

# **Two Lakes Collaborative Sewer Authority Preliminary Engineering Report**

## **WASTEWATER COLLECTION AND TREATMENT SYSTEM**

Two Lakes Collaborative Sewer Authority  
5435 Main Street  
Onkama, Michigan 49675

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## 1.0 PROJECT SUMMARY/NARRATIVE

The Two Lakes Collaborative Sewer Authority (TLCSA) was formed in 2017 with the mission of investigating the feasibility of constructing a sanitary sewage collection and treatment system for the participating municipalities; being the Village of Bear Lake and the Townships of Onekama, Bear Lake, and Pleasanton, all located in Manistee County, Michigan. While these municipalities cover a broad geographic area, the project is essentially centered around the lakeshores of Portage Lake and Bear Lake. With the large number of seasonal and year-round homes existing along the shores of these bodies of water, lingering concern about the future water quality of these lakes is mounting as development continues and small cabin sites get redeveloped into year-round homes. However, it is not the threat of development driving the investigation, but the potential issues caused by septic systems, the use of mounded drain fields, and the need for holding tanks in the area. Like so many lakeshore communities, the proposed project area is not without its issues related to septic systems, the granular soils in the area, or systems that provide very little natural treatment before the wastewater encounters the water table. To help protect the lake and subsequently the health and safety of the users of the resources, the TLCSA is investigating the development and construction of a wastewater collection system around each lake.

The proposed project includes constructing a low-pressure wastewater collection system around Portage Lake and Bear Lake that will connect to a regional treatment facility. The planning area for this project includes properties around Portage Lake (but outside of the Village of Onekama), Village of Bear Lake, Bear Lake Township, and Pleasanton Township. Currently, the entire project is proposed to be in existing public road rights-of-way or public lands, except for individual homeowner connections that will require permanent easements and additional property that the TLCSA may need to purchase for treatment and pumping facilities. Areas disturbed by the project will be restored with grass, roadway, sidewalk, etc. in an effort to return the land to its original state.

## 2.0 PROJECT PLANNING AREA

The planning area for this project is extensive and was developed to encompass the properties around Portage and Bear Lakes, along with those along the shores of Lake Michigan in the near vicinity of the Portage Lake watershed.

### 2.1 LOCATION

The project service area has been defined by each of the four municipalities included in the TLCSA. The service districts were determined by providing a basic service area map that included all parcels abutting the lakefront and adjacent road lots of both Portage and Bear Lakes within the TLCSA municipalities. Also included were all properties on the opposite side of the street where the sewer main or force main would be located.

These maps were reviewed by the municipalities and presented at public meetings where individual parcel owners were able to request inclusion or exclusion from the project area. Several lots and portions of the Village of Bear Lake requested inclusion and were added when the infrastructure required made sense to include them. Only a few areas were removed when requested. These areas generally included areas where development would not occur such as school-owned parcels, unbuildable lots, etc. It was stated in public meetings that any parcel not included in the initial service district would be required to pay all costs for any infrastructure needed to connect to the system, as well as the buy-in cost for the overall system, without the option of a 40-year special assessment payoff should they desire to connect in the future. This was also noted for owners with multiple adjacent parcels, where a single residence on multiple lots would not be able to develop those additional lots without paying the applicable connection fees.

Each municipality has defined the service district within its jurisdiction. Those areas are compiled into two major areas of the Bear Lake Service Area and Portage Lake Service Area. Maps of these areas and lists of the parcels included can be viewed in Attachment 1.

The transmission force mains connecting the service areas and treatment facilities would be located outside of the service districts, but specific force main routes and treatment facility locations will depend upon the treatment alternative chosen. Newly constructed treatment facilities are assumed to be located in between the two collection areas in order to minimize transmission distance.

The overall layout of the system, along with the properties that are currently included in the service district, can be viewed in Attachment 2.

### 2.2 ENVIRONMENTAL RESOURCES PRESENT

An environmental report has been completed for the area discussed in this report. An archaeological desk and field review have been completed with a recommendation of no significant impact due to the proposed project. This has been submitted to the State Historic Preservation Office, and an opinion of no adverse effect has been received. Due to private septic connections not being surveyed at this time, an unanticipated discoveries plan will need to be in place during construction.

## 2.3 GROWTH AREAS AND POPULATION TRENDS

The project planning area is primarily residential, although the force main portions will cross large areas of rural agricultural lands to get to the chosen treatment facility. Each municipality within the TLCSA has set the service district area within their individual municipal boundaries.

A table showing the population growth for the municipalities included in the TLCSA from 2000 through 2017 can be seen in Table 2-1 below. It should be noted that this table represents the municipalities in their entirety, whereas the TLCSA will be comprised of only a portion of each individual municipality.

Area	2000 Census	2010 Census	2017 Estimate	2000-2010 Change	2010-2017 Change	2000-2017 Change	Annual Change
Bear Lake Township	1,587	1,465	1,442	-8%	-2%	-9%	-0.5%
Bear Lake Village	318	286	280	-10%	-2%	-12%	-0.7%
Onekama Township	867	918	901	6%	-2%	4%	0.2%
Pleasanton Township	817	818	806	0%	-1%	-1%	-0.1%
Total Service Area	3,589	3,487	3,429	-3%	-2%	-4%	-0.3%

All municipalities except Onekama Township have seen negative population records and estimates over the 2000 to 2017 period, with the rate of decrease becoming smaller or slightly positive in the most recent estimates. Only Onekama Township has seen a net-positive growth over that time period.

Since our project service district includes only a portion of the municipalities that physically surround the lakes, the population is not expected to decrease as these are generally the most desirable locations and any vacancies are easily replaced. Onekama Township has the most vacant buildable properties within the service districts and has accounted for the potential future growth of its system based on vacant buildable parcels within their service district. The other municipalities are mostly built out within the service districts.

## 2.4 COMMUNITY ENGAGEMENT

The TLCSA was formed in 2017 after months of public meetings discussing the potential project. The TLCSA discussed and/or took public comments regarding the proposed project at almost all meetings held in 2018 and 2019. Most meetings were held during the warm weather months, and public attendance varied from only a couple of citizens to standing room only. All meetings were publicly advertised according to state statute.

All four municipalities had public meetings individually to present the project starting in the summer of 2018. Following the presentation meeting, most municipalities have since discussed the project as a standing agenda item to update the municipality, receive public input, determine and define the areas to be served by the proposed system, and discuss how parcels within the service districts will be assessed sewer rates.

Throughout the process, the Authority engaged the services of engineers, bond attorneys, municipal finance experts, municipal attorneys, and the local health department to assist in the public discussions on how the project may proceed and the potential impacts on individual residents and businesses. Projects of similar intent have been discussed and proposed several different times in the past, but ultimately all previous efforts failed.

Most meetings received input from the public both in support and against the project. Those against generally were concerned about any cost increase and usually noted a lack of documented environmental violations that would require action. Those for the project cited concern of the regional water quality, the steadily increasing regulation by governmental agencies to protect natural resources, and the potential to have some cost-sharing via multiple municipalities and possible grant opportunities in the event that the municipalities are required to take action in the future. The general feeling of the meetings is the public would be favorable for the project if the costs associated with it are not too high. Unfortunately, the term “not too high” has not been defined by the public as it varies significantly among individuals.

## 2.5 SERVICE DISTRICT AND MHI CALCULATION

The proposed TLCSA service district is shown on maps and listed by parcel in Attachment 1. The initial system was revised after a field review by United States Department of Agriculture (USDA) representatives in January 2021. At completion, the project would have 964 residential and 15 commercial service connections. The future buildout is anticipated to be 1,450 total connections. Table 2-2 below shows the number of residential connections per municipality and calculates the blended median household income of the proposed service area.

<b>Table 2-2. Future Number Connections Per Municipality</b>				
<b>Blended MHI Calculation</b>				
<b>Community</b>		<b># of Residential Connections</b>	<b>MHI from Census</b>	<b>Residential Flow or Number of Customers x MHI</b>
Onkama Township		482	\$42,083	\$20,284,006
Bear Lake, Village		68	\$35,625	\$2,422,500
Bear Lake Township		174	\$39,309	\$6,839,766
Pleasanton Township		240	\$37,250	\$8,940,000
	Total	964		\$38,486,272
Blended MHI =	\$39,924			

### 3.0 EXISTING FACILITIES

The sewage collection system will be an entirely new system serving areas with septic systems. These septic systems will be abandoned after the individual homes are switched over to the collection system. No collection system exists within the proposed service districts. Two of the potential treatment alternates investigated utilize existing facilities near the project service areas.

## 4.0 NEED FOR PROJECT

Comprised mostly of agricultural and residential uses, the municipalities that make up the Sewer Authority boast many miles of inland lake and Lake Michigan shoreline. The current population of all 4 municipalities is approximately 3,500 people. Currently, there are no public wastewater treatment or collection facilities within the municipalities that make up the Authority. Septic fields have been constructed and operated by individual properties to treat wastewater. Many properties have experienced problems with their septic systems and have constructed temporary and/or additional systems to handle their wastewater. Many of these failed or alternative septic systems are found adjacent to Portage and Bear Lake where the groundwater table is high and little treatment is anticipated prior to mixing with surface waters. This issue was especially evident last year given the record high water level of Lake Michigan. This can pose a severe health and safety risk to the users of the public water body, and over time can be detrimental to the health of the water body itself. With the large number of seasonal and year-round homes existing along the shores of these bodies of water, lingering concern about the future water quality of these lakes is mounting as development continues and small cabin sites get redeveloped as year-round homes.

To help protect the lake and subsequently the health and safety of the users of the resources, the TLCSA is investigating the development and construction of a wastewater collection system around each lake.

The TLCSA has received documentation from the Health Department to validate the environmental issues associated with the existing septic systems on the riparian lots, noting that over 50% of the systems do not meet the current regulations for onsite septic systems.

## 5.0 ALTERNATIVES CONSIDERED

To help protect the natural resources and the health and safety of its residents, the Sewer Authority is proposing to construct low pressure wastewater collection systems around Portage and Bear Lakes that will collect the waste and send it to an appropriate Wastewater Treatment Facility (WWTF). Except for individual service line connections, the entire project is proposed to be in existing public road rights-of-way, on public lands, or on lands to be purchased by the Authority if a treatment plant or lagoon needs to be constructed. Individual service line connections will require an easement for the installation of the selected system. The connection from the residence to the pump station and any associated work to abandon existing septic systems will be separated from the rest of the project and paid for separately by the individual parcel owner, including this cost in the special assessment charge.

Some of the alternatives considered require a substantial amount of land to be acquired to construct the treatment facilities. Current real estate listings show examples of 40-acre and larger parcels ranging from \$1,700 to \$3,000 per acre, as well as smaller 5- to 15-acre parcels ranging from \$3,000 to \$5,000 per acre, the difference likely being attributed to economies of scale. Due to the total amount of acreage required for some alternatives, multiple parcels may need to be purchased.

Cost estimates for all alternatives are based on a 2024 construction date using current national construction inflation reports resulting in a 15% cost increase above our previous cost estimates. The recent COVID-19 Pandemic has created unstable labor and material sourcing conditions where costs can vary significantly due to unexpected shortages. While this could lead to increased construction costs, at this time there is not sufficient data to predict if or how it will impact the project.

A multitude of alternatives for wastewater collection and treatment are available to most projects. The designer needs to consider many different aspects of a project when making a selection. Items such as construction cost, operation and maintenance (O&M) costs, and product availability are certainly factors. However, other factors such as geology, topography, groundwater elevation, and current surface improvements all play a big role in the selection of the wastewater systems. Due to the size, geographical area, and multiple potential solutions to address wastewater treatment for the proposed service area, it was agreed upon by the TLCSA, Rural Development representatives, and the engineer prior to starting the Preliminary Engineering Report that a specific list of alternatives would be investigated and included in the PER. The specific list of alternatives investigated are as follows:

### 5.1 COLLECTION ALTERNATIVES

1. Low pressure grinder pump collection system.
2. Low pressure septic tank effluent pump (STEP) collection system.

### 5.2 TREATMENT ALTERNATIVES

1. Treatment of the collected waste by the existing Little River Band of Ottawa Indians (LRBOI) WWTP.
2. Treatment of collected waste by the existing Village of Onekama Wastewater Treatment Facility.

3. Treatment of collected waste by a newly constructed mechanical WWTP owned and operated by the Sewer Authority.
4. Treatment of collected waste by a newly constructed wastewater lagoon system owned and operated by the Sewer Authority.

Each of these options is detailed in the following sections.

➤ ***Collection Alternative 1: Low Pressure Grinder Pump Collection***

A. Description

This alternative would collect the wastewater using small-diameter PVC or HDPE force mains and individual grinder pumps for each connection. This approach is widely used in situations where gravity flow is challenging due to a very flat ground surface and high groundwater.

This method allows for the installation of the force main to be done by horizontal directional drilling, which saves cost by removing the need to open-cut a trench that disturbs a large area of surface and requires, in most instances, dewatering of the open-cut trench. It is anticipated that each parcel and/or home would have its own grinder pump that would pump waste from the pump station to the force main out in the road. Due to the use of positive-displacement pumps, the need for an intermediate sewage lift station is only anticipated when flows or head exceed the capabilities of the individual residential pumps.

The funding for this alternate requires that the new grinder pump chambers, pumps, and force mains be owned and maintained by the TLCSA.

Once the waste is collected from the properties within the service district, it would then be transported to a wastewater treatment facility for treatment and disposal. The anticipated routes for this force main can be seen in Attachment 2 and vary depending on the treatment alternative chosen. Transmission from the collection system would be done using a duplex sewage pump station and force main, transporting the sewage to the treatment facility. If the treatment facility alternative of the LRBOI is chosen, a duplex sewage lift station will be used to transfer the waste from the Bear Lake Area to the Portage Lake Area, then another duplex station would be used to take all the waste further south to the LRBOI facility.

B. Design Criteria

1. Proposed system will include 964 residential service connections and 15 commercial service connections, with a total number of 1,450 parcels being assessed within the service district.
2. Every service connection is assumed to require 100 feet of service line and a septic system abandoned.
3. Low pressure sewers and force mains sized to provide a minimum of two feet per second flow velocity at average daily flow rates.

4. Directional drilling of service lines, as well as low pressure force main and transmission force mains will be utilized, reducing the restoration costs to service connection locations, and points of additional infrastructure or access are required such as intermediate lift stations, air relief valves, and cleanouts.
5. This system may not be suitable for all areas within the service district due to the seasonal nature of the lake front areas. Long periods of low use could result in settling and potential clogging of low-pressure force mains when flow is insufficient to keep solids suspended.

C. Map. The map of this alternative is shown in Attachment 2.

D. Environmental Impacts. This alternative would utilize directional drilling for main and service placement, reducing construction impact to localized points throughout the service areas as opposed to a trench installation where every foot of infrastructure impacts the surface environment. An Environmental Review has been completed with an opinion of no adverse effect received from SHPO.

E. Land Requirements. The low pressure and force main route are within existing road rights-of-way, and the individual service connections up to the individual grinder pump station will be within easements. Land or easements may need to be acquired for intermediate lift stations and for the transmission main pumping stations.

No easements or land purchase agreements have been made at this time. Upstream of the grinder pump station would be owned and maintained by the parcel owner.

F. Potential Construction Problems. There are many miles of proposed low pressure sewer and force main proposed so areas of poor soils, high groundwater, and conflicts with other utility infrastructure are likely to be encountered. However, since the installed sewer will be a pressure sewer, it is easy to adjust the location and/or depth to work around existing features and utilities.

G. Sustainability Considerations

1. This alternative requires electric power for each service connection and intermediate lift station. No septic tank pumping is required, reducing trucking and separate disposal of sewage solids.
2. Chemical addition is anticipated to reduce odors and maintain sewage quality for the time required to move the sewage from the individual service connection to the treatment facility.

H. Cost Estimates

1. The Preliminary Engineer's Estimate for this project can be reviewed in Attachment 4.
2. Total Project Capital Cost: \$34,477,000

➤ **Collection Alternative 2: Low Pressure STEP Collection**

A. Description

This alternative would collect the wastewater using small-diameter PVC or HDPE force mains, individual septic tanks, and effluent pumps for each service connection. This approach is widely used in situations where gravity flow is challenging due to a very flat ground surface and high groundwater. This method allows for the installation of the force main to be done by horizontal directional drilling, which saves cost by removing the need to open-cut a trench that disturbs a large area of surface and requires, in most instances, dewatering of the open-cut trench. It is anticipated that each parcel and/or home would have a new septic tank and effluent pump that would pump waste from the home to the force main out in the road.

Due to the use of positive-displacement pumps, the need for an intermediate sewage lift station is only anticipated when flows or head exceed the capabilities of the individual residential pumps.

The funding for this alternate requires that the new septic tanks and pumps be owned and maintained by the TLCSA. This adds maintenance costs as the TLCSA will be responsible for pumping each septic tank at regular intervals. We have assumed a five-year pump out interval, but the actual time will vary due to individual use. For low use residences, a ten-year pump-out may be adequate while high use facilities may need to be pumped every one to two years. We have assumed a cost to have tanks serviced by a local septic hauler.

Once the liquid waste is collected from the properties within the service district, it would then be transported to a wastewater treatment facility for treatment and disposal. The routes for this force main can be seen in Attachment 2 and vary depending on the treatment alternative chosen. Transmission from the collection system would be done using a duplex sewage pump station and force main, transporting the sewage to the treatment facility. If the treatment facility alternative of the LRBOI is chosen, a duplex sewage lift station will be used to transfer the waste from the Bear Lake Area to the Portage Lake Area, then another duplex station would be used to take all the waste further south to the LRBOI facility.

B. Design Criteria

1. Proposed system will include 964 residential service connections and 15 commercial service connections, with a total number of 1,450 parcels being assessed within the service district.
2. Every service connection is assumed to require 100 feet of service line, and a septic system is assumed to exist at each initial connection.
3. All the initial connections are assumed to need a new septic tank installed per recommendations by Rural Development staff.
4. Low pressure sewers and force mains sized to provide a minimum of two feet per second flow velocity at average daily flow rates.

5. Directional drilling of service lines, low pressure force main and transmission force mains will be utilized, reducing the restoration costs to service connection locations, and points of additional infrastructure or access are required such as intermediate lift stations, air relief valves, and cleanouts.

C. Map. The map of this alternative is shown in Attachment 2.

D. Environmental Impacts. This alternative would utilize directional drilling for main and service placement, reducing construction impact to localized points throughout the service areas as opposed to a trench installation where every foot of infrastructure impacts the surface environment. An Environmental Review has been completed with an opinion of no adverse effect received from SHPO.

E. Land Requirements. The low pressure sewer and force main route are within existing road rights-of-way, and the individual service connections from the road up to the individual effluent pump station will be within easements.

Land or easements may need to be acquired for intermediate lift stations and for the transmission main pumping stations. No easements or land purchase agreements have been made at this time. Upstream of the effluent pump, including the septic tank, would be owned and maintained by the parcel owner.

F. Potential Construction Problems. There are many miles of proposed low pressure sewer and force main proposed so areas of poor soils, high groundwater, and conflicts with other utility infrastructure are likely to be encountered. However, since the installed sewer will be a pressure sewer, it is easy to adjust the location and/or depth to work around existing features and utilities.

G. Sustainability Considerations

1. This alternative requires electric power for each service connection and intermediate lift station. The power requirements for the effluent pumps are slightly less than those for a grinder pump due to the solids being removed in a septic tank.
2. Each connection will have a septic tank that requires periodic pumping, trucking, and separate disposal of sewage solids.
3. Chemical addition is anticipated to reduce odors and maintain sewage quality for the time required to move the sewage from the individual service connection to the treatment facility.

H. Cost Estimates

1. The Preliminary Engineer's Estimate for this project can be reviewed in Attachment 4.
2. Total Project Capital Cost: \$34,267,000

➤ ***Treatment Alternative 1: Treatment by LRBOI***

A. Description

Once the waste is collected from the properties around Bear and Portage Lakes, it would then be transported to the LRBOI wastewater treatment facility for treatment and disposal. The proposed route for this force main can be seen in Attachment 2. Transmission from the collection system would be done using duplex sewage pump stations and force main, transporting the sewage to the LRBOI treatment facility, which is located approximately 4.5 miles south of Portage Lake.

Currently, the LRBOI states that the wastewater treatment facility is operating well under its treatment capacity and has 0.2 MGD capacity available for the TLCSA connection with minimal improvements required. The available capacity is an existing lagoon system that is currently unutilized. Correspondence from the LRBOI also states they would be willing to agree to expand as needed to meet future flows from the TLCSA.

With this alternative comes a large contingent of intergovernmental cooperation between the TLCSA, a Michigan municipal governmental entity, and the LRBOI, a sovereign nation. There have been many meetings between the two entities to discuss this option and both are open to it; however, more discussion is needed before formal agreements could be forged.

B. Design Criteria

1. Proposed system will include 964 residential service connections and 15 commercial service connections, with a total number of 1,450 parcels being assessed within the service district.
2. LRBOI has assessed its facility and provided estimates of improvements and associated costs for TLCSA connection to the facility.
3. Includes the cost of force main from Onekama Township to the LRBOI WWTP.

C. Map. The map of this alternative is shown in Attachment 2.

D. Environmental Impacts. Any impacts for this option would be minimal and localized at the site of the existing LRBOI treatment facility. Impacts from the installation of the delivery sewer (from collection to the treatment site) may arise. This route may need to be adjusted once the full Environmental Review is completed. An Environmental Review of this option was not performed.

E. Land Requirements. The force main route is within existing road rights-of-way, and all treatment will be at the existing LRBOI facility. Land or easements may be needed for the duplex lift station.

F. Construction Problems. No known construction problems are identified. The LRBOI will provide the design and construction of any needed improvements at the treatment facility.

G. Sustainability Considerations

1. This alternative utilizes an existing treatment facility with excess capacity, making the required improvements minimal.

H. Cost Estimates

1. The Preliminary Engineer's Estimate for this project can be reviewed in Attachment 4.
2. Total Project Capital Cost: \$8,787,000

➤ ***Treatment Alternative 2: Treatment of Wastewater by the Village of Onekama and/or construction of a new lagoon system.***

A. Description

The Village of Onekama operates its own Wastewater Treatment Facility located about two miles northeast of the Village. Treatment is handled through a lagoon system that is very common to older systems of smaller communities. Disposal of the treated wastewater is done through spray irrigation on crop fields a couple of miles northeast of the lagoon site.

Treatment of wastewater by the Village of Onekama has many technical hurdles. Discussions with the Village President have indicated that the plant is operating at its capacity. In 2003, the Village completed a lagoon and irrigation field rehabilitation project.

This project relined the lagoons and created a center-pivot irrigation field approximately two miles northeast of the lagoon fields. It does not appear that this project served to substantially expand the capacity of the plant.

While the Village has indicated they have space to expand the lagoons, the needed expansion to accept this project would more than double the existing facility size to accommodate the volume anticipated by the TLCSA's system. Moving forward with this option would place a large assumption that property can be secured to build new lagoons and expand the spray irrigation areas.

B. Design Criteria

1. Proposed system will include 964 residential service connections and 15 commercial service connections, with a total number of 1,450 parcels being assessed within the service district.
2. The Village of Onekama has assessed its facility and provided estimates of improvements and associated costs for TLCSA connection to the facility.
3. A lagoon and irrigation disposal system expansion would be required to accommodate the TLCSA proposed flows. Design information is included in Attachment 5. Since this requires infrastructure to treat the entire proposed TLCSA flow, the design is the same as if the TLCSA were to purchase land and construct their own facility.

4. Includes force main collection system to the proposed lagoon location assumed to be located between the two collection areas. Force main length is assumed to be approximately eight miles.

C. Map. A schematic layout of this alternative is shown in Attachment 5.

D. Environmental Impacts. Impacts for this option include a major expansion of the existing Village treatment facility, most likely on additional purchased properties. Impacts from the installation of the delivery sewer (from collection to the treatment site) may arise. This route may need to be adjusted once the full Environmental Review is completed. An Environmental Review of this option was not performed.

E. Land Requirements. The force main route is within existing road rights-of-way, and the treatment facility expansion will require up to 160 acres to be purchased for treatment and irrigation disposal. The Village of Onekama has offered to sell a portion of their existing property to the TLCSA if they are the chosen alternative. Land or easements may be needed for the duplex lift stations to get the sewage to the treatment site.

F. Construction Problems. Locating and acquiring land for this alternate may be challenging. A potential problem with the existing Onekama treatment site is a portion of the lands owned by the Village have been identified as having high nitrates, and most likely cannot be used for irrigation disposal. The existing lagoon site also has a large wetland on it making it unfeasible for treatment development.

