

MEMORANDUM



To: Mike Vinay, Director
From: Dave McCallops, P.E., Nicholas Barr, E.I.
Date: 04/15/2022
Subject: Sanitary Sewer Feasibility Study Update

Overview

Environmental Design Group (EDG) is pleased to present this update to Summit County Department of Sanitary Sewer Services (Summit County DSSS) of a study completed for Summit County DSSS by EDG in 2015.

The update is intended to provide a fresh look at the proposed service area and to develop options to provide wastewater treatment and sanitary collection services for the Village of Peninsula (the Village). The original study and this undated study is necessary because of the environmental impact of existing on-site and direct discharge treatment systems that are failing within the Village. The intent is to develop options for consideration by Summit County DSSS to provide centralized sanitary sewer service for the Village.

Several options were considered, and all of the options fell into one of two basic categories; 1 – Collect and transport the waste to an existing wastewater treatment plant operated by another entity outside of the Village limits, or 2 – Identify a location within the Village limits for the construction of a centralized wastewater treatment plant with a discharge to the Cuyahoga River or one of its tributaries. A total of five (5) different locations were selected and identified as the potential Wastewater Treatment Plant (WWTP) site. The other option is to transport the sewage out of the Village to a collection system that would discharge to an existing WWTP that would accept and treat the sewage. In either case, this study developed the collection system placement/location along with necessary pump stations to transport the sewage as needed to reach the existing or proposed WWTP sites.

Environmental Design Group is familiar with wastewater collection and treatment options for the Village of Peninsula based on previous studies. In 2004, Environmental Design Group was hired to complete a detailed study of the Village and developed options for the collection system and treatment options. In 2009, Environmental Design Group was asked by the Village to submit a proposal to update the costs and submit a grant application for grant funding, though the proposal was never signed, and the application was not submitted. In 2015, Environmental Design Group completed an update for Summit County DSSS that dealt with the development of an additional treatment process option using membrane bioreactor (MBR) technology.

A significant portion of this update identified potential locations for a Wastewater Treatment Plant within the Village and look at other options for taking the sewage collected to other treatment plants. The update reviewed and reconciled the previous studies, delineated the extent of sanitary collection within the Village limits, verified the preferred treatment process, included discussions with the Village to understand their concerns and objectives, and we held meetings with Cuyahoga Valley National Park (CVNP) and the non-profit Conservancy for CVNP to determine their intended or possible use of the former Brandywine Golf Course to understand the impact that might have on the WWTP location and size.

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Previous Studies

Previous studies concentrated on collecting and pumping the sewage to other locations for possible treatment. They identified possible alternatives for the sanitary sewer system in the Village of Peninsula. These included a series of gravity sewer to collect the sewage and then pumping the sewage out of the Village to:

- The City of Akron system
- The Northeast Ohio Regional Sewer District (Cleveland) system
- The Summit County system
- The Cuyahoga Falls system

An additional alternative investigated included the construction of a treatment plant within the Village. So, a total of five alternatives were identified.

Ultimately, the two alternatives that the County investigated further were:

- Connection to the Summit County Collection System on Quick Road. This requires multiple pump stations and force mains in series to overcome the 390-foot difference in elevation between Peninsula and the Summit County system.
- Construction of a WWTP within the Village.

Both of the above alternatives required the construction of a gravity sewer collection system within Peninsula that terminates at a pump station or a new treatment plant. No action was ever taken on either Alternative.

Updated Study with New Alternatives

Environmental Design Group was tasked with reviewing the previous sanitary collection system options and identifying wastewater treatment plant locations within the Village. Options to pump the collection sewage to other treatment facilities were also included, but we were to look for options beyond those previously investigated. EDG developed and analyzed four potential locations for a WWTP within the Village of Peninsula, see Figure 1, as well as an alternative for pumping the sewage out of the Village to City of Akron Pump Station #32 at the intersection of Akron-Peninsula Road and Towpath Boulevard or to the existing WWTP serving the Girl Scouts of Northeast Ohio Camp Ledgewood.

EDG first reviewed the zoning map, see Figure 2. Using the various zoning categories of the Village for existing structures and vacant lots, we determined the preliminary sanitary sewer service area and calculated the anticipated sewage flows within the Village to size the WWTP and/or pump stations. After discussions with CVNP and the Conservancy, the old Par 3 golf course and 18-hole Brandywine Golf Course were taken out of the service area and the anticipated sewage flows were reduced accordingly. After evaluation of the number of residences and businesses within the Village that could potentially connect to the system, a 65,000-gallon WWTP was determined to serve the existing and future needs of the Village

After the service area was finalized, see Figure 3, EDG laid out the sanitary sewer collection system with pump stations, as required, to accommodate the potential five WWTP alternatives within the Village, see Figure 4. This was accomplished by analyzing the topography within the service area of the Village to limit the number of pump stations needed to transport the sewage to the various WWTP locations.

