pump wastewater at the pressure required to transport it through a small diameter forcemain. Further, existing septic tanks will need to be either abandoned or

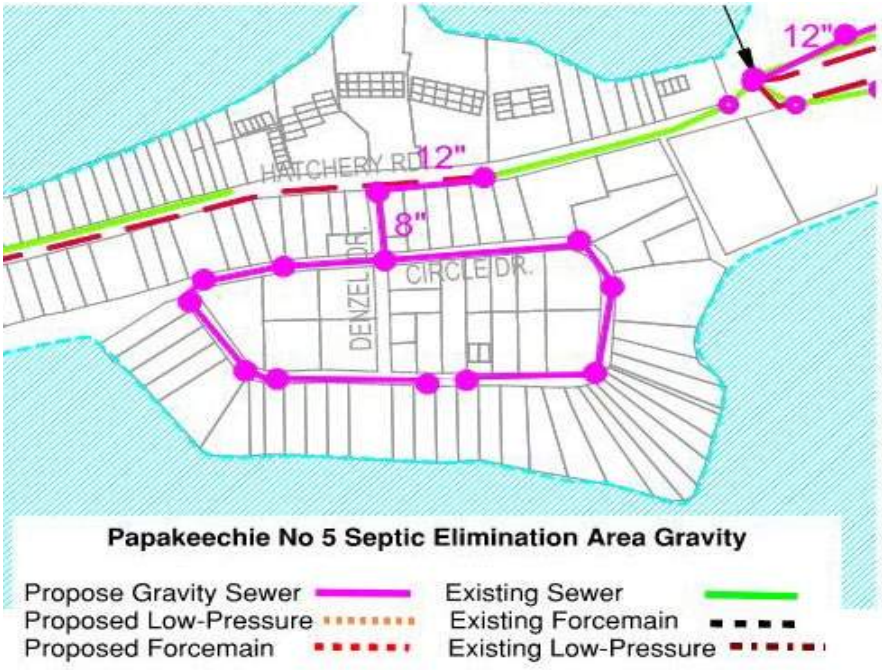



Figure 12 – Papakeechie No. 5 Septic Elimination Gravity Alternative

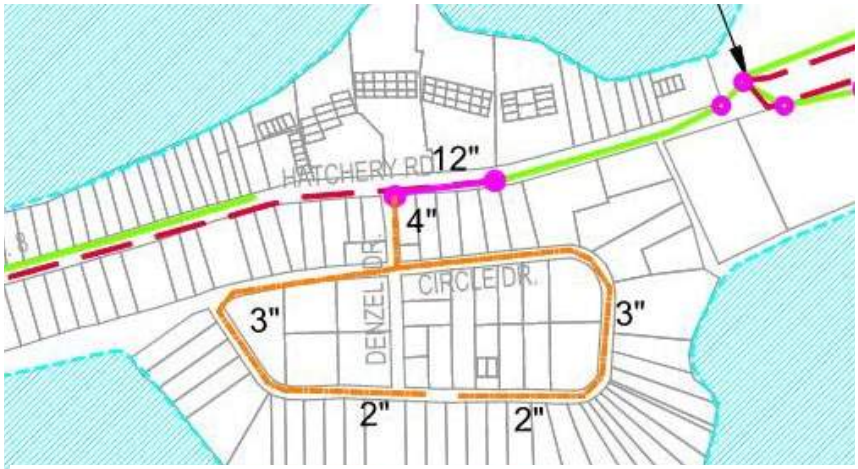



Figure 13 – Papakeechie No. 5 Septic Elimination Low Pressure Alternative

removed according to all applicable laws and regulations. Property owners will need to isolate their septic tank and install a new grinder pump station. The grinder pump would be connected to the homeowner's electrical service, which may also necessitate upgrading the electrical service panel. Each property would be required to connect its existing plumbing to the new grinder pump station. The private grinder pump station would be extended to the public forcemain in the right-of-way via a lateral forcemain.

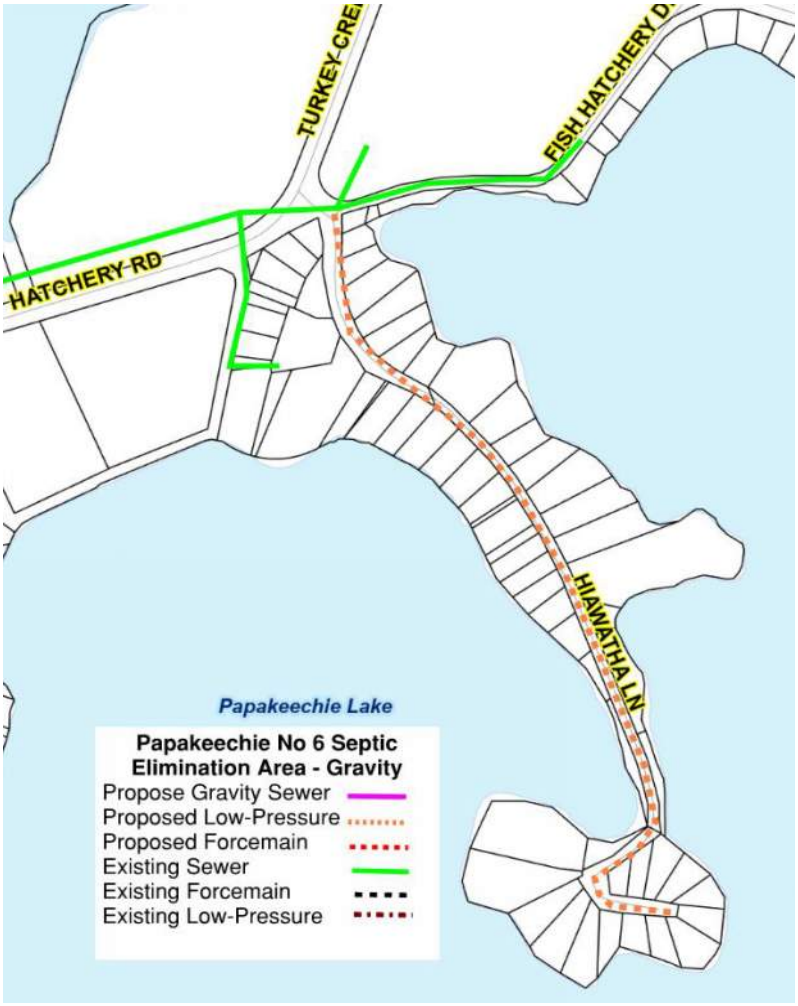



Figure 14 – Papakeechie No. 6 Septic Elimination Gravity Alternative

The estimated costs associated with this alternative are listed in the following. A detailed breakdown is presented in Appendix A of this report.

### Enchanted Hills Low Pressure Grinder System Model Result

The Enchanted Hills area was modeled in two ways; first, all current existing residences would have a grinder pump station and secondly, with each reasonable parcel that has the potential for development. These scenarios were evaluated based on current projected average and future maximum day demands.

Each residence was assumed to produce approximately 310 gpd (equivalent to 3 people using 300 gpdpc). A variety of separate usage patterns were developed and utilized to reasonably project how resident's grinder pump stations may introduce flows into the low-pressure collection system. These different usage patterns created a more realistic usage pattern in the system and mimicked the maximum statistical concurrent users on any given system.

It was assumed that a Liberty two horsepower Two Stage Grinder Pump Station would be installed at each residency. These pumps have a large operating range and can deliver flows from 38 gpm at 60 feet of head (26 psi) all the way up to 5 gpm at 170 ft of head (73 psi). These grinder pump stations have a 2 foot diameter tank that is 5-foot deep, equating to approximately 120 gallons of storage.

The Proposed Enchanted Hills area was divided into three sections, north, southeast and southwest. These three systems are divided by existing canals that are natural barriers. Additionally, these sections all have

a local gravity sewer system to convey flows. By dividing the system into these sections smaller forcemains can be utilized to convey flows.

The forcemains that will convey flows from the residency to the gravity system will vary in size from a 2-inch up to a 6-inch. The branches will support small clusters of residencies. As more branches are combined, larger diameters are required to handle additional flows.

The model utilized known information and data and made conservative assumptions to develop and evaluate the model. Due to minimal elevation change, pumps high operating ranges, and limited houses on each sub system of the low-pressure grinder pump system, it was determined that even at future day maximum flows the low-pressure system will be sufficient to convey flows from residencies to the District's gravity system. See Figure 22 for an overview of maximum velocities experienced by the low-pressure system during a future maximum day demand scenario. Per the Wastewater Ten State Standards, velocities should be between 2 to 8 ft/sec. While there are instances where flows exceed 8 ft/s, the forcemains generally operate within the recommended flows and velocities.

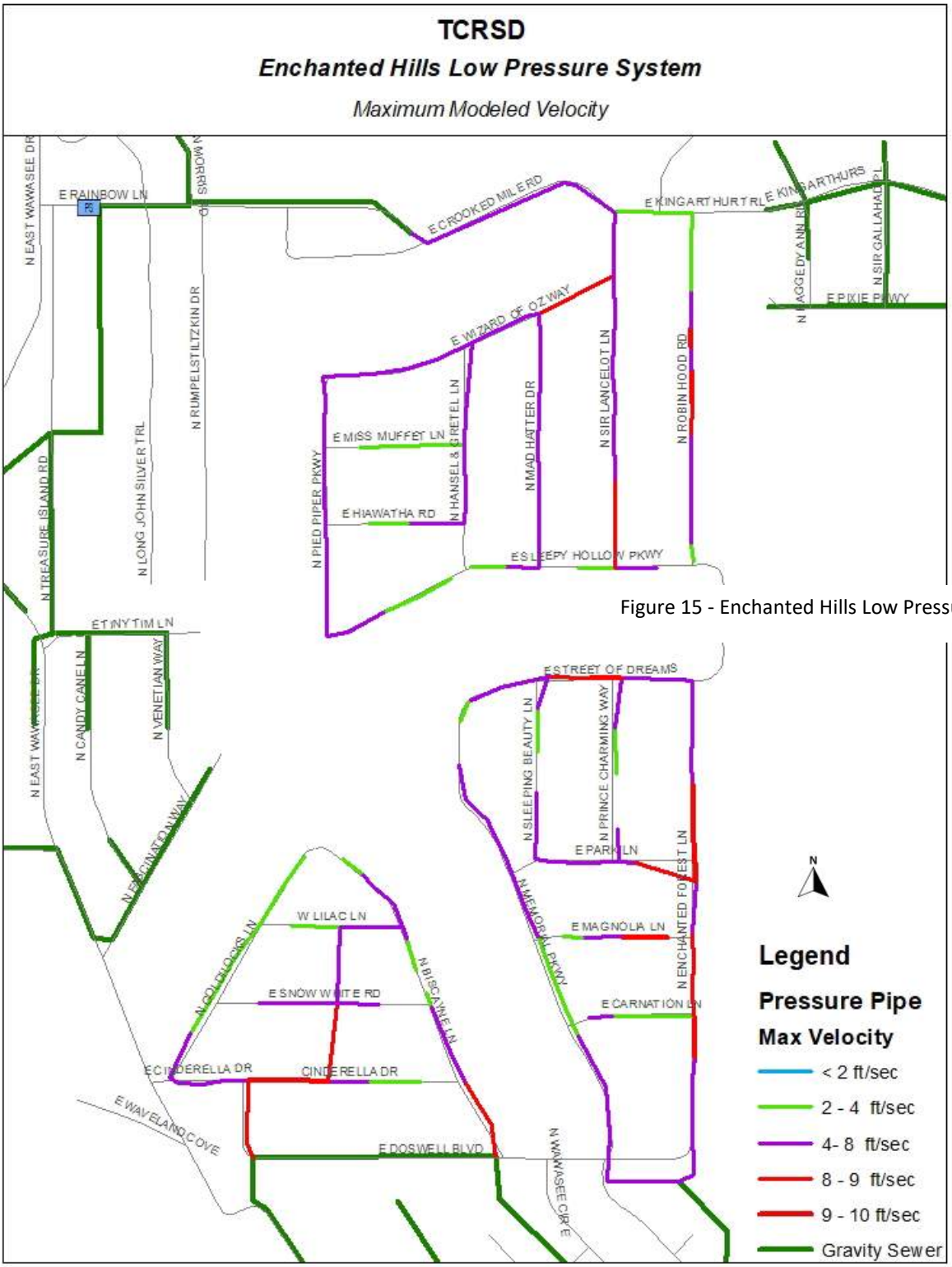



Figure 15 - Enchanted Hills Low Pressure System

The District could consider directly pumping flows from the north and southeast sub system directly into the A1A forcemain without impacting the A1A's ability to pump flows.
The estimated costs associated with this alternative are listed in the following. A detailed breakdown is presented in the Appendix of this report.

The District wanted to evaluate two primary types of collection system alternatives for the study area. The alternative systems are gravity sewers and low-pressure sewers. We have developed a preliminary layout for each alternative illustrating a route with pipe sizes, manholes, and pump stations. We have listed the pros and cons along with an estimated cost of each alternative. Costs include an estimate of average capital expenses that may be incurred by a property owner.
Some assumptions have been made on the existing septic systems currently in operation. It is presumed most properties use a small pump to move their sewage from the house or septic tank to a leach field. This pump would likely remain for all the alternatives. However, a new private grinder pump would be required for the low-pressure sewer alternative. If a property does not have an existing pump in place the owner will have an additional cost to design and install such a system.

In each alternative, we have estimated the homeowner's cost. The homeowner's cost includes an average estimate for the homeowner to connect into the public sewer and associated fees. The District charges a Capital and Availability charge for each new customer connecting into the District's sewer system. The Availability charge ($2,500) and the Capital charge ($3,300) pays for a portion of the current and prior improvements in the Wastewater Utility. We have included the Capital and Availability charges in the homeowner's costs presented in the following cost estimates.

## No Action Alternative - Optimization of Existing Septic Systems

After receiving requests for sewers in the areas of Enchanted Hills & Papakeechie No. 5, the District reviewed the formation documents as mandated by the State of Indiana, as well as Kosciusko County Health Department records.

**Optimization of the existing septic systems can only be done by owners at the discretion and approval of the local health department.**

The following are the findings of the District:

1) The Turkey Creek Regional Sewer District was created by order of the Indiana Stream Pollution Control Board on October 18, 1977, with the purpose to provide sewer service to the defined service territory. The political entity known as Turkey Creek Regional Sewer District was created as a direct response to stream and waterway pollution in the defined territory of the District.
2) The purpose of the District shall be to provide for sewage collection and disposal so as to promote the public health, safety, and welfare of the residents of the proposed District.
3) The District has the responsibility, the means, and the ability to provide sewer service as requested by residents, and as required by the state.

The majority of existing septic systems in the District boundaries are old and do not meet current design requirements for an adequate and safe septic system. Some areas are not able or viable to install new septic treatment.

The industry expected life for residential septic system is approximately 20 years. The state has mandated that the Turkey Creek Regional Sewer District provide sewer service as needed and as requested. Residents with existing septic systems that are less than 10 years old can make use of a waiver process and program that is at the discretion and determination of the Kosciusko County Health Department.

### Summary of Alternatives for Septic Elimination

No action
**"No Action" is not a viable alternative.** Based upon the information gathered, the requested need, the financial ability, and the State of Indiana Mandate, the Turkey Creek Regional Sewer District has a statutory responsibility to provide sewers to the requested area.

Alternative 1
Gravity sewer system

Alternative 2
Low-pressure sewer system

In conclusion, the following table shows the total cost for both types of collection system. We are then showing the District's & the property owner's cost for each system. Each system was then evaluated on a 20-year present worth basis.

**Table 2**
**Septic Elimination Costs**

| **Gravity System** | **Enchanted Hills** | **Papakeechie No. 5 Circle Drive** | **Papakeechie No. 6 Hiawatha Lane** |
|---|---|---|---|
| Estimated Project Cost | $5,374,400 | $1,265,700 | $1,240,700 |
| Estimated 20-year Present Worth of this Alternative | $3,428,715 | $680,784 | $833,961 |
| **Low-Pressure System** | | | |
| Estimated Project Costs | $2,965,000 | $837,000 | $530,481 |
| Estimated 20-year Present Worth of this Alternative | $1,046,235 | $370,187 | $295,669 |

## Collections System 3 - A1A Lift Station & Forcemain Evaluation

The District has reviewed improvements for the AIA Lift Station & forcemain. The Station's generator and control panel are reaching their service life and need replaced. The asbestos cement forcemain has also reached its service life and has recently experienced a break. A break in this type of pipe requires a specialist to work on the pipe. Options reviewed are as follows: relining or replacing the main. Both options are presented below.

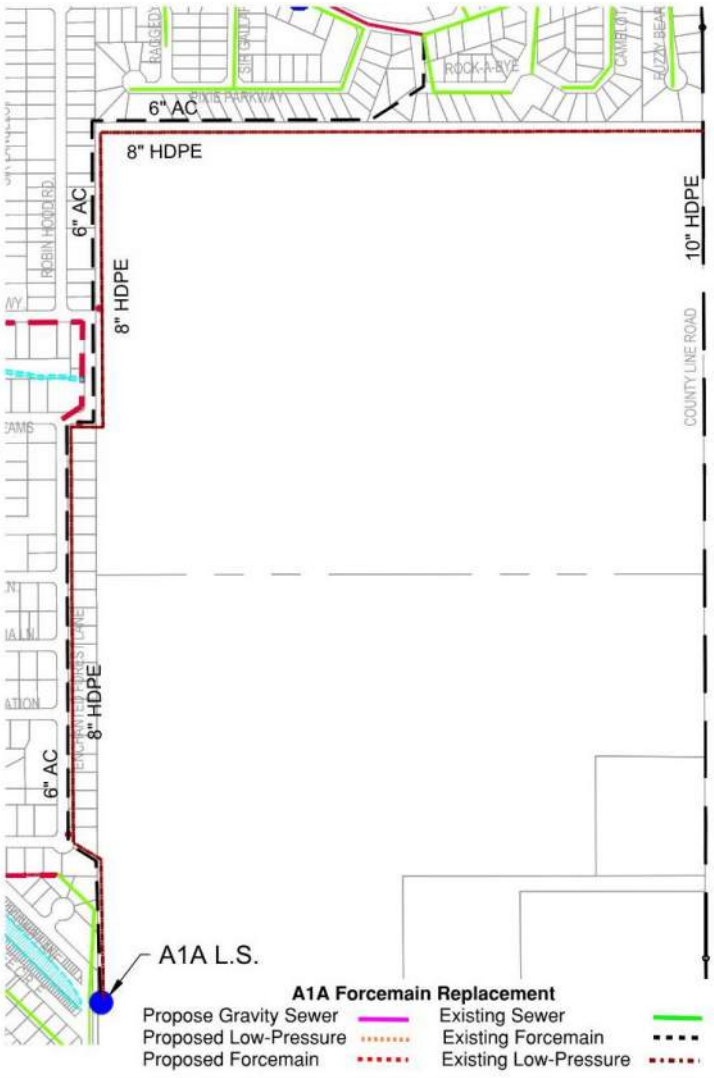



Figure 16 - A1A Forcemain Alternative

A1A Lift Station and forcemain were built around 1962 for the Puritan Utility and Sewage Utility of Indiana according to the plans the District has on file, before the District was formed. It was constructed to serve the southern part of the system, part of Enchanted Hills, Runaway Bay Condos, and Buttermilk Lift Station areas. A1A lift station is located on Wawasee Drive between Honeycomb Lane & Wawasee Circle East. The forcemain for A1A is a 6-inch diameter asbestos cement pipe. It is approximately 5,800 lineal feet in length with 2 air release manholes and no cleanouts or other access points. The forcemain begins at A1A Lift Station and discharges to the manhole in Fascination Place at the intersection of King Authur Trail and Rock-a-bye Lane. While A1A Lift Station has had some upgrades over the years, the upgrades are reaching their service life. The forcemain has not needed any attention until recently. There was a break in the forcemain on December 13, 2023, directly downstream of a 90-degree fitting. The pipe was worn thin along its top. The District has a difficult time finding the pipe main in places. Tracer wire was not installed on the forcemain during the installation and record drawings are vague as to its location.

## A1A LS Forcemain Model Results

Limited hydraulic information was available for the A1A forcemain beyond that the pump's normal operating point of 350 gpm at 81 ft (35 psi), Pumping tests show actual flows under 250 gpm, meaning increased head is being experienced through the forcemain. Results indicate that it takes two pumps running to deliver 350 gpm through the existing forcemain. See Figure 17 below to see an improved system curve with an HDPE 6-inch forcemain. By replacing it with a new 6-inch forcemain, along essentially the same path, it is estimated that the forcemains system curve would increase by approximately 40 percent (220 gpm up to 315 gpm). See Figure 18 system curve for the modeled impact on the system and pump curve.

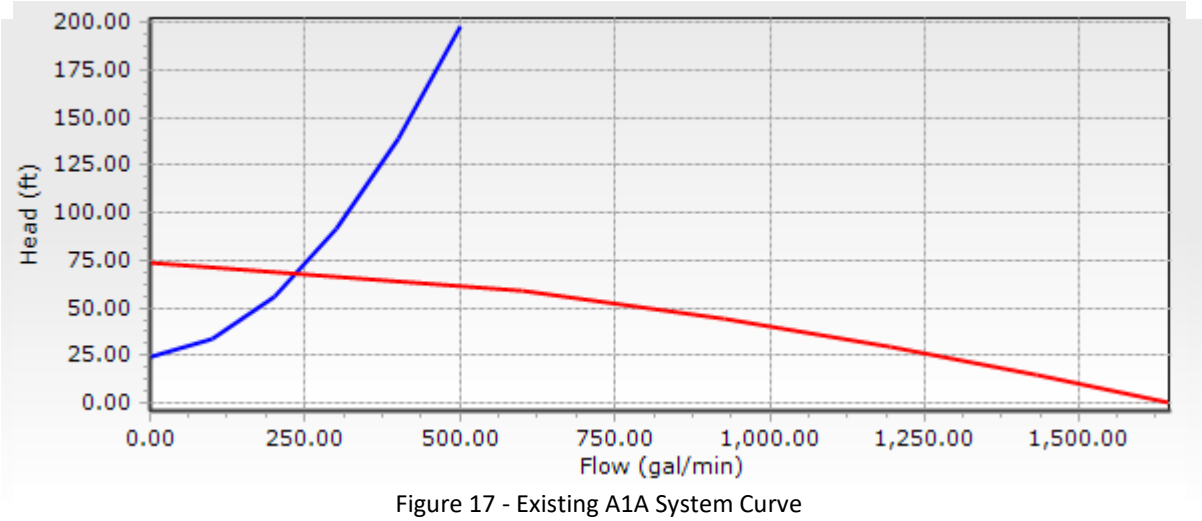



Figure 17 - Existing A1A System Curve

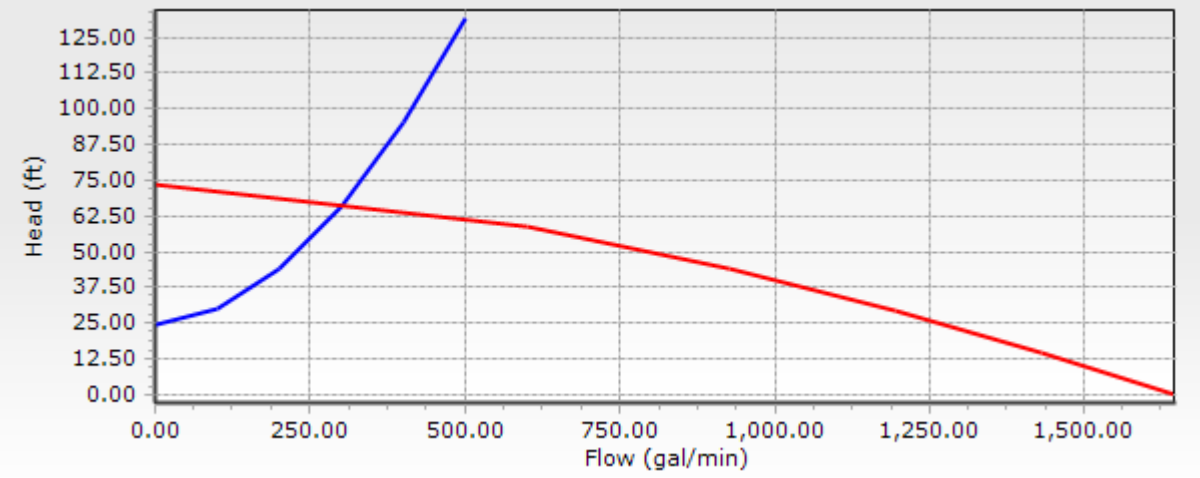



Figure 18 - A1A New System Curve(6-inch)

The District could install an 8-inch HDPE forcemain for a minimal increase in capital cost and increase system capacity by approximately 157 percent (220 up to 565 gpm). Figure 19 below shows the system curve and pump curve of the 8-inch HDPE forcemain.