G. Sustainability Considerations

1. This alternative utilizes an existing treatment facility between the two collection areas, reducing the pumping and force main length required.
2. Due to the lagoon treatment and irrigation disposal sites being separated by a substantial distance, pumping and a force main are required between the sites.

H. Cost Estimates

1. The Preliminary Engineer's Estimate for this project can be reviewed in Attachment 4.
2. Total Project Capital Cost: \$13,052,000

➤ ***Treatment Alternative 3: Authority-Owned Mechanical Wastewater Treatment Plant (WWTP)***

A. Description

This option would utilize a proposed WWTP constructed by the Authority. A potential location for the plant was chosen in order to complete the Environmental Review. The current landowner is open to selling the parcel; however, no purchase agreements have been made at this time. The site appears to be suitable for a mechanical WWTP with sufficient acreage for surface infiltration ponds for the effluent.

For purposes of cost estimates, a mechanical WWTP with the ability to add on treatment capacity as the system grows was assumed. The initial treatment capacity for the plant at the onset of the project was to be 180,000 gpd to accommodate the initial 1,065 REUs anticipated.

B. Design Criteria

1. Proposed system will include 964 residential service connections and 15 commercial service connections, with a total number of 1,450 parcels being assessed within the service district.
2. A preliminary design, equipment layout, and cost estimate were provided by a mechanical WWTP distributor.
3. Preliminary design assumes an onsite surface infiltration of WWTP effluent.
4. Plant location is assumed to be between the two service areas, reducing the distance the sewage needs to travel for treatment.
5. Cost includes the force main from the collection system to the treatment plant and assumes approximately eight miles of force main.

C. Map. A preliminary treatment facility layout of this alternative is shown in Attachment 6.

D. Environmental Impacts. Impacts for this option include constructing a treatment facility and effluent infiltration basins on a purchased parcel of property. An Environmental Review has been completed with an opinion of no adverse effect received from SHPO.

E. Land Requirements. The force main route is within existing road rights-of-way, and treatment facility expansion is assumed to fit within the 70-acre WWTP parcel included in the environmental review. Land or easements may be needed for the duplex lift stations to get the sewage to the treatment site.

F. Construction Problems. Locating and acquiring land for this alternate may be challenging, although this option is not nearly as land intensive as the lagoon treatment options.

G. Sustainability Considerations

1. This alternative utilizes a new treatment plant between the two collection areas, reducing the pumping and force main length required.
2. The treated water discharge will infiltrate onsite.

H. Cost Estimates

1. The Preliminary Engineer's Estimate for this project can be reviewed in Attachment 4.
2. Total Project Capital Cost: \$8,750,000

➤ ***Treatment Alternative 4: Authority-Owned Wastewater Treatment Lagoons***

A. Description

Treatment of wastewater by a TLCSA-owned lagoon system would be very similar logistically and cost wise to connect to the Onekama Village system. Wastewater would be treated in multiple cells, stored during the non-discharge months, and then disposed of through spray irrigation on crop fields as close as possible to the lagoon site. The primary difference between this alternative and Alternative 2 is the connection costs and land costs proposed by the Village of Onekama.

A preliminary design of a lagoon treatment system was performed and is included in Attachment 5. This alternative would place a large assumption that property can be secured to build new treatment and storage lagoons and the spray irrigation areas.

B. Design Criteria

1. Proposed system will include 964 residential service connections and 15 commercial service connections, with a total number of 1,450 parcels being assessed within the service district.
2. It is assumed they would be allowed to irrigate May through October 31, the same as the Village system.
3. Includes force main collection system to the proposed lagoon location assumed to be located between the two collection areas. Force main length is assumed to be approximately eight miles.

C. Map. A schematic layout of this alternative is shown in Attachment 5.

D. Environmental Impacts. Impacts for this option include the construction of a new treatment facility on multiple acquired properties. Impacts from the installation of the delivery sewer (from collection to the treatment site) may arise. This route may need to be adjusted once the full Environmental Review is completed. An Environmental Review of this option was not performed.

E. Land Requirements. The force main route is within existing road rights-of-way, and the treatment facility will require up to 160 acres to be purchased for treatment and irrigation disposal. Land or easements may be needed for the duplex lift stations to get the sewage to the treatment site.

F. Construction Problems. Locating and acquiring land for this alternate may be challenging. Some areas around the existing Onekama treatment site have been identified as having high nitrates, and most likely cannot be used for irrigation disposal, potentially limiting available properties.

G. Sustainability Considerations

1. This alternative assumes the proposed treatment facility will be located between the two collection areas, reducing the pumping and force main length required.
2. Due to the lagoon treatment and irrigation disposal sites possibly being separated by a substantial distance, pumping and a force main may be required between the sites. We have assumed a distance of one mile for this report.

H. Cost Estimates

1. The Preliminary Engineer's Estimate for this project can be reviewed in Attachment 4.
2. Total Project Capital Cost: \$13,010,000

## 6.0 SELECTION OF AN ALTERNATIVE

### 6.1 PRESENT WORTH (LIFE CYCLE) COST ANALYSIS

A Present Worth (life cycle) Cost Analysis has been performed for two collection alternatives and four treatment alternatives that were considered. The analysis entailed completing the Present Worth Analysis tables shown in Attachment 3. A summary matrix rating system is provided below.

### 6.2 MATRIX RATING SYSTEM OF PRESENT WORTH COST ANALYSIS

Following are two matrixes showing the results of the Present Worth Analysis. The first matrix shows the results of the collection alternatives analysis. The second matrix shows the results of the treatment alternatives analysis.

<b>Table 6-1. Matrix of Collection System Costs</b>		
	<b>Alternative No. 1: Low Pressure System with Grinder Pumps</b>	<b>Alternative No. 2: STEP Collection</b>
Initial Capital Costs	\$34,477,000	\$34,267,000
Annual Operations and Maintenance (O&M) Costs	\$562,000	\$631,000
Future Salvage Value	\$5,000	\$5,000
Present Worth of 40 Years of O&M	\$24,954,560	\$28,018,376
Present Worth of 40-Year Salvage Value	\$6,110	\$6,110
Total Present Worth	\$59,425,450	\$62,279,266
Funds to Set Aside Yearly for Short-Lived Depreciated Assets =	\$196,000	\$49,000

<b>Table 6-2. Matrix of Treatment Alternatives Cost</b>				
	<b>Alternative No. 1: Connection to LRBOI WWTF</b>	<b>Alternative No. 2: Connection to Onekama Village WWTF</b>	<b>Alternative No. 3: TLCSA Mechanical WWTP</b>	<b>Alternative No. 4: TLCSA Lagoon WWTF</b>
Initial Capital Costs	\$8,787,000	\$13,052,000	\$8,750,000	\$13,010,000
Annual O&M Costs	\$396,000	\$339,000	\$328,000	\$274,000
Future Salvage Value	\$10,000	\$195,000	\$75,000	\$195,000
Present Worth of 40 Years of O&M	\$17,583,640	\$15,052,662	\$14,564,227	\$12,166,458
Present Worth of 40-Year Salvage Value	\$12,220	\$238,293	\$91,651	\$238,293
Total Present Worth	\$26,358,420	\$27,866,368	\$23,222,576	\$24,938,165
Funds to Set Aside Yearly for Short-Lived Depreciated Assets	\$12,000	\$32,000	\$20,000	\$29,000

### 6.3 RESULTS OF PRESENT WORTH COST ANALYSIS

The Present worth Cost Analysis for the collection system alternatives resulted in relatively close life-cycle costs for the two systems investigated. The current present worth cost analysis calculation puts the life cycle cost of the STEP System higher than the grinder pump system, however it doesn't account for the much higher cost of short-lived assets due to the more expensive grinder pumps typically needing replacement more often than STEP pumps. There is also a concern of low flow periods in portions of the system due to seasonal homes where a low-pressure grinder pump system may allow solids to settle in the force mains causing backups and flow issues.

A review of the current treatment Present Worth Cost Analysis shows that the treatment option of constructing a mechanical WWTP has the lowest life cycle cost. The next lowest life cycle cost option is constructing a TLCSA lagoon WWTF followed by a connection to the LRBOI.

There is more initial capital costs and risks for increased costs involved with the TLCSA having its own lagoon WWTP. Procuring land, easements, and treatment and discharge permits could result in additional costs that are difficult to predict on a project that may not be completed for several years. The anticipated lower cost of annual O&M makes this option almost as cost effective.

A connection to the LRBOI provides a way to treat the waste without the TLCSA having to take on the responsibility of owning and operating a WWTP.

That responsibility includes having certified operators continuously in place, overseeing and making decisions on the maintenance and operation of a WWTP, and meeting required state and federal rules and permit requirements for treatment and disposal of the wastewater.

However, the reduced responsibility comes with less control over operational items and how they will impact customer costs over time. The treatment cost will be set by a separate entity and passed through to the users. An agreement to treat the wastewater for the full life of the Rural Development loan will be required, but cost controls will need to be negotiated and addressed by the TLCSA and LRBOI throughout the life of the agreement.

By constructing and operating their own mechanical treatment facility, the TLCSA would be able to make sure the treatment costs passed on to the customers will reflect the required operation, maintenance, and improvements that would directly affect the TLCSA customers. The costs would have to be born entirely by the TLCSA customers rather than spread amongst multiple municipal customers such as with a connection to a larger regional treatment facility like the LRBOI have in place.

## 7.0 PROPOSED PROJECT (STEP LOW PRESSURE SEWER COLLECTION AND MECHANICAL WWTP)

### 7.1 PROJECT DESIGN

1. Collection: Every connection will intercept the existing sanitary service line with a new septic tank and effluent pump that will allow solids to settle out in the tank and send the liquid waste into a low-pressure collection system. The collection system will have intermediate lift stations to assist the flow over the long distances around the collection areas. Ultimately, the flow for each lake area will culminate at a single duplex lift station where it will be transferred to the wastewater treatment facility. Service lines and the low-pressure collection mains will be directionally drilled where possible reducing disturbance to roads, driveways, and service connection areas. Restoration is assumed at each service connection and at intervals along the length of the collection main to account for bore and receiving pit restoration.
2. Transmission Force Main: A transmission force main will move the waste from the collection areas to the wastewater treatment facility location, which is assumed to be a 70-acre parcel of land located between the 2 collection areas. Additional lift stations are assumed to be required due to the elevation rise between the two collection locations. The transmission main is anticipated to be installed by directional drilling.
3. Treatment: A mechanical wastewater treatment facility is the most cost-effective treatment alternative based on this preliminary report. A WWTP that can be expanded to accommodate future expansion should be considered. A site between the two collection systems is assumed. Treated water discharge is assumed to be to infiltration beds at a suitable site.
4. System sizing is based on 1,065 REUs proposed initially, and 1,551 REUs proposed at full-service area buildout, with each REU contributing 167 gallons per day per RUS Bulletin 1780-2. Initial sewage flows for treatment anticipated at .18 MGD, future flows anticipated at 0.26 MGD.

### 7.2 PROJECT SCHEDULE

A project of this magnitude would be anticipated to take several years to complete. A potential schedule for project completion is as shown below.

**Table 7-1. Potential Schedule for Project Completion**

Complete Full USDA Application	November 2021
Legal and Design Phase	April 2020-June 2023
Project Bids Received	September 2023
Construction Begins (assumes one construction contract)	April 2024
Construction Complete	December 2025

The project timeline could vary based on when funding would become available and if multiple contracts for construction are issued.

If it is determined that the project will need to be phased due to funding, contractor availability, or other reasons, it is assumed that the treatment facility would be constructed first, followed by the transmission system, Portage Lake service area, and finally the Bear Lake service area.

The priority for constructing the service areas is not significantly different at this time so it could be rearranged as needed.

### 7.3 PERMIT REQUIREMENTS

This project would require multiple permits. A Michigan Department of Environment, Great Lakes and Energy Permit to Construct would be required for the collection, transmission, and treatment facility. A Wastewater Discharge Permit would be required for the treated wastewater disposal. Soil Erosion and Sediment Control Permits would be required anywhere the construction disturbed the ground surface. Land Use and Building Permits may be required for facilities on Authority-owned parcels such as the treatment facility and possibly the large transmission lift stations. Construction permits would be required from Manistee County Road Commission or the Michigan Department of Transportation for any work done within their respective rights-of-way.

### 7.4 SUSTAINABILITY CONSIDERATIONS

This project would be all new construction so the energy efficiency of all systems would be at current typical standards. Construction operations such as directional drilling for collection and transmission mains will minimize surface disturbance and tree removal required. The installation of this system should decrease the potential for sewage to directly affect the surface water quality of the lakes they surround.

### 7.5 TOTAL PROJECT COST ESTIMATE

An itemized estimate of the total project cost is attached in Attachment 4. The Initial Capital Cost for this option includes the collection system, the transmission system, and treatment facility for a total of \$43,017,000.

Some additional project costs are anticipated and included in the initial capital cost. These costs include a loan or line of credit for the first year of operation to cover O&M costs until the TLCSA begins to collect user fees. The amount is assumed as one-half year of O&M costs of \$480,000.

When Rural Development funding is proposed, the loan and grant agreements are finalized only after contractor bids have been received to construct the project. This leaves a funding gap between the time the project design and legal work for property and easement acquisition have been completed and when bids are received. To cover these costs, a Bond Anticipation Note (BAN) is assumed to be required and its repayment and associated interest have been added into the cost of the project. It is assumed that three-fourths of the legal, design, and construction service costs at a total of \$3,961,000 will need to be covered under the BAN at an interest rate of 5% for 1.5 years resulting in an additional \$297,000 interest that will need to be paid.

Capitalized interest has also been accounted for assuming that half of the total project costs will be incurred in the first year and the remainder in the second year resulting in an average amount borrowed of \$31,097,000 over 2 years at the poverty interest rate of 1.25%. This adds an additional \$777,000 to the total amount borrowed.

The resulting total project cost for this option is \$43,017,000. The PER summary tables and supporting calculations are included in Attachment 7.

## 7.6 ANNUAL OPERATING BUDGET

The proposed rate schedule based on a loan only financing scenario includes annual payments of \$1,373,163 for the bond and an O&M cost of \$959,000. Short-lived asset reserves are not included in the O&M costs. An operating budget for the first year after operation is included in the PER Summary Tables in Attachment 7.

## 7.7 OPERATIONS AND MAINTENANCE (O&M) COSTS

O&M costs are provided for the selected alternative and can be seen in Attachment 4 and in the operating budget in the PER Summary Tables in Attachment 7. The anticipated annual cost for operation and maintenance is \$959,000. This includes all anticipated costs associated with the operation and maintenance of the proposed facilities including wages, benefits, and supplies.

## 7.8 DEBT REPAYMENTS

The proposed debt repayment will be dependent upon the funding scenario provided by Rural Development and the actual amount spent on the project. Based on the costs used in this report and a loan only financing scenario, the annual debt repayment will be \$1,373,163. This would be paid by a special assessment of all buildable parcels within the service district. The PER Summary Tables are included in Attachment 7.

## 7.9 RESERVES

The capital costs of this project will be paid for by a special assessment of all buildable parcels within the service district. No bond reserves are required for bonds that have a special assessment as their security.

A repair, replacement, and improvement reserve is required and anticipated to be \$71,000 to cover short term assets that the system may need.

## 8.0 CONCLUSIONS AND RECOMMENDATIONS

### 8.1 CONCLUSIONS

The TLCSA has multiple options for collecting and treating wastewater. Based on the information within this report, the most cost-effective solution based on life cycle cost analysis is to construct and operate a mechanical WWTP. While not the most cost-effective solution based on the current Present Worth cost analysis, the best fit for a collection system is a STEP low pressure sewer system due to the seasonal nature of some portions of the project service area.

### 8.2 COST SUMMARY

The total capital cost for a STEP low pressure sewer system and a mechanical WWTP is estimated at \$43,017,000. The estimated O&M costs are expected to be \$959,000 annually. The total net present worth of the STEP low pressure sewer system is \$62,279,266 and \$23,222,576 for the mechanical WWTP treatment system.

This report assumes a 0% grant funding scenario. The TLCSA is eligible for up to a 75% grant based on the Annual Median Household Income and correspondence from the Local Health Department's review of the service area stating that 51% or more of the existing septic systems are failing or do not meet current standards.

### 8.3 RECOMMENDATIONS

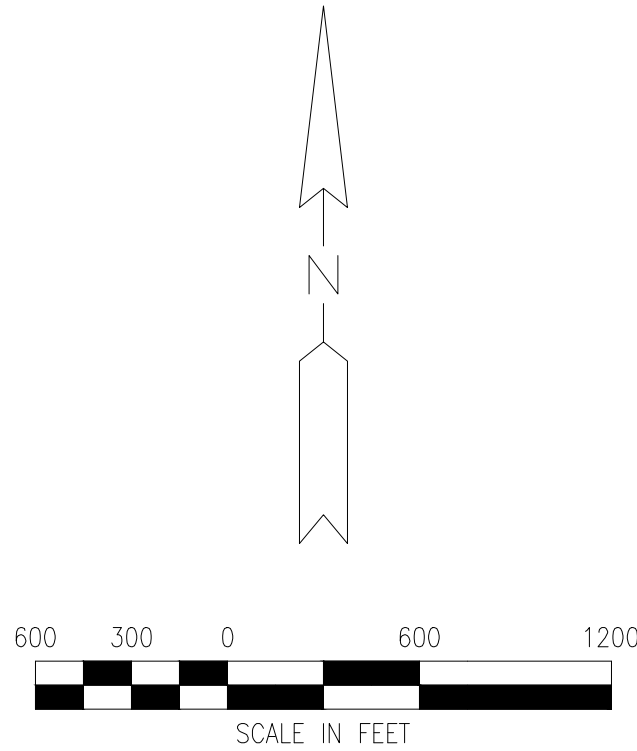
Based upon the information within the Preliminary Engineering Report, we recommend the TLCSA pursue funding for a STEP low pressure sewer collection system, transmission main, and an Authority-owned mechanical wastewater treatment facility.

ATTACHMENT 1  
SERVICE DISTRICT MAPS AND PARCEL LISTS

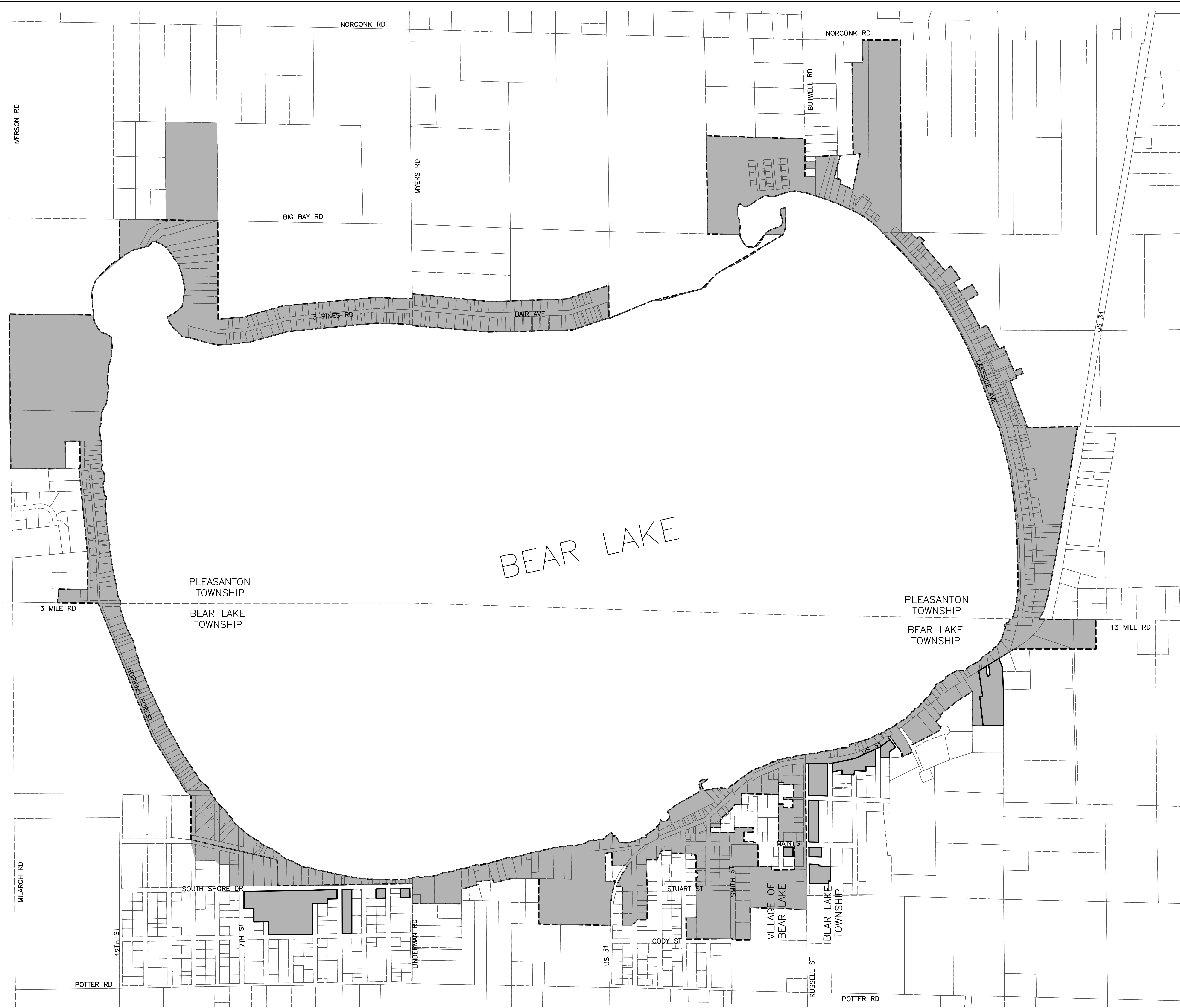
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PROJECT MANAGER: BRIAN SOUSA, PE  
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FIELD BOOK INFORMATION:



- = SANITARY SEWER COLLECTION DISTRICT BOUNDARY LINE
- = PARCEL WITHIN DISTRICT



**TWO LAKES SEWER AUTHORITY**  
**5435 MAIN ST**  
**ONEKAMA, MI 49675**  
SEWER STUDY FOR USDA FINANCING APPLICATION  
BEAR LAKE AREA SERVICE DISTRICT

ISSUED FOR: \_\_\_\_\_ DATE: \_\_\_\_\_ BY: \_\_\_\_\_  
JOB NO. \_\_\_\_\_  
TLS2001.01C  
SHEET  
**BL**

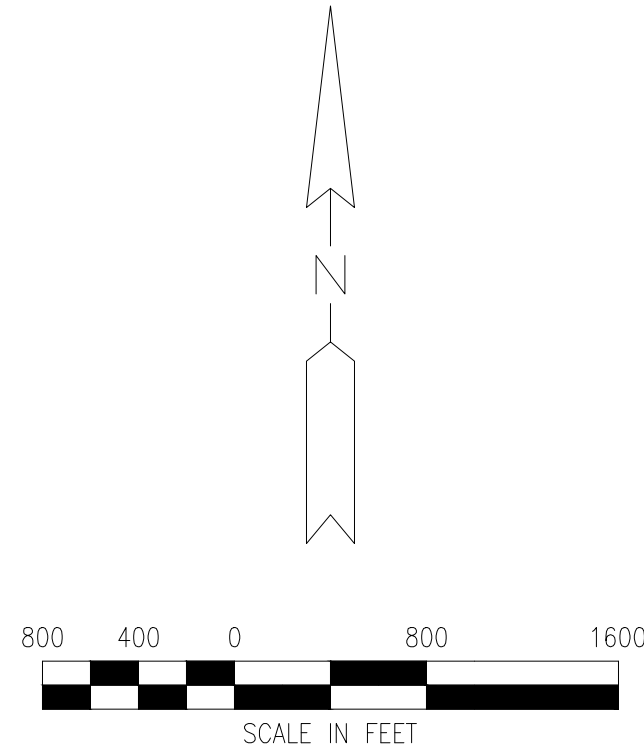


10850 East Traverse Highway, Suite 2260  
Onekama, MI 49664  
www.wadetrim.com

REV#	DATE	DESCRIPTION
3	2/22/2021	FULL RD APPLICATION REVISIONS
2	2/5/2019	SEWER DISTRICT BOUNDARY
1	9/4/2018	SERVICE AREA BOUNDARY