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Finally, EDG performed a feasibility study for each of the five potential WWTP locations for the Village to determine the recommended and preferred option. Below describes each alternate in more detail.

WWTP Alternate 1 (Recommended Option)

The recommended alternative for the location of the proposed WWTP is shown in Figure 5. This location is in the Northeast corner of the Village, on Village-owned land used for storage of materials along Akron Peninsula Road. This location is relatively flat and isolated, so it would not be a burden or “eye-sore” to adjacent properties. In addition, the traditional biological treatment process selected by the County does not emit offensive odors if operated and maintained properly. Since it is a treatment process used throughout the Summit County DSSS system, it is anticipated that operations and maintenance will not be a concern or an issue for the WWTP.

Given the tight footprint of the area, the WWTP was laid out in a linear fashion which include the primary, secondary, and tertiary treatment processes. Once the treatment process is completed, EDG looked at two options to transport the treated sewage to the Cuyahoga River, See Figure 6. Discharge Option 1 includes 1,475 feet of 6-inch diameter gravity sewer pipe and/or forcemain to the Cuyahoga River. The Village would need to obtain three easements for this discharge option. Discharge option 2 includes 1,750 feet of forcemain and/or gravity sewer pipe to the Cuyahoga River, with no easements. These two discharge options will be further evaluated in the detailed design.

Since this is the recommended alternative, EDG developed an opinion of probable construction cost as shown in Exhibit 1.

WWTP Alternate 2

WWTP Alternate 2 is in the southwest corner of the sanitary sewer service area, directly west of the downtown area and a part of the Heritage Classical Academy property, see Figure 7. This location is very isolated and also very flat which is ideal for a WWTP, but it doesn't have a natural stream to accept the discharge creating potential effluent issues. Also, another downfall to this location is that it is uphill from the entire service area, thus calling for a second pump station to be added to the design to access the site. The gravity sewer on the west side of the river tends to want to flow naturally to the east towards the river, and vice versa on the east side of the river. In turn, if we attempted to eliminate the need for a second pump station, we would have to install gravity sewer flowing west against the grade, making the sanitary sewer much too deep, resulting in the option being more expensive and less feasible.

WWTP Alternate 3

WWTP Alternate 3 is in the northern part of the sanitary sewer service area, directly north of the downtown area and the Overflow Lot for Lock 27, see Figure 8. This area is open and very flat, making it an ideal location to consider as a part of our evaluation. Only one pump station for the collection system would be required for this option with minimal forcemain. One of the issues with this alternative is that it is located in the 100-year floodplain, calling for a fill of approximately 2 feet over the entire site. While placing the WWTP in the floodplain is possible, it does create potential permitting issues that may delay the project and might even eliminate the site for consideration. Another larger issue is that the site is located on federal land. Trying to purchase the land and a separate easement for the

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discharge line would be time-consuming and very likely problematic due to laws associated with the purchase and sale of federally owned land.

WWTP Alternate 4/Pumping out of the Village

WWTP Alternate 4 is different from the other alternatives in that it is located outside of the Village. The proposed WWTP would be placed where the existing WWTP is located at the Girl Scouts of NEO Camp Ledgewood, see Figure 9. This alternate was originally investigated as a way to locate the WWTP outside of the Village limits. However, this alternate requires two pump stations to pump up the old route for Akron-Peninsula Rd. and approximately 2 miles of forcemain to discharge the sewage to the Camp Ledgewood WWTP, see Figure 10. Subsequently, the existing WWTP would need to be upgraded to 65,000-gallons per day versus the 13,200-gallons per day it is currently rated. In addition, there will be a need for an anti-degradation study. In our discussions with Ohio EPA, there were concerns about Boston Run, the receiving stream, being able to accept the higher flow without the potential of significantly decreasing the loading limits allowed in the discharge.

WWTP Alternate 5

WWTP Alternate 5 is located within the Village but just outside of the sanitary sewer service area, on the west side of the river along Riverview Road and south of the roadway right-of-way of Church Street, see Figure 11. This alternate was considered due to its proximity to the Cuyahoga River, the isolated location from adjacent properties, and the property being owned by another governmental entity, the Summit County Metroparks. However, the topography for this option is on a 13% slope with 48%-73% slopes surrounding it, requiring a significant amount of grading to create a flat enough site to accommodate the WWTP. Access to this site would also be difficult for construction, plant operations, and maintenance given the steep slopes off of Riverview Road and Church Street.