Figure 19 - Proposed A1A System Curve (8-inch)

The District is also interested in connecting the A1A forcemain to the 10-inch HDPE forcemain from Buttermilk along CR 1000 E. This connection would be made just south of the mobile home park, along the same path the current forcemain runs down. Figure 20 and Figure 21 compare how combining these two forcemains will impact the two system curves.

Figure 20 - Existing Buttermilk vs A1A Independent Operating Conditions

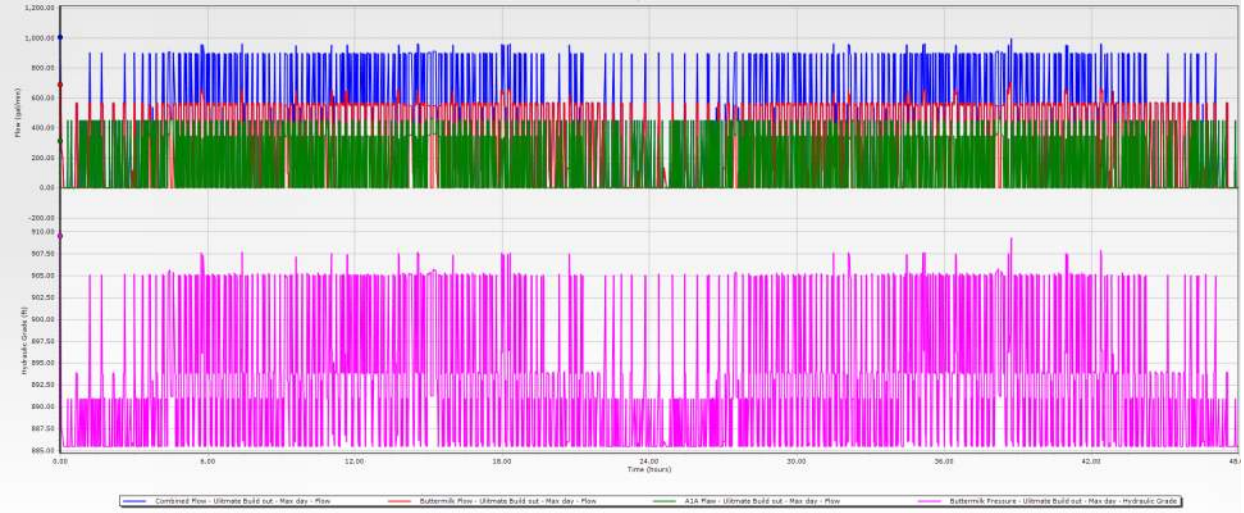


Figure 21 - A1A and Buttermilk Combined Forcemain

By combining these forcemains, the system will experience increased pressures by approximately 5 psi. Flows through the forcemain are not significantly impacted. Flows through these systems are increased, mostly due to the increased forcemain size and condition; it was assumed the forcemain would be an 8-inch HDPE.

### Summary of Alternatives A1A Forcemain and Lift Station

Alternative 1 – No Action
Not acceptable by state mandate.

Alternative 2 – Relining
Relining a forcemain can be difficult and costly. The A1A Lift Station will have to stay in operation. Pumping and hauling of flow would be a 24-hour job until the main is back in service. The main has limited access points to install the liner. Additional points of access will have to be created**.**

Alternative 3 - Replacement forcemain could be 6-inch or 8-inch PVC or HDPE.
A new main would allow taps to be made in the line for other lift stations to add flow as needed. The District has been receiving requests to provide sewers in the area of the existing forcemain. This would eliminate several septic sewers within the District's area. The installation of an 8-inch forcemain would sufficiently provide capacity to incorporate flows from the Enchanted Hills Sub Systems.

**Table 3**
**A1A Forcemain Costs**

| | **Reline** | **Replace** |
|---|---|---|
| Estimated Project Cost | Could not get a quote | $783,000 |
| Estimated 20-year Present Worth of this Alternative | | $394,102 |

## Collections System 5 – Buttermilk & Sunset Pump Station Relocation

The Buttermilk Lift Station is located on DNR property along Hatchery Road near the channel between Lake Wawasee & Lake Papakeechie. It was built around 1962 for the Puritan Utility and Sewage Utility of Indiana to serve the residents along the lakes. The TCRSD took it over during its formation. It has been upgraded with new pumps, control panels, backup generator and forcemains over the years, but it is still the same wet well in the same location. The wet well is too small, too shallow, and too close to the channel, for current conditions.

The Sunset Lift Station is located on private property along Turkey Creek Road near the Buttermilk Lift Station. The station needs new pumps, a control panel, and a backup generator. It is located is too close to Lake Wawasee and needs to be relocated. It serves three different properties (two condo units and a campground) in the area, totaling 36 users.

The District has two options of relocating the Pump Station to a different location, either on the same parcel just on the northernmost side, or across the street near the DNR boat parking lot. Each option will have challenges associated with it, if the new Buttermilk Pump Station is constructed on the northern part of the same parcel, the construction will likely encounter abandoned and buried hatchery tanks during the construction. If the new pump station is moved to the DNR boat parking lot parcel, the gravity sewer will have to cross Hatchery Road in two or three locations.

The Buttermilk Pump Station pumps wastewater over 16,650 feet (3.15 miles) to the gravity sewer along N 1200 W, just south of E 1250 N. The ground elevation between the proposed Buttermilk Pump Station sites to the gravity sewer increases from around 865 to 900.
The Buttermilk Pump Station currently experiences average day flows of approximately 50,400 gpm.

## Buttermilk and Sunset Pump Station Relocation Model Evaluation.

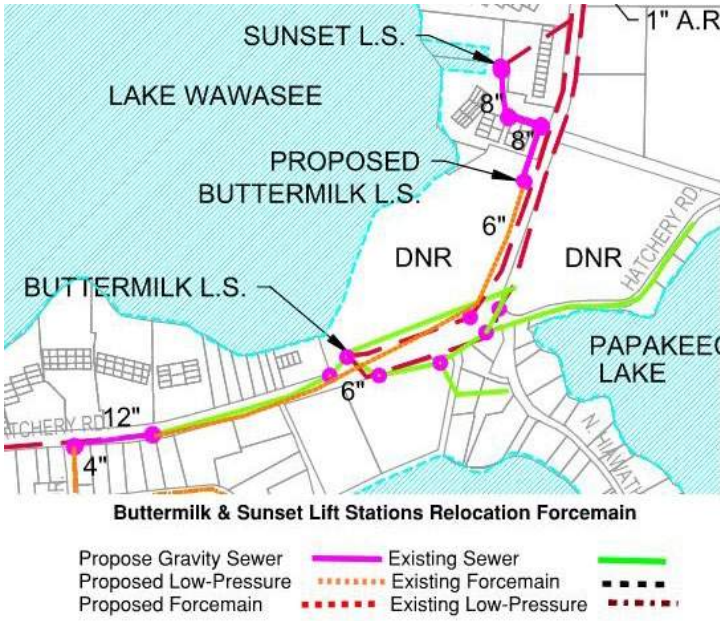



Figure 22 - Buttermilk & Sunset Lift Stations Forcemain Alternative

The District has a couple of options when it comes to replacing Buttermilk Pump Station. The hydraulics between the two alternatives are very similar and will be more dependent on the size of the wet well and pumps. It is recommended that the new Buttermilk Pump Station is located as close to the Sunset Pump Station as possible. The existing depth of the 12-inch sewer water main is not prohibitively deep and can be extended to either of the new proposed locations. Based on the distance and size of the pipe, the sewer will drop approximately 1.65 feet.

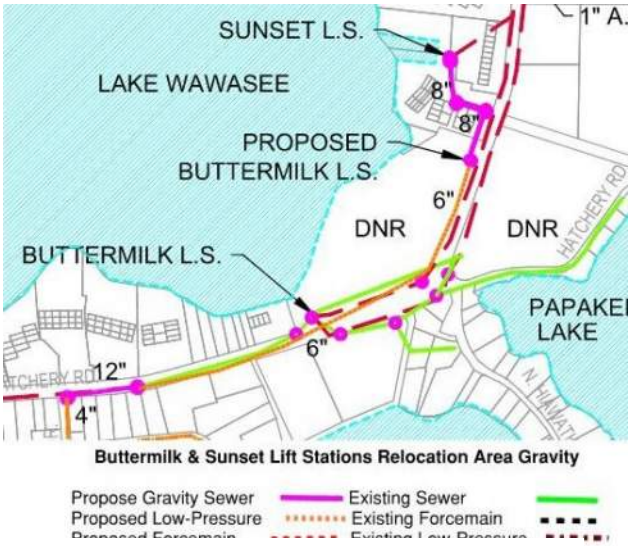



Figure 23 - Buttermilk & Sunset Lift Stations Relocation Gravity Alternative

The model utilized a new pump that operated at a similar head but could pump an additional 100 gpm. Additionally, the wet well size was increased while the current operating range was maintained. These changes allowed the Buttermilk Station to operate sufficiently provided the assumed demands. The District could select larger pumps that could provide increased flows and pressure, but the model would have to be reviewed on how the proposed pump would affect the smaller 6-inch forcemain's ability to introduce flows into collection system.

The Sunset Pump Station provided minimal flows to the existing Buttermilk Pump Station and can be handled by the proposed new Buttermilk Pump Station.

The actual size of the wet well and submersible pump should be confirmed with a final design based on projected demands, field conditions and other proposed changes in the system.

Alternative 1
No Action

Alternative 2
Gravity extension
This option extends the existing 12-inch gravity main 860 feet from the existing wet well to the proposed wet well.

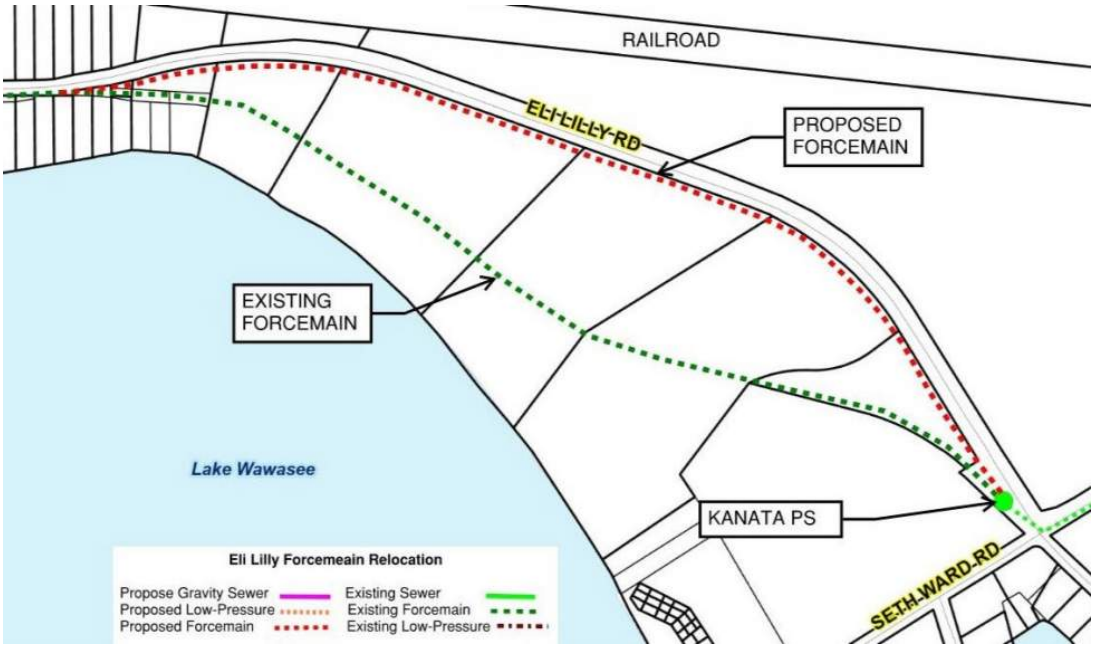
Alternative 3 – Forcemain extension
This option extends the existing 6-inch forcemain 1,680 feet from the existing forcemain to the proposed wet well.

**Table 4**
**Buttermilk & Sunset Lift Station Relocations Costs**

| | Gravity | Forcemain |
|---|---|---|
| Estimated Project Cost | $1,182,000 | $1,797,900 |
| Estimated 20-year Present Worth of this Alternative | $ 610,634 | $742,851 |

## Collections System 6 – Eli Lilly Forcemain Relocation

Relocation of the forcemain is the only option for the District. The existing forcemain flow has increased significantly in the last 8 years. The increased flow has become a priority to move the main away from existing homes and the bank of Lake Wawasee.




Alternative 1
No Action

Alternative 2
Gravity extension
Not an option, it is only a forcemain

Alternative 3 – Forcemain extension
This option relocates the existing 6-inch forcemain 1,680 feet to the existing wet well at Kanata Lift Station.

**Table 5**
**Eli Lilly Lift Station Relocation Costs**

| | Gravity | Forcemain |
|---|---|---|
| Estimated Project Cost | No Option | $253,160 |
| Estimated 20-year Present Worth of this Alternative | | $ 99,602 |

## Wastewater Treatment Plant

Until recently, the wastewater treatment plant had a design capacity of 0.37 mgd. Reasonably anticipated flow projections from the existing and proposed service areas are listed in the following table. The flow projections are based on the District's MROs for the past three years.
We have added 10% of the overall projections to allow for growth. In reviewing the District records for the past 10 years, there has been very little demographic growth in the District user base. However, the increasing year-round residents and septic elimination projects continue to grow the user base.

The past flows and loadings to the WWTP are used to evaluate the need for any necessary improvements at the WWTP. We have reviewed the District's past monthly reports of operation (MRO) and the laboratory test data for the District's discharge. As identified earlier, there has been very little growth of the District's flows. We believe the District's ongoing Collection System I & I (Infiltration and Inflow) reduction program has been successful in removing significant flow generated by I & I and that it has offset the system's flow per user growth.

Table 3.1 Wastewater Treatment Plant 20 Year Projections
Turkey Creek RSD
Annual Flows & Concentrations

| WWTP | Flow (mgd) | | CBOD5 (mg/L) | | TSS (mg/L) | | NH3-N (mg/L) | | P (mg/L) | |
|---|---|---|---|---|---|---|---|---|---|---|
| Year | Avg. | MaxDay | Avg. | MaxDay | Avg. | MaxDay | Avg. | MaxDay | Avg. | MaxDay |
| 2021 | 0.29 | 0.85 | 105 | 378 | 131 | 368 | 35.1 | 96.0 | 4.5 | 7.4 |
| 2022 | 0.31 | 0.73 | 96 | 326 | 145 | 354 | 25.7 | 46.0 | 4.0 | 10.8 |
| 2023 | 0.34 | 1.02 | 95 | 314 | 123 | 376 | 25.1 | 48.0 | 3.7 | 8.2 |
| 3 Year Average | 0.31 | | 99 | | 133 | | 28.6 | | 4.1 | |
| Projected Flow to WWTP | | | | | | | | | | |
| Existing Flow @ (2097 EDU) = | 0.31 | | 99 | | 133 | | 28.6 | | 4.1 | |
| NE Syracuse Lake Flow @ (183 EDU) = | 0.03 | | 99 | | 133 | | 28.6 | | 4.1 | |
| South Shore Development Flow @ (183 EDU) = | 0.03 | | 99 | | 133 | | 28.6 | | 4.1 | |
| Papakeechie Lake Area Flow @ (177 EDU) = | 0.03 | | 99 | | 133 | | 28.6 | | 4.1 | |
| Enchanted Hills Flow @ (430 EDU) = | 0.06 | | 99 | | 133 | | 28.6 | | 4.1 | |
| Total to WWTP | 0.46 | | 99 | | 133 | | 28.6 | | 4.1 | |
| 10% | 0.05 | | | | | | | | | |
| Projected Total to WWTP | 0.50 | | 99 | | 133 | | 28.6 | | 4.1 | |
| Proposed Design Criteria | 0.50 | | 150 | | 170 | | 50.0 | | 4.5 | |

Figure 24 – WWTP 20 Year Projections – Annual Flows & Concentration

The Proposed Design Criteria for CBOD5, TSS, and NH3-N shown above are quite a bit higher than the annual average for each parameter. The proposed parameters are based on select periods of dry weather as requested by IDEM review personnel. Consequently, additional aeration in the oxidation ditches is required for the proposed loadings from CBOD5 & NH3-N.

Four methods of increasing aeration were evaluated. Three of the methods include rebuilding portions of the existing (4) rotors and adding additional aeration. Whereas the fourth alternative considered replacement of the existing rotors with diffused aeration and mixers. All alternatives required the expansion of the existing MCC and plant electrical feed. The estimated cost for each alternative is included in the Appendix of this report. A summary of each alternative is presented in the following.

## Summary of Alternatives of Wastewater Treatment Plant Improvements

Alternative 1 No Action:
No action is not a viable alternative due to increasing flows at 90%
The plant will not be able to meet discharge permit requirements.

Alternative 2
Replace Rotors along with Two Triton Aerators

Alternative 3
Replace Rotors with Two New 11-ft. Rotors.

Alternative 4
Replace Rotors along with Four OxyLift Diffuser Racks & Blowers

Alternative 5
Remove Rotors & Install 8 OxyLift Diffuser Racks with Blowers

**Table 5**
**WWTP Improvements**

| | Estimated Project Cost | 20-year Present Worth with O&M |
|---|---|---|
| Replace Rotors along with Two Triton Aerators | $1,128,266 | $2,111,207 |
| Replace Rotors with Two New 11-ft. Rotors. | $1,110,798 | $1,585243 |
| Replace Rotors along with Four OxyLift Diffuser Racks & Blowers | $1,257,619 | $1,908,120 |
| Remove Rotors & Install 8 OxyLift Diffuser Racks with Blowers | $1,633,466 | $2,725,932 |

# Chapter 4- Proposed Project

## Collection Systems

### Collection System 1 – Septic Elimination Enchanted Hills

Low-pressure small diameter forcemain sewer was selected as the system for Enchanted Hills because of the topography, construction restoration, and the existing utilities in the area. A preliminary layout of the low-pressure systems for the septic elimination of Enchanted Hills is shown in Fig. 25.

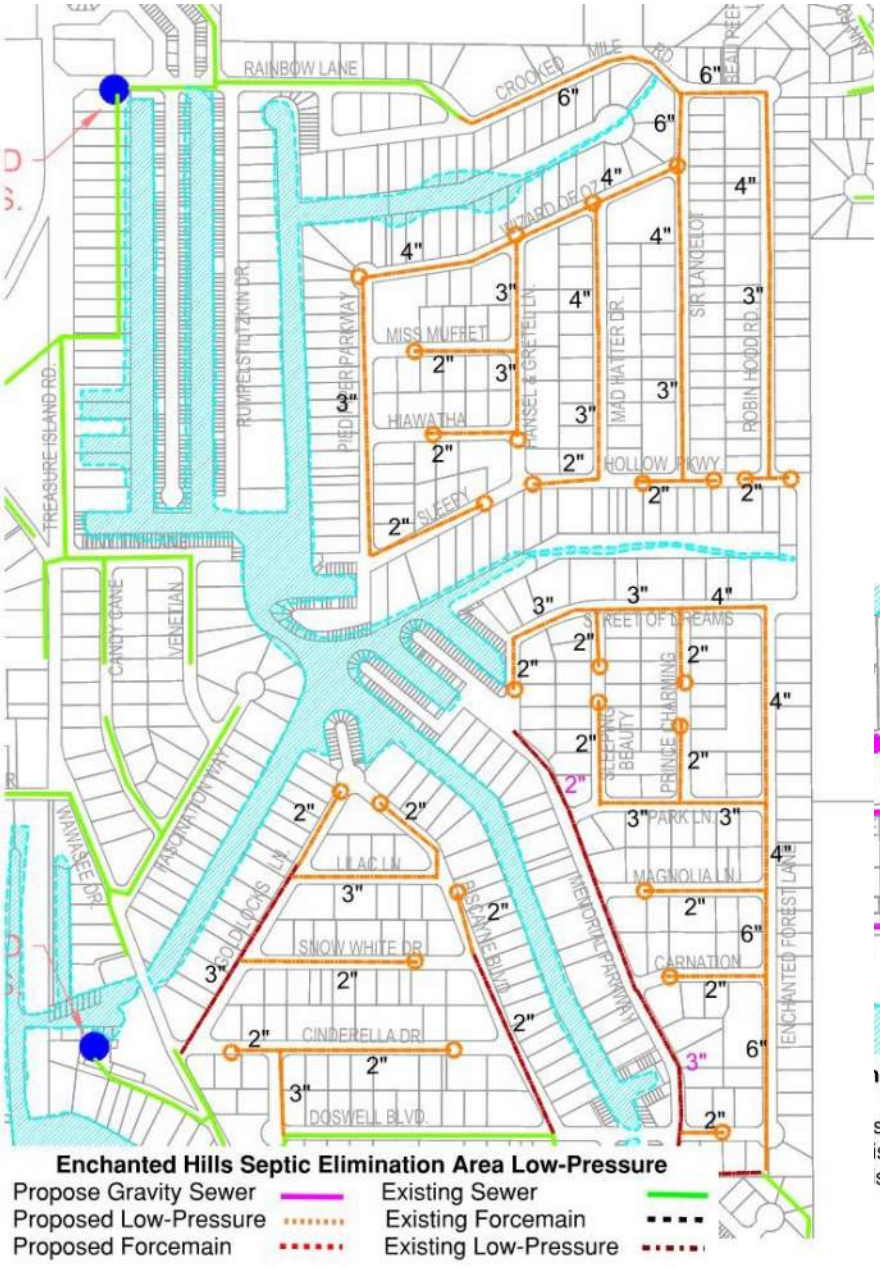



Figure 25 – Septic Elimination Enchanted Hills

The estimated cost for the Enchanted Hills septic elimination improvements is $2,974,000.

## Collection System 2 – Septic Elimination


## Papakeechie No. 5 (Circle Drive)

Low-pressure small diameter forcemain sewer was selected as the system for Papakeechie No.5 because of the topography, construction restoration, and the existing utilities in the area. A preliminary layout of the low-pressure systems for Papakeechie No. 5 is shown in Figure 26.

The estimated cost for the Papakeechie No. 5 improvements is $837,000.