PROJECT MANAGER: BRIAN SOUSA, PE  
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LAKE MICHIGAN



- = SANITARY SEWER COLLECTION DISTRICT BOUNDARY LINE
- [Hatched Box] = PARCEL WITHIN DISTRICT



**TWO LAKES SEWER AUTHORITY**  
**5435 MAIN ST**  
**ONEKAMA, MI 49675**  
SEWER STUDY FOR USDA FINANCING APPLICATION  
PORTAGE LAKE AREA SERVICE DISTRICT

ISSUED FOR: \_\_\_\_\_ DATE: \_\_\_\_\_ BY: \_\_\_\_\_  
JOB NO. **TLS2001.01C**  
SHEET **PL**



10550 East Traverse Highway, Suite 2260  
Onekama, MI 49664  
www.wadetrim.com

REV#	DATE	DESCRIPTION
3	2/22/2022	FULL RD APPLICATION REVISIONS
2	2/5/2019	SEWER DISTRICT BOUNDARY
1	9/4/2018	SERVICE AREA BOUNDARY

## Onekama Twp - Parcels in Proposed Sewer District

Parcel Number	Owner Name Per County GIS Records	Parcel Street Address	REU
11-032-005-00	CARTER WILLIAM & SUE TRUST &	1980 CRESCENT BEACH RD	2
11-032-005-10	MAYLEN DAVID M III & ELAINE R	7810 EDGEWATER	1
11-032-005-15	FOX CAROL C SWAN TRUST		1
11-032-005-20	ACTON EDWARD TR & ACTON MARGARET TR		1
11-032-005-25	ACTON EDWARD TR & ACTON MARGARET TR		1
11-032-006-00	BERKLUND KEVEN & ARLENE (LE) &TRUST	1969 CRESCENT BEACH RD	2
11-032-007-00	KIESLER GEORGE & KUST AMY & ETAL	1963 CRESCENT BEACH RD	1
11-032-008-00	BERKLUND KEVEN & ARLENE (LE)&TRUST	1955 CRESCENT BEACH RD	1
11-033-001-05	GARBRECT ALLEN & BONNIE TRUST	1985 SECOND ST	1
11-033-002-00	HARDENBERGH JORDON T &JACQUELINE T		1
11-033-003-50	HARDENBERGH LEWIS R TRUST	2290 CRESCENT BEACH RD	1
11-033-003-60	BROOKS WENDELL M & KARIN	1971 SECOND ST	2
11-033-004-05	HARDENBERGH JOHN T (LE) TRUST	2370 CRESCENT BEACH RD	2
11-033-004-15	HARDENBERGH JOHN T (LE) TRUST	2340 CRESCENT BEACH RD	1
11-033-004-20	BROOKS STEVEN NATHAN &	1931 SECOND ST	1
11-033-004-25	BROOKS BRUCE ALEXANDER & SUSAN ANNE	1961 SECOND ST	1
11-033-009-00	ASCHAUER MARTIN & ANN	2438 CRESCENT BEACH RD	1
11-033-009-10	NORBECK DANIEL W & CYNTHIA L	2398 CRESCENT BEACH RD	2
11-033-011-00			1
11-033-012-00	GRIFFITHS MARY		1
11-033-013-00	ASCHAUER MARTIN & ANN		1
11-033-014-00			1
11-033-014-03	GRASSA ROBERT TRUST (LE) &	2570 CRESCENT BEACH RD	1
11-033-014-05	GILBERT ROY N & CONSTANCE L		1
11-033-014-07	PRATT JAMES M & JANET E	2642 CRESCENT BEACH RD	1
11-033-014-10			1
11-033-014-20			1
11-033-015-00	SCOTT MICHAEL T	2536 CRESCENT BEACH RD	1
11-033-016-10			1
11-033-016-20			1
11-033-018-05	HENSEL LYNISE TRUST		1
11-033-018-10	CENTILLION GROUP LLC	2768 CRESCENT BEACH RD	1
11-033-018-15	HENSEL LYNISE TRUST		1
11-033-018-20	GRIFFITHS MARY N		1
11-033-020-00	SCRUGGS LESLIE S & JACQUELYN S		0
11-034-001-00	PORTAGE PROPERTIES LLC	3452 CRESCENT BEACH RD	1
11-034-002-00	TOMLINSON RICHARD G TRUST	3498 CRESCENT BEACH RD	1
11-034-003-00	BOGAERT FREDERICK A TRUST	3380 CRESCENT BEACH RD	1
11-034-004-00	MAY DOUGLAS A TRUST		1
11-034-004-10	MAY DOUGLAS A TRUST	3300 CRESCENT BEACH RD	1
11-034-004-20	MAY DOUGLAS A TRUST		0
11-034-005-00	BOGAERT FREDERICK A TRUST		1
11-034-006-00	CALAIS TIMOTHY R TRUST &	3246 CRESCENT BEACH RD	2
11-034-006-10	BARZ MARILYN TRUST	3244 CRESCENT BEACH RD	1
11-034-007-00	RISSE DENNIS & PATSY	3248 CRESCENT BEACH RD	1
11-034-009-00	SOET JAMES R (LE) TRUST &	3198 CRESCENT BEACH RD	1
51-252-001-00	BALDWIN JAMES C & DEBRA S	1 HARBOR POINT LN	1
51-252-001-00	BALDWIN JAMES C & DEBRA S	1 HARBOR POINT LN	1
11-034-010-00	MAY NANCY E TRUST	3180 CRESCENT BEACH RD	1
11-034-011-00	BENEKE HENRY III TRUST	3162 CRESCENT BEACH RD	1
11-034-012-00	LINDBERG EDWARD & MARY	3140 CRESCENT BEACH RD	1.5
11-034-012-10	AGERSON KIRK & CATHY (LE) TRUST	3136 CRESCENT BEACH RD	2
11-034-013-00	ANDERSON ROBERT & AMY	3122 CRESCENT BEACH RD	1
11-034-014-00	LOYNES JACK L & KATHLEEN A TRUST	3100 CRESCENT BEACH RD	1
11-034-016-10	HENSINGER IRENE DEVAUX	3011 CRESCENT BEACH RD	0
11-034-020-00	GODZINA LAYNE C & JANA L TRUST	3801 KENDALL ST	1

## Onekama Twp - Parcels in Proposed Sewer District

Parcel Number	Owner Name Per County GIS Records	Parcel Street Address	REU
11-034-020-50	SCHIMKE LARRY LEE & MARTHA ANN	3835 KENDALL ST	1
11-034-021-00	MARTIN MARIETTA MAGNESIA SPECIALTIE		1
11-034-021-10	PETERSON MILTON O JR &	7429 LEONARD AV	1
11-034-023-00	CICHY MICHAEL & NANCY D	7449 LEONARD AV	1
11-034-024-00			1
11-034-025-00	GEM PARTNERSHIP		1
11-034-026-00	BROMLEY WILLIAM H & NANCY J		1
11-035-005-00		CRESCENT BEACH RD	1
11-035-021-00	VASILNEK KENNETH R & CYNTHIA M	4507 CRESCENT BEACH RD	1
11-035-021-05	GEORGE LEE F & CARMEN M	4513 CRESCENT BEACH RD	1
11-035-021-10	BURRUS CAROLYN J TRUST	4511 CRESCENT BEACH RD	1
11-035-023-00	WISNISKI JAMES L SR & YOLANDA	4595 CRESCENT BEACH RD	1
11-035-023-05	HASKE MICHAEL GARY & AMY	4631 CRESCENT BEACH RD	1
11-035-023-15	GREEN DENNIS W	4599 CRESCENT BEACH RD	1
11-035-024-00	IOCCO DOMINIC A & HAVEY ADAM R	4519 CRESCENT BEACH RD	1
11-035-025-00	HENGY LISA A	4729 CRESCENT BEACH RD	1
11-035-025-10	MACARTHUR BRENT & RASHEL	4735 CRESCENT BEACH RD	1
11-035-027-00	ZIMMERMAN ROGER &	4522 CRESCENT BEACH RD	1
11-035-028-00	MARLETT PAUL & PAMELA	4532 CRESCENT BEACH RD	1
11-035-029-00	BIRD ROBERT A & JULIA L	4554 CRESCENT BEACH RD	1
11-035-030-00	WISNISKI JAMES & YOLANDA & SKYLAR	4751 CRESCENT BEACH RD	1
11-035-031-00	VANDENBERG CHARLES IV & RACHEL	4807 CRESCENT BEACH RD	1
11-035-031-10	WILLINGER MICHAEL SR		1
11-035-032-05	BROWN GREGORY A & SALLY J	4781 CRESCENT BEACH RD	1
11-035-032-10	ROBINSON NATHAN & SHELLEY	CRESCENT BEACH RD	1
11-035-032-15	TENNANT DARWIN		0
11-035-033-00	LIBEY TAMMY L &	4849 CRESCENT BEACH RD	1
11-035-033-05	READ JUDY R TRUST		0
11-035-033-10	PEPPERS EVA JEAN		1
11-035-034-00	BEARDSLEE MARY I	7198 FARR RD	1
11-035-034-05	ZELLER JEFFREY ALLEN & SARA		1
11-035-035-20	ZELLER JEFFREY ALLEN & SARA		1
11-035-037-00	SCHROEDER PAMELA M TRUST	4829 CRESCENT BEACH RD	1
11-035-038-00	WILKOSZ DANIEL S & MARY KAYE &	4941 CRESCENT BEACH RD	1
11-035-039-00	ENGLISH FRANK & LINDA	4861 CRESCENT BEACH RD	1
11-035-040-00	BRZESKI ROBERT ETAL	4968 CRESCENT BEACH RD	1
11-035-041-00	ROSS ERIC J	4985 CRESCENT BEACH RD	1
11-035-042-00	WEST SHORE BANK	4427 CRESCENT BEACH RD	1
11-036-004-00	BINGHAM BARBARA MULBERRY (LE)	7865 FIRST ST	1
11-036-005-00			1
11-036-006-00	MANISTEE COUNTY	7545 FIRST ST	1
11-036-007-05	MANTHEY JOHN & DEBBIE, PEPERA LISA		1
11-036-009-00	BEHLING BARBARA J	5307 CRESCENT BEACH RD	1
11-036-010-00	CLEMENT ROLAND E & MARLENE	5240 CRESCENT BEACH RD	1
11-036-011-00	ACKER WILLIAM H ET UX	5264 CRESCENT BEACH RD	1
11-036-012-00	MADSEN CHARLES CRESCENT BEACH TRUST	5290 CRESCENT BEACH RD	1
11-036-013-00	MCCARTHY DENNIS B TRUST	5061 CRESCENT BEACH RD	1
11-036-014-00	CRUICE TERENCE & GLORIA	5016 CRESCENT BEACH RD	1
11-036-015-00	MCCARTHY DENNIS B TRUST		1
11-036-016-00	HARRISON ELIZABETH ANNE (LE) &TRUST	5224 CRESCENT BEACH RD	1
11-036-017-00	WEBSTER DENNIS & LAURI	5196 CRESCENT BEACH RD	1
11-045-002-00	PLAGANY THOMAS C & ELAINE W	4472 CRESCENT BEACH RD	1
11-045-004-00	STANDALE LUMBER CO		1
11-045-004-01			1
11-045-004-02			1
11-045-004-03			1

## Onekama Twp - Parcels in Proposed Sewer District

Parcel Number	Owner Name Per County GIS Records	Parcel Street Address	REU
11-045-004-04			1
11-045-004-05			1
11-045-004-06			1
11-045-004-07			1
11-045-004-08			1
11-045-004-09			1
11-045-004-10			1
11-045-004-11			1
11-045-004-12			1
11-045-004-13			1
11-045-004-14			1
11-045-004-15			1
11-045-004-16			1
11-045-004-17			1
11-045-004-18			1
11-045-004-19			1
11-045-005-00	MROZINSKI JAMES A TRUST	4366 CRESCENT BEACH RD	1
11-045-006-00	ONEKAMA MARINE INC	4378 CRESCENT BEACH RD	1
11-045-007-00	MROZINSKI JAMES A TRUST		1
11-045-008-00	FEAGINS HARLESS W JR &	7397 ELLEN RD	1
11-045-009-00	FEDERAL HOME LOAN MORTGAGE CORP	7419 ELLEN RD	1
11-045-010-00	MARKOWSKI THOMAS P & BETH A TRUST	7447 ELLEN RD	1
11-045-011-00	GREAT LAKES CONFERENCE OF	7475 ELLEN RD	1
11-050-001-00	HARTRICH NELSON TRUST	3060 CRESCENT BEACH RD	1
11-050-002-00	BUCHHOLZ ROBERT J & JEANINE S	7384 SECOR AV	1
11-050-003-00	BUCHHOLZ ROBERT & JEANINE	CRESCENT BEACH RD	1
11-050-004-00	NOONAN JAMES & LAUREL (LE) ETAL		1
11-050-005-00	RIDGELAND PARTNERSHIP	7375 CRON AV	1
11-050-006-00	NOLLINGER EDWARD J & KAREN A	7384 CRON AV	1
11-050-007-00	FISHER SUSAN K TRUST	7362 CRON AV	1
11-050-008-00	NOONAN JAMES & LAUREL (LE) ETAL	7338 CRON AV	1
11-050-009-00	LOYNES JACK L (LE) & LOYNES GRIFFIN &	3004 CRESCENT BEACH RD	1
11-050-010-00	POELLET BEVERLY (LE) &	2992 CRESCENT BEACH RD	1
11-050-011-00	HUGHES ROBERT C &	7333 C.G. DAVIS AV	1
11-050-012-00	HARTRICH NELSON TRUST	7337 C.G. DAVIS AV	1
11-050-013-00	BRANDENBURG CRAIG G	7361 C.G. DAVIS AV	1
11-050-015-00	TARANDA/BALDWIN TRUST	7375 C.G. DAVIS AV	2
11-050-018-00	SCRUGGS LESLIE S & JACQUELYN	7187 MILLER RD	1
11-050-019-00	SCRUGGS LESLIE		1
11-050-020-00	SCRUGGS LESLIE & JACQUELINE		1
11-050-023-00	HORTON CATHERINE & LUCAS JODI &	7376 C.G. DAVIS AV	1
11-050-024-00	BALDWIN EDWARD ETAL	7360 WM FORTH AV	1
11-050-025-00	BERMES MARK & JEANINE TRUST	7334 WM FORTH AV	1
11-050-026-00	PROBECK EDWIN J III & ETAL	2942 CRESCENT BEACH RD	1
11-050-027-00	PAZ LAZARO & ANA	2924 CRESCENT BEACH RD	1
11-050-028-00	PAZ LAZARO & ANA	7341 SANSOUSA ST	1
11-050-029-00	PAZ LAZARO & ANA	7355 SANSOUSA ST	1
11-050-030-00	MOHNEY C BLAIR & GINGER J	2907 LAKETON CT	1
11-050-031-00	MCCARTHY ALAN & GLADYS	7362 SANSOUSA ST	1
11-050-032-00	KRULL DAWN R & KRULL JAMES M	7340 SANSOUSA ST	1
11-050-033-00	ROSENGREN RONALD & CHRISTINE &	2926 CRESCENT BEACH RD	1
11-050-034-00	BARIBEAU JOHN L (LE) & TRUST	2886 CRESCENT BEACH RD	1
11-050-035-00	KEMP WALLACE & NOEL TRUST	7375 HOLLOWED ST	1
11-050-036-00	BARIBEAU JOHN L (LE) & TRUST	7358 HOLLOWED ST	1
11-050-037-00	BARIBEAU JOHN L (LE) & TRUST		1
11-411-031-00	CONLEY CONSTANCE & DUDLEY		1

## Onekama Twp - Parcels in Proposed Sewer District

Parcel Number	Owner Name Per County GIS Records	Parcel Street Address	REU
11-050-038-10	KEMP WALLACE B & NOEL B TRUST	2898 LAKETON CT	1
11-050-043-00	CENTILLION GROUP LLC	CRESCENT BEACH RD	0
11-050-062-00	CENTILLION GROUP LLC	CRESCENT BEACH RD	0
11-050-063-00	HOLLOWED FAMILY CORP	2820 CRESCENT BEACH RD	1
11-050-064-00	STONE MARY K TRUST	2840 CRESCENT BEACH RD	2
11-050-065-00	GLEESON DAVID & BARIBEAU COLLEEN	7400 MOREY ST	1
11-050-065-10	BARIBEAU JOHN L (LE) & TRUST		1
11-050-070-00	HORTON CATHERINE & LUCAS JODI &		1
11-050-072-00	DIJAK TIMOTHY J & ANGELA J	7401 C.G. DAVIS AV	1
11-050-073-00	FOX LAURENCE	2972 CRESCENT BEACH RD	1
11-095-000-00	TOSEBO CLUBHOUSE LLC		1
11-095-004-00	DARPEL STEPHEN & KRISTY TRUST		1
11-095-005-00	SCHROCK MARK R TRUST &	7174 MILLER RD	1
11-095-006-00	BROWN GREGORY & SALLY	7178 MILLER RD	1
11-095-007-00	TOSEBO CLUBHOUSE LLC	7228 MILLER RD	1
11-095-008-00	BEEHIVE LLC		1
11-130-001-00	MORTENSON G DOUGLAS & SALLY L TRUST	4008 CAMP DELIGHT RD	1
11-130-003-00	KOWALSKI SUZANNE TRUST	4022 CAMP DELIGHT RD	2
11-130-006-00	GILES PETER W & DAWN F	4046 CAMP DELIGHT RD	1
11-130-008-00	GILES CYNTHIA	4070 CAMP DELIGHT RD	2
11-130-014-00	GREAT LAKES CONF OF EVANGELICAL	4158 CAMP DELIGHT RD	1
11-130-014-10	MANISTEE COUNTY ROAD COMMISSION	7415 SOUTH CAMP DELIGHT RD	1
11-130-031-00	GREAT LAKES CONF OF EVANGELICAL		1
11-170-001-00	MILLER ALBERT TRUST	ELLEN RD	1
11-170-002-00	GREAT LAKES CONF OF EVANGELICAL		1
11-170-005-00	GILES CYNTHIA		1
11-170-006-00	MANISTEE COUNTY ROAD COMMISSION	4093 SOUTH CAMP DELIGHT RD	1
11-280-001-00			1
11-280-002-00			1
11-280-003-00			1
11-280-004-00			1
11-280-005-00			1
11-280-006-00			1
11-290-027-00	ONEKAMA TOWNSHIP		1
11-290-028-00	ONEKAMA TOWNSHIP		1
11-290-029-00	ONEKAMA TOWNSHIP		1
11-290-030-00	PALDAN DARRYL D & SANDRA M		1
11-290-035-05	PALDAN DARRYL D & SANDRA M		1
11-290-035-10	ONEKAMA TOWNSHIP		1
11-290-036-00	ONEKAMA TOWNSHIP		1
11-290-037-00	KEMPERMAN RICHARD & CHERYL		1
11-290-038-00	KEMPERMAN RICHARD & CHERYL ANN		1
11-290-039-00	JOHNSON JANE M		1
11-290-040-00	JOHNSON JANE M		1
11-290-041-00	JOHNSON JANE M	8951 BAYVIEW RD	1
11-290-043-00	SCHAFER RALPH		1
11-290-044-00	KEMPERMAN RICHARD & CHERYL	8883 BAYVIEW RD	1
11-290-045-00	LANDON SUSAN	8891 BAYVIEW RD	1
11-290-046-00	STEINMEYER WILLARD F & MEGHAN B	8909 BAYVIEW RD	1
11-290-047-00	REINKE ROGER M & NOLA A	8911 BAYVIEW RD	1
11-290-048-00	JOHNSON JANE M		1
11-290-050-00	ONEKAMA TOWNSHIP		1
11-290-051-00	ONEKAMA TOWNSHIP		1
11-290-052-00	ONEKAMA TOWNSHIP		1
11-290-066-00	BEZESKY JOHN & BEZESKY DAVID M	8640 BAYVIEW RD	1
11-290-067-00	KROLczyk JACQUELYN N	8626 BAYVIEW RD	1

## Onekama Twp - Parcels in Proposed Sewer District

Parcel Number	Owner Name Per County GIS Records	Parcel Street Address	REU
11-290-067-20	VAN DER HULST A WAYNE &		1
11-290-068-00	MAIN DONALD E TRUST		1
11-290-069-00	MAIN DONALD TRUST &		1
11-290-071-00	GOODMAN DEBRA J &	8536 BAYVIEW RD	1
11-290-072-00	CRANDALL JEFFERY &	8548 BAYVIEW RD	1
11-290-073-00	KROLCZYK MARY ANN TRUST &	8558 BAYVIEW RD	1
11-290-074-00	HANZEL JANET	8566 BAYVIEW RD	1
11-290-075-00	MCISAAC MARK A &	8588 BAYVIEW RD	1
11-290-076-00	TABACZKA KEVIN & GRETCHEN	8600 BAYVIEW RD	1
11-290-077-00	STATE OF MICHIGAN		1
11-290-084-00	MESSNER JAMES WILLARD TR	3219 MIDWAY DR	1
11-290-085-00	MESSNER JAMES WILLARD TR		0
11-290-088-00	MESSNER JAMES WILLARD TR		1
11-290-089-00	MAJOR JAMES TRUST &	8448 BAYVIEW RD	1
11-290-091-00	MAJOR DEBORAH TRUST &		1
11-290-093-00	SANCHEZ JESSE & KARINDA		1
11-290-094-00	MAKOWIEC RICHARD & ANGELA		1
11-290-095-00	MAKOWIEC RICHARD & ANGELA		1
11-290-096-00			2
11-290-097-00			1
11-290-098-00			1
11-290-099-00			1
11-290-100-00			1
11-290-101-00			1
11-290-102-00			1
11-290-103-00			1
11-290-104-00	TAMULIS WALTER W & CAROL ANN		1
11-290-105-00	ADAMS JEAN C		1
11-290-106-00	DND OLSON FARM LLC		1
11-290-107-00	KELLER ERIC E & TRISHA L		1
11-290-108-00	WEBB HUGH & WEBB GWENDOLYN	8350 FAIRWAY WEST	1
11-290-109-00	HALLAS DON & CYNTHIA		2
11-290-109-10	COOPER MELINDA MARY		1
11-290-110-00	ALAM JAMIL & ALAM LAURA	FAIRWAY WEST	1
11-290-112-00	KROLCZYK MARY ANN (HERKELRATH) TR		1
11-290-113-00	COOPER MELINDA MARY		1
11-290-114-00	BRUNSON BRUCE W (LE) &		1
11-290-115-00	O'CONNOR GERALD P TRUST		1
11-290-116-00	KROLCZYK JACQUELYN &		1
11-290-117-00	YANG CHANG		1
11-290-117-10	YANG CHANG		1
11-290-117-20	ADAMS JOHN F TRUST		1
11-290-119-00	WARD MICHAEL V & SUSAN		1
11-290-121-00	ADAMS RONALD W & CYNTHIA		1
11-290-122-00	ADAMS RONALD		1
11-290-123-00	ZANDER THOMAS & ROBERTA		1
11-290-124-00	ZANDER THOMAS ROBERT & ROBERTA ANN		1
11-290-125-00	CORONELLA JOSEPH T		1
11-290-126-00	CORONELLA JOSEPH T		1
11-290-127-00	ZANDER TOM R & ROBERTA A		1
11-290-128-00			1
11-290-129-00			1
11-290-129-05			1
11-290-129-10			1
11-290-129-15			1
11-290-129-20			1