Pumping out of the Village

This option included collecting the sewage and pumping the wastewater out of the Village to the Towpath Trail subdivision to a pump station (Pump Station #32) owned and operated by the City of Akron. The pump station eventually discharges for treatment at the City of Akron's Water Reclamation Facility, see Figure 12. This option requires approximately 5.35 miles of forcemain, numerous air releases, long retention times resulting in odor and corrosion issues at the receiving pump station, and a capacity analysis of Pump Station #32 that will likely result in the expense of upgrading the pump station to accept the sewage flow from the Village.

Discussions with CVNP and the Conservancy

EDG met with the Cuyahoga Valley National Park (CVNP) and the Conservancy staff on at least two occasions to discuss this project in more detail and to ascertain possible future development at the old par 3 golf course and the Brandywine Golf Course. The consensus from our meetings was that once the National Park Service receives ownership of the Brandywine Golf Course, it will likely be preserved as open space, so no future development is anticipated on the property. However, a portion of the par 3 golf course is being set aside and it is open to possible future development that will be limited. If developed in any way, CVNP and the Conservancy would like to see a possible event space with rentals of kayaks, possible water sports, and other park visitor services. The Conservancy purchased the land with funds from donors with specific expectations for the use or uses of the land, and from our

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discussions, it would appear they will likely conserve as much land as possible. With these limited new park services, little to zero sanitary flow will be generated and the WWTP size should not be affected.

Other discussions took place with CVNP regarding easements and other permits required for permission to cross under the Cuyahoga Valley Scenic Railroad for utility lines and for the discharge of the WWTP effluent. Due to the north-south linear arrangement of the railroad, any east-west utility lines under the Cuyahoga River will require some type of permission from CVNP. In discussions with Ms. Joan Sweeney-Dent, Business Management Specialist, and Ms. Kathleen Smoot, Permit Coordinator, of CVNP the following was discussed:

1. Easements are not granted for any utility. CVNP will instead enter into a Right-of-Way (ROW) Permit with 10-year renewals.
2. It's anticipated that there will be only one ROW Permit required for the entire project in lieu of separate ROW Permits for each utility crossing. The ROW Permit will require a map with survey information that indicates the location of each utility crossing or impact.
3. A Cost Recovery Fee will be required for the review of the ROW Permit.
4. A separate Construction Permit will be required from CVNP.
5. Included with the review of the Construction Permit will be an Environmental Compliance review.
6. The Environmental Compliance review will look at all possible impacts to the river, ecological systems, etc.
7. An Application Fee will be required with the submission of the Construction Permit application.
8. The ROW Permit and the Construction Permit will each take between two (2) to six (6) months for review by CVNP. The timing will depend on workload, incomplete submission, number of questions, inquiries of possible impacts, required changes, etc.
9. There will be a need for an insurance component with each permit. The limits of the insurance will be determined at the time of the permit submission.
10. Use and Occupancy fees won't apply to this project. These fees are typically associated with the rental of facilities.

Funding

Regardless of the selected alternative, finding the funds to make the project affordable for the construction of the project improvements is a key concern and the proposed improvements are beyond the Village's financial capabilities. Summit County and the Village of Peninsula are working together to develop a partnership and intend to work together to identify funding sources so the project continues to move forward.

Ohio EPA

Based on our discussions with the Ohio Environmental Protection Agency recognizes that individual on-site or direct discharge wastewater treatment systems in Peninsula are failing. As this project moves forward into the next steps of the planning and design process, their approval and support of the recommended alternative will be required.

As this will be a new direct discharge into the Cuyahoga River, an anti-degradation study meeting the requirements of the Ohio Administrative Code 3745-1-05 will need to be undertaken. In addition, an application for a new National Pollutant Discharge Elimination System (NPDES) permit will need to be submitted along with construction documents for the Permit to Install (PTI). For the treatment plant, the OEPA will establish discharge limits for various

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elements (nitrogen, phosphorus, oxygen, suspended solids, BOD, CBOD, and more) within the treatment plant effluent and those will be noted in the NPDES permit when issued to Summit County DSSS. Once the WWTP is put into service, the effluent will be tested and reports submitted monthly to the OEPA to demonstrate compliance with the NPDES permit.

Conclusion

EDG's recommended option is WWTP Alternative 1. We believe this provides the best service, isolation of the WWTP from adjacent properties, and can be more easily maintained and operated than other options within the Village. The outlet for this alternative, as for all the other alternatives, will require a permit to cross CVNP owned land before discharging into the Cuyahoga River. A schematic layout of the potential WWTP is shown in Figure 13.

We appreciate being a part of this update study and look forward to working on future projects with the County!

Regards,

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