Figure 26 – Septic Elimination Papakeechie No. 5 (Circle Drive)

## Collection System 3 – Septic Elimination Papakeechie No. 6 (Hiawatha Lane)

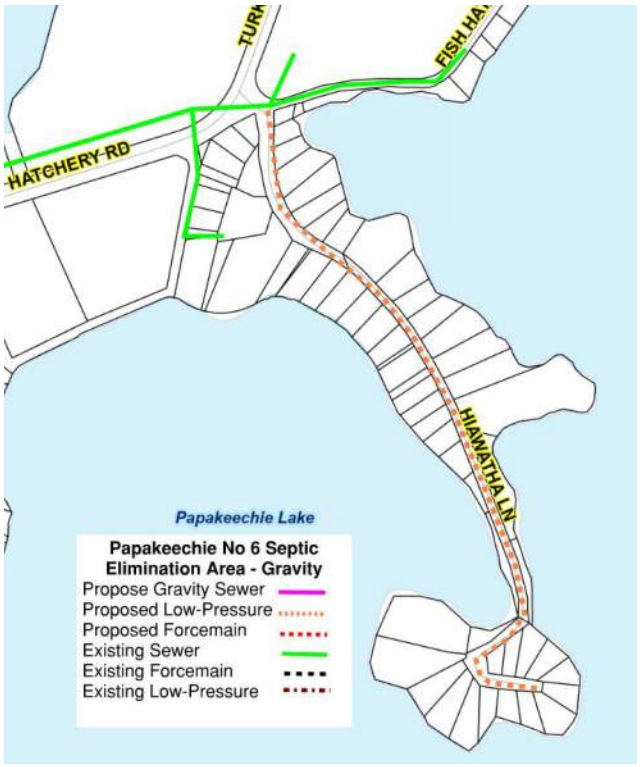



Figure 27 – Septic Elimination Papakeechie No. 6 (Hiawatha Lane)

only option for the District. Relining the pressure pipe is not feasible at this time. The forcemain is beyond its useful life and the pipe is made with an asbestos cement product. Asbestos cement requires special procedures when repairing or servicing. A preliminary layout of the proposed forcemain is shown in Figure 28.

The estimated cost for this improvement is $783,000.

Low-pressure small diameter forcemain sewer was selected as the system for Papakeechie No.6 because of the topography, construction restoration, and the existing utilities in the area. A preliminary layout of the low-pressure systems for Papakeechie No. 6 is shown in Figure 27.

The estimated cost for the Papakeechie No. 5 improvements is $530,431.

## Collections System 4 – A1A Lift Station Improvements & Forcemain Replacement

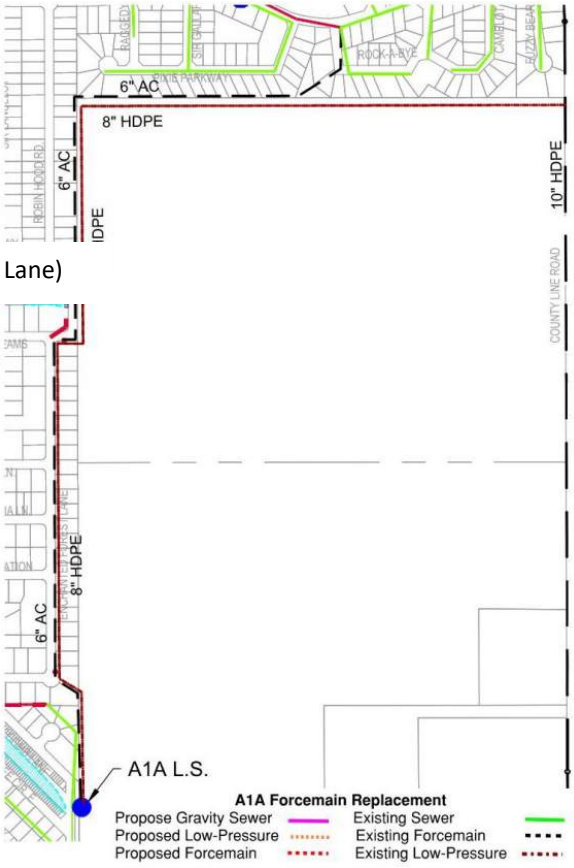
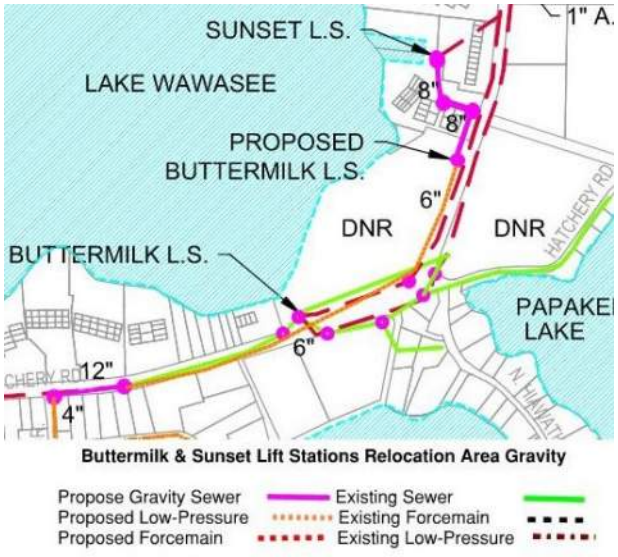


Figure 28 – A1A Lift Station Improvements & Forcemain Replacement

### Collections System 5 – Buttermilk Lift Station Relocati




The combining of the Buttermilk & Sunset Lift Stations eliminates several issues with both stations. The Stations are near water sources that would impact Lake Wawasee; both at the end of life and are in need of major improvements. The relocation eliminates one station and will be designed to handle future flows from the west and south. A preliminary layout of the gravity extension is shown in figure 29.

A gravity extension for the relocation will provide additional storage along with the larger wet well.

The estimated cost for this project is $1,182,000.

Figure 29 – Buttermilk Relocation & Sunset Deletion

### Collections System 6 – Elkhart Forcemain Relocation

Relocation of the forcemain is the only option for the District. The existing forcemain flow has increased significantly in the last 8 years. The increased flow has become a priority to move the main away from existing homes and the bank of Lake Wawasee.

A preliminary layout of the proposed forcemain is shown in Figure 30.

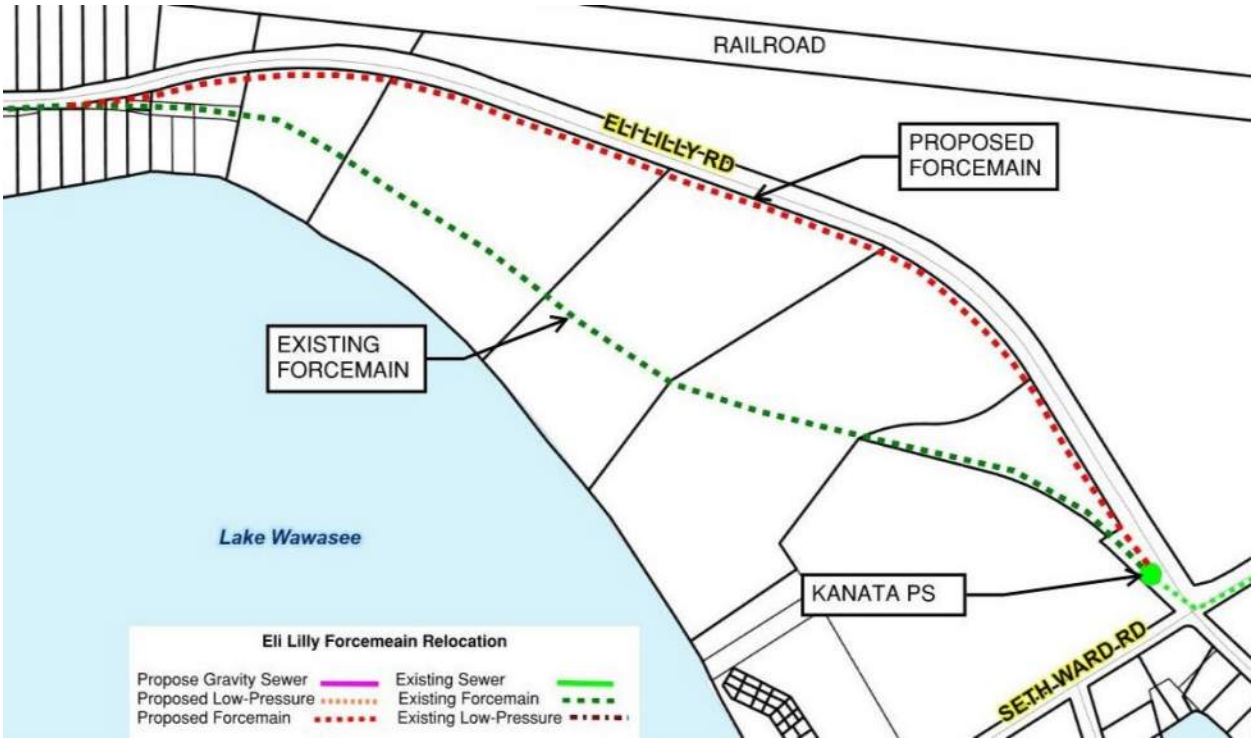



Figure 30 – Eli Lilly Forcemain Relocation

The estimated cost for this improvement is $253,160.

## Wastewater Treatment Plant Improvements

### WWTP Aeration

Of the alternatives considered, the two 11-ft rotors is estimated to have the lowest capital cost. This equipment is familiar to the District and has proven to be effective. It is recommended that TCRSD strongly consider this style of equipment. A preliminary sketch of proposed locations is shown in Figure 31.

The cost for this improvement is estimated to be $1,110,798.

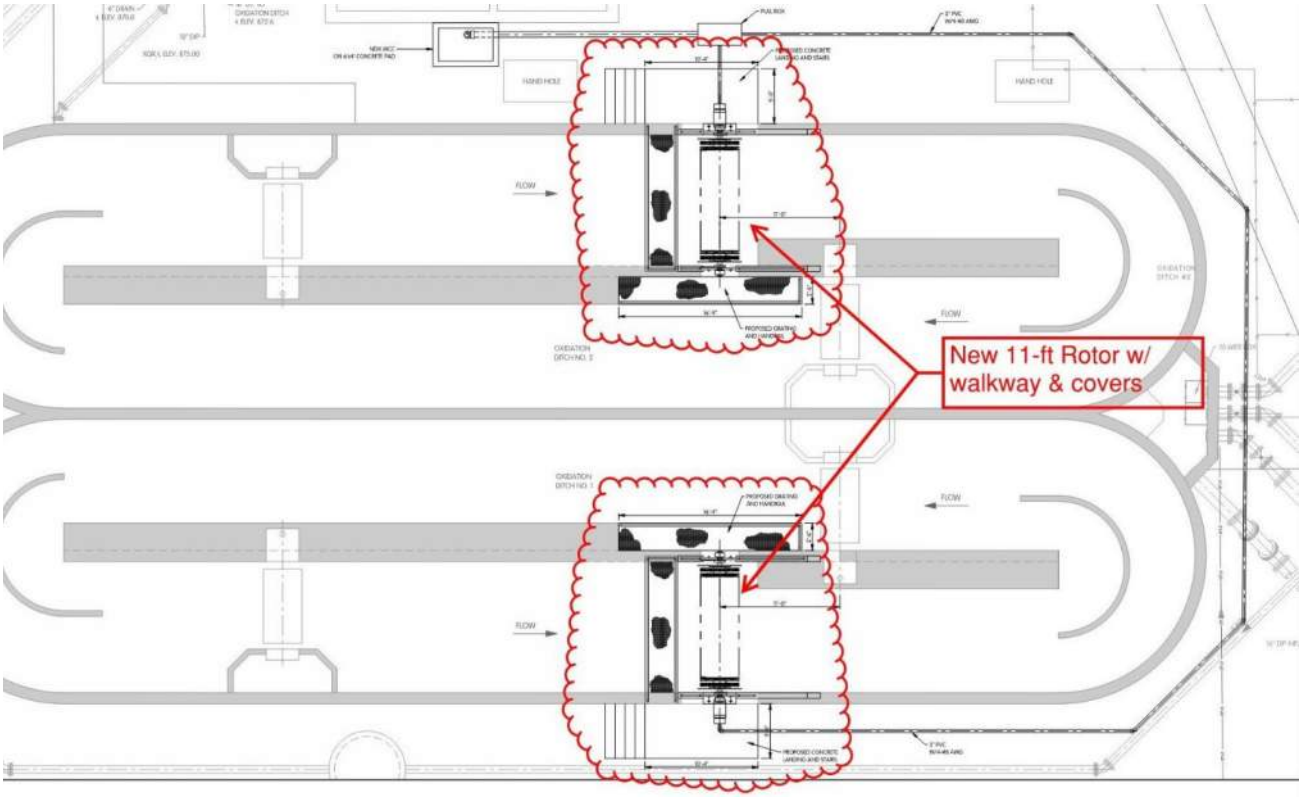



Figure 31 – WWTP Aeration Improvements

### WWTP Biosolids Handling

Currently, the District has a very efficient, very cost-effective solution to biosolid handling and land application. They have ample available acreage to meet current needs. The proposed projects at this time would implement Geo-bags for dewatering. Changes can be made operationally and through existing O&M budgets.

### Administration Building

Projects at this time revolve around improvements for high-efficiency lighting replacements and potential HVAC upgrades. Additional replacements of office equipment and ergonomic improvements should also be addressed.
The District has been very frugal in these matters and much of the equipment is at the end of its functional life.

### Green Project Reserve Components

The District strives to improve efficiency in their treatment process in all aspects. Currently the operations of the plant incorporates SCADA systems and controls, VFD's, and high-efficiency pump.

The District will continue with the application and use of SCADA, VFD and HE pumps. In addition, the District is considering the implementation of a solar photovoltaic array to the cost of operations and electric energy use.

## Project Cost Summary

Table 6 shows all project and equipment costs.

**Table 6**
**Collection Project Selection Matrix**

| | Septic Eliminations | | | Lift Station & Forcemain upgrades | | | | |
|---|---|---|---|---|---|---|---|---|
| | Enchanted Hills | Papakeechie No 5 (Circle Dr.) | Papakeechie No 6 (Hiawatha Ln.) | Buttermilk & Sunset | A1A Lift Station & Force main | Eli Lilly Forcemain Replacement | Portable 100kW Generator | Totals |
| Gravity Sewer System | $6,873,000 | $1,266,000 | $1,240,700 | | | | | |
| Low Pressure Sewer System | $2,974,000 | $837,000 | $530,481 | | | | | |
| Gravity Extension | | | | $1,182,000 | | | | |
| Forcemain Extension / Replacement | | | | $1,797,900 | $783,000 | $253,160 | | |
| Relining Force main | | | | | No Option | No Option | | |
| **Selected Project** | **$2,974,000** | **$837,000** | **$530,481** | **$1,182,000** | **$783,000** | **$253,160** | **$100,000** | **$6,659,641** |

**Wastewater Treatment Plant Project Selection Matrix**

| | Triton | 11-foot Rotors | Jeager | Option 3 | | | | Totals |
|---|---|---|---|---|---|---|---|---|
| Aeration Improvements | $1,128,266 | $1,110,798 | $1,257,619 | $1,633,466 | | | | |
| **Selected Project** | **$0** | **$1,110,798** | **$0** | **$0** | | | | **$1,110,798** |

| | |
|---|---|
| **Total Amount Requested** | **$7,770,439** |

# Chapter 5 - Evaluation of Environmental Impacts

## 1. Disturbed & Undisturbed Land

All work proposed in this report will be on previously disturbed ground, see Appendix C.

## 2. Historic /Architectural Resources

The project will not impact any known historical or architectural resources, see Appendix C. Interim Report Map and Report. All care will be taken to identify the marker and to protect it. This project will be no closer than 20 feet to the marker.

## 3. Wetlands

No wetlands will be impacted by this project. Any necessary dewatering or construction run-off would need to be controlled and filtered during construction and stormwater BMP solutions, see Appendix C.

## 4. Surface Waters

Lake Wawasee & Papakeechie Lake are not considered Waters of High Quality, an Exceptional Use Lake, or a Natural Scenic and Recreational water body, see Appendix C.

## 5. Groundwater

There should be only temporary impacts on groundwater. Dewatering may be needed for installing the sewer mains and laterals. Any dewatering would be short term, no more than 6-10 feet in depth and limited to the area of pipe installation. No wells should be affected.
There is no sole source aquifer in Region V that is impacted by this project.

## 6. Floodplain

The project will not impact floodplains in the area, see Appendix C.

## 7. Plants & Animals

The project has no known negative impact on federally or state listed endangered and non-endangered plant and animal species and their habitats.

No tree removal is expected during this project so potential species or habitat disturbance would be near zero.

The project will be implemented to minimize impact to non-endangered species and their habitat as well. Mitigation Measures that may be cited in comment letters from the Indiana Department of Natural Resources and the US Fish & Wildlife Services should be Implemented.

## 8. Prime Farmland Impacts & Influence of Local Geology

The project will have no impact on Prime Farmlands or local geology.

## 9. Air Quality

There is no direct or long-term impact to air quality. Any issues that could arise from construction equipment can be addressed with ICE mufflers and silencers as a requirement to mitigate impacts. The vacuum sewer alternative would have air emission that the other alternatives do not have. If selected, the vacuum sewer pump station would have odor control equipment installed.

## 10. Open Space & Recreational Opportunities

The project will neither create nor destroy open space and recreational opportunities.

## 11. Lake Michigan Coastal Management

The project is located in the Great Lakes Water Shed, however, it is not located in the Lake Michigan Coastal Zone. The proposed projects will not negatively impact the Lake Michigan Coastal Zone.

## 12. National Natural Landmarks Impact

The construction and operation of the proposed projects will not affect national natural landmarks.

## 13. Secondary Impacts

Growth and future development is a potential negative secondary impact from the proposed project. Growth and development can impact our natural resources and environment. To reduce the negative impacts of growth and development the TCRSD will implement the following:

> *The TCRSD, through the authority of its Trustees, intends to ensure that future collection system or treatment works projects connecting to SRF-funded facilities will not adversely affect wetlands, wooded areas, steep slopes, archaeological/historical/structural resources or other sensitive environmental resources. The TCRSD intends to require new treatment works projects to be constructed within the guidelines of the U.S. Fish and Wildlife Service, IDNR, IDEM, and other environmental review authorities."*

## 14. Mitigation Measures

In order to maintain compliance with all applicable laws regarding contamination and/or proper waste disposal, the TCRSD agrees that:

- If a project site is found to contain any areas used to dispose of solid or hazardous waste. The Office of Land Quality (OLQ) will be contacted at 317-308-3103.
- All solid wastes generated by the project, or removed from the project site, will be taken to a properly permitted solid waste processing or disposal facility.
- If any contaminated soils are discovered during this project, they may be subject to disposal as hazardous waste. The OLQ will be contacted at 317-308-3103.
- If PCB's are found on the project site, the Industrial Waste Section of OWQ will be contacted at 317-308-3103 for information regarding management of any PCB wastes.
- If there are any asbestos disposal issues related to this project, the Industrial Waste Section of OLQ will be contacted at 317-308-3103 for information regarding the management of asbestos wastes.

- If the project involves installation or removal of an underground storage tank, or involves contamination from an underground storage tank, the IDEM Underground Storage Tank program will be contacted at 317-308-3039.
- Access for emergency vehicles must be provided at all times.
- If during the course of construction, evidence of deposits of historical and/or archaeological interest are found, the operator will cease operations and notify the TCRSD. The District will then notify the Indiana DNR. No further disturbance of the deposits will occur until an official from ISHPO has surveyed the find, made a determination of the value of the find and effect of continued construction disturbances, and submitted the results of the determination to the District.
- Any site preparation that will involve earth moving (such as clearing and grubbing) will not begin more than two weeks in advance of the start of excavation. The purpose of this restriction is to prevent the existence of large areas of exposed soils for an extended period of time when construction is not proceeding.
- All motorized construction equipment will be equipped with proper emission control equipment, mufflers, and intake silencers, as appropriate to minimize noise pollution.
- All construction will take place during normal weekday, daylight working hours, and not on weekend or holidays, unless necessary to resolve an emergency situation.
- Only water or calcium chloride will be used as dust palliative.
- Stockpiled topsoil and fill material shall be protected with erosion control barriers or temporary seeding.
- No fill, topsoil, or heavy equipment shall be stored within 200 feet of a stream bank or within the drip-line of a treed area.
- If, due to weather, final grading cannot be accomplished immediately, mulching and temporary seeding, if feasible, or some type of temporary erosion control measures, must be used within 30 days until long-term restoration can occur.
  Excess soil that is stockpiled must be either removed or regraded within 15 days of the completion of construction.

# Chapter 6 –Legal, Financial, Managerial Capabilities

The following forms will be submitted after appropriate signatures are obtained.

- Resolution for Authorized Representative
- PER Acceptance

The Turkey Creek Regional Sewer District is currently developing and implementing a Fiscal Sustainability Plan (FSP). The Self Certification form for the FSP will be provided after the plans are implemented and appropriate signatures are obtained.

# Chapter 7 - Public Participation

To be provided at a later date:

- Publishers Affidavit
- Notification to Contract Customers
- Public Meeting Sign In Sheet
- Public Meeting Minutes
- All Written Comments Received
- Mailing Labels for all Interested Parties
- County Drainage Board comments
- County Health Department comments
- Local Media coverage

# APPENDIX

Jones & Henry
ENGINEERS, LTD.