## Onekama Twp - Parcels in Proposed Sewer District

Parcel Number	Owner Name Per County GIS Records	Parcel Street Address	REU
11-290-130-00			1
11-290-131-00			1
11-290-131-10			1
11-290-132-00			1
11-290-133-00			1
11-290-135-00	COLE HEATHER	8573 FAIRWAY WEST	1
11-290-136-00	FRANCK HAZEL D & FRANCK JAN	8603 FAIRWAY WEST	1
11-290-137-00	ADAMS RONALD W & CYNTHIA	8629 FAIRWAY WEST	1
11-290-138-00	STATE OF MICHIGAN		1
11-290-139-00	KC9 ENTERPRISES LLC		1
11-290-140-00	AMMON SCOTT H & BRENDA B	8580 FAIRWAY WEST	1
11-290-141-00	PIOTROWSKI JEROME TRUST		1
11-290-142-00	HARVEY GEORGE & MARIANN	8614 FAIRWAY WEST	1
11-290-144-00	STATE OF MICH		1
11-290-146-00	SCARNAVACK JOHN C & KIMBERLY A	8566 FAIRWAY WEST	1
11-290-147-00	HANSEN MARTIN B & ARLENE M	8807 LAKE PARK DR	1
11-290-148-10	HURFORD JONATHAN P & TRACEY A	8761 LAKE PARK DR	1
11-290-148-20			1
11-290-150-00			1
11-290-150-10	PAKULAK JAMES & NANCY	LAKE PARK DR	1
11-290-151-00	BERGQUIST KARLTON JR & BETSY TRUST		1
11-290-151-10	BERGQUIST KARLTON JR & BETSY TRUST		1
11-290-153-00	HEGGE LAND JACK TRUST	2811 SEYMOUR ST	1
11-290-154-00	HOUCK RICHARD TRUST.		1
11-290-155-00	GREENHALGH TRUST		1
11-290-156-00	DUTKAVICH LAVERN E &	8685 FERNDAL DR	1
11-290-157-00	DUTKAVICH LAVERN E		1
11-290-158-00	KRAUSE ARNOLD & MARLENE		1
11-290-158-10	DND OLSON FARM LLC		1
11-290-159-00	DND OLSON FARM LLC		1
11-290-160-00	ONEKAMA TOWNSHIP		1
11-290-161-00	WADE FAMILY PARTNERS LTD		1
11-290-162-00	EVANS ROBERT M TRUST &	8717 JUNIPER WY	1
11-290-163-00	EVANS ROBERT M TRUST &		1
11-290-164-00	HANSEN ROBERT & R CAROL	8714 FERNDAL DR	1
11-290-166-00	WADE FAMILY PARTNERS LTD	2721 SEYMOUR ST	1
11-290-168-00	WADE FAMILY PARTNERS LTD	8793 ARBORVITAE	1
11-290-169-00	WADE FAMILY PARTNERS LTD		1
11-290-170-00	WADE FAMILY PARTNERS LTD	8685 JUNIPER WY	1
11-290-171-00	HARTRICH NELSON E ETAL		1
11-290-172-00	MURRAY MARGARET PARK	8752 JUNIPER WY	1
11-290-173-00	ANDERSON GARY & BARB		1
11-290-174-00	SIMONS VAUGHN & LINDA		1
11-290-175-00	WADE FAMILY PARTNERS LTD		1
11-290-176-00	BURCH JANET M ETAL		1
11-290-177-00	PIERCE PATRICIA & ROBERT	2680 LAKEVIEW RD	2
11-290-177-10	BERNARD FAMILY RETREAT LLC	8853 ARDMORE DR	1
11-290-177-15	BERNARD LAKEHOUSE LLC	8860 ARBORVITAE	1
11-290-177-20	BERNARD FAMILY RETREAT LLC		1
11-290-177-25	BERNARD LAKEHOUSE LLC		1
11-290-178-00	GREENHALGH TRUST		1
11-290-178-04	GREENHALGH TRUST		1
11-290-179-00	LE SARGE CATHERINE K		1
11-290-180-00	LE SARGE CATHERINE K		1
11-290-181-00	GREENHALGH TRUST		1
11-290-182-00	SEDLAR PHILIP P		1

## Onekama Twp - Parcels in Proposed Sewer District

Parcel Number	Owner Name Per County GIS Records	Parcel Street Address	REU
11-290-183-00	LESARGE EARL & BEVERLY (LE) &		1
11-290-184-00	STEINMEYER MEGHAN B & WILLARD F		1
11-290-185-00	STEINMEYER MEGHAN B & WILLARD F		1
11-290-186-00	ARMOUR THOMAS L & ALEXEA	8899 ARBORVITAE	1
11-290-187-00	LESARGE CATHERINE & LESARGE MICHAEL	2724 SEYMOUR ST	1
11-290-188-00	FERRY BRUCE A		1
11-290-189-00	LESARGE CATHERINE K		1
11-290-190-00	LESARGE CATHERINE K		1
11-290-191-00	STEINMEYER WILLARD F & MEGHAN B		1
11-290-192-00	STEINMEYER WILLARD F & MEGHAN B		1
11-290-193-00	KOMAR WALTER TRUST	8963 JUNIPER WY	1
11-290-193-50	COZZIE ELIZABETH L &	8888 FERNDAL DR	1
11-290-194-01	SOLID COMFORT LC		1
11-290-195-00	WEBB SCOTT THOMAS		1
11-290-196-00	WEBB SCOTT THOMAS		1
11-290-199-00	HERZOG JOHN P & SUSAN B		1
11-290-200-00	SIMUTIS ROBERT & EVA	8963 FERNDAL DR	1
11-290-200-10	COZZIE ELIZABETH L &		1
11-290-200-15	FISCHER JOHN F		1
11-290-200-20	COZZIE ELIZABETH L &		1
11-290-201-00	GREEN MARSHA A TRUST		1
11-290-203-05	SIMUTIS ROBERT P & EVE M	8898 LAKE PARK DR	1
11-290-204-00	PHEBUS AMY M &		1
11-290-205-20	HARTMAN PHIL L ETAL	8895 LAKE PARK DR	1
11-290-206-00	HARTMAN PHIL & LINDA		1
11-290-207-00	SALZER DAVID & SHELLY	LAKE PARK DR	1
11-290-208-00	DND OLSON FARM LLC		1
11-290-209-00	WILCOX MARK & SANDRA		1
11-290-210-00	HANSON DIANE M		1
11-290-211-00	HARTMAN PHIL & LINDA S		1
11-290-212-00	LESARGE CATHERINE & LESARGE MICHAEL		1
11-290-269-00	WOOD RANDOLPH H TRUST		1
11-290-295-00	TOWNSHIP OF ONEKAMA		1
11-290-295-06	WOOD RANDOLPH G TRUST		1
11-290-296-00	WOOD RANDOLPH G TRUST		1
11-290-297-00	WOOD RANDOLPH G TRUST		1
11-290-297-10	KUNCAITIS FAMILY TRUST	9102 BAYVIEW RD	1
11-290-298-00	WOOD RANDOLPH G TRUST		1
11-290-299-00	WOOD RANDOLPH G TRUST		1
11-290-309-00			1
11-290-310-00			1
11-290-311-00			1
11-290-312-00			1
11-290-313-00			1
11-290-314-00			1
11-290-316-00			1
11-290-317-00			1
11-290-318-00			1
11-290-320-00			1
11-290-321-00			1
11-290-336-00	ONEKAMA TOWNSHIP		1
11-290-337-00	ERVIN MICHELLE M & PATRICK J		1
11-290-338-01	DESKINS NANCY M TRUST		1
11-290-338-02	DESKINS NANCY M & ADAMS JOSEPH M		1
11-290-339-00	DESKINS NANCY M &		1
11-290-340-01	KRAMIG THOMAS E & JACQUELINE P		1

## Onekama Twp - Parcels in Proposed Sewer District

Parcel Number	Owner Name Per County GIS Records	Parcel Street Address	REU
11-290-341-00	DIXON DALE & KATHY	2638 LAKEVIEW RD	1
11-290-342-00	DESKINS NANCY M &		1
11-290-343-00	CHAPPELL STEVEN M		1
11-290-344-00	GARRETT MICHAEL A & CAROLYN	9214 LAKESIDE AVE	1
11-290-345-00	HOPKINS JON & PEGGY	9120 LAKESIDE AV	1
11-290-346-00	MIDDLETON FAMILY TRUST	9114 LAKESIDE AV	1
11-290-347-00	FINNEY CURTIS J	9330 LAKESIDE AV	1
11-290-348-00	BURKEL DONALD & ANN M	9314 LAKESIDE AV	1
11-290-350-00	HODGMAN DAVID & LIANE	9296 LAKESIDE AV	1
11-290-351-00	RHOADS PAUL K TRUST	9280 LAKESIDE AV	1
11-290-352-00	SPORER ALISSA L	9274 LAKESIDE AV	1.5
11-290-353-00	HENDERSON BRUCE T & JANET L	9400 LAKESIDE AV	1
11-290-353-01	MATTHEWS SUSAN S TRUST	9380 LAKESIDE AVE	1
11-290-353-03	DUEMLER ALFRED F III & SUE C	9364 LAKESIDE AV	1
11-290-353-06	ZACK EVERETT & ROSENELE (LE) TR	9340 LAKESIDE AV	1
11-290-354-00	DREW JOHN R	9440 LAKESIDE AV	1
11-290-354-20	HALL RONALD R & BETTINA J (LE) & TR	9428 LAKESIDE AV	1
11-290-354-30	MAYHEW KAREN A TRUST	9420 LAKESIDE AV	1
11-290-354-40	MCCLAIN MARK & DEANNA	9414 LAKESIDE AV	1
11-290-354-50	MEEK EDWARD J & KATHERYN R	9408 LAKESIDE AV	1
11-290-368-00	WOODS JASON C & APRIL B	3111 MIDWAY	1
11-290-369-00	DRIPPS ROY C & ANN D	3125 MIDWAY	1
11-290-370-00	MCCAUSLAND CAMERON & TAMMI	3145 MIDWAY	1.5
11-290-371-00	LUMPKIN NANCY S TRUST	3159 MIDWAY	1
11-290-372-00	SCHRAM THOMAS L & DEBORAH A	3075 MIDWAY DR	1
11-290-373-00	MAKOWIEC RICHARD & ANGELA		1
11-290-374-00	MAKOWIEC RICHARD & ANGELA	3055 MIDWAY	1.5
11-290-375-00	TAMULIS WALTER & CAROL	3091 MIDWAY	1.5
11-290-376-00	HOLMAN DONALD G TRUST	3171 MIDWAY	1
11-290-377-02	ONEKAMA TOWNSHIP		1
11-290-377-10	EVANS ROBERT M TRUST &		1
11-290-377-13	ONEKAMA TOWNSHIP		1
11-290-377-15	ONEKAMA TOWNSHIP		1
11-300-001-00	ADAMS JOHN F TRUST	8729 BAYVIEW RD	1
11-300-002-00			1
11-300-003-00	APPICELLI KEITH & CAROLE	8703 BAYVIEW RD	1
11-300-004-00	MAKI MARTIN & REBECCA	8687 BAYVIEW RD	1
11-300-005-00	WORKMAN TRUST	8675 BAYVIEW RD	1
11-300-006-00	VANDERHULST WAYNE & KATHLEEN	8679 BAYVIEW RD	1
11-300-007-00	SIEWERTSEN DONALD & DEBORAH	8659 BAYVIEW RD	1
11-300-008-00	MAIN DEBORAH A & MAIN CAROL S	8657 BAYVIEW RD	1
11-300-010-00	HEISER JAMES P & SHEILA	8641 BAYVIEW RD	1
11-300-011-00	PALKO DANIEL & JUDITH &	8629 BAYVIEW RD	1
11-300-012-00	ECKERT ROGER & KAREN	8623 BAYVIEW RD	1
11-300-013-00	TABACZKA JANE ETAL	8611 BAYVIEW RD	1
11-300-014-00	HOUSER JERRY & BARBARA	8597 BAYVIEW RD	1
11-300-014-10			1
11-300-015-00	POSTEMA JAMES BRIAN & TONI	8579 BAYVIEW RD	1
11-300-016-00	PETERSON BRADFORD J & ANNA M	8571 BAYVIEW RD	1
11-300-017-00	WORKMAN GARY & HELENE P	8559 BAYVIEW RD	1
11-300-018-00	KASSON DANIEL J	8543 BAYVIEW RD	1
11-300-019-00	KROLCZYK DENNIS ETAL	8529 BAYVIEW RD	1
11-300-020-00	WOODS RONALD & DIANE (LE) ETAL	8495 BAYVIEW RD	1
11-300-021-00	MAJOR DEBORAH J TRUST &	8445 BAYVIEW RD	1
11-300-022-00	TABACZKA JANE ETAL		1
11-300-022-10	HOUSER JERRY & BARB		1

## Onekama Twp - Parcels in Proposed Sewer District

Parcel Number	Owner Name Per County GIS Records	Parcel Street Address	REU
11-300-023-00	GROSZ EDMUND R & ERNA		0
11-300-023-10	WOODS RONALD & DIANE (LE) ETAL		0
11-330-059-10			1
11-330-062-00			1
11-330-068-00			1
11-330-069-00			1
11-330-070-00			1
11-330-071-00			1
11-330-072-00			1
11-330-073-00			1
11-330-074-00	HOUCK RICHARD & IMOGENE (LE) TRUSTS		1
11-330-074-03	NATURE CONSERVANCY		1
11-330-074-05	MOODY JAMES D, OSMUS SUSAN	2656 PINE RUN DR	1
11-330-074-06	SOPER DORIS M LIVING TRUST		1
11-330-074-07	ANDERSON THOMAS R & CONNIE L	9391 LAKESIDE AVE	1
11-330-075-00	MASLAR LAURA TRUST		1
11-330-075-10	SIWEK JAY & LINDA		1
11-330-075-30	SIWEK JAY & LINDA	9335 LAKESIDE AV	1
11-330-075-35	CONNOLLY FRANCIS T &	9307 LAKESIDE AV	1
11-330-075-40	CONWAY BRIAN & DEBRA	9285 LAKESIDE AV	1
11-330-076-00	BOOKER DEBORAH S &		1
11-330-076-10			1
11-330-076-15	HATTENDORF WILLIAM H III	9241 LAKESIDE AV	1
11-330-077-00	THOMAS DANIEL & WENDY TRUST	9201 LAKESIDE AV	1
11-330-078-00	HOLTON MICHAEL & JOANNE		1
11-330-079-00	HOLTON MICHAEL TRUST	9117 LAKESIDE AV	1
11-370-001-00	8794 LAKESIDE LLC	8794 LAKESIDE AV	4
11-370-002-00	WOOD SALLY M TRUST	8836 LAKESIDE AV	1
11-370-003-00	SWANSON HELEN D SMYTHE &	8856 LAKESIDE AV	1
11-370-004-00	OSBORNE JOHN & ANN E	8878 LAKESIDE AV	1.5
11-370-005-00	LANG STEPHEN R & ALISON M	8900 LAKESIDE AVE	1
11-370-006-00	HERZOG ALBERT P & HERZOG JOHN &	8912 LAKESIDE AV	1
11-370-007-00	HERZOG JOHN P & SUSAN B	8928 LAKESIDE AV	1
11-370-008-00	BERGLAND EVELYN &	8942 LAKESIDE AV	1.5
11-370-009-00	ABRAHAM WILLIAM J JR ETUX	8980 LAKESIDE AV	1
11-370-010-00	MILASICH RUDOLPH L JR	8982 LAKESIDE AV	1
11-370-011-00	SMITH ANN W TRUST	8998 LAKESIDE AV	1
11-370-012-00	SMITH ANN W TRUST		1
11-370-013-00	MARR DAVID TRUST ETAL	9008 LAKESIDE AV	1
11-370-014-00	RENTAL VACATION HOME TRUST	9016 LAKESIDE AV	1
11-370-015-00	RILEY JAMES & CLAIRE	9034 LAKESIDE AV	1
11-370-016-00	SCHLEIFFARTH ROBERT & ELIZABETH TRU	9060 LAKESIDE AV	1
11-370-017-00	PMPA HOLDINGS LLC	9080 LAKESIDE AV	2
11-370-018-00	HARLEY JOHN W & ELAINE K (LE) &	9094 LAKESIDE AV	1
11-370-022-10	CARPENTER MICHAEL	8981 LAKESIDE AV	1
11-370-023-10	SKIBO TRUST	9007 LAKESIDE AV	1
11-370-024-00	STANEK MICHAEL & BLANCHE &ETAL	2205 LAKEISLE AV	1
11-370-024-10	STANEK MICHAEL & BLANCHE (LE)	LAKEISLE AVE	1
11-370-027-00	LONGCORE ROBERT ET AL	8909 LAKESIDE AV	1.5
11-370-028-00	OSBORNE JOHN & ANN E	8881 LAKESIDE AV	1
11-370-029-00	DESHONE BARBARA	8853 LAKESIDE AV	1
11-370-030-00	8794 LAKESIDE LLC		1
11-370-031-00	8794 LAKESIDE LLC		1
11-370-032-00	8794 LAKESIDE LLC		1
11-370-034-00	RIVERA JEFFREY	RIDGE AVE	1
11-370-035-00	BRADLEY DON & KORENDYKE BEN		1

## Onekama Twp - Parcels in Proposed Sewer District

Parcel Number	Owner Name Per County GIS Records	Parcel Street Address	REU
11-370-036-00	8794 LAKESIDE LLC		1
11-370-037-00	ROGERS BARBARA ETAL	8794 GLENDALE DR	1
11-370-038-00	ROGERS BARBARA ETAL		1
11-370-039-00	STEVENSON MARGARET		1
11-370-040-00	STEVENSON MARGARET		1
11-370-042-00	HOSPADARUK ROBERT & BETH ANNE		1
11-370-043-00	STEVENSON MARGARET L		1
11-370-044-00	STEVENSON MARGARET LYNN		1
11-370-045-00	HOPKINS B SMITH TRUST	2279 LAKEISLE AV	1
11-370-046-00	PARKER SCOTT C	2291 LAKEISLE AV	1
11-370-047-00	MONNETT ROBERT K TRUST		1
11-370-047-20	BEALL BADGER & JULIE	2263 LAKEISLE AV	1
11-370-048-00	DECKER MARTHA JO	2261 LAKEISLE AV	1
11-370-049-10	JESSEN JENS L & CHARLOTTE	2304 LAKEISLE AV	1.5
11-370-063-00	BIGLER JOHN S JR & BARB TRUST	8804 NORWOOD AV	1
11-370-064-00	THOLE JACK & NANCY TRUST		1
11-370-066-00	ANDREWS CHARLES E & SUSAN A	8850 NORWOOD AV	1
11-370-066-10	ANDREWS CHARLES E & SUSAN A	8832 NORWOOD AV	1
11-370-066-50	MULLIGAN LARRY G ETAL	8860 NORWOOD AV	1
11-370-066-60	MULLIGAN LARRY G ETAL		1
11-370-067-00	MULLIGAN LARRY G ETAL		1
11-370-067-10	VAUGHAN WM J & BARBARA		1
11-370-068-00	MEADE DAVID R TRUST &	2230 BEECHWARD AV	1
11-370-069-00	VERPLANK WILLIAM & KATE	2220 BEECHWARD AV	1
11-370-070-00	MEADE DAVID R TRUST &		1
11-370-071-00	KEISER R LINCOLN &	2375 LAKEISLE AV	1
11-370-072-00	VAUGHAN WILLIAM J ETUX	2363 LAKEISLE AV	1
11-370-073-00	NICHOLSON J. MICHAEL & JOAN L	8775 NORWOOD AV	1
11-370-074-00	CLEMAR COTTAGE LLC	8805 NORWOOD AV	1
11-370-075-00	VERPLANK RICHARD J		1
11-370-075-05	VERPLANK WILLIAM &		1
11-370-076-00	NICHOLSON J. MICHAEL & JOAN L		1
11-370-077-00	NORDLOH LEE C & LISA S	8808 PORTAGE POINT DR	1
11-370-079-00	FORWOOD BARBARA J TRUST	8816 PORTAGE POINT DR	1
11-370-080-00	WEBB HUGH M TRUST	8842 PORTAGE POINT DR	1
11-370-081-00	MEADE DAVID R TRUST &		1
11-370-083-00	MULLIGAN GEORGE & MARY	8888 S PORTAGE POINT DR	1
11-370-084-00	DREWS JOHN M & ROBYN L	8900 PORTAGE POINT DR	1
11-370-085-00	SHAPE JOHN & LESLIE		1
11-370-086-00	WOODSIDE KENNETH & KAREN	8946 PORTAGE POINT DR	1
11-370-087-00	FARRIS MARY SKINNER &SKINNER WARREN		1
11-370-088-00	FARRIS MARY SKINNER &SKINNER WARREN	8962 PORTAGE POINT DR	1
11-370-092-01			1
11-370-092-02			1
11-370-092-25			1
11-370-095-00	WINDFALLS LANDING LLC		1
11-370-095-10	DEVOE MICHAEL C & JANE C		1
11-370-097-00	MOSCARDELLI DEBORAH M FRANCKE	2414 LAKEISLE AV	1
11-370-098-00	SMITH ROBERT D & SMITH BARRY G		1
11-370-099-00	SHEEDY KELLY	2435 SEYMOUR ST	1
11-370-100-00	BAKER WINIFRED NELL	8865 PORTAGE POINT DR	1
11-370-100-10	OAKES MARY JANE		1
11-370-101-00	DANIEL MATTHER &		1
11-370-102-00	BROWN RUTH L TRUST	8791 PORTAGE POINT DR	1
11-370-103-00	VANECEK PAULA M TRUST	8793 PORTAGE POINT DR	1
11-370-104-00	RAY LINDA ANN & STOKES JAMES ROBERT	8831 PORTAGE POINT DR	3

## Onekama Twp - Parcels in Proposed Sewer District

Parcel Number	Owner Name Per County GIS Records	Parcel Street Address	REU
11-370-106-00	BOYER WM TRUST	8817 PORTAGE POINT DR	1
11-370-107-00	ONEKAMA STARDUST LLC		1
11-370-108-00	VAUGHAN BARBARA NORA		1
11-370-108-10	OAKES MARY JANE		1
11-370-109-00	BELL CHRISTIAN & SUSAN	8830 PORTAGE VIEW RD	1
11-370-110-00	BLANCHARD FREDERICK J & DEBORAH ANN	2470 LAKEISLE AV	1
11-370-111-00	VAUGHAN RICHARD	2473 SEYMOUR ST	1
11-370-113-00	WINDFALLS LANDING LLC	2476 SEYMOUR ST	1
11-370-114-00			1
11-370-114-05			1
11-370-114-			1
11-370-114-09			1
11-370-115-00			1
11-370-116-00	WINDFALLS LANDING LLC		1
11-370-117-00	HOTSON MARY L & HOTSON MERNA C &	8854 PORTAGE LAKE AVE	1
11-370-118-00	WARSH DAVID L	8868 PORTAGE LAKE AVE	1
11-370-119-00	WARSH DAVID L		1
11-370-120-00	VAUGHAN RICHARD		1
11-370-121-00	VERPLANK MARTIN & CHRISTINE		1
11-370-122-00	KEEPSAKE LLC	8807 PORTAGE VIEW RD	1.5
11-370-123-00	CAREY MARY & ETAL	8811 PORTAGE VIEW RD	1
11-370-125-00	ONEKAMA STARDUST LLC	8819 PORTAGE VIEW RD	1
11-370-126-00	GREAVES JUDITH J TRUST	8810 PORTAGE LAKE AVE	1
11-370-127-00	HARTRICH NELSON TRUST	8840 PORTAGE LAKE AVE	1
11-370-128-00	DALY RAYMOND A ET AL	2518 LAKEVIEW RD	1
11-370-130-00	PARKER SCOTT C & KATHY		1
11-370-131-00	MIHAEL NANCY H REVOCABLE TRUST		1
11-370-132-00	ELLIS GEORGE JR & DEBRA E		1
11-370-136-00	ERVIN MICHELLE M & PATRICK J		1
11-370-137-00	ONEKAMA TOWNSHIP		1
11-370-138-00	JOHNSON MATTHEW SCOTT		1
11-370-139-00	SPITZIG K ELEANOR & MARG		1
11-370-140-00	SMITH THOMAS & DANIELS ROSEMARY		1
11-370-141-00	BROWN ANNA MAY	2560 LAKEVIEW RD	1
11-370-142-00	DIRKSEN THEODORE J III	2572 LAKEVIEW RD	1
11-370-143-00	DELOOF RONALD TRUST	2588 LAKEVIEW RD	1
11-370-145-00	DOMRES REVOCABLE TRUST		1
11-375-001-00	RUMLER GERALD E II & LEANNE C TRUST	8901 LAKESIDE AV	1
11-375-002-00	FINNEY JAMES C JR ETAL		1
11-376-003-00	CEFARATTI SAMUEL & TRACY TRUST	2294 LAKEISLE AV	1
11-376-005-00	HOFFMAN ERIC R ETAL	2254 LAKEISLE AV	1
11-376-006-00	JESSEN PAUL F		1
11-410-001-00	CAIRNS MICHAEL J TRUST &	8741 PORTAGE POINT DR	1
11-410-002-00	FISH STEPHEN J & JANE S	8701 PORTAGE POINT DR	1
11-410-002-10	MEADOWCROFT SCOTT & GAIL		1
11-410-003-00	OCONNOR GERALD P TRUST		0
11-410-004-00	ADAMS JOHN F TRUST	8671 PORTAGE POINT DR	1
11-410-005-00	DRAKE GAIL & CARRIGANSUSAN &		1
11-410-006-00	SMUCKER JON		1
11-410-007-00	DOMRES ALLAN E & CATHERINE B		1
11-410-008-00	SORENSEN EVELYN L TRUST		1
11-410-009-00	NORTHWOODS DEVELOPMENT LLC		1
11-410-010-00	WINDFALLS LANDINGS LLC	8569 S PORTAGE POINT DR	1
11-410-010-00	WINDFALLS LANDINGS LLC	8569 S PORTAGE POINT DR	1
11-410-012-00	DOMRES ALLAN E &	8600 PORTAGE POINT DR	1
11-410-013-00	SORENSEN EVELYN L TRUST	8586 PORTAGE POINT DR	1

## Onekama Twp - Parcels in Proposed Sewer District

Parcel Number	Owner Name Per County GIS Records	Parcel Street Address	REU
11-410-014-00	NORTHWOODS DEVELOPMENT LLC	8576 S PORTAGE POINT DR	1
11-410-015-00	WINDFALLS LANDINGS LLC	8566 S PORTAGE POINT DR	1
11-410-016-00	PETERSON STEPHEN W & CYNTHIA K	2144 NINTH ST	1
11-410-017-00	HICKMAN PAUL P TRUST &		1
11-410-018-00	HICKMAN PAUL P TRUST &	8698 PORTAGE POINT DR	1
11-410-019-00	FISHIGAN PROPERTIES LLC	8666 S PORTAGE POINT DR	1.5
11-410-019-10	WADE HARRY V III	8650 PORTAGE POINT DR	1
11-410-020-10	SMUCKER JON		1
11-410-021-00	DRAKE GAIL & CARRIGAN SUSAN &	8620 PORTAGE POINT DR	1
11-410-024-00	CAIRNS MICHAEL J & ELIZABETH C.V.		1
11-410-027-00			1
11-410-029-00	HERZOG ALBERT P III & JUDITH A	8478 LAKESIDE AV	1
11-410-031-10	MONAHAN W DANIEL & SANDRA R		0
11-410-034-00	OCONNOR SALLY JO TRUST	2119 NINTH ST	1
11-410-035-00	WHELAN JOHN T JR & ANN S	2127 NINTH ST	1
11-410-036-00	OLSON SHARON S TRUST	2143 NINTH ST	1
11-410-037-00	WINDFALLS LANDINGS LLC	8520 S PORTAGE POINT DR	1
11-410-038-00	WINDFALLS LANDINGS LLC	8513 S PORTAGE POINT DR	1
11-410-038-50	WATTERS THADDIUS D TRUST		1
11-410-039-00	GERHARDT KATHRYN HARRIS TRUST	8451 LAKESIDE AV	1
11-410-041-00	WINDFALLS LANDINGS LLC		1
11-410-042-00	MALONE WILLIAM D & MARILYN C	8460 LAKESIDE AV	1
11-410-043-00	CONLAN FAMILY HOLDINGS LLC	8438 LAKESIDE AV	1
11-410-044-00	ALLINSON VIRGINIA J TRUST	8412 LAKESIDE AV	1
11-410-045-00	DOOLEY CAROL A TRUST	8382 LAKESIDE AV	1
11-410-047-00	HANKS DAVID ETAL		1
11-410-049-00	STARICK H WILLIAM & MARTHA E		1
11-410-049-10	STARICK H WILLIAM & MARTHA E	2102 PARK PL	1
11-410-050-00	HANKS DAVID ETAL		1
11-410-051-00	PETER PAN AT PORTAGE LAKE LLC		1
11-410-052-00	FRY STEPHEN & SUSAN (LE) &	2104 SIXTH ST	1
11-410-054-00	WINDFALLS LANDINGS LLC		1
11-410-055-00	COOK J ANDREW & BARBARA		1
11-410-056-00	BRADFORD CATHERINE O		1
11-410-057-00	SWANSON NANCY K TRUST		1
11-410-058-00	WIPPERMAN FAMILY LLC		1
11-410-059-00	BLUEWATERS LLC		1
11-410-060-00	SWANSON NANCY K TRUST		1
11-410-061-00	WATTERS THADDIUS D TRUST		1
11-410-062-00	WIPPERMAN FAMILY LLC	8324 PORTAGE POINT DR	1
11-410-063-00	BLUEWATERS LLC	8276 PORTAGE POINT DR	1
11-410-064-00	WIPPERMAN FAMILY LLC		1
11-410-065-00	RUOFF WILLIAM & ROASLIE ETAL	2088 FIFTH ST	1
11-410-066-00	MCDEVITT MARY W TRUST		1
11-410-078-00	BOERSMA MILFORD TRUST		1
11-410-079-00	LANDIS MARTHA TRUST & CASA JULIE		1
11-410-084-00	BOERSMA MILFORD TRUST		1
11-410-085-00	LANDIS MARTHA TRUST & CASA JULIE		1
11-410-086-00	KRAMIG JANICE J TRUST	2091 FIFTH ST	2
11-410-087-00	KRAMIG JANICE J TRUST		1
11-410-088-00	WAGON WHEEL COTTAGE LLC		1
11-410-089-00	CHAGARES SUSAN		1
11-410-091-00	KRAMIG ROBERT E IV	8248 PORTAGE POINT DR	1
11-410-092-00	GROENKE DAVID A TRUSTEE	8224 PORTAGE POINT DR	1
11-410-093-00	WAGON WHEEL COTTAGE LLC	8212 PORTAGE POINT DR	1
11-410-094-00	KRAMIG JANICE J TRUST		1

## Onekama Twp - Parcels in Proposed Sewer District

Parcel Number	Owner Name Per County GIS Records	Parcel Street Address	REU
11-410-094-10	KRAMIG ROBERT E IV		1
11-410-095-00	GROENKE DAVID A TRUSTEE		1
11-410-096-00	WAGON WHEEL COTTAGE LLC		1
11-410-097-00	FISHER JOHN H & JOYCE A (LE)& TRUST		2
11-410-098-00	HURLEY JANE A &	8157 PORTAGE POINT DR	1
11-410-099-00	BOERSMA MILFORD TRUST	8141 PORTAGE POINT DR	1
11-410-100-00			1
11-410-101-00	FISHER JOHN H & JOYCE A (LE)& TRUST	8194 PORTAGE POINT DR	1
11-410-102-00	HURLEY JANE A &		1
11-410-103-00	BOERSMA MILFORD TRUST		1
11-410-104-00	LANDIS MARTHA TRUST & CASA JULIE		1
11-410-104-50	THOMSON MARTHA K TRUST	2013 FOURTH ST	2
11-410-105-00	DEEDRICK CAROL B TRUST	2007 FOURTH ST	1
11-410-106-00	BOERSMA MILFORD TRUST		1
11-410-107-00	LANDIS MARTHA TRUST & CASA JULIE		1
11-410-107-10	FERREE ROBERT A & SALLY TRUST	2065 THIRD ST	1
11-410-110-00	LANDIS MARTHA TRUST & CASA JULIE		1
11-410-112-00	LANDIS MARTHA TRUST & CASA JULIE	8112 S PORTAGE POINT DR	1
11-410-113-00	HESKETT JOHN W TRUST	8086 S PORTAGE POINT DR	1
11-410-114-00	HESKETT JOHN W TRUST	8084 S PORTAGE POINT DR	1
11-410-115-00	PORTAGE LAKE YACHT CLUB		1
11-410-116-00	REICHLE KENNETH M JR	8111 PORTAGE POINT DR	1
11-410-117-00	HESKETT JOHN W TRUST		1
11-410-118-00	HESKETT JOHN W TRUST		1
11-410-119-00	PORTAGE LAKE YACHT CLUB	8061 S PORTAGE POINT DR	1
11-410-120-00	WHITACRE NANCY		1
11-410-120-05	WHITACRE NANCY		1
11-410-121-00	DIGGENS FAMILY TRUST	2039 SECOND ST	3
11-410-122-00	NEEB SUE A	2035 SECOND ST	1
11-410-123-00	WALSH JOSEPH W	2031 SECOND ST	1
11-410-124-00	WINDFALLS LANDING LLC		1
11-410-125-00	BRADFORD CATHERINE O	8368 PORTAGE POINT DR	1
11-410-126-00	MARTY PROPERTIES LLC	2114 SIXTH ST	1
11-411-000-00	WINDFALLS LANDING LLC		1
11-411-001-00	FRANK ANNE M		1
11-411-002-00			1
11-411-003-00			1
11-411-004-00			1
11-411-005-00			1
11-411-006-00			1
11-411-007-00	WHITE COTTAGE LLC	2165 NINTH ST	1
11-411-008-00	RUEPING FRANK & JANIS	2149 NINTH ST	1
11-411-009-00	SALLOT ANNE & WINSLOW JAMES	2162 NINTH ST	1
11-411-010-00	WINDFALLS LANDING LLC	2170 NINTH ST	1
11-411-011-00	WINDFALLS LANDING LLC		1
11-411-012-00			1
11-411-013-00			1
11-411-014-00			1
11-411-015-00			1
11-411-016-00			1
11-411-017-00			1
11-411-018-00			1
11-411-019-00			1
11-411-020-00			1
11-411-021-00			1
11-411-022-00			1

## Onekama Twp - Parcels in Proposed Sewer District

Parcel Number	Owner Name Per County GIS Records	Parcel Street Address	REU
11-411-023-00			1
11-411-026-00			1
11-411-027-00			1
11-411-028-00			1
11-411-029-00			1
11-411-030-00			1
11-411-023-00	KOVACK PAUL & KELLI (LE) TRUST		1
11-411-024-00	MARTY PROPERTIES LLC	8569 S PORTAGE POINT DR UNIT 24	1
11-411-031-00	CONLEY CONSTANCE & DUDLEY		1
11-411-032-00	KROMBEEN WILLIAM E & PHYLLIS M		1
11-411-033-00	RENEL DANIEL A & PAMELA K		1
11-411-034-00	SCHR TENBOER LISA & RICHARD		1
11-411-035-00	YOUNG LAWRENCE III		1
11-411-036-00	BEECHNUT WALK-UP LLC		1
11-411-037-00	WINDFALLS LANDING LLC		1
11-411-038-00	WINDFALLS LANDING LLC		1
11-411-039-00	WINDFALLS LANDING LLC		1
11-411-040-00	HOOSIER TRADEWINDS PROPERTIES LLC		1
11-411-041-00	GRANT JAYNE E & JAMES J		1
11-411-042-00	LAKESIDE HOLDING LLC		1
11-411-043-00	LAKESIDE HOLDING LLC		1
11-411-044-00	WINDFALLS LANDING LLC		1
11-411-045-00	NELSON TOM & JEAN MARIE	8535 S PORTAGE POINT DR UNIT 45	1
11-411-046-00	JOHNSON ROBERT P		1
11-411-047-00	WENSTRUP JAY P & MARY B	8535 S PORTAGE POINT DR UNIT 47	1
11-411-048-00	LAKESIDE HOLDINGS LLC	8535 S PORTAGE POINT DR UNIT 48	1
11-411-049-00	LAKESIDE HOLDING LLC		1
11-415-001-00	PETER PAN AT PORTAGE LAKE LLC	2074 SIXTH ST	1
11-415-002-00	SWANSON NANCY K TRUST	2073 SIXTH ST	1
11-415-003-00	MCDEVITT TODD & MCDEVITT SUSANNE	2010 FIFTH ST	1
11-415-004-00	MCDEVITT MARY W TRUST	2006 FIFTH ST	1
11-415-005-00	SHEETS JOHN TRUST	2003 FIFTH ST	1
11-415-008-00	CHAGARES SUSAN	2016 FOURTH ST	1
11-415-009-00	MCDEVITT MARY W TRUST		1
11-415-010-00	MARTY PROPERTIES LLC		1
11-415-011-00	MCDEVITT TODD & MCDEVITT SUSAN		1
11-417-002-00	SPRADLING ALBERT TR & SHEETS JOHN TR		1
11-417-006-00	LEWIS GEORGE & WILLIAM		1
11-417-015-00	LEWIS GEORGE G & LEWIS WILLIAM B		1
11-417-016-00	LEWIS GEORGE & WILLIAM		1
11-420-001-00	RUPRICH GARY & SYLVIA	2036 SECOND ST	1
11-420-002-00	WHITACRE NANCY & ANDREW	2040 SECOND ST	1
11-420-003-00	FORD MARY D TRUST	2075 THIRD ST	1
11-425-005-00	MONAHAN W DANIEL & SANDRA R	8520 LAKESIDE AV	1
11-425-019-00	HERZOG ALBERT P III & JUDITH A		1
11-425-020-00	WIPER FAMILY TRUST	2109 NINTH ST	1
11-490-001-00	CAREY JOHN A & SHERI L	4556 CRESCENT BEACH RD	1
11-490-002-00	GREEN DENNIS W		1
11-490-003-00	JOUSMA FLOYD L JR & SANDRA(LE) & TRUST	4612 EASY ST	1
11-490-004-00	DROOGER DAVID G & LINDA	4634 EASY ST	1
11-490-005-00	DEKKER LEROY D (LE) TRUST	4654 EASY ST	1
11-490-006-00	CLOUSE JEFFREY & AMBER	4668 EASY ST	1
11-490-007-00	DUNCAN FAMILY TRUST	4688 EASY ST	1
11-490-008-00	LANNING ALVIN JAY TRUST	4708 EASY ST	1
11-490-009-00	MEDVECKY JULIE & JEFF &	4718 EASY ST	1
11-490-010-00	PEPLINSKI GEORGE & TOKEAH	4742 EASY ST	1

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Parcel Number	Owner Name Per County GIS Records	Parcel Street Address	REU
11-490-011-00	HAMADY DAVID J &	4733 EASY ST	1
11-490-013-00	WALCOTT KURT & SHANNON	4695 EASY ST	1
11-490-014-00	NOLAN JOHN	4665 EASY ST	1
11-490-015-00	KNUDSEN SEAN	4633 EASY ST	1
11-490-016-00	WEST DORIS MARIE	4658 CRESCENT BEACH RD	1
11-490-018-00	JACKSON OKLA & MERLYN TRUST	4718 CRESCENT BEACH RD	1
11-490-020-00	DOMINY EVERARD L TRUST	4738 CRESCENT BEACH RD	1
11-530-001-00	RUTHVEN JOHN (LE)	3995 LAKESHORE DR	1
11-530-002-00	STICKEL LORRAINE D	7647 REEVES ST	1
11-530-003-00	OLSON GERALD C ETAL	7587 REEVES ST	1
11-530-006-00	BLARNEY CASTLE INC	3953 LAKESHORE DR	1.5
11-530-007-00	RUTHVEN JOHN (LE)	7658 REEVES ST	1
11-530-007-10	SAPKOWSKI JOHN & SHIRLEY TRUST		1
11-530-007-15	SAPKOWSKI JOHN & SHIRLEY TRUST	7634 REEVES ST	1
11-530-007-18	SAPKOWSKI JOHN & SHIRLEY TRUST		1
11-530-008-00	MILLER ALBERT R TRUST	3921 LAKESHORE DR	2
11-530-009-00	KAMALOSKI MICHAEL & NAN	3903 LAKESHORE DR	1
11-530-010-00	BRADFORD HARRIETT C &	3879 LAKESHORE DR	2
11-530-012-00	BENEKE EDWARD U JR & ETAL		1
11-530-013-00	BENEKE EDWARD U JR & ETAL		1
11-530-014-00	BENEKE EDWARD U JR & ETAL	3827 LAKESHORE DR	1
11-530-015-00	HICKS FAMILY TRUST	7617 BENEKE ST	1
11-530-016-00	LENON HERBERT TRUST &	3801 LAKESHORE DR	1
11-530-017-00	GRAHAM GREGORY & ROBIN &	7631 BENEKE ST	1
11-530-017-10	PUNCHES MARGARET A TRUST	3813 LAKESHORE DR	1
11-530-018-01	REEDY KATHERINE R TRUST	3757 LAKESHORE DR	1
11-530-019-00	BENEKE EDWARD U JR & ETAL		1
11-530-020-00	ZIEHM TAMI JO	3824 KENDALL ST	1
11-530-021-00	MATHIEU CURTIS JON	3806 KENDALL ST	1
11-530-022-00	JANKOWSKI DENNIS	7539 BENEKE ST	1
11-530-023-00	COURNEYA ROBERT T	7575 BENEKE ST	1
11-530-024-00	HICKS FAMILY TRUST		1
11-530-026-00	HUNT TOM & PHYLLIS	7573 LEONARD AV	1
11-530-027-00	STEPANOVIC MICHAEL& GERRILYN		1
11-530-027-10	LLOYD RICHARD & BOBBIE	3780 KENDALL ST	1
11-530-030-00	LLOYD RICHARD & BOBBIE	7405 LEONARD AV	1
11-530-031-00	MIRABITUR RICHARD & SANDRA (LE) &	7517 LEONARD AV	1
11-530-033-00	HOLLINGSWORTH FAMILY CORP	3735 LAKESHORE DR	1
11-530-034-00	FAIRCHILD ROBERT D & HELEN H TRUST	7576 LEONARD AV	1
11-530-035-00	CECCONI JOHN & PATRICIA		1
11-530-036-00	MILLARD FAMILY TRUST	7488 LEONARD AV	1
11-530-036-10	VALLEE MARK A	7461 MCMILLAN ST	1
11-530-037-00	FROST HERBERT H & PAULA A	7452 LEONARD AV	1
11-530-038-00	FROST HERBERT H & PAULA A		1
11-530-038-10	MANISTEE COUNTY ROAD COMMISSION		1
11-530-040-00	RADTKE DANNY L TRUST		1
11-530-040-10	WARNER ANDREW T &		1
11-530-041-00	LAMKIN WALTER R TRUST	3719 LAKESHORE DR	1
11-530-043-00	BEHRING NANCY J TRUST	3695 LAKESHORE DR	1
11-530-044-00	ZEILE RICHARD & BARBARA	7447 TORRANT ST	1
11-530-045-00	MANISTEE COUNTY ROAD COMMISSION		1
11-530-046-00	BAUSCH GREG & SHELLEY TRUST		1
11-530-046-10	MINCY CRAIG & BULLION CAROLE	3633 KARI ST	1
11-530-047-00	RAY JEROME A & KAREN M TRUST	7465 TORRANT ST	1
11-530-048-00	LAWRENCE ROBERT TERRELL	7481 TORRANT ST	1
11-530-049-00	WALTERS GARY A & JANICE M (LE)&TRUS	3669 LAKESHORE DR	1

## Onekama Twp - Parcels in Proposed Sewer District

Parcel Number	Owner Name Per County GIS Records	Parcel Street Address	REU
11-530-050-00	RADTKE DANNY L TRUST	3635 LAKESHORE DR	1
11-530-051-00	HUDAK MICHAEL T & MICHELLE A	7472 TORRANT ST	1
11-530-051-05	MANISTEE COUNTY ROAD COMMISSION		1
11-530-051-10	RADTKE DANNY L TRUST		1
11-530-051-15	FORTH PEARL B & FORTH CHRISTOPHER		1
11-530-052-00	TYSON ELIZABETH A &		1
11-530-053-00	TYSON ELIZABETH A &	7441 DANFORTH ST	1
11-530-054-00	UNDERWOOD MARGARET TRUST	7445 DANFORTH ST	1
11-530-055-00	GANNON EULA TRUST	3627 LAKESHORE DR	2
11-530-056-00	MCCORMICK JAMES & JOY	3599 LAKESHORE DR	1
11-530-057-00	MCCORMICK JOY		1
11-530-057-05	FORTH PEARL B & FORTH CHRISTOPHER		1
11-530-058-00	FORTH PEARL B & FORTH CHRISTOPHER	7434 DANFORTH ST	1
11-530-058-20	RATHFORD STEPHEN M & SUSAN L	7407 WINNOGENE ST	1
11-530-058-25	RETTELL STEPHEN R	7433 WINNOGENE ST	1
11-530-058-30	KOOPMAN JOHN C & ELAINE	3579 LAKESHORE DR	1
11-530-059-00	ALAMEDDINE SUSAN TRUST	3553 LAKESHORE DR	1
11-530-059-10	VACEK JOHN JR & ARLENE	7438 WINNOGENE ST	1
11-530-060-00	VACEK JOHN JR & ARLENE		1
11-530-060-01	TORRES MIGUEL & KELLY GRAY	7422 WINNOGENE ST	1
11-540-001-00	BROMLEY WILLIAM H & NANCY J	3512 CRESCENT BEACH RD	1
11-650-008-00	HURST VICTORIA C TRUST		1
11-650-009-00	CARTER FAMILY LLC		1
11-650-009-10			1
11-655-001-00	HURST VICTORIA C TRUST	2092 CRESCENT BEACH RD	1.5
11-655-016-00	ARENS THEODORE G & PAMELA J TRUSTS	2110 CRESCENT BEACH RD	2
11-655-017-00	WHEYLAND CHARLOTTE TRUST		1
11-655-018-00	HARDENBERGH JORDAN T &		1
11-660-007-00	CARTER WILLIAM W & SUE ELLEN TR &		1
11-660-013-00	ROSEGATE LLC	2046 CRESCENT BEACH RD	4
11-690-005-00			1
11-690-016-00			2
Total Assessments			REUs
872			899.5

Bear Lake Township Final Sewer District  
Updated March 2021

<u>Parcel No.</u>	<u>Units</u>		
02-004-125-02	4.5	Saddle Up	5000 sft, 7 pumps
02-004-125-04	1		
02-004-125-05	1		
02-004-125-06	1		
02-004-125-07	1		
02-004-125-08	15	Grille 44	3000 sft at 5 reus/1000
02-004-200-01	1		
02-004-200-04	0.5		
02-004-200-05	1		
02-004-200-06	1		
02-004-200-07	0.5		
02-004-200-08	2		
02-004-200-09	1		
02-004-200-10	1		
02-004-200-12	1		
02-004-200-13	1		
02-004-200-14	1		
02-004-200-15	1		
02-004-200-16	1		
02-004-200-17	2		
02-004-200-18	1		
02-004-200-19	2		
02-004-200-20	1		
02-004-200-2 3	1		
02-004-200-24	1		
02-004-250-00	1		
02-004-250-0 1	1		
02-004-275-09	5	bear lake medical	5600 sft @0.9 reus/1000
02-004-275-13	0		
02-004-275-14	0		
02-005-300-0 1	1		

02-005-300-02	1	
02-005-300-03	0.5	
02-005-300-05	7.5	Blarney Castle Corporate Office 15000 sft @ 0.5reus/1000
02-005-300-06	1	
02-005-300-07	1	
02-005-300-08	1	
02-005-300-09	1	
02-005-300-10	1	
02-005-300-11	0.5	
02-005-300-12	1	
02-005-300-13	0.5	
02-005-300-14	1	<div> <div></div> <div>No frontage on sewer, 02-005-300-15 does</div> </div>
02-005-300-16	1	
02-005-300-18	1	
02-005-300-20	0.5	
02-005-325-01	1	
02-005-325-02	1	
02-005-325-03	1	
02-005-325-04	1	
02-005-325-05	1	
02-005-325-06	1	
02-005-325-07	1	
02-005-325-08	1	
02-005-325-09	1	
02-005-325-10	1	
02-005-325-15	1.5	
02-005-325-20	1	
02-005-350-07	1	
02-221-001-00	1	
02-221-002-00	1	
02-221-003-00	1	
02-221-004-00	1	
02-221-005-00	1	
02-221-006-00	1	

02-221-007-00	1
02-221-008-00	1
02-341-701-01	1
02-341-701-05	1
02-341-701-09	1
02-341-702-02	0.5
02-341-702-05	1
02-341-702-07	1
02-341-702-08	1
02-341-702-09	1
02-341-703-05	1.5
02-341-703-09	1
02-341-704-01	1.5
02-341-704-03	1
02-341-704-07	1
02-341-704-10	1
02-341-705-03	1
02-341-705-07	1
02-341-705-09	1
02-341-706-01	1
02-341-706-03	1
02-341-706-05	1
02-341-706-07	1
02-341-707-01	1
02-341-707-03	1
02-341-707-05	1
02-341-707-09	1.5
02-341-708-01	1
02-341-708-03	1
02-341-708-05	1
02-341-708-07	1
02-341-709-01	1
02-341-709-04	1
02-341-709-07	1