# APPENDIX A

## ALTERNATE COSTS

## Engineers Opinion of Probable Construction Cost - Conceptual

Project: Enchanted Hills Septic Elimination

Date: 10-Mar-25
Estimator: JPM

### Gravity Sewer Alternative

| Item | Item Description | Unit | Qty | Unit Cost | Cost |
|---|---|---|---|---|---|
| 1 | Audio-Video Recording | 1 | ls | $7,000 | $7,000 |
| 2 | Survey & Staking | 1 | ls | $7,000 | $7,000 |
| 3 | Stormwater Pollution Prevention | 1 | ls | $6,000 | $6,000 |
| 4 | Maintenance of Traffic | 1 | ls | $10,000 | $10,000 |
| 5 | 6" laterals taps | 175 | ea | $550 | $96,250 |
| 6 | 6" lateral main, | 3,020 | lf | $65 | $196,300 |
| 7 | 8" Sewer Main | 17,761 | lf | $100 | $1,776,113 |
| 8 | 48" Dia MH, Type I | 53 | ls | $7,000 | $371,000 |
| 9 | Lift Station | 3 | ls | $200,000 | $600,000 |
| 10 | Generator for Lift Station | 3 | ls | $40,000 | $120,000 |
| 11 | 4" Force main, HDPE, HDD | 5,177 | lf | $30 | $155,306 |
| 12 | Air Release MH | 2 | ea | $12,000 | $24,000 |
| 13 | Special Backfill | 1,053 | cy | $60 | $63,151 |
| 14 | #8 Aggregate Base | 1,184 | sy | $60 | $71,045 |
| 15 | Gravel | 161 | sy | $60 | $9,667 |
| 16 | 3" Base Course | 61 | ton | $300 | $18,271 |
| 17 | 1.5" Wearing Course | 30 | ton | $330 | $10,049 |
| 19 | Post-CCTV Inspection of Sewers | 17,761 | lf | $3 | $53,283 |
| 20 | Allowance for Electric Power Connection | 3 | EA | $15,000 | $45,000 |
| 21 | Allowance for Natural Gas Connection | 3 | EA | $15,000 | $45,000 |
| 22 | Allowance for SCADA/Telemetry | 3 | EA | $20,000 | $60,000 |
| 23 | Seed & Mulch | 19,735 | sy | $3 | $59,204 |
| 24 | Record Documents | 1 | ls | $5,000 | $5,000 |
| 25 | Mobilization, Bonding, Insurance & General Requirements (5%) | | | | $190,432 |
| | | | | Subtotal Construction = | $3,808,600 |
| | | | | Admin and Legal = | $190,500 |
| | | | | Property Acquisition = | $40,000 |
| | | | | Engineering Design = | $457,000 |
| | | | | Engineering Construction Services = | $190,000 |
| | | | | Resident Project Representative = | $117,000 |
| | | | | Contingencies (10%) = | $571,300 |
| | | | | Total Estimated Capital Costs = | $5,374,400 |

## Engineers Opinion of Probable Construction Cost - Conceptual

Project: Enchanted Hills Septic Elimination
Date: 10-Mar-25
Estimator: JPM

### Low Pressure Sewer Alternative

| Item | Item Description | Unit | Qty | Unit Cost | Cost |
|---|---|---|---|---|---|
| 1 | Audio-Video Recording | 1 | ls | $2,500.00 | $2,500.00 |
| 2 | Survey & Staking | 1 | ls | $3,000.00 | $3,000.00 |
| 3 | Stormwater Pollution Prevention | 1 | ls | $2,000.00 | $2,000.00 |
| 4 | Maintenance of Traffic | 1 | ls | $3,500.00 | $3,500.00 |
| 5 | Cleanout / Air Release Manhole | 13 | ea | $11,000.00 | $143,000.00 |
| 6 | Cleanout Manhole | 22 | ea | $6,500.00 | $143,000.00 |
| 7 | 2-Inch Tap Into Force Main | 175 | ea | $1,500.00 | $262,500.00 |
| 8 | 2-Inch, Laterals HDPE, DR-11, IPS, HDD | 596 | lf | $35.00 | $20,860.00 |
| 9 | 2-Inch, Force Main HDPE, DR-11, IPS, HDD | 6864 | lf | $35.00 | $240,240.00 |
| 10 | 3-Inch, Force Main HDPE, DR-11, IPS, HDD | 6,445 | lf | $35.00 | $225,575.00 |
| 11 | 4-Inch, Force Main HDPE, DR-11, IPS, HDD | 4,118 | lf | $40.00 | $164,726.40 |
| 12 | 6-Inch, Force Main HDPE, DR-11, IPS, HDD | 2,410 | lf | $50.00 | $120,500.00 |
| 13 | 2-Inch Ball Valve | 28 | ea | $3,000.00 | $84,000.00 |
| 14 | 3-Inch Ball Valve | 13 | ea | $3,500.00 | $45,500.00 |
| 15 | 4-Inch Ball Valve | 9 | ea | $4,000.00 | $36,000.00 |
| 16 | 6-Inch Ball Valve | 2 | ea | $4,500.00 | $9,000.00 |
| 17 | 2-Inch Curb Stop & Swing Check Assembly | 175 | ea | $3,500.00 | $612,500.00 |
| 18 | Special Backfill | 253 | cy | $45.00 | $11,400.00 |
| 19 | #8 Aggregate Base | 428 | sy | $45.00 | $19,237.50 |
| 20 | Gravel | 191 | sy | $35.00 | $6,688.89 |
| 21 | 3" Base Course | 71 | ton | $300.00 | $21,161.25 |
| 24 | 1.5" Wearing Course | 35 | ton | $330.00 | $11,638.69 |
| 25 | Seed & Mulch | 382 | sy | $3.00 | $1,146.67 |
| 26 | Record Documents | 1 | ls | $2,500.00 | $2,500.00 |
| 27 | Mobilization, Bonding, Insurance & General Requirements (5%) | | | | $109,609 |

| | |
|---|---|
| Subtotal Construction = | $2,302,000 |
| Admin and Legal = | $70,000 |
| Property Acquisition = | $20,000 |
| Engineering Design = | $253,000 |
| Engineering Construction Services = | $115,000 |
| Resident Project Representative (130 days)= | $90,000 |
| Contingencies (5%) = | $115,000 |
| Total Estimated Capital Costs = | $2,965,000 |

# 20 Year Present Worth Analysis

| | | | |
|---|---|---|---|
| Project | Enchanted Hills Septic Elimination | Date: | 10-Mar-25 |
| Alterate | Gravity Sewer | Estimator: | jpm |

n=20 yr., i=4.0%, Planning Period 20 yrs.,

| Item | | Capital Cost | Life Exp. | Salvage Value in 20 Years | Annual Cost | 20 year Present Worth |
|---|---|---|---|---|---|---|
| 1 | Equipment | $ 720,000 | 15 | $ (240,000) | | $ 950,599 |
| 2 | Stuctures | $ 395,000 | 50 | $ 237,000 | | $ 167,284 |
| 3 | Piping | $ 2,127,719 | 50 | $ 1,276,631 | | $ 901,096 |
| 4 | Electrical & Instrumentation | $ 150,000 | 20 | $ - | | $ 150,000 |
| 5 | Non Construction Costs | $ 1,565,800 | 50 | $ 939,480 | | $ 663,121 |
| | | | | | | |
| | | | | | | |
| 1 | Labor | | 20 | | $ 34,000 | $ 462,071 |
| 2 | Power | | 20 | | $ 8,900 | $ 120,954 |
| 3 | Consumables | | 20 | | $ 1,000 | $ 13,590 |
| | | | | | | |
| | | | | | Total Present Worth | $ 3,428,715 |

# 20 Year Present Worth Analysis

| | | | |
|---|---|---|---|
| Project | Enchanted Hills Septic Elimination | Date: | 10-Mar-25 |
| Alterate | Gravity Sewer | Estimator: | JPM |

n=20 yr., i=4.0%, Planning Period 20 yrs.,

| Item | | Capital Cost | Life Exp. | Salvage Value in 20 Years | Annual Cost | 20 year Present Worth |
|---|---|---|---|---|---|---|
| 1 | Equipment | $0 | 15 | $0 | | $0 |
| 2 | Stuctures | $286,000 | 50 | $171,600 | | $121,122 |
| 3 | Piping | $1,208,901 | 50 | $725,341 | | $511,974 |
| 4 | Electrical & Instrumentation | $0 | 20 | $0 | | $0 |
| 5 | Non Construction Costs | $19,238 | 50 | $11,543 | | $8,147 |
| | | | | | | |
| | | | | | | |
| 1 | Labor | | 20 | | $24,000 | $326,168 |
| 2 | Power | | 20 | | $4,800 | $65,234 |
| 3 | Consumables | | 20 | | $1,000 | $13,590 |
| | | | | | | |
| | | | | | Total Present Worth | $1,046,235 |

## Summary Costs of Sewer Alternatives

### Enchanted Hill Septic Elimination

### Turkey Creek Regional Sewer District

| | Gravity Sewers | Low-Pressure Sewers |
|---|---|---|
| Total Costs, TCRSD & Homeowners | $7,903,150 | $6,780,000 |
| Project Costs, TCRSD | $5,374,400 | $2,965,000 |
| Average Cost per Homeowner with Availability Charge | $2,528,750 | $3,815,000 |
| 20 Year Present Worth | $3,428,715 | $1,046,235 |
| Preliminary User Rates @ 2% | $222 | $138 |
| | | |
| Capital Charge to reduce the user rate to $75 / month. | $1,015,000 | $950,000 |
| Capital Charge /User | $0 | $0 |
| Average Cost per Homeowner with Availability Charge & Addl. Capital Charge | $2,528,750 | $3,815,000 |
| Preliminary User Rates | $189 | $105 |

| Energy Efficiency<br>Enchanted Hill Septic Elimination<br>Turkey Creek Regional Sewer District | | |
|---|---|---|
| **Alternative** | **Est. Annual Power Consumption** | **Rank** |
| Gravity Sewer System | $8,900 | 1 |
| Low-Pressure Sewer System | $4,800 | 4 |

| Project Selection Matrix<br>Enchanted Hill Septic Elimination<br>Turkey Creek Regional Sewer District | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project Alternatives (1= poor, 5= good)** | **Monetary** | **Technical** | **Reliability** | **Implementability** | **Environmental** | **Total Score** | **Comments** |
| No Action | 0 | 0 | 0 | 0 | 0 | 0 | Does not meet State Mandate or the needs of the property owners. |
| Gravity Sewer System | 2 | 2 | 3 | 2 | 3 | 12 | Uses less power & is more reliable, grater I/I |
| Low Pressure Sewer System | 4 | 4 | 3 | 4 | 4 | 19 | Less impact from construction, least I/I |

Conformance with 20yr. PW
,Mechanical & Hydraulic complexity
Gravity has less parts & more reliable
LP sewers will have much less impact
,LP Less I/I

## Engineers Opinion of Probable Construction Cost - Conceptual

Project: Papakeechie No 6 (Hiawatha Ln) Septic Elimination
Date: 11-Mar-25
Estimator: JPM

### Gravity Sewer Alternative

| Item | Item Description | Unit | Qty | Unit Cost | Cost |
|---|---|---|---|---|---|
| 1 | Audio-Video Recording | 1 | ls | $1,000 | $1,000 |
| 2 | Survey & Staking | 1 | ls | $2,000 | $2,000 |
| 3 | Stormwater Pollution Prevention | 1 | ls | $1,000 | $1,000 |
| 4 | Maintenance of Traffic | 1 | ls | $1,500 | $1,500 |
| 5 | 6" laterals taps | 30 | ea | $550 | $16,500 |
| 6 | 6" lateral main, | 600 | lf | $70 | $42,000 |
| 7 | 8" Sewer Main | 1,078 | lf | $100 | $107,800 |
| 8 | 48" Dia MH, Type I | 12 | ls | $9,500 | $114,000 |
| 9 | Lift Station | 1 | ea | $310,000.00 | $310,000.00 |
| 10 | Generator for Lift Station | 1 | ea | $35,000 | $35,000.00 |
| 11 | Force main 3" HDPE, HDD | 560 | lf | $45 | $25,200.00 |
| 12 | Air Release MH | 1 | ea | $12,000 | $12,000.00 |
| 13 | Special Backfill | 741 | cy | $60 | $44,460 |
| 14 | #8 Aggregate Base | 778 | sy | $40 | $31,120 |
| 15 | Gravel | 200 | sy | $300 | $60,000 |
| 16 | 3.5" Base Course | 18 | ton | $330 | $5,940 |
| 17 | 1.5" Wearing Course | 9 | ton | $85 | $765 |
| 19 | Post-CCTV Inspection of Sewers | 1,078 | lf | $3 | $3,234 |
| 20 | Seed & Mulch | 150 | sy | $3 | $450 |
| 21 | Record Documents | 1 | ls | $1,000 | $1,000 |
| 22 | Mobilization, Bonding, Insurance & General Requirements (5%) | | | | $40,748 |
| | | | | Subtotal Construction = | $824,200 |
| | | | | Admin and Legal = | $42,000 |
| | | | | Property Acquisition = | $20,000 |
| | | | | Engineering Design = | $98,900 |
| | | | | Engineering Construction Services = | $42,000 |
| | | | | Resident Project Representative = | $90,000 |
| | | | | Contingencies (10%) = | $123,600 |
| | | | | Total Estimated Capital Costs = | $1,240,700 |

## Engineers Opinion of Probable Construction Cost - Conceptual

Project: Papakeechie No 6 (Hiawatha Ln) Septic Elimination
Date: 11-Mar-25
Estimator: JPM

### Low Pressure Sewer Alternative

| Item | Item Description | Unit | Qty | Unit Cost | Cost |
|---|---|---|---|---|---|
| 1 | Audio-Video Recording | 1 | ls | $500 | $500 |
| 2 | Survey & Staking | 1 | ls | $1,000 | $1,000 |
| 3 | Stormwater Pollution Prevention | 1 | ls | $800 | $800 |
| 4 | Maintenance of Traffic | 1 | ls | $500 | $500 |
| 5 | Cleanout / Air Release Manhole | 3 | ea | $12,000 | $36,000 |
| 6 | 2-Inch Tap Into Force Main | 30 | ea | $1,500 | $45,000 |
| 7 | 2-Inch, Laterals HDPE, DR-11, IPS, HDD | 750 | lf | $25 | $18,750 |
| 8 | 2-Inch, Force Main HDPE, DR-11, IPS, HDD | 170 | lf | $25 | $4,250 |
| 9 | 3-Inch, Force Main HDPE, DR-11, IPS, HDD | 600 | lf | $30 | $18,000 |
| 10 | 4-Inch, Force Main HDPE, DR-11, IPS, HDD | 1,010 | lf | $35 | $35,350 |
| 11 | 2-Inch Ball Valve | 1 | ea | $3,000 | $3,000 |
| 12 | 3-Inch Ball Valve | 1 | ea | $3,500 | $3,500 |
| 13 | 4-Inch Ball Valve | 1 | ea | $4,000 | $4,000 |
| 14 | 2-Inch Curb Stop & Swing Check Assembly | 30 | ea | $3,500 | $105,000 |
| 16 | Special Backfill | 328 | cy | $55 | $18,040 |
| 17 | #8 Aggregate Base | 393 | sy | $55 | $21,615 |
| 18 | Gravel | 1,067 | sy | $35 | $37,345 |
| 19 | 2.5" Base Course | 28 | ton | $300 | $8,400 |
| 20 | 1.5" Wearing Course | 17 | ton | $330 | $5,610 |
| 21 | 6-inch Concrete Sidewalk / Drive | 10 | sy | $85 | $850 |
| 22 | Seed & Mulch | 800 | sy | $3 | $2,400 |
| 23 | Record Documents | 1 | ls | $1,500 | $1,500 |
| 24 | Mobilization, Bonding, Insurance & General Requirements (5%) | | | | $18,571 |
| | | | | Subtotal Construction = | $389,981 |
| | | | | Admin and Legal = | $19,500 |
| | | | | Property Acquisition = | $5,000 |
| | | | | Engineering Design = | $46,000 |
| | | | | Engineering Construction Services = | $28,000 |
| | | | | Resident Project Representative (25 days) = | $22,500 |
| | | | | Contingencies (5%) = | $19,500 |
| | | | | Total Estimated Capital Costs = | $530,481 |

# 20 Year Present Worth Analysis

Papakeechie No 6 (Hiawatha Ln) Septic Elimination — Date: 11-Mar-25

Alternate **Gravity Sewer** — Estimator: jpm

n=20 yr., i=4.0%, Planning Period 20 yrs.,

| Item | | Capital Cost | Life Exp. | Salvage Value in 20 Years | Annual Cost | 20 year Present Worth |
|---|---|---|---|---|---|---|
| #REF! | Equipment | $ 345,000 | 15 | $ (115,000) | | $ 455,495 |
| #REF! | Stuctures | $ 126,000 | 50 | $ 75,600 | | $ 53,361 |
| #REF! | Piping | $ 133,000 | 50 | $ 79,800 | | $ 56,326 |
| #REF! | Electrical & Instrumentation | $ 12,000 | 20 | $ - | | $ 12,000 |
| 5 | Non Construction Costs | $ 426,615 | 50 | $ 255,969 | | $ 180,673 |
| | | | | | | |
| | | | | | | |
| 1 | Labor | | 20 | | $ 5,000 | $ 67,952 |
| 2 | Power | | 20 | | $ 500 | $ 6,795 |
| 3 | Consumables | | 20 | | $ 100 | $ 1,359 |
| | | | | | | |
| | | | | | Total Present Worth | $ 833,961 |

# 20 Year Present Worth Analysis

Papakeechie No 6 (Hiawatha Ln) Septic Elimination — Date: 11-Mar-25

Alternate **Low-pressure Sewer** — Estimator: jpm

n=20 yr., i=4.0%, Planning Period 20 yrs.,

| Item | | Capital Cost | Life Exp. | Salvage Value in 20 Years | Annual Cost | 20 year Present Worth |
|---|---|---|---|---|---|---|
| 1 | Equipment | $0 | 15 | $0 | | $0 |
| 2 | Stuctures | $141,000 | 50 | $84,600 | | $59,714 |
| 3 | Piping | $236,850 | 50 | $142,110 | | $100,307 |
| 4 | Electrical & Instrumentation | $0 | 20 | $0 | | $0 |
| 5 | Non Construction Costs | $140,594 | 50 | $84,357 | | $59,542 |
| | | | | | | |
| | | | | | | |
| 1 | Labor | | 20 | | $5,000 | $67,952 |
| 2 | Power | | 20 | | $500 | $6,795 |
| 3 | Consumables | | 20 | | $100 | $1,359 |
| | | | | | | |
| | | | | | Total Present Worth | $295,669 |

| Energy Efficiency<br>Papakeechie No 6 (Hiawatha Ln) Septic Elimination<br>Turkey Creek Regional Sewer District | | |
|---|---|---|
| **Alternative** | **Est. Annual Power Consumption** | **Rank** |
| Gravity Sewer System | $500 | 1 |
| Low-Pressure Sewer System | $0 | 5 |

# Summary Costs of Sewer Alternatives

## Papakeechie No 6 (Hiawatha Ln) Septic Elimination
## Turkey Creek Regional Sewer District

| | Gravity Sewers | Low-Pressure Sewers |
|---|---|---|
| Total Costs, TCRSD & Homeowners | $2,028,200 | $1,184,481 |
| Project Costs, TCRSD | $1,240,700 | $530,481 |
| Average Cost per Homeowner with Availability Charge | $6,780 | $3,574 |
| 20 Year Present Worth | $ 833,961 | $295,669 |
| Preliminary User Rates @ 2% | $78 | $53 |
| | | |
| Capital Charge to reduce the user rate to $75/mo. | $950,000 | $950,000 |
| Capital Charge /User | $5,191 | $5,191 |
| Average Cost per Homeowner with Availability Charge & Addl. Capital Charge | $11,971 | $8,765 |
| Preliminary User Rates | $43 | $18 |

## Project Selection Matrix

Papakeechie No 6 (Hiawatha Ln) Septic Elimination

Turkey Creek Regional Sewer District

| Project Alternatives (1= poor, 5= good) | Monetary | Technical | Reliability | Implementability | Environmental | Total Score | Comments |
|---|---|---|---|---|---|---|---|
| No Action | 0 | 0 | 0 | 0 | 0 | 0 | Does not meet State Mandate or the needs of the property owners. |
| Gravity Sewer System | 2 | 3 | 4 | 2 | 3 | 14 | Uses less power & is more reliable, grater I/I |
| Low Pressure Sewer System | 4 | 4 | 4 | 5 | 4 | 21 | Less impact from construction, least I/I |

Conformance with 20yr. PW
,Mechanical & Hyraulic complexity
Gravity has less parts & more reliable
LP sewers will have much less impact
LP Less I/I, Vac. Has air emmsions, dewatering & wetlands

## Engineers Opinion of Probable Construction Cost - Conceptual

Project: Papakeechie No 5 (Circle Dr) Septic Elimination
Date: 10-Mar-25
Estimator: JPM

### Gravity Sewer Alternative

| Item | Item Description | Unit | Qty | Unit Cost | Cost |
|---|---|---|---|---|---|
| 1 | Audio-Video Recording | 1 | ls | $1,000 | $1,000 |
| 2 | Survey & Staking | 1 | ls | $2,000 | $2,000 |
| 3 | Stormwater Pollution Prevention | 1 | ls | $1,000 | $1,000 |
| 4 | Maintenance of Traffic | 1 | ls | $1,500 | $1,500 |
| 5 | 6" laterals taps | 50 | ea | $550 | $27,500 |
| 6 | 6" lateral main, | 1,020 | lf | $70 | $71,400 |
| 7 | 8" Sewer Main | 2,425 | lf | $100 | $242,500 |
| 8 | 12" Sewer Main | 260 | lf | $120 | $31,200 |
| 9 | 48" Dia MH, Type I | 13 | ls | $7,000 | $91,000 |
| 10 | Special Backfill | 1,481 | cy | $60 | $88,889 |
| 11 | #8 Aggregate Base | 1,778 | sy | $60 | $106,667 |
| 12 | Gravel | 222 | sy | $40 | $8,889 |
| 13 | 3.5" Base Course | 220 | ton | $300 | $66,000 |
| 14 | 1.5" Wearing Course | 110 | ton | $330 | $36,300 |
| 15 | 6-inch Concrete Sidewalk / Drive | 222 | sy | $85 | $18,889 |
| 16 | Post-CCTV Inspection of Sewers | 2,425 | lf | $3 | $7,275 |
| 17 | Seed & Mulch | 2,222 | sy | $3 | $6,667 |
| 19 | Record Documents | 1 | ls | $1,000 | $1,000 |
| 20 | Mobilization, Bonding, Insurance & General Requirements (5%) | | | | $40,484 |
| | | | | Subtotal Construction = | $850,200 |
| | | | | Admin and Legal = | $42,500 |
| | | | | Property Acquisition = | $20,000 |
| | | | | Engineering Design = | $102,000 |
| | | | | Engineering Construction Services = | $42,500 |
| | | | | Resident Project Representative = | $81,000 |
| | | | | Contingencies (10%) = | $127,500 |
| | | | | Total Estimated Capital Costs = | $1,265,700 |

## Engineers Opinion of Probable Construction Cost - Conceptual

Project: Papakeechie No 5 (Circle Dr) Septic Elimination
Date: 10-Mar-25
Estimator: JPM

### Low Pressure Sewer Alternative

| Item | Item Description | Unit | Qty | Unit Cost | Cost |
|---|---|---|---|---|---|
| 1 | Audio-Video Recording | 1 | ls | $1,000 | $1,000 |
| 2 | Survey & Staking | 1 | ls | $1,500 | $1,500 |
| 3 | Stormwater Pollution Prevention | 1 | ls | $800 | $800 |
| 4 | Maintenance of Traffic | 1 | ls | $1,000 | $1,000 |
| 5 | 6" laterals taps | 2 | ea | $550 | $1,100 |
| 6 | 6" lateral main, | 40 | lf | $50 | $2,000 |
| 7 | 8" Sewer Main | 0 | lf | $100 | $0 |
| 8 | 12" Sewer Main | 250 | lf | $120 | $30,000 |
| 9 | 48" Dia MH, Type I | 2 | lf | $7,000 | $14,000 |
| 10 | Cleanout / Air Release Manhole | 3 | ea | $12,000 | $36,000 |
| 11 | Cleanout Manhole | 3 | ea | $8,000 | $24,000 |
| 12 | 2-Inch Tap Into Force Main | 48 | ea | $1,500 | $72,000 |
| 13 | 2-Inch, Laterals HDPE, DR-11, IPS, HDD | 980 | lf | $25 | $24,500 |
| 14 | 2-Inch, Force Main HDPE, DR-11, IPS, HDD | 660 | lf | $25 | $16,500 |
| 15 | 3-Inch, Force Main HDPE, DR-11, IPS, HDD | 1,580 | lf | $30 | $47,400 |
| 16 | 4-Inch, Force Main HDPE, DR-11, IPS, HDD | 1,000 | lf | $35 | $35,000 |
| 17 | 2-Inch Ball Valve | 2 | ea | $3,000 | $6,000 |
| 19 | 3-Inch Ball Valve | 2 | ea | $3,500 | $7,000 |
| 20 | 4-Inch Ball Valve | 1 | ea | $4,000 | $4,000 |
| 21 | 2-Inch Curb Stop & Swing Check Assembly | 48 | ea | $3,500 | $168,000 |
| 22 | Special Backfill | 278 | cy | $60 | $16,667 |
| 23 | #8 Aggregate Base | 333 | sy | $60 | $20,000 |
| 24 | Gravel | 222 | sy | $40 | $8,889 |
| 25 | 2.5" Base Course | 18 | ton | $300 | $5,500 |
| 26 | 1.5" Wearing Course | 11 | ton | $330 | $3,630 |
| 27 | 6-inch Concrete Sidewalk / Drive | 222 | sy | $85 | $18,889 |
| 28 | Seed & Mulch | 556 | sy | $3 | $1,667 |
| 29 | Record Documents | 1 | ls | $1,500 | $1,500 |
| 30 | Mobilization, Bonding, Insurance & General Requirements (5%) | | | | $28,427 |
| | | | | Subtotal Construction = | $597,000 |
| | | | | Admin and Legal = | $29,500 |
| | | | | Property Acquisition = | $20,000 |
| | | | | Engineering Design = | $71,500 |
| | | | | Engineering Construction Services = | $30,000 |
| | | | | Resident Project Representative = | $58,500 |
| | | | | Contingencies (15%) = | $30,500 |
| | | | | Total Estimated Capital Costs = | $837,000 |