02-341-709-09	1.5
02-341-710-01	1
02-341-710-03	1
02-341-710-05	1
02-341-710-07	1
02-341-710-09	1
02-341-711-01	1
02-341-711-05	1
02-341-711-07	1
02-581-701-01	1
02-581-701-04	1
02-581-701-05	1
02-581-701-11	1
02-581-701-14	1
02-581-701-20	1
02-581-702-02	1
02-581-702-07	1
02-581-702-13	1
02-581-702-16	1
02-581-703-03	1
02-581-703-04	1
02-581-703-05	1
02-581-704-03	1
02-581-705-01	1
02-581-707-03	1
02-581-711-01	1
02-581-714-01	1
02-581-715-11	1
02-581-717-02	1
02-581-718-19	1
02-581-729-01	1
02-581-730-10	1
02-585-021-03	1
02-585-021-00	1

02-585-022-00	1
02-635-001-00	1
02-635-002-00	1
02-635-003-00	1
02-635-004-00	1
02-635-005-00	1
02-635-006-00	1
02-635-007-00	1
02-635-008-00	1
02-641-701-01	1
02-641-707-01	1
02-641-709-03	1
02-641-715-01	1
02-641-715-03	1
02-641-717-01	1.5
02-641-717-02	1
02-641-717-05	1
02-641-717-09	1
02-641-717-10	1
02-641-717-14	1
02-641-717-16	1
02-641-718-01	1
02-641-718-03	1
02-641-718-05	1
02-641-718-09	1
02-641-718-13	1
02-641-719-01	1
02-641-719-03	1
02-641-725-01	1
02-641-725-03	1
02-641-728-01	1
02-641-728-03	1
02-641-736-01	1
02-641-736-03	1

02-641-736-05	1
02-641-736-06	1
02-641-736-09	1
02-641-738-11	1
02-641-738-13	1
02-641-739-01	1
02-641-740-01	1
02-641-740-04	1
02-641-740-05	1
02-641-740-06	1
02-641-740-08	1
02-641-740-09	1
02-641-740-10	1
02-641-740-11	1
02-641-741-01	2
02-641-741-07	1
02-641-743-06	1
02-641-773-01	0.5
02-641-773-03	1
02-641-773-05	1
02-641-773-07	1
02-641-773-09	1
02-641-773-11	1
02-641-773-13	1
02-641-773-15	1
02-641-773-16	1
02-641-773-17	1
02-641-773-19	1

195 Parcels

224 REUs

	A	B	C	D	E	F	G	H
1	Village of Bear Lake -Final Sewer District Map							
3								
4	PARCEL NUMBER	OWNER	ADDRESS	Special Asses	Benefit units	REASON		
5	32-005-400-02	David Adams		1	1			
6	32-005-400-00	Sally King and David Reed	12300 Russell Street	1	1			
7	32-562-713-05	Wanda Schafer, Susie Locker	12424 Russell Street	1	1			
8	32-562-709-11	Richard & Myrna Walter	12424 Russell Street	1	1			
9	32-562-708-11	Marseillie McNett	12460 Russell Street	1	1			
10	32-562-708-01	Independent Telephone Corp	12488 Russell Street	1	1			
11	32-562-707-17	Arlee Sutton	12554 Russell Street	1	1			
12	32-562-703-01	Mardelle Johnson	7963 Lake Street	1	1			
13	32-562-707-01	Mardelle Johnson		0	0	non build - water side US 31		
14	32-562-707-07	Hugh Higley	7961 Lake Street	1	1			
15	32-562-703-05	Hugh Higley		0	0	non build- water side US 31		
16	32-562-704-01	Charles Kevin Hunt	7941 Lake Street	1	1			
17	32-562-703-09			0	0	non build - water side US 31		
18	32-562-707-13		7949 Lake Street	1	1			
19	32-562-704-03	Allan Colleen Swanson	7933 Lake Street	1	1			
20	32-241-701-01	John Debra Bradley	7899 Lake Street	1	1			
21	32-562-704-05			0	0	non build - water side US 31		
22	32-005-175-03	Kenneth & Jean Sibley	7885 Lake Street	1	1			
23	32-005-175-04			1	1			
24	32-005-175-01	Scott Burnham	17833 Lake Street	1	1			
25	32-005-175-02			1	9	Café - 1800 sft @5REU/1000		
26	32-561-703-03			1	1			
27	32-342-701-01	Joyce Gorley	7809 Lake Street	1	1			
28	32-342-704-09			0	0	non build - water side US 31		
29	32-562-701-01	State of MI Dept Highway		0	0	non build - water side US 31		
30	32-562-703-10			0	0	non build - water side US 31		
31	32-562-713-01	Tooker Bernard	Main Street	1	1			
32	32-342-701-09	Connie Wallstrom	7799 Lake Street	1	1			
33	32-342-701-13		7789 Lake Street	1	1			
34	32-342-701-05	Bear Lake Township Hall	7771 Lake Street	0	0	Government		
35	32-342-703-01			0	0	Government		
36	32-222-701-01	CJ McGee LLC	7749 Lake Street	1	1			
37	32-222-701-05	Bear Lake Mason	7737 Lake Street	1	1			
38	32-221-705-03	Stacy & Leah Peterson	7717 Lake Street	1	1			
39	?	Manistee Land Bank - variety	12407 Lynn Street	1	1	Government		
40	?	Manistee Land Bank - white house	12395 Lynn Street	1	1	Government		
41	32-221-706-01	Jon Haugen or Filer Cr Union	7685 Lake Street	1	1			
42	32-221-701-01	Toni Schroder	7820 Lake Street	1	1			
43	32-221-701-02	Bear Lake Cottages Williams	7816 Lake Street	1	3	3 units (assumed)		
44	32-221-701-03	Schroder, Nusmeyer	7802 Lake Street	1	1			
45	32-221-701-04	Schroder, Nusmeyer - marina	7798 Hopkins Dr	1	1			
46	32-221-701-09	BL Village/BL Township	7727 Lake Street	0	0	non build - road way		
47	32-541-701-01	BL Village		0	0	non build -		
48	32-541-701-02	BL Village	7781 or 7718 Lake Street	1	1			
49	32-221-705-01	BL Village - pocket park	7725 Lake Street	0	0			
50	32-541-701-05	Clyde W. & James R Reed		1	1			
51	32-541-701-06	Lions Club	7748 Lake Street	1	1			
52	32-541-701-08	Hugh & Paula Yorton	7762 Lake Street	1	1			
53	32-541-701-03	James & Shelly Reed	7730 or 7726 Lake Street	1	1			
54	32-541-702-01	Village	7730 Lake Street	1	1			
55	32-541-702-05	BL Village	7718 Lake Street	1	1			
56	32-541-703-01	James M Kieszkowski Trust	7710 Lake Street	1	1			
57	32-541-703-05	Hillary Potter Erickson	7702 Lake Street	1	1			
58	32-541-703-07	Brenden & Krista Fink	7686 Lake Street	1	1			
59	32-541-704-03	Glenn Moore Trust	7676 Lake Street	1	1			
60	32-541-705-03	James & Shelly Reed	7660 Lake Street	1	1	4000 sft retail @0.5 REU/1000		
61	32-005-425-01		?	0	0	non build ?		
62	32-221-702-01	Blarney Castle Inc	7681 Lake Street	1	1			
63	32-221-702-09	Bear Lake Village	7576 Lake Street	0	0	non build - park		
64	32-221-703-02	Blarney Castle Inc	?	0	0	non build		
65	32-221-703-03	Robert & Marjorie Rosenzweig	7526 South Shore	1	1			
66	32-221-703-08	Marilyn McCarthy	7494 South Shore	0	0	non build		
67	32-221-707-01	Blarney Castle Oil Co. Inc	12348 West Street	1	5	3200 sft @ 0.2reu/1000 + 8 pumps@0.5 reu/pump		
68	32-221-708*17	Robert Barbara DeWildt	12273 West Street	1	10	20 room@0.5reu/room		
69	32-221-732-10	Christopher & Dawn Sutton	12252 Maple Street	1	1			
70	32-221-732-06	Venus Bradford	12234 Maple Street	1	1			

	A	B	C	D	E	F	G	H
71	32-221-732-05	VanLiere, James R Trust	12220 Maple Street	1	1			
72	32-231-732-03	Barbara K Bauer-Smith	12202 Maple Street	1	1			
73	32-231-731-08	Olah, Renee	12182 Maple Street	1	1			
74	32-231-725-08	Athony Evans Rugg Marla Mae	12915 Maple Street	1	1			
75	32-221-725-06		12217 Maple Street	0	0	non build		
76	32-221-725-05	Yvonne Baughan	12229 Maple Street	1	1			
77	32-221-725-01	Patricia Higgins	12241 Maple Street	1	1			
78	32-221-711-05	Kent Babcock	12291 Maple Street	1	1			
79	32-221-710-05	Blarney Castle Oil Co,	12332 Lake Street	1	1			
80	32-221-710-01	Gloria Edwards, ? Bennett	7623 Main Street	1	1			
81	32-221-713-02	Barry Boughner	7647 Main Street	1	1			
82	32-221-713-01	Cole Setser	7651 Main Street	1	1			
83	32-221-705-09	Karen Leckrone	12391 Lynn Street	1	1			
84	32-221-714-16	Jerry Caroll Bair	12372 Lynn Street	1	1			
85	32-221-715-03	Oak Grove Cremanation Center Inc	12353 Lynn Street	1	1			
86	32-221-716-14	same as above		1	1			
87	32-221-716-13	Nancy Charlich-Smith	7745 Main Street	1	1			
88	32-222-702-01	Village of Bear Lake (Office/Museum)	12376 Virginia Street	1	1			
89	32-221-716-12	Andrea Ware	12352 Virginia Street	1	1			
90	32-221-716-10	Todd & Nancy Netherton	12334 Virginia Strett	1	1			
91	32-221-716-09	Jim Thompson	12328 Virginia Street	1	1			
92	32-221-716-07	Megan Meyer	12318 Virginia Street	1	1			
93	32-221-716-03	Rebecca & Kenneth Cook	12294 Virginia Street	1	1			
94	32-221-716-06	Rebecca & Kenneth Cook	empty lot no addy	1	1			
95	32-221-716-01	Glenda & Merlin Norby	12274 Virginia Street	1	1			
96	32-341-701-01	Glenda & Merlin Norby	empty lot no addy	1	1			
97	32-341-702-01	Lori & Curtiss Schaeffer	12273 Virginia Street	1	1			
98	32-221-717-11	Lori & Curtiss Schaeffer	empty lot no addy	1	1			
99	32-221-717-10	Keddie-Norconk Library	12325 Virginia	1	1			
100	32-221-717-07	Keddie-Norconk Library	empty lot no addy	1	1			
101	32-221-717-02	Nelson LLC	7777 Main Street	1	1			
102	32-221-717-01	Woodfield Acres LLC	no address - empty lot	1	1			
103	32-221-704-01	Jerald Johnson	7776 Main Street	1	1			
104	32-221-704-05	Greg & Cindi McPherson	7812 Main Street	1	1			
105	32-221-718-13	Woodfield Acres LLC (Apts)	12346 Smith Street	1	1			
106	32-221-718-13	Pienta Joseph A Trust	12334 Smith Street	1	1			
107	32-221-718-07	BL United Methoist Chruch	12346 Smith Street	1	1			
108	32-221-702-06	Edwards Kenneth Hugen & Diana Trust	empty lot no addy	1	1			
109	32-341-702-05	Edwards Kenneth Hugen & Diana Trust	empty lot no addy	1	1			
110	32-341-703-01	Bear Lake Public School	7748 Cody St & 7795 Stuart St	1	19	Assumed		
111	32-343-701-01	Bonnie & Delbert Miner	12143 Smith Street	1	1			
112	32-343-701-09	Robert June Iverson	12201 Smith Street	1	1			
113	32-343-701-15	Susan Meyer	12227 Smith Street	1	1			
114	32-343-702-03	Lyndia Virginia McClintock	12243 Smith Street	1	1			
115	32-221-702-09	Patricia Gilbert	12267 Smith Street	1	1			
116	32-221-702-11	Stephen Swanson	12291 Smith Street	1	1			
117	32-221-702-15	Ovon Smith	12311 Smith Street	1	1			
118	32-005-400-01	BL United Methoist Chruch	7861 Main Street	1	4	8000 sft @ .25/1000		
119	32-561-701-01	Suzanna Kae Fischer	7980 Main Street	1	1			
120	32-562-709-17	Jacquie Johnson	7980 Main Street	1	1			
121	32-562-713-00	Natalie Ware	7991 Main Street	1	1			
122								
123			Total	100	144			

Pleasanton Final Sewer District

PARCEL NUMBER	OWNER	ADDRESS	special	benefit	REASON
			ass'ment	units	
			units		
12-423-702-70	ABBOTT FAMILY TRUST	14127 HOUSER AVE	1	1	
12-421-714-09	ABEL, STEVEN R	13845 LAKESIDE AVE	1	1	
12-401-701-01	ADAMS DAVID & WILAMENIA	HOPKINS FOREST DR	0	0	BACK LOT
12-481-701-01	ADAMS DAVID & WILAMENIA	HOPKINS FOREST DR	0	0	BACK LOT
12-031-325-00	ADAMS DAVID & WILMENIA	HOPKINS FOREST DR	0	0	ENCROACH
12-031-325-03	ADAMS DAVID + WILAMENIA	13353 HOPKINS FOREST	1	1	
12-221-701-01	ALLYN, DAVID F	6995 THREE PINES RD	1	1	
12-563-701-09	ANDERSON, ZOLA (DC)	LAKESIDE AVE	1	1	
12-461-707-05	AXCE CHALES W & ALICE KRUSE T	7145 BAIR AVE	1	1	
12-461-727-09	AXCE CHARLES & ALICE K TRUST	BAIR AVE	0	0	ACC BLDG
12-461-720-01	AXCE DON & DEBRA	BAIR AVE	1	1	
12-461-720-05	AXCE DONALD & DEBRA	BAIR AVE	1	1	
12-461-734-05	AXCE DONALD & DEBRA	BAIR AVE	0	0	BACK LOT
12-461-703-01	AYERS, NANCY SPARKS (TRUST)	7061 BAIR AVE	1	1	
12-461-725-01	AYERS, NANCY SPARKS (TRUST)	BAIR AVE	0	0	ACC BLDG
12-031-350-08	BARTON, ROBERT A & PEGGY (TRUST)		0	0	UNBUILDABLE
12-031-350-09	BARTON, ROBERT A & PEGGY A (T	13159 HOPKINS FOREST	1	1	
12-423-705-30	BASHFORD, FREDRICK C (TRUST 50	14119 HOWELL AVE	1	1	
12-033-200-21	BASKIN, MARY/LOVE, AMY		0	0	BACK LOT
12-421-709-05	BASKIN, MARY/LOVE, AMY	13723 LAKESIDE AVE	1	1	
12-221-710-01	BAUGH THOMAS M	6565 THREE PINES RD	1	1	
12-030-375-01	BAUMAN FAMILY TRUST	6488 BIG BAY RD	1	1	
12-031-200-04	BAUMAN FAMILY TRUST	6440 THREE PINES RD	1	1	
12-033-200-13	BEDNAREK, PHILLIP G		0	0	BACK LOT
12-421-714-01	BEDNAREK, PHILLIP G	13829 LAKESIDE AVE	1	1	
12-461-722-01	BEELER TIMOTHY & NAN	7463 BAIR AVE	1	1	
12-461-735-07	BEELER TIMOTY & NAN	BAIR AVE	0	0	BACK LOT
12-031-100-01	BEGHTEL ALAN DEAN FAMILY		0	0	BACK LOT
12-221-707-09	BEGHTEL FAMILY TRUST	THREE PINES RD	1	1	
12-033-275-03	BELLEGIE LAURA ET AL		0	0	BACK LOT
12-421-708-02	BELLEGIE LAURA ET AL	13681 LAKESIDE AVE	1	1	
12-031-275-02	BENEDICT, MILBRY E. (LE)	6493 THREE PINES RD	1	1	
12-481-705-07	BINDAS, STEVEN P & BINDAS, STEV	HOPKINS FOREST DR	0	0	BACK LOT
12-031-350-11	BINDAS, STEVEN PETER	13137 HOPKINS FOREST	1	1	
12-031-350-02	BISSIG, ENGRACIA ELIZABETH	13231 HOPKINS FOREST	1	1	
12-033-425-07	BOND, ROBERT & MARCIA (TRSTEES)		0	0	BACK LOT
12-441-703-03	BOND, ROBERT J & MARCIA K (TR	13401 LAKESIDE AVE	1	1	
12-031-350-06	BRISBIN MARVIN & RITA		0	0	UNBUILDABLE
12-031-350-07	BRISBIN, MARVIN D & RITA	13171 HOPKINS FOREST	1	1	
12-481-704-05	BRISBIN, MARVIN D & RITA	HOPKINS FOREST DR	1	1	
12-461-723-00	BROOKS CHARLES A & RENGOM	7491 BAIR AVE	1	1	
12-421-701-05	BROWN RANDY L & REGINA L	PETERS ST	1	1	
12-422-706-05	BROWN RANDY L & REGINA L	PETERS ST	0	0	BACK LOT
12-028-350-06	BUELL, ROBERT I.		1	1	
12-028-350-08	BUELL, ROBERT I.		0	0	UNBUILDABLE
12-442-702-01	BURLEY JOAN M	13067 PLEASANTON HWY	0	0	UNBUILDABLE
12-442-701-05	BURLEY LINDA & BURLEY JOAN	PLEASANTON HWY	0	0	UNBUILDABLE

12-563-702-01	BURLEY REGINA & ROGER	13067 LAKESIDE AVE	1	1	
12-442-701-07	BURLEY ROGER ETAL	PLEASANTON HWY	0	0	UNBUILDABLE
12-442-702-03	BURLEY, REGINA M	PLEASANTON HWY	0	0	UNBUILDABLE
12-033-200-20	BURT, DALE CLARE & DONNA MAE (LE)		0	0	BACK LOT
12-421-710-01	BURT, DALE CLARE & DONNA MAE	13731 LAKESIDE AVE	1	1	
12-221-706-05	CAPUA, THOMAS L. SR & AMY P (T	6731 THREE PINES RD	1	1	
12-031-325-05	CAREY MICHAEL D	13317 HOPKINS FOREST	1	1	
12-481-701-02	CAREY MICHAEL D	HOPKINS FOREST DR	0	0	BACK LOT
12-423-702-30	CARRAHER, FRANK B	14149 HOUSER AVE	1	1	
12-028-350-13	CHMURA JOSEPH & CHMURA VIRG	14047 LAKESIDE AVE	1	3	
12-028-350-12	CHMURA RICHARD J		1	1	
12-028-350-21	CHMURA RICHARD J		0	0	BACK LOT
12-031-350-10	CLARK, DAVID	HOPKINS FOREST DR	0	0	UNBUILDABLE
12-481-705-01	CLARK, DAVID	13152 HOPKINS FOREST	1	1	
12-461-702-05	CLAY, TONI L.	7043 BAIR AVE	1	1	
12-461-724-09	CLAY, TONI L	BAIR AVE	0	0	ACC BLDG
12-033-425-12	COLE, CARRIE J		0	0	BACK LOT
12-441-705-09	COLE, CARRIE J	13305 LAKESIDE AVE	1	1 1/4	
12-442-706-01	COLE, CARRIE J		0	0	UNBUILDABLE
12-028-350-20	CONROY FAMILY COTTAGE TRUST	14099 LAKESIDE AVE	1	1	
12-221-702-09	COOLEY-WALKER STEWARDSHIP G	6901 THREE PINES RD	1	1	
12-222-703-01	COOLEY-WALKER STEWARDSHIP G	THREE PINES RD	0	0	ACC BLDG
12-421-703-09	COWDEN, RONALD K (LE)	13569 LAKESIDE AVE	1	1	
12-562-701-04	COWIE RALPH & MARIANNA	O'ROURKE DR	0	0	BACK LOT
12-562-703-05	COWIE RALPH TRUST	HOPKINS FOREST DR	1	1	
12-033-425-08	COX JAMES W & DEBORAH A		0	0	BACK LOT
12-441-703-05	COX JAMES W & DEBORAH A	13379 LAKESIDE AVE	1	1	
12-442-708-01	COX JAMES W & DEBORAH A		0	0	UNBUILDABLE
12-222-705-01	CRAMPTON JOINT DECLARATION	6823 THREE PINES RD	0	0	ACC BLDG
12-221-704-08	CRAMPTON, GAYLE J	6807 THREE PINES RD	1	1	
12-221-704-05	CRAMPTON, JEANNE	6823 THREE PINES RD	1	1	
12-031-200-03	CZARNECKI, BARBARA	6430 THREE PINES RD	1	1	
12-029-475-02	DAYTON BEAR LAKE OUTING CLUB		1	1	
12-422-701-09	DND OLSON FARM, LLC	EMERY ST	0	0	BACK LOT
12-033-200-06	DOUGLAS JAMES & CATHERINE		0	0	BACK LOT
12-421-718-05	DOUGLAS JAMES & CATHERINE	13925 LAKESIDE AVE	1	1 1/4	
12-031-200-02	DRIESENKA, DANIEL S (TRUST)		1	1	
12-031-350-03	DUPILKA JOS + DORIS	13217 HOPKINS FOREST	1	1	
12-481-702-06	DUPILKA JOSEPH & DORIS	HOPKINS FOREST DR	0	0	BACK LOT
12-031-200-40	DYKHUIS, DANIEL JAMES	6410 THREE PINES RD	1	1	
12-461-717-01	EARDLEY, CHARLES H	7365 BAIR AVE	1	1	
12-461-733-01	EARDLEY, CHARLES H	BAIR AVE	0	0	BACK LOT
12-461-706-01	EATON FAMILY TRUST	7123 BAIR AVE	1	1	
12-461-726-07	EATON FAMILY TRUST	BAIR AVE	0	0	BACK LOT
12-221-702-02	ECKHOUT MICHAEL	6941 THREE PINES RD	1	1	
12-481-704-01	ECKHOUT, MARYBETH	13200 HOPKINS FOREST	1	1	
12-441-704-09	EDGREN, ALAN J & GAIL D	13347 LAKESIDE AVE	1	1	
12-421-705-01	EGGERS BRUCE GORDON & ANNE	13601 LAKESIDE AVE	1	1	
12-421-705-09	EISENLOHR ROBERT & PATRICIA	13615 LAKESIDE AVE	1	1	
12-422-703-00	EISENLOHR ROBERT L & PATRICIA D		0	0	BACK LOT
12-221-706-01	EMBURY JAMES L & JAMES T	THREE PINES RD	1	1	

12-222-706-05	EMBURY JAMES L & JAMES T	THREE PINES RD	0	0	BACK LOT
12-221-705-09	EMBURY MABEL & JAMES T	6759 THREE PINES RD	1	1	
12-222-706-03	EMBURY MABEL & JAMES T	THREE PINES RD	0	0	ACC BLDG
12-421-701-03	EMINGER A CHARLES & BARBARA	13517 LAKESIDE AVE	1	1	
12-422-709-01	EMINGER A CHARLES & BARBARA	PETERS ST	0	0	BACK LOT
12-422-709-03	EMINGER A CHARLES & BARBARA	PETERS ST	0	0	BACK LOT
12-423-706-40	ENGLAND MELVIN S & NANCY M	14188 HOWELL AVE	1	1	
12-461-708-01	ENNIS MICHAEL & SUSAN	7161 BAIR AVE	1	1	
12-461-727-10	ENNIS, MICHAEL	BAIR AVE	0	0	ACC BLDG
12-031-200-10	ERICKSON, BRIAN LEE & SHANNON	6450 THREE PINES RD	1	1	
12-562-701-07	ERTEL DAVID E & SANDRA	HOPKINS FOREST DR	0	0	ACC BLDG
12-562-703-03	ERTEL DAVID E & SANDRA	13063 HOPKINS FOREST	1	1	
12-461-701-01	EW VENTURES, LLC	7019 BAIR AVE	1	1 1/4	
12-461-724-01	EW VENTURES, LLC	BAIR AVE	0	0	ACC BLDG
12-442-701-02	FAUZ, SUSAN	PLEASANTON HWY	0	0	UNBUILDABLE
12-031-325-01	FINOUT, III., GUY E & LINDA L		1	1	
12-031-150-02	FISHEL JAMES		1	1	
12-031-125-01	FISHEL JAMES L		0	0	ACC BLDG
12-221-702-04	FLEMING TOM & FRANCES	6931 THREE PINES RD	1	1	
12-222-702-03	FLEMING TOM & FRANCES	THREE PINES RD	0	0	ACC BLDG
12-222-703-07	FLEMING, THOMAS M	6870 THREE PINES RD	1	1	
12-031-125-02	FOSTER, BEVERLY	THREE PINES RD	0	0	ACC BLDG
12-221-710-07	FOSTER, BEVERLY	6527 THREE PINES RD	1	1	
12-033-425-11	FRONK WILLIAM & NANCY TRUSTS		0	0	BACK LOT
12-441-705-05	FRONK WILLIAM R TRUST	13321 LAKESIDE AVE	1	1	
12-442-704-01	FRONK WILLIAM R TRUST	PLEASANTON HWY	0	0	UNBUILDABLE
12-221-707-02	GENUALDI JOHN & DEBRA	6695 THREE PINES RD	1	1	
12-222-707-05	GENUALDI JOHN M & DEBRA	THREE PINES RD	0	0	BACK LOT
12-423-702-10	GIARD JOEL R & BARBARA D TRUS	14181 HOUSER AVE	1	1	
12-421-704-05	GILMOUR DONALD & MARY	LAKESIDE AVE	1	1	
12-422-706-03	GILMOUR DONALD & MARY	PETERS ST	0	0	BACK LOT
12-031-125-06	GUNSELL RODNEY & ANNETTE K		0	0	ACC BLDG
12-221-707-05	GUNSELL RODNEY & ANNETTE K	6677 THREE PINES RD	1	1	
12-461-730-07	HAGUE, JR., DAVID	BAIR AVE	0	0	ACC BLDG
12-423-701-80	HALL DAVID C DDS & KAREN S	14170 DAYTON AVE	1	1	
12-028-350-15	HAMMER, PAUL S (LE)	14031 LAKESIDE AVE	1	1	
12-031-125-00	HAMP, JOHN & JERI LIVING TRUST	THREE PINES RD	0	0	ACC BLDG
12-031-150-01	HAMP, JOHN & JERI LIVING TRUST	6519 THREE PINES RD	1	1	
12-421-706-09	HANNAN, GRETCHEN R (TRUST)	13641 LAKESIDE AVE	1	1	
12-031-200-01	HARRIS BYRAN W & KIMBERLY	6325 BIG BAY RD	1	1	
12-033-425-02	HEYBOER, RANDALL		0	0	BACK LOT
12-441-701-01	HEYBOER, RANDALL	13489 LAKESIDE AVE	1	1 1/4	
12-423-701-60	HIETANEN PAUL W & NANCY L	14160 DAYTON AVE	1	1	
12-442-701-01	HMP FAMILY LLC	13015 LAKESIDE AVE	1	1	
12-033-425-09	HOBART, ALAN J & GAIL D		0	0	BACK LOT
12-423-702-60	HOLMEN, JAMES	14147 HOUSER AVE	1	1	
12-461-705-01	HOLT, ELEANOR LOUISE	7103 BAIR AVE	1	1	
12-461-726-03	HOLT, ELEANOR LOUISE	7103 BAIR AVE	0	0	BACK LOT
12-423-701-01	HORN, DAVID R & KAREN W (TR 50	14120 DAYTON AVE	1	1	
12-421-712-09	HOSPENTHAL, PAULETTE	13801 LAKESIDE AVE	1	1	
12-033-200-25	HOSPENTHAL, PAULETTE M		0	0	BACK LOT

12-423-705-40	HUBBARD DONALD J & ROBERTA	14118 HOWELL AVE	1	1	
12-221-701-05	HYBZA EDWARD & JEANNE	6973 THREE PINES RD	1	1	
12-221-703-01	JENNINGS, MARTIN R & TERESA T	6891 THREE PINES RD	1	1	
12-222-703-03	JENNINGS, MARTIN R & TERESA T	THREE PINES RD	0	0	ACC BLDG
12-221-710-03	JOHNSON JEFF & JO ANN TRUST	6535 THREE PINES RD	1	1	
12-031-125-03	JOHNSON JEFFREY R & JOANN L TR	6530 THREE PINES	0	0	ACC BLDG
12-461-727-08	JOHNSON MARILYN	BAIR AVE	0	0	BACK LOT
12-461-728-01	JOHNSON MARILYN	BAIR AVE	0	0	ACC BLDG
12-033-450-05	JOHNSON, DARLENE	LAKESIDE AVE	0	0	BACK LOT
12-441-708-09	JOHNSON, DARLENE	13161 LAKESIDE AVE	1	1	
12-442-703-01	JOHNSON, DARLENE	PLEASANTON HWY	0	0	UNBUILDABLE
12-031-200-35	KACZMAREK PAUL & CYNTHIA	6400 THREE PINES ROAD	1	1	
12-031-200-50	KADZBAN JOSEPH & ELJEAN		1	1	
12-033-200-24	KANTOR, LAURA		0	0	BACK LOT
12-421-713-01	KANTOR, LAURA	13807 LAKESIDE AVE	1	1	
12-031-200-20	KASTELIC FAMILY REVOCABLE TRU	6438 THREE PINES RD	1	1	
12-401-701-02	KIESZKOWSKI, JAMES M. (TRUST)	13365 HOPKINS FOREST	1	1	
12-461-713-01	KINGERY, PAMELA	7265 BAIR AVE	1	1	
12-031-325-04	KNIGHT CHARLES & PHYLLIS A	13325 HOPKINS FOREST	1	1	
12-421-701-08	KNUTSON, DEAN E	13533 LAKESIDE AVE	1	1	
12-422-706-02	KNUTSON, DEAN E		0	0	BACK LOT
12-033-200-14	KOCH, DAVID J	LAKESIDE AVE	0	0	BACK LOT
12-033-200-15	KOCH, DAVID J		0	0	BACK LOT
12-033-200-26	KOCH, DAVID J	LAKESIDE AVE	0	0	BACK LOT
12-421-713-05	KOCH, DAVID J	13823 LAKESIDE AVE	1	1	
12-421-713-07	KOCH, DAVID J	LAKESIDE AVE	1	1	
12-031-350-13	KOLESAR JULIE ANN		1	1	
12-033-425-10	KONING JAMES & DIANE		0	0	BACK LOT
12-441-705-01	KONING JAMES & DIANE	13335 LAKESIDE AVE	1	1	
12-442-703-02	KRAUSE ARNOLD J ET UX	PLEASANTON HWY	0	0	UNBUILDABLE
12-442-703-03	KRAUSE MARLENE	PLEASANTON HWY	0	0	UNBUILDABLE
12-033-450-03	KRAUSE MARLENE J		0	0	BACK LOT
12-441-707-09	KRAUSE MARLENE J	13201 LAKESIDE AVE	1	1	
12-028-350-18	KRIGBAUM KAREN		0	0	BACK LOT
12-421-720-13	KRIGBAUM KAREN	13984 LAKESIDE AVE	1	1	
12-421-720-17	KRIGBAUM KAREN	LAKESIDE AVE	0	0	UNBUILDABLE
12-563-702-03	KUIPER, WILLIAM J & JUDY L (LE)	13055 LAKESIDE AVE	1	1	
12-563-702-07	KUMMER CHARLES W JR & LORRA	13031 LAKESIDE AVE	1	1	
12-442-701-03	LAATSCH DON & JANET	PLEASANTON HWY	0	0	UNBUILDABLE
12-563-702-05	LAATSCH DON & JANET	13043 LAKESIDE AVE	1	1	
12-031-325-09	LADUKE, ALLAN J (LE)	13241 HOPKINS FOREST	1	1	
12-033-200-11	LAKESIDE COTTAGES AT BEAR LAK	13849 LAKESIDE AVE	1	1	
12-421-714-10	LAKESIDE COTTAGES AT BEAR LAK	13849 LAKESIDE AVE	1	1	
12-423-704-50	LARUE (HUMPHREYS), PAULA	14173 HOWELL AVE	1	1	
12-423-703-90	LENZ JAMES F & KAYE C	14168 HOUSER AVE	1	1	
12-423-703-40	LENZ, SCOTT & KELLY (50% INT)	HOUSER AVE	1	1	
12-031-125-05	MALLISON, KEVIN		0	0	ACC BLDG
12-221-708-01	MALLISON, KEVIN	6649 THREE PINES RD	1	1	
12-401-701-03	MANNING FAMILY TRUST	13377 HOPKINS FOREST	1	1	
12-401-701-05	MANNING, JANE	13393 HOPKINS FOREST	1	1	
12-028-350-11	MARLOW, JEFFREY	14051 LAKESIDE AVE	1	1	

12-423-703-60	MARTIN SARA ANN	14134 HOUSER AVE	1	1	
12-221-706-08	MARTIN, ANNE T	6715 THREE PINES RD	1	1	
12-222-707-01	MARTIN, ANNE T		0	0	BACK LOT
12-033-200-16	MARTON, JOHN LUCAS		0	0	BACK LOT
12-421-712-05	MARTON, JOHN LUCAS	13797 LAKESIDE AVE	1	1	
12-221-701-04	MARTTILA, CHRISTOPHER JOHN	6977 THREE PINES RD	1	1	
12-222-701-01	MARTTILA, CHRISTOPHER JOHN	THREE PINES RD	0	0	ACC BLDG
12-461-718-05	MATHIEU MADELEINE TRUST	BAIR AVE	0	0	BACK LOT
12-461-733-07	MATHIEU MADELEINE TRUST	BAIR AVE	0	0	BACK LOT
12-461-734-01	MATHIEU MADELEINE TRUST	BAIR AVE	0	0	ACC BLDG
12-461-719-01	MATHIEU MADELINE TRUST	7413 BAIR AVE	1	1	
12-028-350-22	MAY JOAN R TRUST	14079 LAKESIDE AVE	1	1	
12-028-325-09	MAY JOANN TRUST	LAKESIDE AVE	0	0	BACK LOT
12-461-721-05	MCBRIDE JEFFERY W & ANNA TRU	7453 BAIR AVE	1	1	
12-461-735-03	MCBRIDE JEFFERY W & ANNA TRU	BAIR AVE	0	0	BACK LOT
12-461-735-05	MCBRIDE JEFFERY W & ANNA TRU	BAIR AVE	0	0	BACK LOT
12-031-125-08	MCCARTHY KAREN S		0	0	ACC BLDG
12-221-709-03	MCCARTHY KAREN S	6589 THREE PINES RD	1	1	
12-033-450-01	MCCRACKEN BROTHERS LLC		0	0	BACK LOT
12-441-706-10	MCCRACKEN BROTHERS LLC	13225 LAKESIDE AVE	1	1 1/4	
12-442-703-10	MCCRACKEN BROTHERS LLC	LAKESIDE AVE	0	0	UNBUILDABLE
12-028-350-09	MCGILLIARD, JOHN H	14063 LAKESIDE AVE	1	1	
12-562-703-07	MIEHLKE TODD J & ROBIN	HOPKINS FOREST DR	1	1	
12-562-701-08	MINER, JOHN	HOPKINS FOREST DR	1	1	
12-028-350-10	MITCHELL, KRISTINE A (TRUST)	14059 LAKESIDE AVE	1	1	
12-031-275-03	MOGK WILLIAM C TRUST	6499 THREE PINES RD	1	1	
12-031-275-01	MOGK, PETER E (TRUSTEE)		1	1	
12-221-701-10	MOORE RICHARD W & MARCIA	6951 THREE PINES RD	1	1 1/4	
12-401-701-09	MORIN, GARY	HOPKINS FOREST DR	1	1	
12-423-704-20	MORRIS, DANIEL R	14186 HOUSER AVE	1	1	
12-423-705-60	NAYLOR RONALD & CYNTHIA TRU	14134 HOWELL AVE	1	1	
12-421-716-05	NELSON FREDOLF & DELORES	13883 LAKESIDE AVE	1	1	
12-033-200-09	NELSON FREDOLF O & DELORES M	LAKESIDE AVE	0	0	BACK LOT
12-031-275-04	NORKUS, SANDRA S	6489 THREE PINES RD	1	1	
12-423-703-20	OBLINGER JON C ETAL	14116 HOUSER AVE	2/3	2/3	
12-423-705-10	O'HARE, RICHARD RAYMOND	14137 HOWELL AVE	1	1	
12-033-200-12	OLIVER JANE S TRUST		0	0	BACK LOT
12-421-714-05	OLIVER JANE S TRUST	13841 LAKESIDE AVE	1	1	
12-031-200-05	OLSON ALDEN C & BARBARA H		1	1	
12-421-707-02	OLSON, DOUGLAS S	13651 LAKESIDE AVE	1	1	
12-421-707-05	OLSON, II., LEONARD W	13657 LAKESIDE AVE	1	1	
12-031-325-07	O'ROURKE DOROTHY H ETAL	13297 HOPKINS FOREST	1	1	
12-481-701-06	O'ROURKE DOROTHY H ETAL	HOPKINS FOREST DR	0	0	BACK LOT
12-461-716-01	OWENS, DAN L	7341 BAIR AVE	1	1	
12-461-732-05	OWENS, DAN L	BAIR AVE	0	0	ACC BLDG
12-423-701-20	OZDEN, ELIZABETH H (TRUST) (50	14130 DAYTON AVE	1	1	
12-461-715-01	PARKS FAMILY TRUST	7319 BAIR AVE	1	1	
12-461-732-01	PARKS FAMILY TRUST	BAIR AVE	0	0	ACC BLDG
12-033-425-04	PARRAMORE, DOUGLAS C (TRSTEE)		0	0	BACK LOT
12-441-702-01	PARRAMORE, DOUGLAS C (TRSTEE)	13453 LAKESIDE AVE	1	1	
12-442-710-07	PARRAMORE, DOUGLAS C (TRSTEE)		0	0	UNBUILDABLE

12-033-450-02	PEDERSON TIMOTHY		0	0	BACK LOT
12-442-703-09	PEDERSON TIMOTHY	PLEASANTON HWY	0	0	UNBUILDABLE
12-441-707-05	PEDERSON TIMOTHY TRUST	13211 LAKESIDE AVE	1	1	
12-033-450-06	PEDERSON, NANCY	13010 LAKESIDE AVE	1	1	
12-401-701-07	PELHAM LORI W & WOODRUFF SC	13409 HOPKINS FOREST	1	1	
12-221-701-07	PELLEGRINO JOSEPH TRUST	6965 THREE PINES RD	1	1	
12-222-701-03	PELLEGRINO JOSEPH TRUST	THREE PINES RD	0	0	BACK LOT
12-028-350-03	PEPLINSKI JEROME F @ PAMELA A	14177 BUTWELL RD	1	1	
12-031-200-25	PERALTA, PHILLIP (TRUST)	6370 THREE PINES RD	1	1	
12-563-701-07	PETERSON, ROBERT N	13095 LAKESIDE AVE	1	1	
12-461-714-01	PETROELJE LARRY TRUST	7297 BAIR AVE	1	1	
12-461-731-03	PETROELJE LARRY TRUST	BAIR AVE	0	0	BACK LOT
12-421-706-05	PIKE ELLSWORTH S & BEVERLY J	13631 LAKESIDE AVE	1	1	
12-421-701-10	PIPER ACCESS LLC		1	1	
12-422-706-09	PIPER ACCESS LLC		0	0	BACK LOT
12-562-703-01	PLAGANY ROBERT ETAL	13033 HOPKINS FOREST	1	1	
12-031-200-07	PLEASANTON TOWNSHIP		0	0	EXEMPT
12-033-150-02	PLEASANTON TOWNSHIP		0	0	EXEMPT
12-421-705-10	PLEASANTON TOWNSHIP	LAKESIDE AVE	0	0	EXEMPT
12-421-707-01	PLEASANTON TOWNSHIP	LAKESIDE AVE	0	0	EXEMPT
12-422-701-01	PLEASANTON TOWNSHIP		0	0	EXEMPT
12-422-704-05	PLEASANTON TOWNSHIP		0	0	EXEMPT
12-421-704-01	POGGENDORF, RICHARD J	13575 LAKESIDE AVE	1	1	
12-422-706-08	POGGENDORF, RICHARD J	PETERS ST	0	0	BACK LOT
12-442-702-07	POWELL, ROBERT L.	PLEASANTON HWY	0	0	UNBUILDABLE
12-563-701-01	POWELL, ROBERT L.	13141 LAKESIDE AVE	1	1	
12-033-200-05	QUACKENBUSH JOHN & DEBRA	LAKESIDE AVE	0	0	BACK LOT
12-421-718-09	QUACKENBUSH JOHN & DEBRA	13933 LAKESIDE AVE	1	1	
12-442-710-01	R & B DEVELOPMENT INC		0	0	UNBUILDABLE
12-421-706-01	RAHN DAVID & NAN	13625 LAKESIDE AVE	1	1 1/4	
12-423-703-10	RAIFF FAMILY TRUST	14111 HOUSER AVE	1	1	
12-033-425-05	REIDY THOMAS P TRUST		0	0	BACK LOT
12-441-702-06	REIDY THOMAS P TRUST	13429 LAKESIDE AVE	1	1	
12-033-200-01	RENGO PHILLIP		0	0	BACK LOT
12-421-720-05	RENGO PHILLIP E	13971 LAKESIDE AVE	1	1	
12-033-200-00	RENGO RENA ETAL		0	0	BACK LOT
12-421-720-09	RENGO RENA ETAL	13979 LAKESIDE AVE	1	1	
12-221-703-07	RICHARDS, BRIAN G	6863 THREE PINES RD	1	1	
12-461-722-05	RICHMOND RODERIC & RICHMOND	BAIR AVE	1	1	
12-461-736-01	RICHMOND RODERIC & RICHMOND	BAIR AVE	0	0	UNBUILDABLE
12-421-702-01	RILEY, PATRICK & KIMBERLY	13535 LAKESIDE AVE	1	1 1/8	
12-421-702-03	RILEY, PATRICK & KIMBERLY	13535 LAKESIDE AVE	1	1 1/8	
12-422-706-07	RILEY, PATRICK & KIMBERLY		0	0	BACK LOT
12-562-701-03	ROBERTS, JOHN T	HOPKINS FOREST DR	0	0	BACK LOT
12-562-701-05	ROBERTS, JOHN T	13023 HOPKINS FOREST	1	1	
12-033-200-17	ROHN GERALD R & SHARON		0	0	BACK LOT
12-421-712-01	ROHN GERALD R & SHARON K	13787 LAKESIDE AVE	1	1	
12-033-450-04	ROLLENHAGEN FAMILY TRUST	LAKESIDE AVE	0	0	BACK LOT
12-441-708-05	ROLLENHAGEN FAMILY TRUST	13181 LAKESIDE AVE	1	1	
12-442-703-05	ROLLENHAGEN FAMILY TRUST	PLEASANTON HWY	0	0	UNBUILDABLE
12-221-703-05	ROLLENHAGEN, NATHAN	6873 THREE PINES RD	1	1	

12-028-325-01	ROWLAND WM E ETAL		1	1	
12-028-350-07	ROWLAND WM E ETAL	14107 LAKESIDE AVE	1	1	
12-562-701-01	RUSSELL RICHARD L & PHYLLIS TR	13 MILE RD	0	0	BACK LOT
12-562-701-09	RUSSELL, RICHARD L & PHYLLIS TR	13086 HOPKINS FOREST	1	1	
12-442-706-05	RYE OSCAR & MARILYN A		0	0	UNBUILDABLE
12-441-706-05	RYE OSCAR WILLIAM & MARILYN	13271 LAKESIDE AVE	1	1	
12-033-425-13	RYE OSCAR WILLIAM & MARILYN A		0	0	BACK LOT
12-563-701-05	SAUNDERS, DAVID	13107 LAKESIDE AVE	1	1	
12-563-701-03	SAUNDERS, DAVID A	13121 LAKESIDE AVE	1	1	
12-421-707-09	SAVASKY, THOMAS MARTIN	13665 LAKESIDE AVE	1	1	
12-033-200-10	SAWYER, PAUL L	13871 LAKESIDE AVE	1	1	
12-421-715-09	SAWYER, PAUL L	13871 LAKESIDE AVE	1	1	
12-031-325-10	SCHAFER GEORGE W TRUST		0	0	BACK LOT
12-481-702-01	SCHAFER GEORGE W TRUST	HOPKINS FOREST DR	0	0	BACK LOT
12-031-325-08	SCHAFER, GEORGE W TRUST		1	1	
12-031-350-04	SCHEBECK, TIMOTHY	13213 HOPKINS FOREST	1	1	
12-028-350-16	SCHMIDT ROBERT P & PATRICIA L	14025 LAKESIDE AVE	1	1	
12-221-709-01	SCHMIEDICKE DIANA B TRUST	6607 THREE PINES RD	1	1	
12-031-125-04	SCHMIEDICKE DIANA TRUST		0	0	ACC BLDG
12-221-708-05	SCHMIEDICKE, DIANA (TRUST)	THREE PINES RD	1	1	
12-031-325-06	SCHNELL, FREDRICK M	13311 HOPKINS FOREST	1	1	
12-481-701-07	SCHNELL, FREDRICK M	HOPKINS FOREST DR	0	0	BACK LOT
12-031-200-15	SCHOLL STEVEN & SANDRA		1	1	
12-033-425-06	SCHOPP TRUST		0	0	BACK LOT
12-441-703-01	SCHOPP TRUST	13415 LAKESIDE AVE	1	1	
12-033-200-07	SCHULTZ ANTHONY & MARILYN		0	0	BACK LOT
12-421-718-01	SCHULTZ ANTHONY & MARILYN	13919 LAKESIDE AVE	1	1 1/4	
12-421-711-05	SCHWEYER DAVID J & LINDA	13773 LAKESIDE AVE	1	1	
12-033-200-18	SCHWEYER DAVID J & LINDA W		0	0	BACK LOT
12-031-125-07	SECHRIST, STEPHEN J		0	0	ACC BLDG
12-221-709-07	SECHRIST, STEPHEN J	6581 THREE PINES RD	1	1	
12-461-707-01	SHELLEY, MICHAEL H	7135 BAIR AVE	1	1	
12-461-727-05	SHELLEY, MICHAEL H	BAIR AVE	0	0	BACK LOT
12-031-200-30	SMITH, KELLY L (TRUST)	6386 THREE PINES RD	1	1	
12-221-705-03	SOMSEL DONALD R	6777 THREE PINES RD	1	1	
12-222-705-09	SOMSEL, DONALD R	THREE PINES RD	0	0	ACC BLDG
12-423-701-30	SORG NANCY M & THOMAS J	14140 DAYTON AVE	1	1	
12-423-705-80	SORG, THOMAS J	14148 HOWELL AVE	1	1	
12-221-701-03	SPAUST CHARLES J ETUX	6983 THREE PINES RD	1	1	
12-421-704-09	STACK, PETER	13593 LAKESIDE AVE	1	1 1/4	
12-422-704-01	STACK, PETER		0	0	BACK LOT
12-031-250-01	STATE OF MICH		0	0	EXEMPT
12-423-704-80	STEWART LAURIE A	14149 HOWELL AVE	1	1	
12-033-200-19	SWAIN DENNIS & WALLACE JACQUE		0	0	BACK LOT
12-421-709-01	SWALES JOHN & SANDRA	13701 LAKESIDE AVE	1	1	
12-033-275-01	SWALES JOHN & SANDRA		0	0	BACK LOT
12-033-275-02	SWALES JOHN & SANDRA		0	0	BACK LOT
12-031-350-12	SWAN LYNN R & MARGARET M	13123 HOPKINS FOREST	1	1	
12-461-721-01	SWANKER, AARON M	7443 BAIR AVE	1	1	
12-461-734-07	SWANKER, AARON M	BAIR AVE	0	0	BACK LOT
12-481-705-05	SWANSON ALLAN	13134 HOPKINS FOREST	1	1	