# 20 Year Present Worth Analysis

| | | | |
|---|---|---|---|
| Project | Papakeechie No 5 (Circle Dr) Septic Elimination | Date: | 10-Mar-25 |
| Aternate | **Gravity Sewer Alternative** | Estimator: | jpm |

n=20 yr., i=4.0%, Planning Period 20 yrs.,

| Item | | Capital Cost | Life Exp. | Salvage Value in 20 Years | Annual Cost | 20 year Present Worth |
|---|---|---|---|---|---|---|
| 1 | Equipment | $0 | 15 | $0 | | $0 |
| 2 | Stuctures | $31,200 | 50 | $18,720 | | $13,213 |
| 3 | Piping | $193,600 | 50 | $116,160 | | $81,990 |
| 4 | Electrical & Instrumentation | $0 | 20 | $0 | | $0 |
| 5 | Non Construction Costs | $1,203,000 | 50 | $721,800 | | $509,474 |
| | | | | | | |
| | | | | | | |
| 1 | Labor | | 20 | | $5,000 | $67,952 |
| 2 | Power | | 20 | | $500 | $6,795 |
| 3 | Consumables | | 20 | | $100 | $1,359 |
| | | | | | | |
| | | | | | Total Present Worth | $680,784 |

# 20 Year Present Worth Analysis

| | | | |
|---|---|---|---|
| Project | Papakeechie No 5 (Circle Dr) Septic Elimination | Date: | 10-Mar-25 |
| Aternate | **Low Pressure Sewer Alternative** | Estimator: | jpm |

n=20 yr., i=4.0%, Planning Period 20 yrs.,

| Item | | Capital Cost | Life Exp. | Salvage Value in 20 Years | Annual Cost | 20 year Present Worth |
|---|---|---|---|---|---|---|
| 1 | Equipment | $0 | 15 | $0 | | $0 |
| 2 | Stuctures | $74,000 | 50 | $44,400 | | $31,339 |
| 3 | Piping | $380,400 | 50 | $228,240 | | $161,101 |
| 4 | Electrical & Instrumentation | $0 | 20 | $0 | | $0 |
| 5 | Non Construction Costs | $240,000 | 50 | $144,000 | | $101,641 |
| | | | | | | |
| | | | | | | |
| 1 | Labor | | 20 | | $5,000 | $67,952 |
| 2 | Power | | 20 | | $500 | $6,795 |
| 3 | Consumables | | 20 | | $100 | $1,359 |
| | | | | | | |
| | | | | | Total Present Worth | $370,187 |

| Energy Efficiency<br>Papakeechie No 5 (Circle Dr) Septic Elimination<br>Turkey Creek Regional Sewer District | | |
|---|---|---|
| **Alternative** | **Est. Annual Power Consumption** | **Rank** |
| Gravity Sewer System | $500 | 2 |
| Low-Pressure Sewer System | $500 | 3 |

## Summary Costs of Sewer Alternatives

### Papakeechie No 5 (Circle Dr) Septic Elimination

### Turkey Creek Regional Sewer District

| | Gravity Sewers | Low-Pressure Sewers |
|---|---|---|
| Total Costs, TCRSD & Homeowners | $2,053,200 | $1,927,000 |
| Project Costs, TCRSD | $1,265,700 | $837,000 |
| Average Cost per Homeowner with Availability Charge | $4,257 | $5,956 |
| 20 Year Present Worth | $680,784 | $370,187 |
| Preliminary User Rates @ 2% | $79 | $64 |
| | | |
| Capital Charge to reduce the user rate to $75/mo. | $950,000 | $950,000 |
| Capital Charge /User | $5,337 | $5,337 |
| Average Cost per Homeowner with Availability Charge & Addl. Capital Charge | $9,594 | $11,293 |
| Preliminary User Rates | $44 | $29 |

## Project Selection Matrix

Papakeechie No 5 (Circle Dr) Septic Elimination

Turkey Creek Regional Sewer District

| Project Alternatives (1= poor, 5= good) | Monetary | Technical | Reliability | Implementability | Environmental | Total Score | Comments |
|---|---|---|---|---|---|---|---|
| No Action | 0 | 0 | 0 | 0 | 0 | 0 | Does not meet State Mandate or the needs of the property owners. |
| Gravity Sewer System | 4 | 3 | 5 | 2 | 2 | 16 | Uses less power & is more reliable, grater I/I |
| Low Pressure Sewer System | 1 | 4 | 4 | 5 | 5 | 19 | Less impact from construction, less I/I |

Conformance with 20yr. PW
,Mechanical & Hyraulic complexity
Gravity has less parts & more reliable
LP sewers will have much less impact
LP Less I/I, dewatering

**Jones Henry**
Engineering, LTD

TCRSD I Septic Elimination WWTP Improvements
Project Number 868-8106

## Engineers Opinion of Probable Construction Cost - Conceptual

Project: Buttermilk & Sunset Lift Station Relocation
Date: 10-Mar-25
Estimator: JPM

### Gravity Extension Alternative

| Item | Item Description | Unit | Qty | Unit Cost | Cost |
|---|---|---|---|---|---|
| 1 | Audio-Video Recording | 1 | ls | $2,500 | $2,500 |
| 2 | Survey & Staking | 1 | ls | $2,500 | $2,500 |
| 3 | Stormwater Pollution Prevention | 1 | ls | $3,000 | $3,000 |
| 4 | Maintenance of Traffic | 1 | ls | $2,500 | $2,500 |
| 5 | 8" Sewer Main | 450 | lf | $90 | $40,500 |
| 6 | 12" Sewer Main | 860 | lf | $150 | $129,000 |
| 7 | 48" Dia MH, Type I | 6 | ls | $8,500 | $51,000 |
| 8 | Lift Station | 1 | ls | $400,000 | $400,000 |
| 9 | Generator for Lift Station | 1 | ls | $80,000 | $80,000 |
| 10 | 6" Force main, HDPE, HDD | 10 | lf | $45 | $450 |
| 11 | 10" Force main, HDPE, HDD | 30 | lf | $80 | $2,400 |
| 12 | Special Backfill | 100 | cy | $60 | $6,000 |
| 13 | #8 Aggregate Base | 50 | sy | $60 | $3,000 |
| 14 | Gravel | 0 | sy | $40 | $0 |
| 15 | 3" Base Course | 10 | ton | $300 | $3,000 |
| 16 | 1.5" Wearing Course | 8 | ton | $330 | $2,640 |
| 17 | Post-CCTV Inspection of Sewers | 1,310 | lf | $3 | $3,930 |
| 18 | Coating the Wet Well | 1 | LS | $20,000 | $20,000 |
| 19 | Allowance for Electric Power Connection | 1 | LS | $18,000 | $18,000 |
| 20 | Allowance for Natural Gas Connection | 1 | LS | $15,000 | $15,000 |
| 21 | Allowance for SCADA/Telemetry | 1 | LS | $25,000 | $25,000 |
| 22 | Seed & Mulch | 2,189 | sy | $3 | $6,567 |
| 23 | Record Documents | 1 | ls | $1,500 | $1,500 |
| 24 | Mobilization, Bonding, Insurance & General Requirements (5%) | | | | $40,924 |
| | | | | Subtotal Construction = | $859,000.00 |
| | | | | Admin and Legal = | $45,000 |
| | | | | Property Acquisition = | $30,000 |
| | | | | Engineering Design = | $103,000 |
| | | | | Engineering Construction Services = | $43,000 |
| | | | | Resident Project Representative = | $59,000 |
| | | | | Contingencies (5%) = | $43,000 |
| | | | | Total Estimated Capital Costs = | $1,182,000 |

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TCRSD I Septic Elimination WWTP Improvements
Project Number 868-8106

| Engineers Opinion of Probable Construction Cost - Conceptual | | | | | |
|---|---|---|---|---|---|
| Project | Buttermilk & Sunset Lift Station Relocation | | | Date: 15-Feb-25 | |
| | | | | Estimator: JPM | |
| | **Force main Extesion Alternative** | | | | |
| **Item** | **Item Description** | **Unit** | **Qty** | **Unit Cost** | **Cost** |
| 1 | Audio-Video Recording | 1 | ls | $2,500.00 | $2,500.00 |
| 2 | Survey & Staking | 1 | ls | $2,500.00 | $2,500.00 |
| 3 | Stormwater Pollution Prevention | 1 | ls | $3,000.00 | $3,000.00 |
| 4 | Maintenance of Traffic | 1 | ls | $2,500.00 | $2,500.00 |
| 5 | 8" Sewer Main | 450 | lf | $90.00 | $40,500.00 |
| 6 | 12" Sewer Main | 10 | lf | $150.00 | $1,500.00 |
| 7 | 48" Dia MH, Type I | 6 | ls | $8,500.00 | $51,000.00 |
| 8 | Lift Station | 1 | ls | $400,000.00 | $400,000.00 |
| 9 | Generator for Lift Station | 1 | ls | $80,000.00 | $80,000.00 |
| 10 | 8" Force main, HDPE, HDD | 50 | lf | $45.00 | $2,250.00 |
| 11 | 10" Force main, HDPE, HDD | 1,680 | lf | $90.00 | $151,200.00 |
| | Duplex Grinder Station | 1 | ea | $20,000.00 | $20,000.00 |
| 12 | Special Backfill | 100 | cy | $60.00 | $6,000.00 |
| 13 | #8 Aggregate Base | 50 | sy | $60.00 | $3,000.00 |
| 14 | Gravel | 10 | sy | $40.00 | $400.00 |
| 15 | 3" Base Course | 10 | ton | $300.00 | $3,000.00 |
| 16 | 1.5" Wearing Course | 8 | ton | $330.00 | $2,640.00 |
| 17 | Post-CCTV Inspection of Sewers | 450 | lf | $3.00 | $1,350.00 |
| 18 | Coating the Wet Well | 1 | LS | $20,000.00 | $20,000.00 |
| 19 | Allowance for Electric Power Connection | 1 | LS | $18,000.00 | $18,000.00 |
| 20 | Allowance for Natural Gas Connection | 1 | LS | $15,000.00 | $15,000.00 |
| 21 | Allowance for SCADA/Telemetry | 1 | LS | $30,000.00 | $30,000.00 |
| 22 | Seed & Mulch | 278 | sy | $1,500.00 | $416,666.67 |
| 23 | Record Documents | 1 | ls | $2,500.00 | $2,500.00 |
| 24 | Mobilization, Bonding, Insurance & General Requirements (5%) | | | | $63,775.33 |
| | | | | Subtotal Construction = | $1,339,000 |
| | | | | Admin and Legal = | $67,000 |
| | | | | Property Acquisition = | $30,000 |
| | | | | Engineering Design = | $160,600 |
| | | | | Engineering Construction Services = | $66,900 |
| | | | | Resident Project Representative = | $67,500 |
| | | | | Contingencies (10%) = | $66,900 |
| | | | | Total Estimated Capital Costs = | $1,797,900 |

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# 20 Year Present Worth Analysis

| | | | |
|---|---|---|---|
| Project | Buttermilk & Sunset Lift Station Relocation | Date: | 10-Mar-25 |
| Alternate | **Gravity Sewer** | Estimator: | jpm |

n=20 yr., i=4%, Planning Period 20 yrs.,

| Item | | Capital Cost | Life Exp. | Salvage Value in 20 Years | Annual Cost | 20 year Present Worth |
|---|---|---|---|---|---|---|
| 1 | Equipment | $ 480,000 | 90 | $ 373,333 | | $ 121,291 |
| 2 | Stuctures | $ 51,000 | 50 | $ 30,600 | | $ 21,599 |
| 3 | Piping | $169,500 | 8500 | $ 169,101 | | $ 7,023 |
| 4 | Electrical & Instrumentation | $ 43,000 | 20 | $ - | | $ 43,000 |
| 5 | Non Construction Costs | $ 323,000 | 80000 | $ 322,919 | | $ 12,730 |
| | | | | | | |
| | These items will be the same as before just replacing an existing station | | | | | |
| 1 | Labor | | 20 | | $ 24,000 | $ 326,168 |
| 2 | Power | | 20 | | $ 4,800 | $ 65,234 |
| 3 | Consumables | | 20 | | $ 1,000 | $ 13,590 |
| | | | | | | |
| | | | | | Total Present Worth | $ 610,634 |

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# 20 Year Present Worth Analysis

| | | | |
|---|---|---|---|
| Project | Buttermilk & Sunset Lift Station Relocation | Date: | 10-Mar-25 |
| Alternate | **Low Pressure Sewer** | Estimator: | jpm |

n=20 yr., i=1.2%, Planning Period 20 yrs.,

| Item | | Capital Cost | Life Exp. | Salvage Value in 20 Years | Annual Cost | 20 year Present Worth |
|---|---|---|---|---|---|---|
| 1 | Equipment | $500,000 | 90 | $388,889 | | $126,345 |
| 2 | Stuctures | $51,000 | 50 | $30,600 | | $21,599 |
| 3 | Piping | $42,000 | 8500 | $41,901 | | $1,740 |
| 4 | Electrical & Instrumentation | $48,000 | 20 | $0 | | $48,000 |
| 5 | Non Construction Costs | $458,900 | 80000 | $458,785 | | $18,086 |
| | | | | | | |
| | These items will be the same as before just replacing an existing station | | | | | |
| 1 | Labor | | 20 | | $24,000 | $424,495 |
| 2 | Power | | 20 | | $4,800 | $84,899 |
| 3 | Consumables | | 20 | | $1,000 | $17,687 |
| | | | | | | |
| | | | | | Total Present Worth | $742,851 |

## Summary Costs of Sewer Alternatives

Buttermilk & Sunset Lift Station Relocation
Turkey Creek Regional Sewer District

| | Gravity Sewers | Forcemain Sewers |
|---|---|---|
| Project Costs, TCRSD | $1,182,000 | $1,797,900 |
| 20 Year Present Worth | $610,634 | $742,851 |
| Preliminary User Rates @ 2% | $76 | $98 |
| Capital Charge to reduce the user rate to $75/mo. | $950,000 | $950,000 |
| Capital Charge /User | $5,337 | $5,337 |
| Preliminary User Rates | $41 | $63 |

| Energy Efficiency<br>Buttermilk & Sunset Lift Station Relocation<br>Turkey Creek Regional Sewer District | | |
|---|---|---|
| **Alternative** | **Est. Annual Power Consumption** | **Rank** |
| Gravity System | $4,800 | 2 |
| Force Main System | $4,800 | 2 |

## Project Selection Matrix

Buttermilk & Sunset Lift Station Relocation
Turkey Creek Regional Sewer District

| Project Alternatives (1= poor, 5= good) | Monetary | Technical | Reliability | Implementability | Environmental | Total Score | Comments |
|---|---|---|---|---|---|---|---|
| No Action | 0 | 0 | 0 | 0 | 0 | 0 | Does not meet State Mandate or the needs of the property owners. |
| Gravity System | 4 | 5 | 5 | 3 | 3 | 20 | Uses less power & is more reliable, grater I/I |
| Force Main System | 3 | 4 | 3 | 4 | 4 | 18 | Less impact from construction, least I/I |

Conformance with 20yr. PW
,Mechanical & Hyraulic complexity
Gravity has less parts & more reliable
FM sewers will have much less impact

**Jones Henry**
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TCRSD I Septic Elimination WWTP Improvments
Project Number 868-8106

## Engineers Opinion of Probable Construction Cost - Conceptual

Project A1A Pump Station Upgrades & Forcemain Replacement

Date: 10-Mar-25
Estimator: JPM

### Replacement force main with HDPE

| Item | Item Description | Unit | Qty | Unit Cost | Cost |
|---|---|---|---|---|---|
| 1 | Audio-Video Recording | 1 | ls | $1,500 | $1,500 |
| 2 | Survey & Staking | 1 | ls | $2,000 | $2,000 |
| 3 | Stormwater Pollution Prevention | 1 | ls | $800 | $800 |
| 4 | Maintenance of Traffic | 1 | ls | $500 | $500 |
| 5 | 8" HDPE, IPS -DR-11 | 6,650 | lf | $45 | $299,250 |
| 6 | 48" A/R manhole | 2 | ea | $12,000 | $24,000 |
| 7 | 48" Cleanout Manholes | 2 | ea | $8,000 | $16,000 |
| 8 | 4" HDPE valve | 6 | ea | $3,500 | $21,000 |
| 9 | 8" HDPE valve | 8 | ea | $4,000 | $32,000 |
| 10 | 8"x 4"x 8" Tee | 5 | ea | $3,500 | $17,500 |
| 11 | Control Panel with SCADA / Telemetry | 1 | ls | $110,000 | $110,000 |
| 12 | Generator for Lift Station | 1 | ls | $45,000 | $45,000 |
| 13 | Special Backfill | 19 | cy | $60 | $1,111 |
| 14 | #8 Aggregate Base | 6 | sy | $60 | $333 |
| 15 | Gravel | 6 | sy | $60 | $333 |
| 16 | 2.5" Base Course | 3 | ton | $300 | $917 |
| 17 | 1.5" Wearing Course | 2 | ton | $330 | $605 |
| 18 | Seed & Mulch | 22 | sy | $3 | $67 |
| 19 | Record Documents | 1 | ls | $800 | $800 |
| 20 | Mobilization, Bonding, Insurance & General Requirements (5%) | | | | $28,646 |

| | |
|---|---|
| Subtotal Construction = | $602,400 |
| Admin and Legal = | $12,000 |
| Property Acquisition = | $20,000 |
| Engineering Design = | $70,000 |
| Engineering Construction Services = | $30,100 |
| Resident Project Representative = | $16,500 |
| Contingencies (10%) = | $30,100 |
| Total Estimated Capital Costs = | $783,000 |

# Engineers Opinion of Probable Construction Cost - Conceptual

| | | | |
|---|---|---|---|
| Project | A1A Pump Station | Date: | 10-Mar-25 |
| Alterante | A1A Pump Station Upgrades & Forcemain Replacement | Estimator: | JPM |

n=20 yr., i=4.0%, Planning Period 20 yrs.,

| Item | | Capital Cost | Lift Exp. | Salvage Value in 20 Years | Annual Cost | 20 year Present Worth |
|---|---|---|---|---|---|---|
| 1 | Equipment | $ 155,000 | 15 | $ (51,667) | | $ 204,643 |
| 2 | Stuctures | $ 93,000 | 50 | $ 55,800 | | $ 39,386 |
| 3 | Piping | $ 299,250 | 50 | $ 179,550 | | $ 126,733 |
| 4 | Non Construction Costs | $ 55,112 | 50 | $ 33,067 | | $ 23,340 |
| | | | | | Total Present Worth | $ 394,102 |

| Engineers Opinion of Probable Construction Cost - Conceptual | | | | | |
|---|---|---|---|---|---|
| Project | Eli Lilly Forcemain Replacement | | | Date: 11-Mar-25 | |
| | | | | Estimator: JPM | |
| | **Replacement Alternative** | | | | |
| **Item** | **Item Description** | **Unit** | **Qty** | **Unit Cost** | **Cost** |
| 1 | Audio-Video Recording | 1 | ls | $800 | $800 |
| 2 | Survey & Staking | 1 | ls | $1,000 | $1,000 |
| 3 | Stormwater Pollution Prevention | 1 | ls | $500 | $500 |
| 4 | Maintenance of Traffic | 1 | ls | $500 | $500 |
| 5 | 8" HDPE, IPS -DR-11 | 2,700 | lf | $45 | $121,500 |
| 6 | 48" A/R manhole | 2 | ea | $12,000 | $24,000 |
| 8 | 4" HDPE valve | 1 | ea | $3,500 | $3,500 |
| 9 | 8" HDPE valve | 1 | ea | $4,000 | $4,000 |
| 10 | 8"x 4"x 8" Tee | 1 | ea | $3,500 | $3,500 |
| 13 | Special Backfill | 10 | cy | $60 | $600 |
| 14 | #8 Aggregate Base | 6 | sy | $60 | $333 |
| 15 | Gravel | 6 | sy | $60 | $333 |
| 16 | 2.5" Base Course | 3 | ton | $300 | $917 |
| 17 | 1.5" Wearing Course | 2 | ton | $330 | $605 |
| 18 | Seed & Mulch | 22 | sy | $3 | $67 |
| 19 | Record Documents | 1 | ls | $800 | $800 |
| 20 | Mobilization, Bonding, Insurance & General Requirements (5%) | | | | $8,108 |
| | | | | Subtotal Construction = | $171,060 |
| | | | | Admin and Legal = | $8,550 |
| | | | | Property Acquisition = | $20,000 |
| | | | | Engineering Design = | $20,500 |
| | | | | Engineering Construction Services = | $8,550 |
| | | | | Resident Project Representative = | $16,000 |
| | | | | Contingencies (5%) = | $8,500 |
| | | | | Total Estimated Capital Costs = | $253,160 |

## Engineers Opinion of Probable Construction Cost - Conceptual

| | | | |
|---|---|---|---|
| Project | Eli Lilly Forcemain Replacement | Date: | 11-Mar-25 |
| Alterante | Replacement | Estimator: | JPM |

n=20 yr., i=4.0%, Planning Period 20 yrs.,

| Item | | Capital Cost | 500 | Salvage Value in 20 Years | Annual Cost | 20 year Present Worth |
|---|---|---|---|---|---|---|
| 1 | Equipment | $ - | 45 | $ - | | $ - |
| 2 | Stuctures | $ 31,500 | 50 | $ 18,900 | | $ 13,340 |
| 3 | Piping | $ 121,500 | 50 | $ 72,900 | | $ 51,456 |
| 4 | Non Construction Costs | $82,186.94 | 50 | $ 49,312 | | $ 34,806 |
| | | | | | Total Present Worth | $ 99,602 |

## Engineers Opinion of Probable Construction Cost - Conceptual

Project Wastewater Treatment Plant — Date: 12-Mar-25
Estimator: BWH

### Triton Option

Rebuild the Existing Four 15 hp Rotors

| Item | Description | Unit | Qty | Unit Cost | Cost |
|---|---|---|---|---|---|
| 1 | Materials (direct purchase by District) | ls | 1 | $135,180 | $135,180 |
| 2 | Crane | hr | 100 | $245 | $24,500 |
| 3 | Labor | mhr | 500 | $80 | $40,000 |
| 4 | Project Coordination | mhr | 40 | $120 | $4,800 |
| 5 | Misc. Materials (bolts, plates, gaskets, etc.) | ls | 1 | $8,000 | $8,000 |
| 6 | 10% Contingencies | | | | $21,248 |
| | | | | **Est. total Cost of Construction =** | **$233,728** |

Two 40 hp Triton Aerators & keep the 4 existing rotors

| Item | Description | Unit | Qty | Unit Cost | Cost |
|---|---|---|---|---|---|
| 1 | Two Triton Aerators with Universal Mounts | ls | 1 | $300,000 | $300,000 |
| 2 | Electrical cable, 4 No.6 AWG, MCC to Disconnect | lf | 200 | $300 | $60,000 |
| 3 | Elec. Conduit to Disconnect, 2" PVC | lf | 200 | $120 | $24,000 |
| 4 | MCC, two section with disconnect | ls | 1 | $85,000 | $85,000 |
| 5 | Elec. Wire to MCC, 8-600 MCM | lf | 30 | $300 | $9,000 |
| 6 | Elec. Conduit to MCC, 3" Ridgid | lf | 30 | $120 | $3,600 |
| 7 | Pull Box | ea | 1 | $3,000 | $3,000 |
| 8 | Concrete | ea | 2 | $8,500 | $17,000 |
| 9 | 40 hp VFDs | ea | 2 | $18,000 | $36,000 |
| 10 | 10 hp VFDs | ea | 2 | $6,500 | $13,000 |
| 11 | Installation | mhr | 160 | $280 | $44,800 |
| 15 | Plumbing and Small Piping | ls | 1 | $12,000 | $12,000 |
| 16 | Painting | ls | 1 | $5,000 | $5,000 |
| 17 | Electrical Installation | ls | 1 | $18,000 | $18,000 |
| 18 | Mobilization, General Requirements | ls | 1 | $63,040 | $63,040 |
| | | | | **Total Construction** | **$693,440** |
| | | | | Admin and Legal | $13,869 |
| | | | | Engineering Design | $62,410 |
| | | | | Construction Services | $27,738 |
| | | | | Inspection | $27,738 |
| | | | | Contingencies | $69,344 |
| | | | | Total Estimated Capital Costs | $894,538 |
| | **Total for both improvements** | | | | **$1,128,266** |

## Engineers Opinion of Probable Construction Cost - Conceptual

Project Wastewater Treatment Plant — Date: 12-Mar-25
Estimator: BWH

### 11-foot Rotors Option

Rebuild the Existing Four 15 hp Rotors

| Item | Description | Unit | Qty | Unit Cost | Cost |
|---|---|---|---|---|---|
| 1 | Materials (direct purchase by District) | ls | 1 | 135,180 | 135,180 |
| 2 | Crane | hr | 100 | 245 | 24,500 |
| 3 | Labor | mhr | 500 | 80 | 40,000 |
| 4 | Project Coordination | mhr | 40 | 120 | 4,800 |
| 5 | Misc. Materials (bolts, plates, gaskets, etc.) | ls | 1 | 8,000 | 8,000 |
| 6 | 10% Contingencies | | | | $21,248 |
| | | | | **Est. total Cost of Construction =** | **$233,728** |

Install Two 25 hp 11-ft. Rotors & Keep the 4 Existing Rotors

| Item | Description | Unit | Qty | Unit Cost | Cost |
|---|---|---|---|---|---|
| 1 | New 11-ft. Rotors, Drives & Acc. | ea | 2 | 90,000 | 180,000 |
| 2 | Crane | hr | 80 | 500 | 40,000 |
| 3 | Labor | mhr | 600 | 160 | 96,000 |
| 4 | Project Coordination | mhr | 40 | 160 | 6,400 |
| 5 | Misc. Materials (bolts, plates, gaskets, etc.) | ls | 1 | 10,000 | 10,000 |
| 6 | Concrete Removal | lf | 72 | 120 | 8,640 |
| 7 | Walkway with Handrail (@ bearing ends) | ea | 2 | 3,000 | 6,000 |
| 8 | Electrical cable, 4 No.6 AWG, MCC to Disconnect | lf | 500 | 200 | 100,000 |
| 9 | Elec. Conduit to Disconnect, 2" PVC | lf | 200 | 40 | 8,000 |
| 10 | MCC, two section with disconnect | ls | 1 | 85,000 | 85,000 |
| 11 | Elec. Wire to MCC, 4-250 kCmil | lf | 30 | 600 | 18,000 |
| 12 | Elec. Conduit to MCC, 3" Ridgid | lf | 30 | 85 | 2,550 |
| 13 | VFD's | ea | 2 | 4,500 | 9,000 |
| 14 | MCC Enclosure | ea | 1 | 12,000 | 12,000 |
| 15 | Plumbing and Small Piping | ls | 1 | 12,000 | 12,000 |
| 16 | Painting | ls | 1 | 6,500 | 6,500 |
| 17 | Electrical Installation | ls | 1 | 18,000 | 18,000 |
| 18 | Mobilization, General Requirements | ls | 1 | 61,809 | 61,809 |
| | | | | **Total Construction** | **$679,899** |
| | | | | Admin and Legal | $13,598 |
| | | | | Engineering Design | $61,191 |
| | | | | Construction Services | $27,196 |
| | | | | Inspection | $27,196 |
| | | | | Contingencies | $67,990 |
| | | | | Total Estimated Capital Costs | $877,070 |
| | **Total for both improvements** | | | | **$1,110,798** |

## Engineers Opinion of Probable Construction Cost - Conceptual

Project Wastewater Treatment Plant — Date: 12-Mar-25
Estimator: BWH

### Jeager Option

Rebuild the Existing Four 15 hp Rotors

| Item | Description | Unit | Qty | Unit Cost | Cost |
|---|---|---|---|---|---|
| 1 | Materials (direct purchase by District) | ls | 1 | $ 135,180 | $ 135,180 |
| 2 | Crane | hr | 100 | $ 245 | $ 24,500 |
| 3 | Labor (4 people for 2 weeks each ditch) | mhr | 500 | $ 80 | $ 40,000 |
| 4 | Project Coordination | mhr | 40 | $ 120 | $ 4,800 |
| 5 | Misc. Materials (bolts, plates, gaskets, etc.) | ls | 1 | $ 8,000 | $ 8,000 |
| 6 | 10% Contingencies | | | | $ 21,248 |
| | | | | **Est. total Cost of Construction =** | **$ 233,728** |

Three Blowers, Four Diffusers Racks & Keep the Four Existing Rotors

| Item | Description | Unit | Qty | Unit Cost | Cost |
|---|---|---|---|---|---|
| 1 | Jaegar Material Costs | ls | 1 | 450,000 | 450,000 |
| 2 | Diffuser Installation | mhr | 40 | 180 | 7,200 |
| 3 | Misc Materials (bolts, plates, grout, etc.) | ls | 1 | 1,000 | 1,000 |
| 4 | Concrete Slab & Foundation (8'x8') | ls | 1 | 15,000 | 15,000 |
| 5 | Blower Building (FRP) | ls | 1 | 12,000 | 12,000 |
| 6 | HVAC | ls | 1 | 7,000 | 7,000 |
| 7 | Electrical cable, 4 No.6 AWG, MCC to Disconnect | lf | 80 | 300 | 24,000 |
| 8 | Elec. Conduit to Disconnect, 2" PVC | lf | 80 | 150 | 12,000 |
| 9 | MCC, two section with disconnect | ls | 1 | 70,000 | 70,000 |
| 10 | Elec. Wire to MCC, 8-600 MCM | lf | 30 | 300 | 9,000 |
| 11 | Elec. Conduit to MCC, 3" Ridgid | lf | 30 | 120 | 3,600 |
| 12 | Pull Box | ea | 1 | 1,000 | 1,000 |
| 15 | Plumbing and Small Piping | ls | 1 | 12,500 | 12,500 |
| 16 | Painting | ls | 1 | 5,000 | 5,000 |
| 17 | Electrical Installation | ls | 1 | 15,000 | 15,000 |
| 18 | Mobilization, General Requirements | ls | 1 | 64,430 | 64,430 |
| | | | | **Total Construction** | **708,730** |
| | | | | Admin and Legal | 21,735 |
| | | | | Engineering Design | 97,808 |
| | | | | Construction Services | 43,470 |
| | | | | Inspection | 43,470 |
| | | | | Contingencies | 108,676 |
| | | | | Total Estimated Capital Costs | 1,023,891 |
| | **Total for both improvements** | | | | **1,257,619** |

| Engineers Opinion of Probable Construction Cost - Conceptual | | | | | |
|---|---|---|---|---|---|
| Project Wastewater Treatment Plant | | | | Date: 12-Mar-25 | |
| | | | | Estimator: BWH | |
| **Three Blowers & 8 Diffuser Option** | | | | | |
| Remove the Existing Four 15 hp Rotors | | | | | |
| Item | Description | Unit | Qty | Unit Cost | Cost |
| 1 | Crane | hr | 48 | $ 245 | $ 11,760 |
| 2 | Trucking & Disposal | ls | 1 | $ 15,000 | $ 15,000 |
| 3 | Labor (4 people for 3 days each ditch) | mhr | 192 | $ 80 | $ 15,360 |
| 4 | 10% Contingencies | | | | $ 4,212 |
| | **Est. total Cost of Construction =** | | | | **$ 46,332** |
| | | | | | |
| Three Blowers, 8 Diffuser Racks & @ Mixers | | | | | |
| Item | Description | Unit | Qty | Unit Cost | Cost |
| 1 | Jaegar Material Costs | ls | 1 | 900,000 | $ 900,000 |
| 2 | Diffuser & Mixer Installation | mhr | 100 | 150 | $ 15,000 |
| 3 | Misc Materials (bolts, plates, grout, etc.) | ls | 1 | 8,000 | $ 8,000 |
| 4 | Concrete Slab & Foundation (8'x8') | cy | 10 | 2,000 | $ 20,000 |
| 5 | Blower Building (FRP) | sf | 100 | 300 | $ 30,000 |
| 6 | HVAC | ls | 1 | 6,000 | $ 6,000 |
| 7 | Electrical cable, 4 No.6 AWG, MCC to Disconnect | lf | 200 | 22 | $ 4,400 |
| 8 | Elec. Conduit to Disconnect, 2" PVC | lf | 200 | 40 | $ 8,000 |
| 9 | MCC, two section with disconnect | ls | 1 | 80,000 | $ 80,000 |
| 10 | Elec. Wire to MCC, 8-600 MCM | lf | 30 | 500 | $ 15,000 |
| 11 | Elec. Conduit to MCC, 3" Ridgid | lf | 30 | 70 | $ 2,100 |
| 12 | Pull Box | ea | 1 | 2,000 | $ 2,000 |
| 14 | MCC Enclosure | ea | 1 | 2,500 | $ 2,500 |
| 15 | Plumbing and Small Piping | ls | 1 | 8,000 | $ 8,000 |
| 16 | Painting | ls | 1 | 6,558 | $ 6,558 |
| 17 | Electrical Installation | ls | 1 | 10,930 | $ 10,930 |
| 18 | Mobilization, General Requirements | ls | 1 | 111,849 | $ 111,849 |
| | **Total Construction** | | | | **$ 1,230,337** |
| | Admin and Legal | | | | $ 24,607 |
| | Engineering Design | | | | $ 110,730 |
| | Construction Services | | | | $ 49,213 |
| | Inspection | | | | $ 49,213 |
| | Contingencies | | | | $ 123,034 |
| | Total Estimated Capital Costs | | | | $ 1,587,134 |
| **Total for both improvements** | | | | | **$ 1,633,466** |

# 20 Year Present Worth Analysis

| Project | Aeration Evaluation of Alternatives | Date: | 12-Mar-25 |
|---|---|---|---|
| | n=20 yr., i= -4.0%, Planning Period 20 yrs., | Estimator: | BWH |

## Rebuild Rotors along with Two Triton Aerators

| Item | Item Description | Capital Cost | Life Exp. | Salvage Value in 20 Years | Annual Cost | 20 year Present Worth |
|---|---|---|---|---|---|---|
| | Capital Costs | | | | | |
| 1 | Equipment, Triton Aerators | $410,800 | 20 | $0 | | $410,800 |
| 2 | Equipment, Rotors | $292,000 | 30 | $97,333 | | $198,479 |
| 3 | Stuctures | $10,000 | 50 | $6,000 | | $4,235 |
| 4 | Piping | $0 | 50 | $0 | | $0 |
| 5 | Electrical & Instrumentation | $184,600 | 20 | $0 | | $184,600 |
| 6 | Non Construction Costs | $201,098 | 50 | $120,659 | | $85,165 |
| | Operation & Maintenance Costs | | | | | |
| 1 | Labor | | 20 | | $11,700 | $159,007 |
| 2 | Power | | 20 | | $78,653 | $1,068,920 |
| | | | | | **Total Present Worth** | **$2,111,207** |

## Rebuild Rotors with Two New 25hp 11-ft. Rotors

| Item | Item Description | Capital Cost | Life Exp. | Salvage Value in 20 Years | Annual Cost | 20 year Present Worth |
|---|---|---|---|---|---|---|
| | Capital Costs | | | | | |
| 1 | Equipment | $410,490 | 30 | $136,830 | | $279,020 |
| 2 | Stuctures | $8,000 | 50 | $4,800 | | $3,388 |
| 3 | Piping | $0 | 50 | $0 | | $0 |
| 4 | Electrical & Instrumentation | $222,550 | 20 | $0 | | $222,550 |
| 5 | Non Construction Costs | $197,171 | 50 | $118,302 | | $83,502 |
| | Operation & Maintenance Costs | | | | | |
| 1 | Labor | | 20 | | $11,700 | $159,007 |
| 2 | Power | | 20 | | $61,645 | $837,776 |
| | | | | | **Total Present Worth** | **$1,585,243** |

## Rebuild Rotors along with Four OxyLift Diffuser Racks & Blowers

| Item | Item Description | Capital Cost | Life Exp. | Salvage Value in 20 Years | Annual Cost | 20 year Present Worth |
|---|---|---|---|---|---|---|
| | Capital Costs | | | | | |
| 1 | Equipment, Diffusers & Blowers | $313,600 | 15 | -$104,533 | | $414,039 |
| | Equipment, Rotors | $292,000 | 30 | $97,333 | | $198,479 |
| 2 | Stuctures | $27,000 | 50 | $16,200 | | $11,435 |
| 3 | Piping | $5,000 | 50 | $3,000 | | $2,118 |
| 4 | Electrical & Instrumentation | $119,600 | 20 | $0 | | $119,600 |
| 5 | Non Construction Costs | $315,161 | 50 | $189,096 | | $133,472 |
| | Operation & Maintenance Costs | | | | | |
| 1 | Labor | | 20 | | $15,600 | $212,009 |
| 2 | Power | | 20 | | $60,114 | $816,969 |
| | | | | | **Total Present Worth** | **$1,908,120** |

## Remove Rotors & Install 8 OxyLift Diffuser Racks with Blowers

| Item | Item Description | Capital Cost | Life Exp. | Salvage Value in 20 Years | Annual Cost | 20 year Present Worth |
|---|---|---|---|---|---|---|
| | Capital Costs | | | | | |
| 1 | Equipment | $921,000 | 15 | -$307,000 | | $1,215,974 |
| 2 | Stuctures | $50,000 | 50 | $30,000 | | $21,175 |
| 3 | Piping | $8,000 | 50 | $4,800 | | $3,388 |
| 4 | Electrical & Instrumentation | $111,500 | 20 | $0 | | $111,500 |
| 5 | Non Construction Costs | $356,798 | 50 | $214,079 | | $151,105 |
| | Operation & Maintenance Costs | | | | | |
| 1 | Labor | | 20 | | $15,600 | $212,009 |
| 2 | Power | | 20 | | $74,375 | $1,010,781 |
| | | | | | **Total Present Worth** | **$2,725,932** |

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# APPENDIX B

## SUMMARY COSTS

## Table 6
## Collection Project Selection Matrix

| | Septic Eliminations | | | Lift Station & Forcemain upgrades | | | | |
|---|---|---|---|---|---|---|---|---|
| | **Enchanted Hills** | **Papakeechie No 5 (Circle Dr.)** | **Papakeechie No 6 (Hiawatha Ln.)** | **Buttermilk & Sunset** | **A1A Lift Station & Force main** | **Eli Lilly Forcemain Replacement** | **Portable 100kW Generator** | **Totals** |
| Gravity Sewer System | $6,873,000 | $1,266,000 | $1,240,700 | | | | | |
| Low Pressure Sewer System | $2,974,000 | $837,000 | $530,481 | | | | | |
| Gravity Extension | | | | $1,182,000 | | | | |
| Forcemain Extension / Replacement | | | | $1,797,900 | $783,000 | $253,160 | | |
| Relining Force main | | | | | No Option | No Option | | |
| **Selected Project** | **$2,974,000** | **$837,000** | **$530,481** | **$1,182,000** | **$783,000** | **$253,160** | **$100,000** | **$6,659,641** |

## Wastewater Treatment Plant Project Selection Matrix

| | **Triton** | **11-foot Rotors** | **Jeager** | **Option 3** | | | | **Totals** |
|---|---|---|---|---|---|---|---|---|
| Aeration Improvements | $1,128,266 | $1,110,798 | $1,257,619 | $1,633,466 | | | | |
| **Selected Project** | **$0** | **$1,110,798** | **$0** | **$0** | | | | **$1,110,798** |

**Total Amount Requested** **$7,770,439**

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# APPENDIX C

**ENVIRONMENTAL**

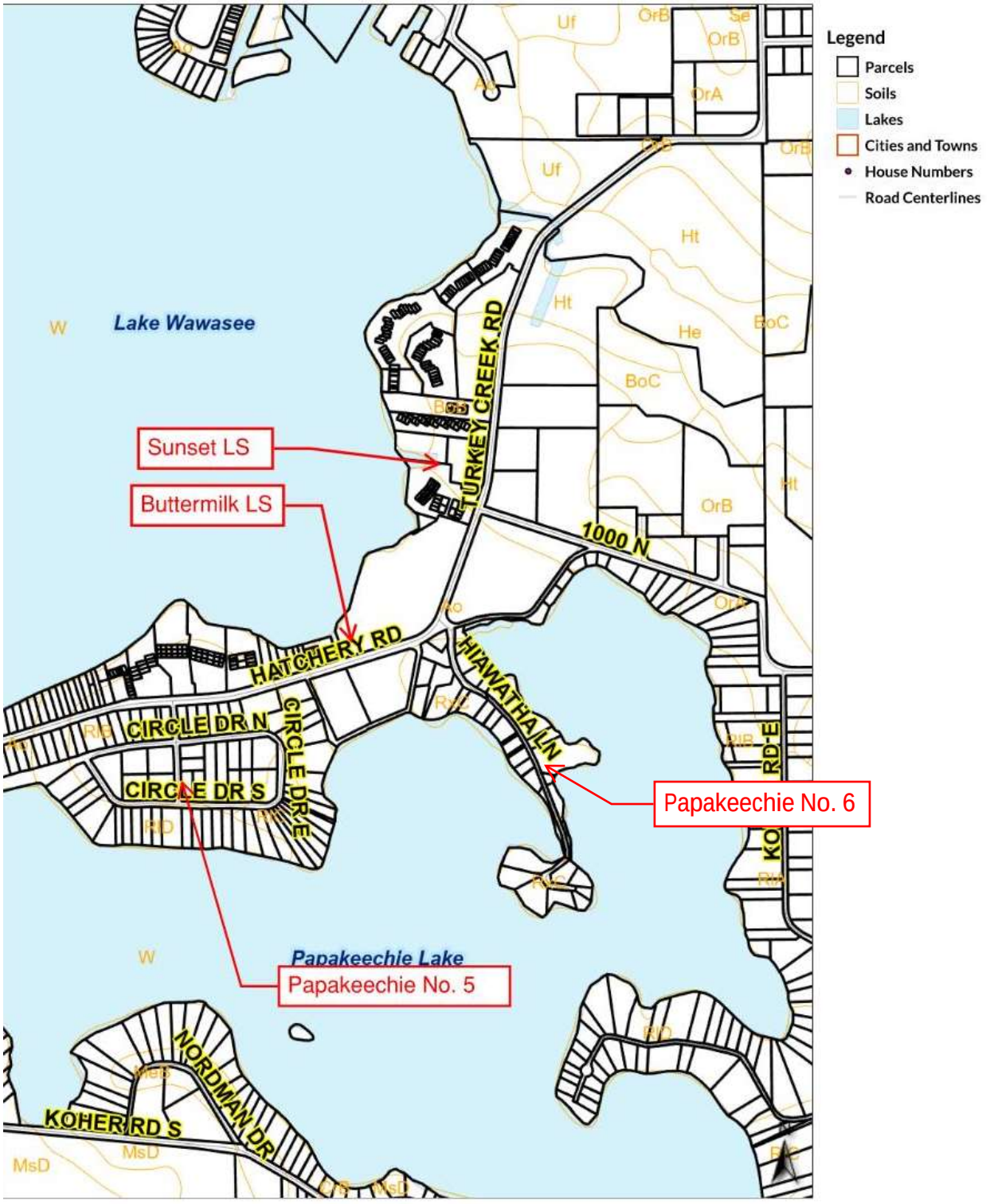
TCRSD soil Enchanted Hills Area


**Figure 5.1a**
**Soils Map**

NTS

Kosciusko County GIS

TCRSD soil Papakeechie No 5 & LSs Areas




Jones & Henry

N

NTS

**Figure 5.1b**
**Soils Map**

Kosciusko County GIS

Turkey Creek Regional Sewer District
Comprehensive PER
February 2024

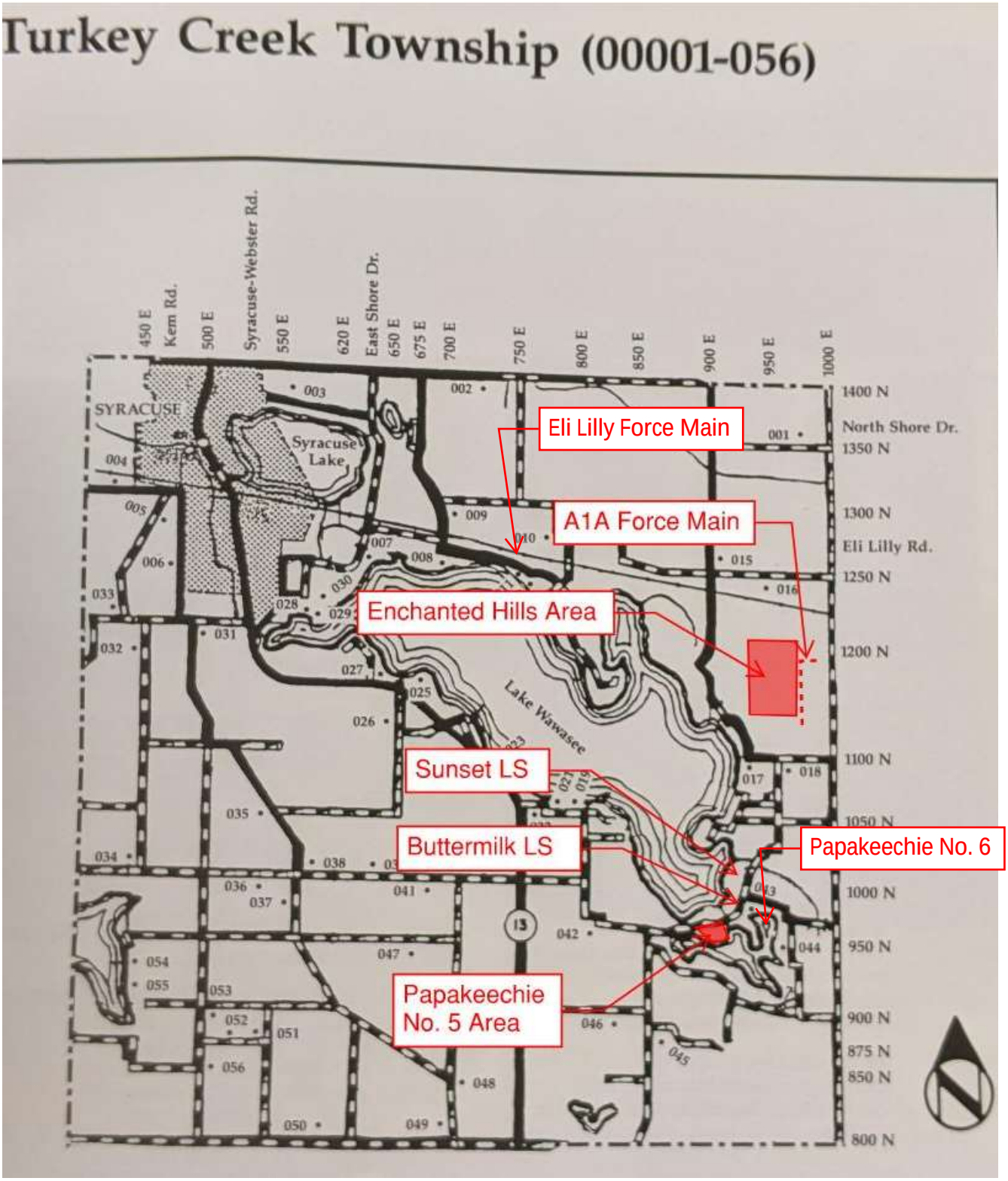



**Figure 5.2a**
**Interim Map & Report**
Kosciusko County
Interim Report

NTS

Jones & Henry

Turkey Creek Regional Sewer District
Comprehensive Report
February 2024

040 N **Grady Farm,** 1000 N; House: American four-square, 1924 (Charlie Lynch, builder); Outbuildings: livestock barn, pump house, hog house, windmill; Agriculture, Vernacular/Construction (340)

041 C **House,** 1000 N; Gabled-ell, c.1890; Vernacular/Construction (340)

042 C **McClintic Cemetery,** Hatchery Road; c.1850-present; Exploration/Settlement, Religion (340)

043 N **Fish Hatchery Caretaker Building,** Old Hatchery Road; Colonial Revival, c.1935 (Civilian Conservation Corps, builder); Architecture, Politics/Government (340)

043

044 C **Benty Cottage,** Promontory Point; Gable-front, c.1920; Entertainment/Recreation, Vernacular/Construction (473)

045 C **Turkey Creek Township District School No. 7,** 850 E; Gable-front, c.1870; Education, Vernacular/Construction (473)

046 C **House,** 900 N; Gabled-ell, c.1890; Vernacular/Construction (473)

047 C **Barn,** 950 N; Basement, c.1870; Agriculture, Vernacular/Construction (473)

048 N **Baugher-Cox Farm,** 700 E; House: American four-square, c.1910 (W.F. Baugher, builder); Outbuildings: basement barn, drive-in corncrib; chicken house, milk house, pump house, silo; Agriculture, Vernacular/Construction (473)

049 C **Farm,** Syracuse-Webster Road; House: hall-and-parlor, c.1870; Outbuildings: basement barn, machine shop, pumphouse; Agriculture, Vernacular/Construction (473)

050 C **House,** 800 N; Italianate, c.1870; Architecture (473)

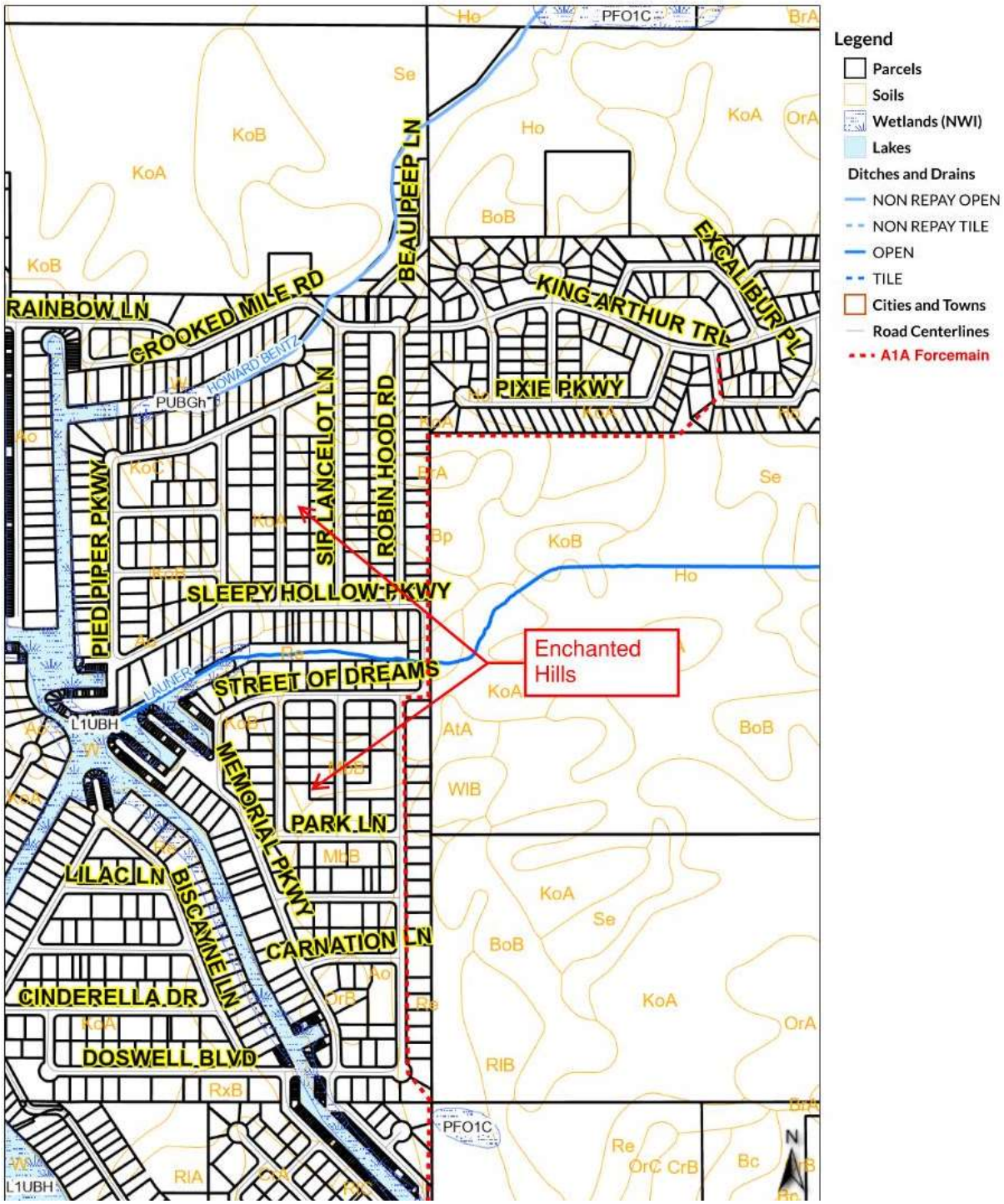
051 N **Turkey Creek Township District Schoo No. 5,** 875 N; T-plan, c.1910; Education, Vernacular/Construction (473)

052 C **Mock Cemetery,** 875 N; c.1840-1890; Exploration/Settlement, Religion (473)

053 O **John Strieby Farm,** 500 E; House: log single-pen, c.1850 (John Strieby, builder); Outbuilding: English barn; Agriculture, Exploration/Settlement, Vernacular/Construction (473)

054 C **Jones House,** 950 N; Cottage, 1929 (Ray D. Jones, builder); Entertainment/Recreation, Vernacular/Construction (350)

TCRSD Wetland Enchanted Hills Area




Jones & Henry

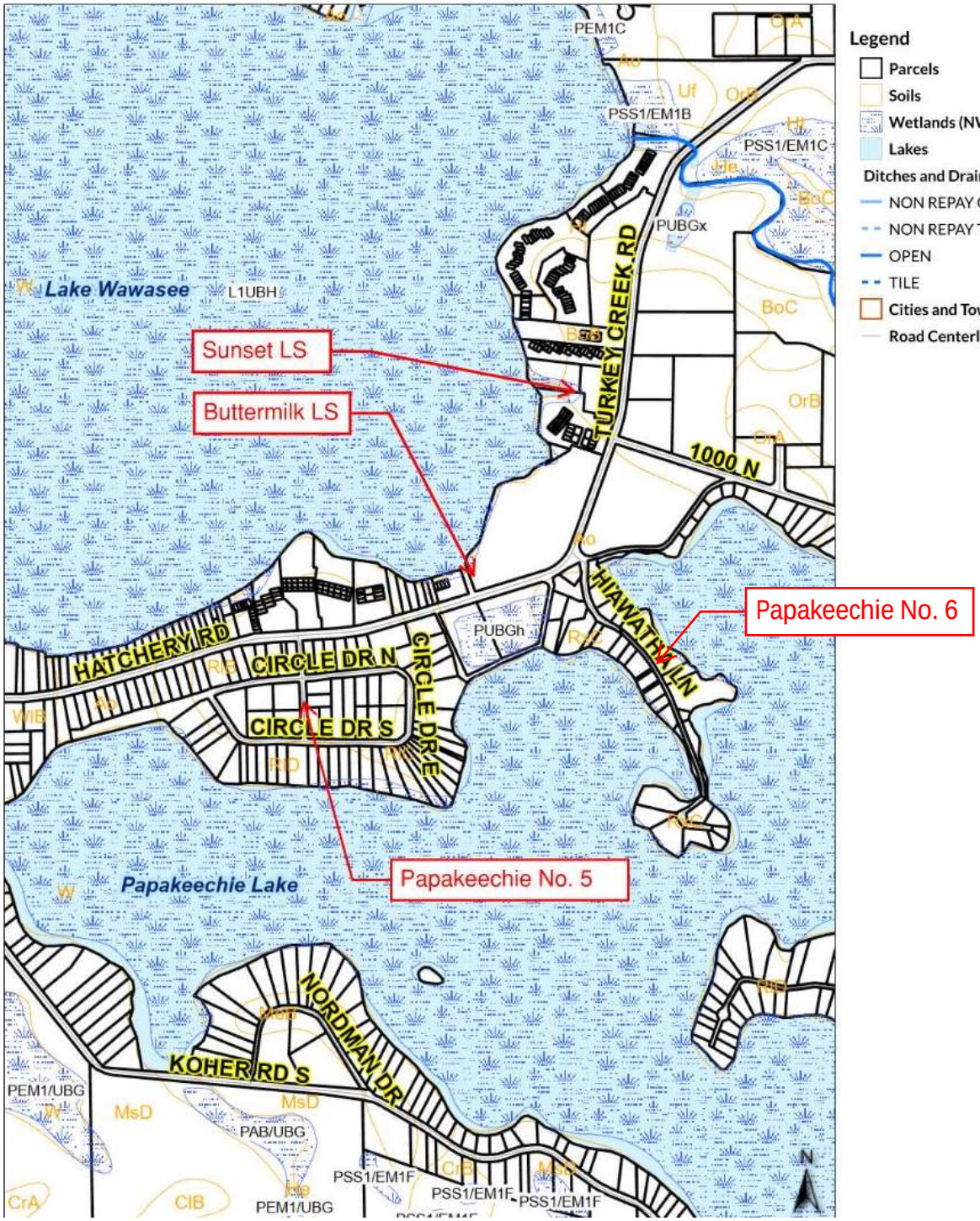
N

NTS

**Figure 5.3a**
**Wetland Map**

Kosciusko County GIS

## TCRSD Wetland Papakeechie No 5 & LSs Areas




Jones & Henry

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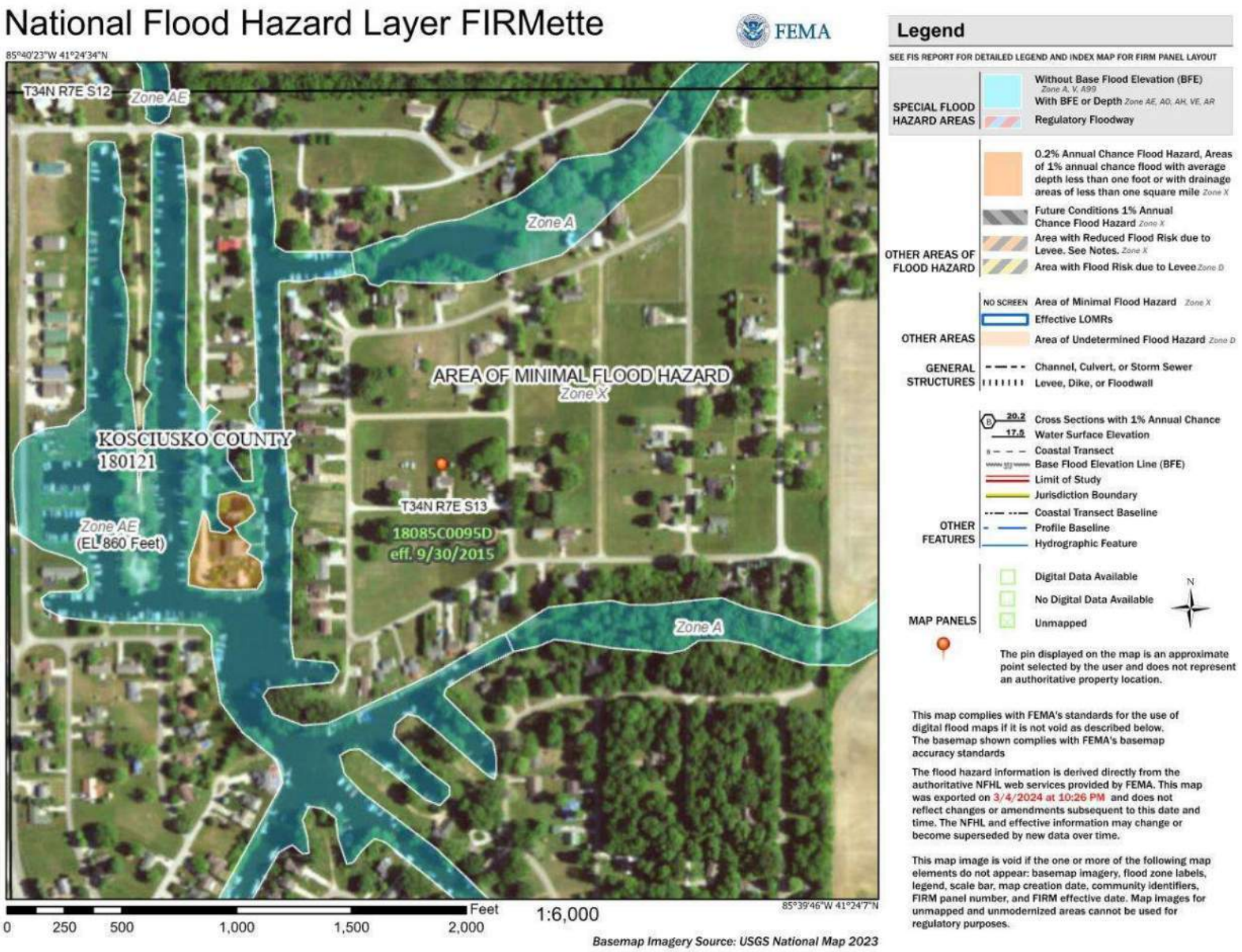
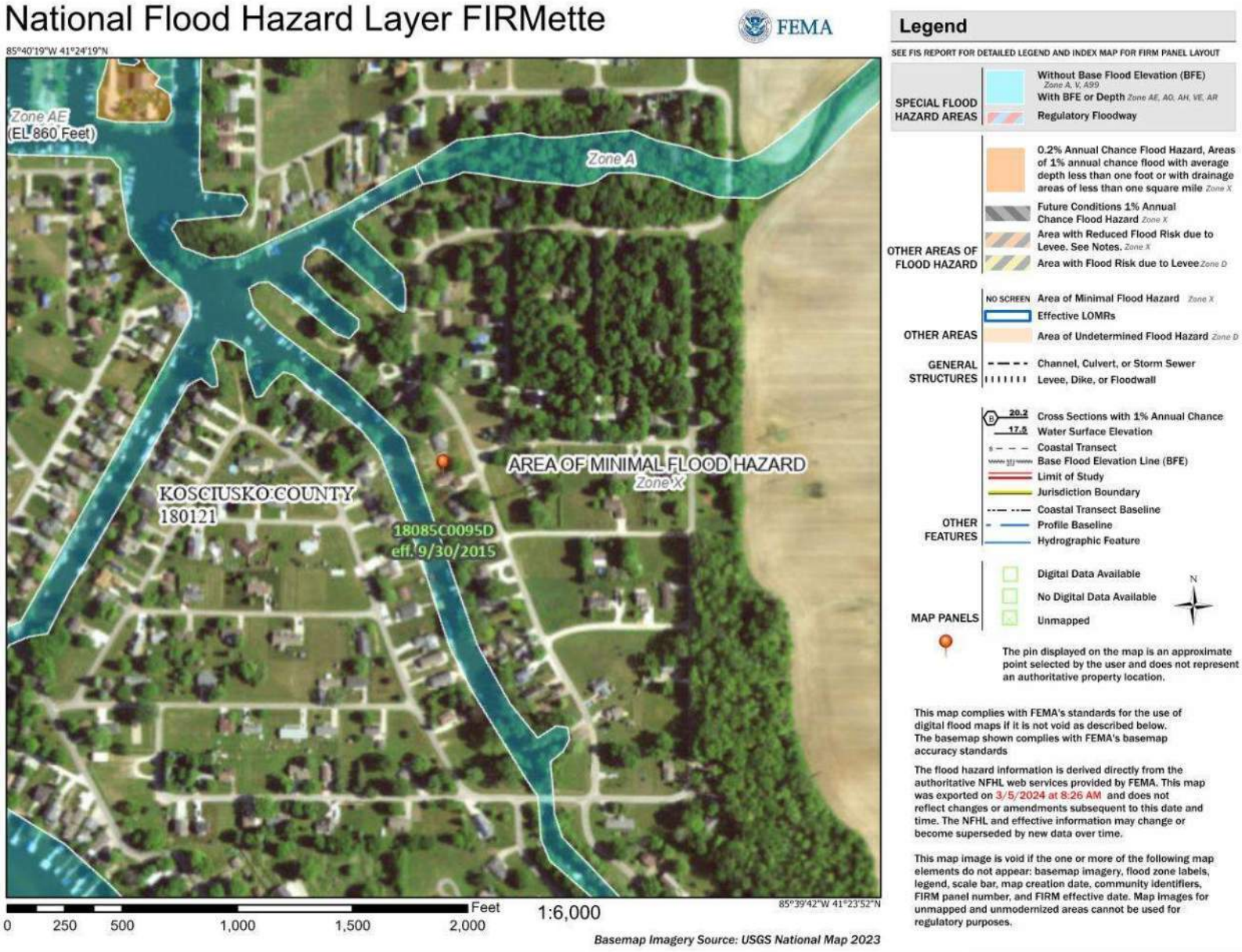
NTS

**Figure 5.3b**
**Wetland Map**
Kosciusko County GIS


National Flood Hazard Layer FIRMette
FEMA
85°40'23"W 41°24'34"N
T34N R7E S12
Zone AE
Zone A
AREA OF MINIMAL FLOOD HAZARD
Zone X
KOSCIUSKO COUNTY
180121
T34N R7E S13
18085C0095D
eff. 9/30/2015
Zone AE
(EL 860 Feet)
Zone A
0 250 500 1,000 1,500 2,000 Feet
1:6,000
85°39'46"W 41°24'7"N
Basemap Imagery Source: USGS National Map 2023
Legend
SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT
SPECIAL FLOOD HAZARD AREAS
Without Base Flood Elevation (BFE)
Zone A, V, A99
With BFE or Depth Zone AE, AO, AH, VE, AR
Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD
0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
Future Conditions 1% Annual Chance Flood Hazard Zone X
Area with Reduced Flood Risk due to Levee. See Notes. Zone X
Area with Flood Risk due to Levee Zone D
OTHER AREAS
NO SCREEN Area of Minimal Flood Hazard Zone X
Effective LOMRs
Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES
Channel, Culvert, or Storm Sewer
Levee, Dike, or Floodwall
OTHER FEATURES
20.2
17.5
Cross Sections with 1% Annual Chance
Water Surface Elevation
Coastal Transect
Base Flood Elevation Line (BFE)
Limit of Study
Jurisdiction Boundary
Coastal Transect Baseline
Profile Baseline
Hydrographic Feature
MAP PANELS
Digital Data Available
No Digital Data Available
Unmapped
N
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.
This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/4/2024 at 10:26 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.
This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.


National Flood Hazard Layer FIRMette
FEMA
85°40'19"W 41°24'19"N
Zone AE
(EL 860 Feet)
Zone A
AREA OF MINIMAL FLOOD HAZARD
Zone X
KOSCIUSKO COUNTY
180121
18085C0095D
eff. 9/30/2015
0 250 500 1,000 1,500 2,000 Feet
1:6,000
85°39'42"W 41°23'52"N
Basemap Imagery Source: USGS National Map 2023
Legend
SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT
SPECIAL FLOOD HAZARD AREAS
Without Base Flood Elevation (BFE) Zone A, V, A99
With BFE or Depth Zone AE, AO, AH, VE, AR
Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD
0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
Future Conditions 1% Annual Chance Flood Hazard Zone X
Area with Reduced Flood Risk due to Levee. See Notes. Zone X
Area with Flood Risk due to Levee Zone D
OTHER AREAS
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Effective LOMRs
Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES
Channel, Culvert, or Storm Sewer
Levee, Dike, or Floodwall
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20.2
17.5
Cross Sections with 1% Annual Chance
Water Surface Elevation
Coastal Transect
Base Flood Elevation Line (BFE)
Limit of Study
Jurisdiction Boundary
Coastal Transect Baseline
Profile Baseline
Hydrographic Feature
MAP PANELS
Digital Data Available
No Digital Data Available
Unmapped
N
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.
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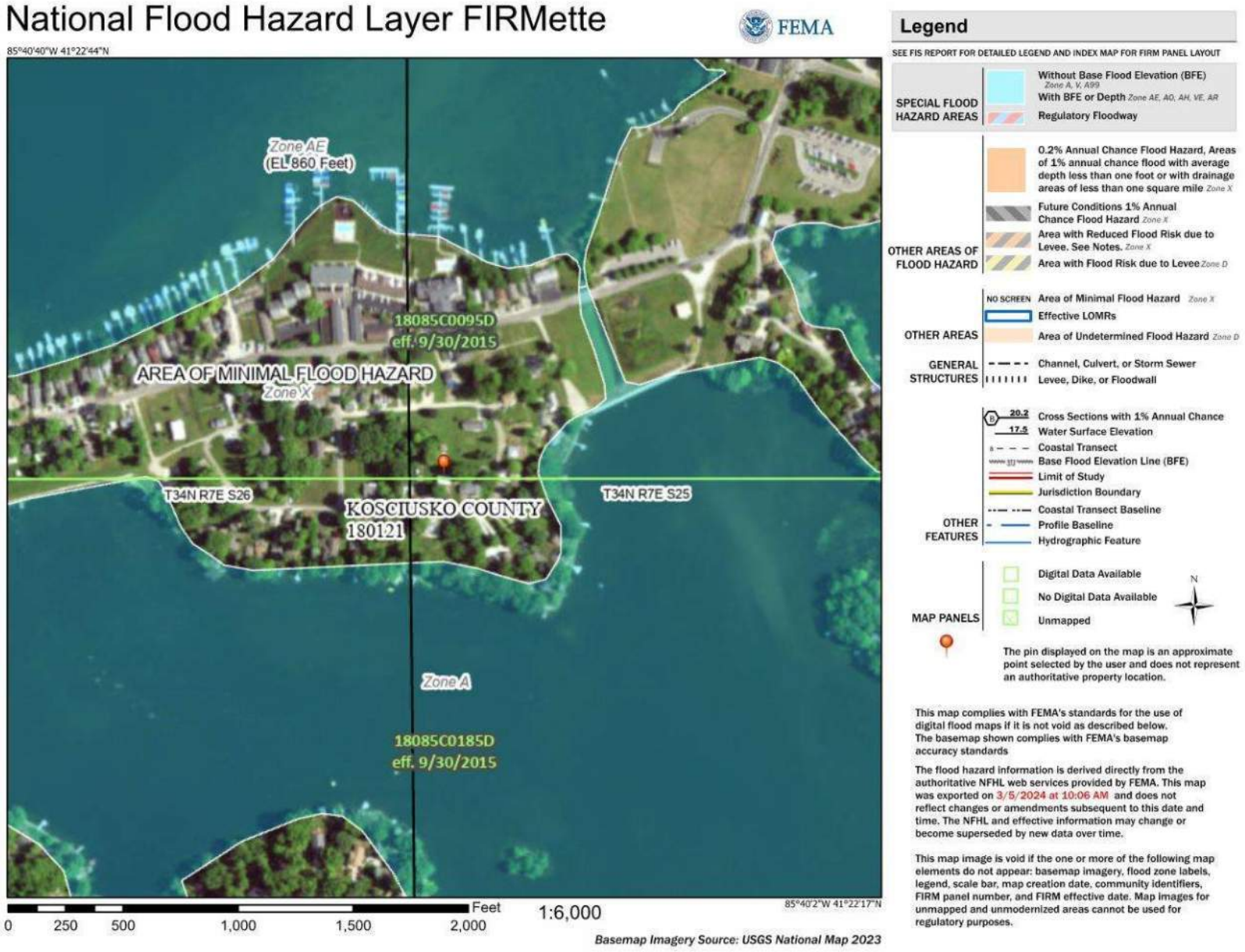
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/5/2024 at 8:26 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.
This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

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Papakeechie No 5
& Buttermilk LS Relocation

As Shown

**Figure 5.6c**
**Flood Plain Map**

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# APPENDIX D

## AC SOP

**Turkey Creek Regional Sewer District / TCRSD Water Utility**
**"Standard Operating Procedures for Working with Asbestos Cement Pipe"**

## A. PURPOSE:

Turkey Creek Regional Sewer District, aka TCRSD, places the highest value on employee safety. Being consistent in providing a safe and healthy workplace for all employees and to help make fieldwork as safe as possible, the following safe work procedures have been developed for repairing Asbestos-Cement pipe.

These procedures will assist TCRSD to establish itself as a leader in the water industry by providing their employees with training and equipment to protect themselves from hazards and injuries. Once hazards are identified and evaluated, every effort will be made to eliminate or control them through engineering or administrative measures. Good design and engineering practices will be used to eliminate or reduce hazards in the design of facilities and projects. But when hazards cannot be eliminated, Personal Protective Equipment (PPE) will be required.

This policy defines the use of appropriate work practices and PPE necessary to protect employees from hazards associated with working with Asbestos-Cement (AC) pipe.

All employees-managers, supervisors and staff-are responsible for the success of this policy and will be held accountable for deviations. Any violation of the policy will be subject to progressive disciplinary action, up to and including termination of employment.

## B. SCOPE:

Repair work involving disturbing and/or removal, of AC Pipe must follow the outlined safety procedures. This procedure applies to Water Utilities crews and contractors. No methods can be used that intentionally cause AC pipe to shatter, crumble, be pulverized, or release asbestos fibers. This means that we are not permitted to sand, power saw, grind, chip or use power tools on AC pipe. By using these methods, Indiana licensed asbestos abatement contractor and worker certification are not required.

## C. RESPONSIBILITIES

1. TCRSD will provide support and commitment to furnish affected employees with the appropriate training and equipment to protect themselves from known hazards working with and around AC pipe. Whenever possible, TCRSD will attempt to eliminate hazards of AC pipe by means of engineering controls and design.

2. The TCRSD Staff will provide and document all training and education for employees; and provide Supervisors with assistance and support in the administration and maintenance of the program.

3. The Managers and Supervisors will ensure that these procedures are implemented and ensure compliance within their respective departments and crews. They will also ensure that all equipment necessary for AC pipe work is available and in use whenever working with AC pipe.

4. The Employee is responsible for following the procedures, including utilizing training and equipment provided. Employees who violate this policy will be subject to disciplinary action.

5. Competent Person is capable of identifying existing and predictable hazards in the surroundings or work conditions which are unsanitary, hazardous, or dangerous to employees and has the authority to take prompt corrective measures to eliminate them.

*NOTE: It is important to note that the work practices and conditions describe in the policy must exist and be maintained at all times. If there are any deviations in conditions, practices or procedures outside the scope of the policy, a Competent Person must have a higher level of skills and training as outlined in OSHA's 1926.1101 Asbestos Standards and the EPAs 40 CFR 763.92*

D. TRAINING

1. All employees involved in AC pipe work must be Asbestos Awareness Trained. The training will include this safe work procedure.

2. Training will be refreshed at least annually or as needed.

3. All training and refresher sessions will be documented. Documentation will be filed with TCRSD Safety File system.

4. For the purpose of these Safe Work Practices, the training module attached will be deemed adequate.

E. <u>SAFETY PROCEDURES:</u>

1. <u>Wet methods</u> will be used to prevent release of airborne asbestos fibers. This requires use of a garden type sprayer with water to be used prior and during all work in AC pipe. The pipe exterior will be sprayed down prior to and during removal or repair work.

2. <u>No power tools</u> will be used on AC pipe. Only various approved hand tools will be used.

3. Approved tools:

   a. *Snap cutters* ("squeeze-and pop" equipment) operate by means of cutting wheels mounted in a chair wrapper around the pipe barrel. Hydraulic pressure, applied by means of a remote, pneumatically, or manually operated pump, squeezes the cutting wheel into the pipe wall unit the cut is made. This type of cutting with water sprayed minimizes the release of asbestos fibers.

   b. *Roll cutters* that cut the pipe as the cutting edge of the rollers are tightened clown as pressure is applied manually to the cutters as they circle the pipe. This type of cutting with water sprayed on the pipe minimizes the release of any asbestos fibers. Cutting wheels are wiped before use to remove any lubricant that might bond with any fibers and wiped cleaned after use.

   c. *Wet Tapping AC Pressure Pipe* for service connects is performed in the trench while the pipe is under pressure. The equipment is affixed to the pipe by means of a chain yoke. A combination boring-and-inserting bar drills and taps the pipe wall and inserts a corporation stop or pipe plug. The pressure chamber, which protects against water leakage, also catches the asbestos-cement chips, so this is essentially a dust-free operation. To minimize fouling of valves, regulators, meters, and other equipment with chips or unnecessary addition of asbestos to drinking water a positive purge or blow-off features should be used on the equipment. (NOTE: There will be no dry AC pipe tapping as only non-A.C pipe is used for new installation or repair). Bolts for all fittings and sleeves should be placed so the nuts are on the non-asbestos side of the pipe, which prevents the AC pipe from being, rubbed by the wrenching and tightening of the bolts.

   d. *Bristle Brush* to smooth cutting surface may be used only with copious water spray to suppress any dust.

   e. *Use of Cold Chisel and Hammer to remove coupling from AC pipe:* When possible, the intact section would be removed not requiring a coupler to be removed but this is not always possible. AC coupling removal must be done by gradually splitting the coupling lengthwise using a chisel and hammer. After the coupler has been split a crowbar or similar tool is used as a lever to split the bottom of the coupling. The pieces must be bagged in asbestos disposal bag(s).

      There are varieties of other fittings that are used to insert the pipe, including various pressure collars, which do not result in damage to the AC pipe.

   f. *Safety Equipment:* The AC pipe safety equipment will be available from the Turkey Creek Regional Sewer District before heading to the AC pipe work site. The equipment must include a laminated copy of this SOP, gloves, safety glasses, ear plugs, appropriate polypropylene suits, towels, hand cleaner, yellow disposal bags, clear disposal bags, duct tape, flash light, warning signs and barrier tape.

4. **Required Personal Protective Equipment:**

   a. Employee personal protective clothing: To further safeguard our employees' the following PPE is required:
      1 Polypropylene or disposable coveralls appropriate for the hazard
      2 Rubber boots
      3 Gloves with plastic cover hands and canvas back will be worn when working with AC pipe
      4 Safety Glasses
      5 While testing has shown that proper procedures do not result in any detectable fiber exposure employees have the option of wearing the N-100 disposable dust masks. Since exposure to asbestos occurs primarily through inhalation, the use of respiratory protection is strongly recommended.

NOTE: The use of disposable dust masks (N-100) is NOT an acceptable practice under the OR-OSHA Asbestos Standard (1926.1101). Air-purifying respirators equipped with N-100 cartridges are acceptable. While these procedures recognize airborne exposure to asbestos fibers from non-friable asbestos cement pipe would not pose a hazard, a best practice is to avoid using disposable dust masks (filtering face pieces) and to use air-purifying respiratory protection, even for voluntary use.

   b. The rubber gloves will have the tops rolled out 1 —1 ½" to form a cuff that can catch drips, etc. that might normally land on a body part.

   c. The coveralls will be secured and sealed to the ankles and wrists by applying duct tape at the cuffs if necessary.

5. **Establish a "Controlled Zone"**

   a. A "Controlled Zone" will be established for all work involving AC pipe. The following are guidelines for establishing and maintaining a "Controlled Zone".

      1. Establish a perimeter 5-10 feet back from the leading edge of any excavation, hole or trench.

      2. Set cones or barricades strategically around the perimeter.

      3. Thread "Danger Tape" around the perimeter and attached to the cones or barricades.

      4. Set the "Authorized Personnel Only" signs around the outside of the "Controlled Zone".

v. Only authorized and properly outfitted personnel may enter the "Controlled Zone".

vi. Any person and any equipment leaving the "Controlled Zone" must be subjected to decontamination as defined further in this document.

## 6. Disposal and Decontamination procedures

a. The Snap or Roll Cutter tool should be cleaned prior to use to reduce asbestos cement debris which could build-up on the blades during cutting

b. All removed AC pipe and debris will be wetted clown, collected, and placed in asbestos disposal bags. They will be taken to the asbestos disposal area at the main shop.

c. All tools that have been used to remove AC pipe must be wiped clean of debris with disposable cloths while still inside the "Controlled Zone". The cloths will be placed in Asbestos disposal bags and the bags will be sealed as defined above

d. The disposable coveralls and rubber gloves will be placed into the asbestos disposal bag while the workers are still inside the "Controlled Zone".

e. Rubber boots must be washed off removing dirt and debris while in the excavation with the garden sprayer.

f. Proper bagging will consist of placing the AC pipe and debris in a yellow hazardous waste bag and duct taping the top of the bag to seal it. The yellow bag will then be placed inside a clear disposal bag to ensure double-bagging can be verified. The 2nd bag must also have the top sealed with duct tape to ensure a seal.

g. Waterless hand cleaners and water will be available for employee's hand and face cleaning after removing the Personal Protective Equipment.

h. Once wiped clean, clean Snap or Roll Cutter and all other tools used at the shop and restocked on the crew vehicles.

## 7. *Periodic Air Re-monitoring*

If there are needed changes to work procedures or the condition of AC pipe is friable and unstable, work must cease immediately and all provisions of 1926.1101 apply. A Competent Person as defined by the Asbestos Standard must re-evaluate the situation to determine what actions are necessary, including air monitoring, respiratory protection, training, or any other required actions. Re-monitoring will be clone when the Competent Person has reason to believe that there has been a change in the operation, which could affect airborne exposure.

8. *Safe Work Procedure Checklist*

The Supervisor and crew mechanic will use, follow, and document safe work procedures on a checklist (attached). Notification to the Safety Office so that Key Performance Indicators can be verified is required.

a. Identify potential AC pipe work needs prior to job site work. This allows crew to ensure they have right equipment and procedures for working on AC pipe.

b. Ensure that crew has asbestos awareness training

c. Assemble basic protective equipment and tools, which is in good repair and clean:
   Disposable coveralls
   Rubber boots
   Rubber gloves
   Safety glasses
   Proper working order and clean tools including Snap or Roll cutters wiped before and after use to reduce and remove any fibers that may be on the cutters.
   Ensure all clean tools are available

d. Assembling Control Equipment
   Garden sprayer with adequate supply of water
   Large wipes for cleaning tools and equipment
   Asbestos Disposable Bags and duct tape
   Waterless hand cleaners
   Warning signs
   Barrier tape

***DOCUMENTATION:***

All training, refresher sessions, checklists and annual reviews or audits will be documented. Documentation will be filed with the Turkey Creek Regional Sewer District Safety File system.

## G. KEY PERFORMANCE INDICATORS:

1. Documentation of training, checklists and audits or reviews.

2. Field audits during actual operations.

## H. AUDITS AND REVIEWS

1. Field audits by the safety office or the supervisor will be conducted as opportunities present themselves using the utilizing the established jobsite inspection program.

2. Conduct SOP reviews whenever there is reason to believe or field audits indicate that there is a need to review and/or revise this SOP because of observed deviations and violations of this SOP.

3. Supervisors and safety staff are readily available to address employee concerns, questions, and/or assist with work activities

## I. ATTACHMENTS

Safe Work Procedure Checklist

# EQUIPMENT:

- O Roll Cutters or similar tool
- O Garden Sprayer w/adequate water reserve
- O Asbestos Disposal Bags and duct tape (yellow and clear bags)
- O Asbestos barrier tape
- O Rubber boots
- O Rubber gloves
- O N100 filtering face pieces
- O Waterless hand cleaner
- O Large wipes for tools & equipment
- O Asbestos Warning Sign
- O Hooded Tyvek disposable coveralls
- O Laminated SOP
- O Safety glasses
- O Pipe, collars, specific tools etc. required for the repair

By my signature, I verify that all the items above are on site or have been reviewed or verified.

**Crew mechanic or supervisor:** _____
**Print name**

**Address or site of work:** _____

**Date work conducted:** _____

SAFE WORK PROCEDURE CHECKLIST

The crew mechanic or the district supervisor will ensure this checklist is reviewed and completed before any work involving AC pipe commences. This checklist must be fully completed, signed and dated. The completed checklist will be forwarded to the TCRSD Risk Specialist.

**Training**

- All crew members have been trained to the SOP for AC pipe work. O Yes O No

| **Crew Members on site for repair** | **Training Date** |
|---|---|
| **1)** | |
| **2)** | |
| **3)** | |
| **4)** | |
| **5)** | |
| **6)** | |
| **7)** | |
| **8)** | |
| **9)** | |

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# APPENDIX E

## IDEM CORRESPONDENCE

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
*We Protect Hoosiers and Our Environment.*
100 N. Senate Avenue • Indianapolis, IN 46204
(800) 451-6027 • (317) 232-8603 • www.idem.IN.gov

**Eric J. Holcomb**
*Governor*

**Brian C. Rockensuess**
*Commissioner*

July 22, 2022

VIA ELECTRONIC MAIL

Mr. Jeffery Hersha, Principal, Office Director
Jones & Henry Engineers, Ltd.
2420 N. Coliseum Boulevard, Suite 214
Fort Wayne, Indiana 46805

Dear Mr. Hersha:

Re: Preliminary Effluent Limitations
Turkey Creek RSD WWTP Expansion
Permit No. IN0045802
Noble County

This letter is in response to your request for Preliminary Effluent Limitations (PELs) for a proposed expansion of the Turkey Creek Regional Sewer District Wastewater Treatment Plant (WWTP). As indicated in your request, the expansion will consist of modifying the 0.37 MGD WWTP to either a 0.5 or 0.6 MGD WWTP. The facility would continue to discharge via the existing outfall location to Cromwell Ditch to Meyer Ditch. The $Q_{7,10}$ low-flow of the receiving stream at the point of discharge is considered to be 0 cfs.

A Wasteload Allocation (WLA002648) analysis was performed by this Office's staff on June 30, 2022 for the proposed facility upgrades. The following effluent limits are appropriated for the aforementioned modified treatment facility with an average design flow of 0.6 MGD with continuous discharge to Cromwell Ditch to Meyer Ditch and would also apply to a design flow of 0.5 MGD:

Table 1

| | Summer | | Winter | | |
|---|---|---|---|---|---|
| Parameter | Monthly Average | Weekly Average | Monthly Average | Weekly Average | Units |
| $CBOD_5$ | 15 | 23 | 25 | 40 | mg/l |
| TSS | 18 | 27 | 30 | 45 | mg/l |
| Phosphorus | 1.0 | ---- | 1.0 | ---- | mg/l |

Table 2

| Parameter | Daily Minimum | Monthly Average | Daily Maximum | Units |
|---|---|---|---|---|
| pH | 6.0 | ---- | 9.0 | s.u. |
| Dissolved Oxygen | | | | |
| Summer | 6.0 | ---- | ---- | mg/l |
| Winter | 5.0 | ---- | ---- | mg/l |
| *E. coli* | ---- | 125 | 235 | count/100mL |

Table 3

| Parameter | Summer [1] | | Winter | | Units |
|---|---|---|---|---|---|
| | Monthly Average | Daily Maximum | Monthly Average | Daily Maximum | |
| Ammonia-N [1] | 1.1 | 2.5 | 1.3 | 3.1 | mg/l |

[1] The wasteload allocation analysis calculated a summer ammonia-nitrogen limit of 1.2 mg/l as a monthly average (2.9 mg/l as a daily maximum). The current permit summer ammonia-nitrogen limits are retained to comply with anti-backsliding regulations found in 327 IAC 5-2-10(a)(11)(A).

327 IAC 2-1.3 outlines the state's Antidegradation Standards and Implementation Procedures. According to 327 IAC 2-1.3-1(b), the procedures apply to a proposed new or increased loading of a regulated pollutant to surface waters of the state from a deliberate activity subject to the Clean Water Act, including a change in process or operation, that will result in a significant lowering of water quality. **As the proposed activities would not result in a significant lowering of water quality, the Antidegradation Standards and Implementation Procedures do not apply.**

For the above referenced discharge scenario, the following requirements will apply: Flow must be measured. The mass limits for parameters are calculated by multiplying the average design flow (in MGD) by the corresponding concentration value and by 8.345. Summer effluent limitations apply from May 1 through November 30 of each year. Winter effluent limitations apply December 1 through April 30 of each year.

The effluent limitations for *E. coli* are 125 count/100 mls as a monthly average calculated as a geometric mean and 235 count/100 mls as a daily maximum. The *E.coli* limits apply from April 1 through October 31 of each year.

The water quality-based limits set forth in this letter are based on the Indiana water quality standards in effect at this time and may not be the final limits once the NPDES permit is issued. If the water quality standards are modified by the Water Pollution Control Board and new water quality standards become effective prior to the date the

NPDES permit for your facility is actually issued, then the IDEM is required by law to issue the NPDES permit with limits based on the new standards.

Also, note that these preliminary effluent limitations are based upon a wasteload allocation analysis which mainly evaluated the typical conventional pollutants. Since the wastestream has not been fully characterized, IDEM reserves the right to establish effluent limitations for additional pollutant parameters as deemed necessary. This letter does not guarantee the approval of any permits.

In addition, Indiana Code 13-18-26 requires the permit applicant to certify that the following documents have been prepared and completed for new facilities and/or facility expansions with a design capacity above 0.10 MGD:

· A Life Cycle Cost-Benefit Analysis, as described in IC 13-18-26-3;
· A Capital Asset Management Plan, as described in IC 13-18-26-4; and
· A Cybersecurity Plan, as described in IC 13-18-26-5.

The certification of completion must be submitted to IDEM along with the permit application, and must be notarized. IDEM will not issue a permit to an applicant that is subject to IC 13-18-26 if the required certification is not included with the application packet, as required by IC 13-18-26-1(b).

The plans and analyses must be reviewed and revised (as necessary) at least once every five years. A new certification must be submitted to IDEM (with the NPDES renewal application) if any plan or analysis is revised during the five-year review.

If you have any questions regarding construction permits associated with the proposed facility upgrade, please contact Ms. Missy Nunnery at 317-232-5579. The NPDES permit modification will not be issued to reflect the upgrade until the construction permit is finalized. At a minimum, the modification request should be submitted at least 180 days prior to completion of the upgrade activities. Please be advised that the modification request must be accompanied by a $50.00 fee in accordance with IC 13-18-20-12.

If there are any questions regarding the NPDES permit requirements, please feel free to contact Jay Hanko at Jhanko@idem.IN.gov or 317233-0704.

Sincerely,

Leigh Voss

Leigh Voss, Chief
Municipal NPDES Permits Section
Office of Water Quality

Enclosures
cc: Timothy Woodward, Superintendent

# EXAMPLE

**IC 13-18-26 Certification of Completion**
**Wastewater**

Indiana Code 13-18-26 requires the permit applicant to certify that the following documents have been prepared and completed:

- A Life Cycle Cost-Benefit Analysis, as described in IC 13-18-26-3;
- A Capital Asset Management Plan, as described in IC 13-18-26-4; and
- A Cybersecurity Plan, as described in IC 13-18-26-5.

The certification of completion must be submitted to IDEM along with the permit application, and must be notarized. The plans and analyses must be reviewed and revised (as necessary) at least once every five years. A new certification must be submitted to IDEM (with the NPDES renewal application) if any plan or analysis is revised during the five-year review.

I hereby certify that I am an authorized representative for the permit applicant and pursuant to IC 13-18-26, the permit applicant has developed and completed a life cycle cost-benefit analysis; a capital asset management plan; and a cybersecurity plan that meet the requirements of IC 13-18-26-3, IC 13-18-26-4, and IC 13-18-26-5. To the extent required under IC 13-18-26-6, the plans and analyses are available for public inspection.

| _____ | _____ | _____ |
|---|---|---|
| Permit Applicant (Printed) | Signature | Date |
| _____ | _____ | _____ |
| Authorized Representative (Printed) | Signature | Date |
| _____ | _____ | |
| Notary (Printed) | Signature | |

My Commission Expires: _____

(seal)

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# APPENDIX F

## LEGAL & PUBLIC INFORMATON

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# APPENDIX G

## RESOLUTION APPROVAL

# TURKEY CREEK REGIONAL SEWER DISTRICT REGIONAL SEWER DISTRICT

RESOLUTION NO. 2

A RESOLUTION TO AUTHORIZE JAMES BOONE OR ROBERT DUMFORD TO MAKE APPLICATION(S) TO THE STATE REVOLVING FUNDS LOAN PROGRAM ON BEHALF OF THE TURKEY CREEK REGIONAL SEWER DISTRICT

WHEREAS, the Turkey Creek Regional Sewer District ("District"), located in Kosciusko County, Indiana, has plans for a wastewater project, which includes instillation of a sanitary sewer collection system for septic elimination in the Enchanted Hills subdivision as well as upgrading other District-wide facilities ("Project") and the District intends to conditionally proceed with the design and construction of the Project;

NOW, THEREFORE, BE IT RESOLVED by the Board of Trustees, the governing body of said District, that:

1. James Boone or Robert Dumford be authorized to make application for a State Revolving Fund loan for the Project and provide the State Revolving Fund Loan Program such information, data and documents pertaining to the loan process as may be required, and otherwise act as the authorized representative of the District.

2. The District agrees to comply with the Indiana Finance Authority, State of Indiana and Federal requirements as they pertain to the State Revolving Fund.

3. That two copies of this resolution are to be prepared and submitted as part of the District's Preliminary Engineering Reports for the Projects.

*Signature Page to Follow*

ALL OF WHICH IS DULY RESOLVED THIS 27th DAY OF MARCH 2025, BY A VOTE OF 4 FOR, -0- AGAINST, AND -0- ABSTAIN.

**Turkey Creek Regional Sewer District**

Robert D. Dunford V.P.

Attest