12-421-719-06	SWEETLAND, ALAN	13959 LAKESIDE AVE	1	1	
12-423-706-20	SWITT ROSE ANN ETAL	14174 HOWELL AVE	1	1	
12-421-703-05	THIELMANN, JR., JOSEPH P	13561 LAKESIDE AVE	1	1	
12-422-707-01	THIELMANN, JR., JOSEPH P	PETERS ST	0	0	BACK LOT
12-461-730-01	THOMAS, CHRISTOPHER A	BAIR AVE	0	0	BACK LOT
12-471-151-00	THOMAS, CHRISTOPHER A	7229 BAIR AVE	1	1 1/4	
12-031-350-05	TOLFA JOHN & LYNN	13186 HOPKINS FOREST	1	1	
12-221-703-09	TOWNLEY LIVING TRUST	THREE PINES RD	1	1	
12-221-704-02	TOWNLEY LIVING TRUST	6835 THREE PINES RD	1	1	
12-222-703-10	TOWNLEY LIVING TRUST	THREE PINES RD	0	0	BACK LOT
12-222-704-01	TOWNLEY LIVING TRUST	THREE PINES RD	0	0	ACC BLDG
12-222-704-07	TOWNLEY LIVING TRUST	THREE PINES RD	0	0	BACK LOT
12-421-701-01	TURNER, WILLIAM H (TRUST)	13509 LAKESIDE AVE	1	1 1/2	
12-422-709-07	TURNER, WILLIAM H (TRUST)		0	0	BACK LOT
12-033-200-03	US BANK NATIONAL ASSOCIATION		0	0	BACK LOT
12-421-705-05	VAN SENS, JR. WILLIAM F	13607 LAKESIDE AVE	1	1	
12-422-703-10	VAN SENS, JR. WILLIAM F		0	0	BACK LOT
12-461-704-01	VANDENBOSCH REVOCABLE TRUS	7081 BAIR AVE	1	1	
12-461-725-05	VANDENBOSCH REVOCABLE TRUS	BAIR AVE	0	0	ACC BLDG
12-033-425-01	VANHOUTEN, GARY A (LE)		0	0	BACK LOT
12-033-425-03	VANHOUTEN, GARY A (LE)		0	0	BACK LOT
12-441-701-09	VANHOUTEN, GARY A (LE)	13469 LAKESIDE AVE	1	1	
12-441-701-13	VANHOUTEN, GARY A (LE)	13457 LAKESIDE AVE	1	1	
12-442-710-03	VANHOUTEN, GARY A (LE)		0	0	UNBUILDABLE
12-442-710-05	VANHOUTEN, GARY A (LE)		0	0	UNBUILDABLE
12-033-200-22	W.I.N.O. INC	LAKESIDE AVE	0	0	BACK LOT
12-421-711-01	W.I.N.O., INC	13741 LAKESIDE AVE	1	1 1/4	
12-221-702-05	WADE, BETTY	6915 THREE PINES RD	1	1	
12-222-702-05	WADE, BETTY	THREE PINES RD	0	0	ACC BLDG
12-421-710-11	WALLACE JACQUE L	13767 LAKESIDE AVE	1	1	
12-461-709-01	WALTHER, CATHERINE J (TRUST)	BAIR AVE	0	0	BACK LOT
12-461-710-01	WALTHER, CATHERINE J (TRUST)	7207 BAIR AVE	1	1	
12-461-711-01	WALTHER, CATHERINE J (TRUST)	BAIR AVE	0	0	ACC BLDG
12-461-729-01	WALTHER, CATHERINE J (TRUST)		0	0	ENCROACH
12-033-200-04	WARE ERNEST & DIANA		0	0	BACK LOT
12-421-719-01	WARE ERNEST & DIANA	13941 LAKESIDE AVE	1	1	
12-031-200-45	WATSELL JOHN & GEORGIANNA	6414 THREE PINES RD	1	1	
12-033-200-08	WEIMER, KENNETH		0	0	BACK LOT
12-421-717-01	WEIMER, KENNETH	13905 LAKESIDE AVE	1	1	
12-033-200-02	WESNER C EUGENE TRUST		0	0	BACK LOT
12-421-720-01	WESNER C EUGENE TRUST	13695 LAKESIDE AVE	1	1	
12-028-350-17	WIDICK, TIMOTHY J	14017 LAKESIDE AVE	1	1	
12-461-712-01	WILLIAMS, JACQUELINE A (TRUST)	7243 BAIR AVE	1	1	
12-461-730-03	WILLIAMS, JACQUELINE A (TRUST)	BAIR AVE	0	0	ACC BLDG
12-471-152-00	WILLIAMS, JACQUELINE A (TRUST)	BAIR AVE	0	0	BACK LOT
12-221-705-07	WINANS RANDALL	THREE PINES RD	1	1	
12-222-706-01	WINANS RANDALL	6762 THREE PINES RD	1	1	
12-461-702-01	WOLFF ERIC J & LEE A	7033 BAIR AVE	1	1	
12-461-724-05	WOLFF ERIC J & LEE A	BAIR AVE	0	0	BACK LOT
12-028-350-14	WOLVERTON CHARLES & SALLY		1	1	
12-423-703-21	WURSTNER ROBERT P	14116 HOUSER AVE	1/3	1/3	

12-423-703-30	WURSTNER, ROBERT P	14120 HOUSER AVE	1	1	
12-423-701-40	YOUNG, HEATHER J & ISRAEL, HAR	14150 DAYTON AVE	1	1	
12-033-425-14	ZEEUW BRUCE & DIANE		0	0	BACK LOT
12-441-706-09	ZEEUW BRUCE & DIANE	13257 LAKESIDE AVE	1	1	
12-442-706-10	ZEEUW BRUCE & DIANE		0	0	UNBUILDABLE
		total	240	245.5	

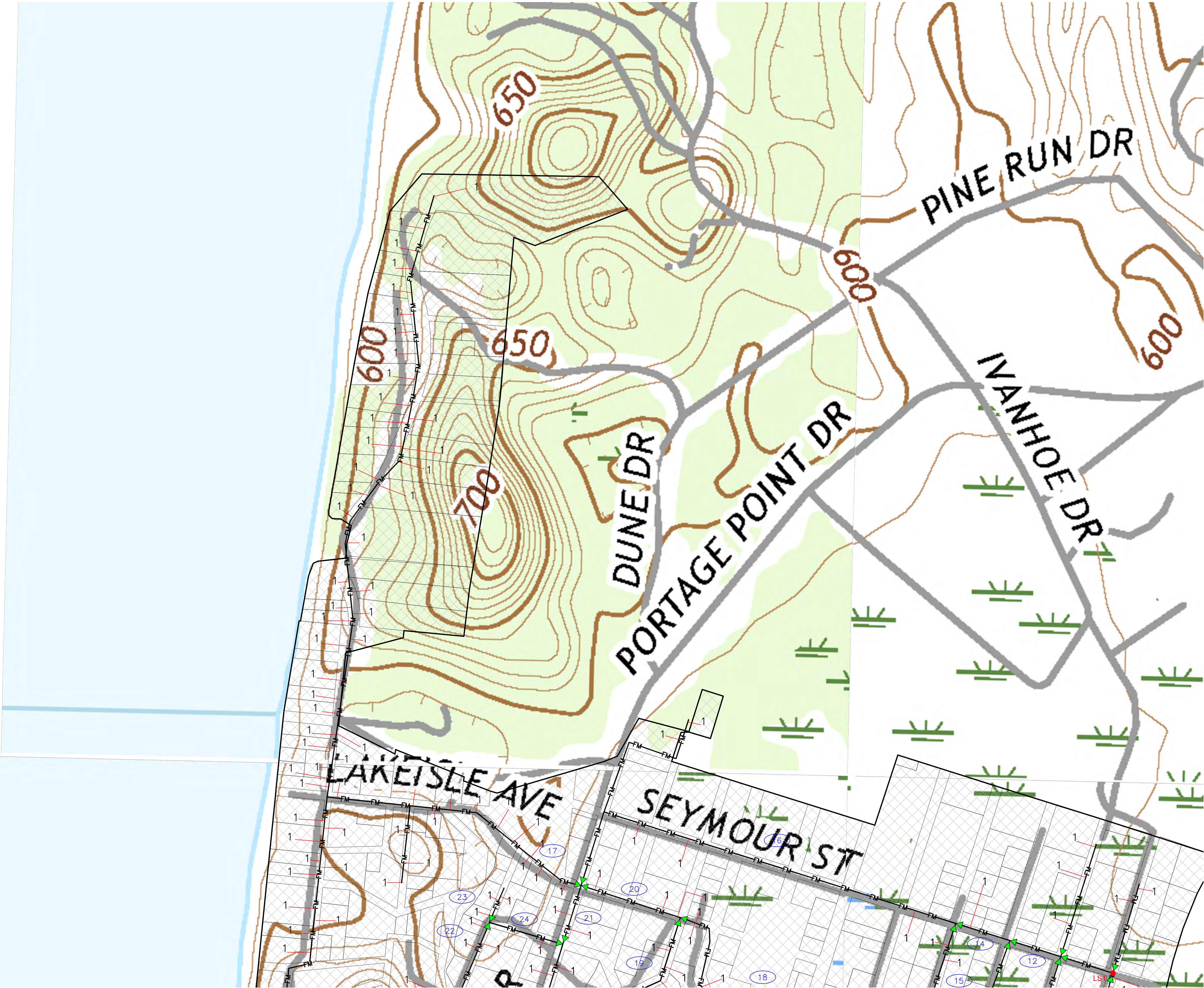
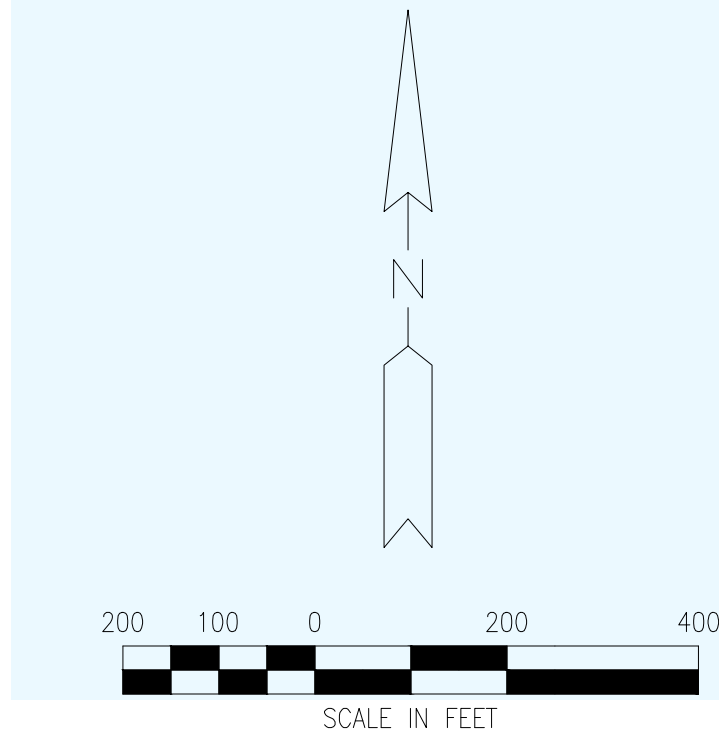
## ATTACHMENT 2

### COLLECTION SYSTEM MAPS

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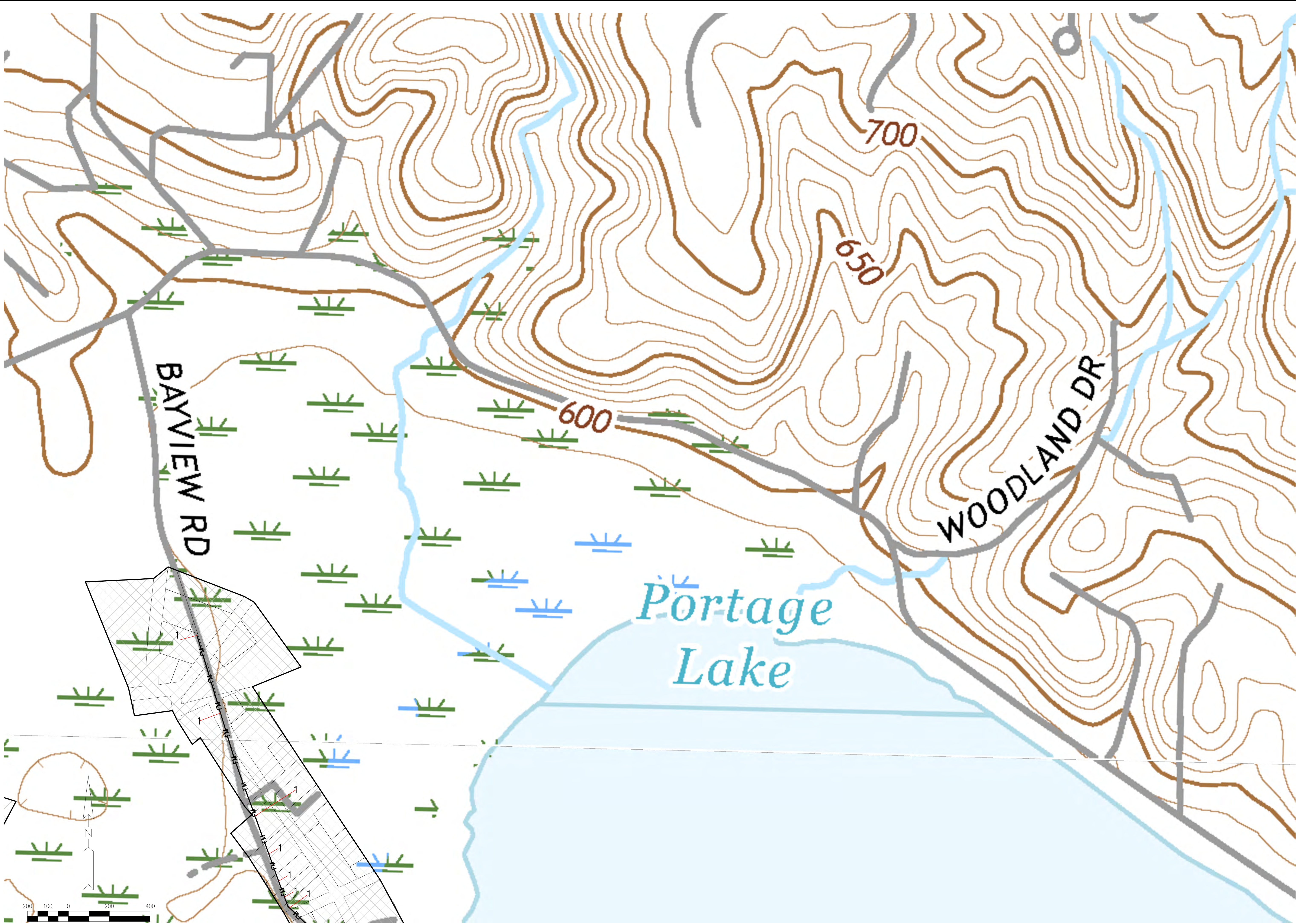
TWO LAKES SEWER AUTHORITY  
5435 MAIN ST  
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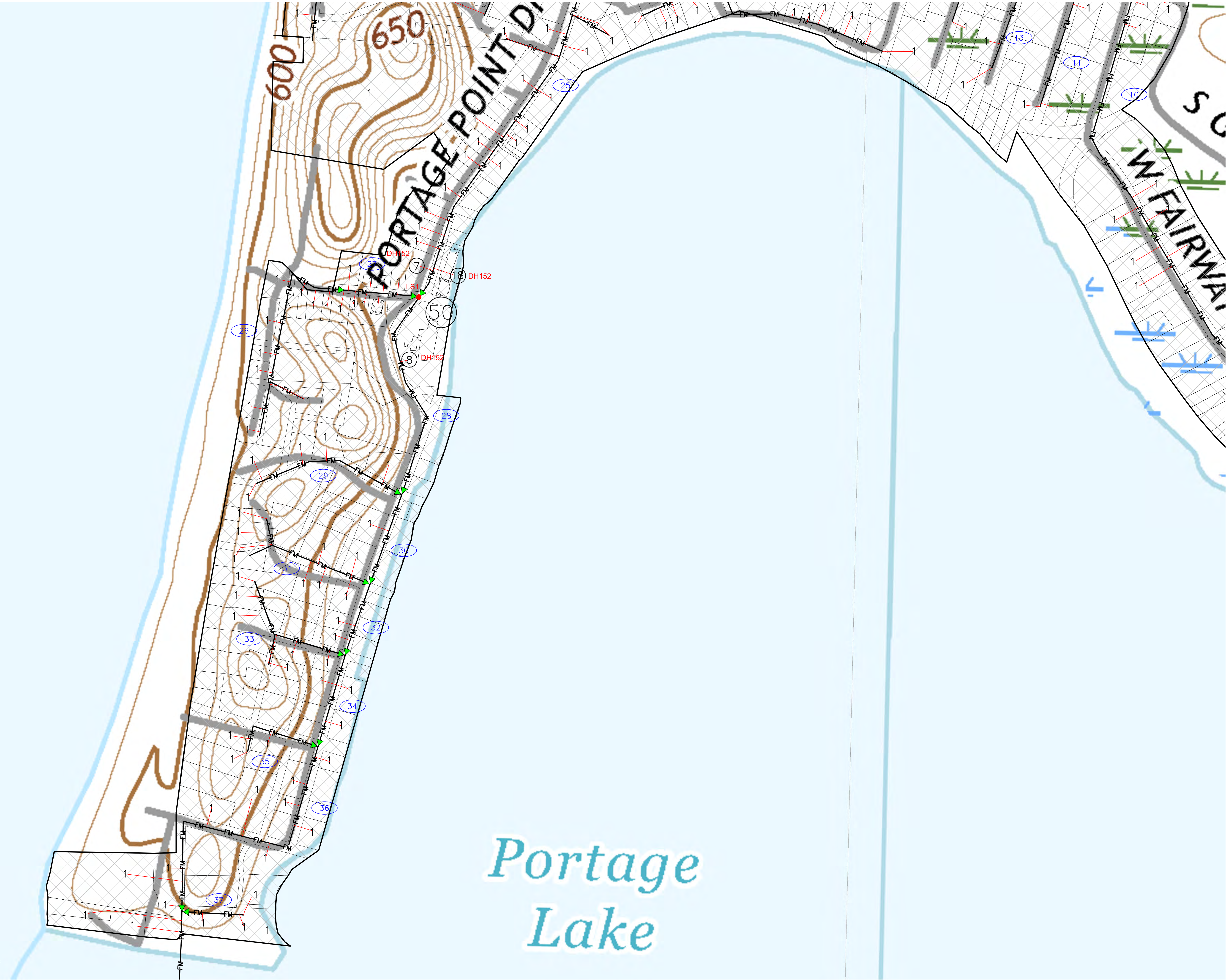
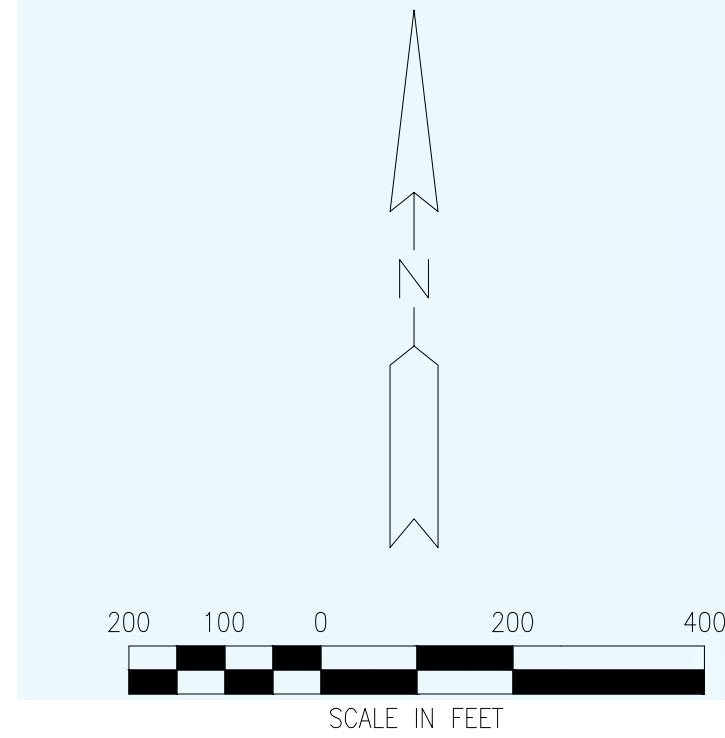
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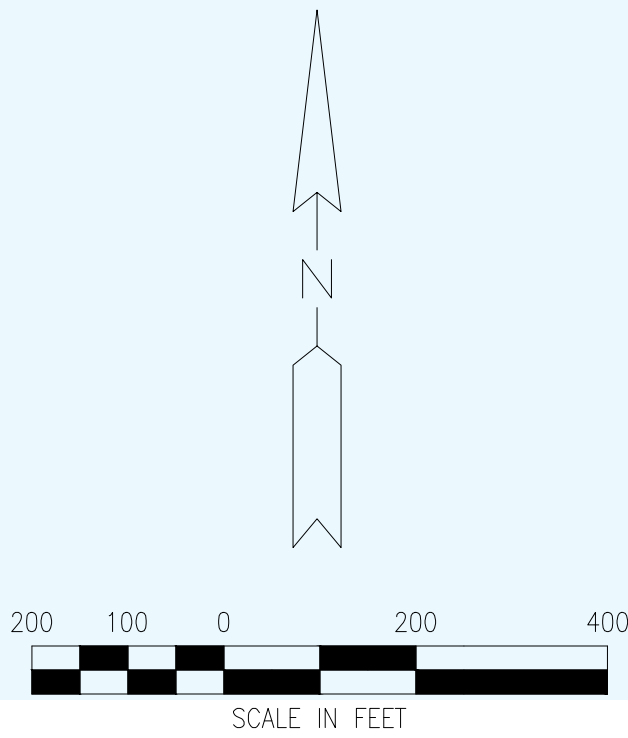
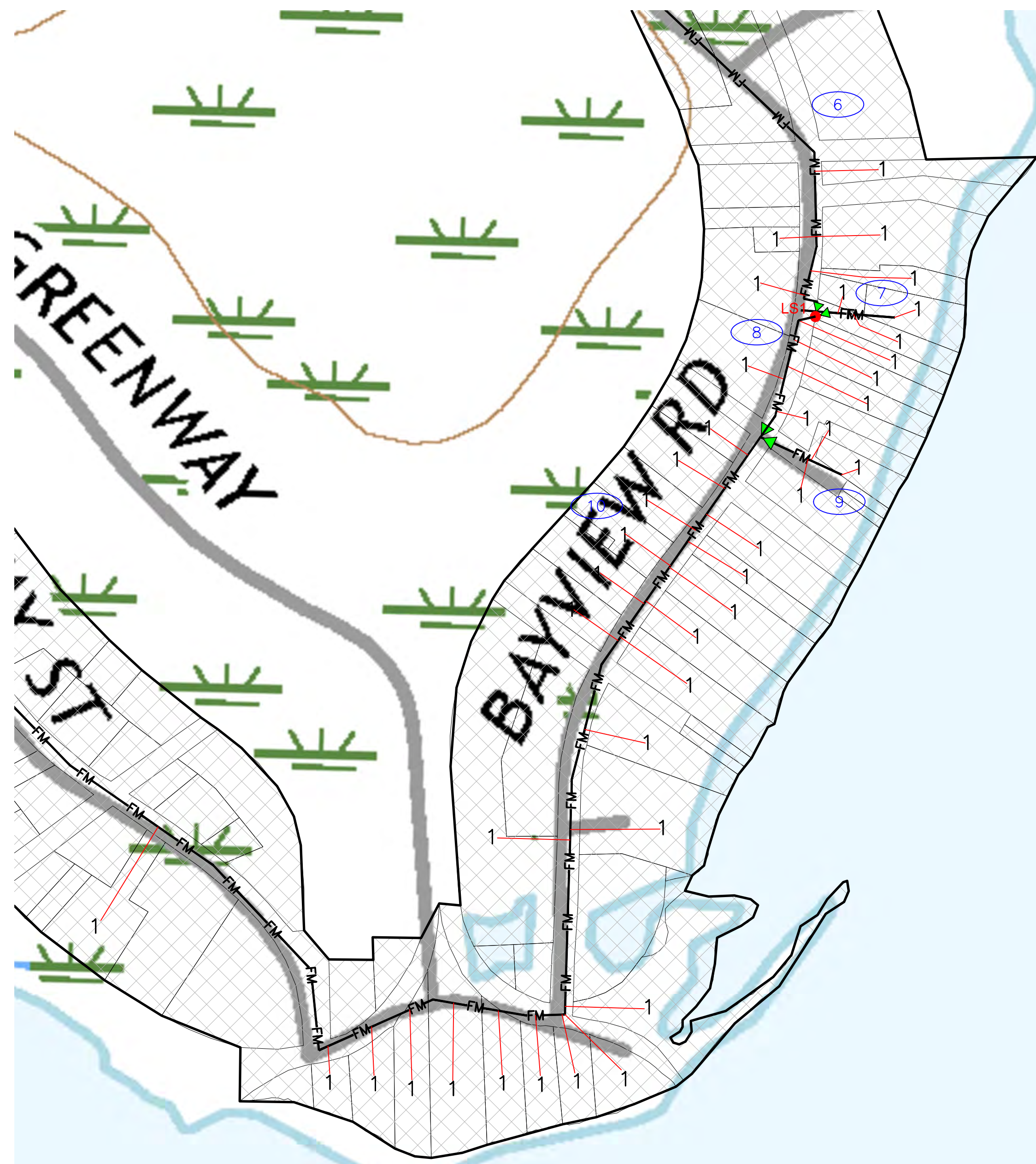


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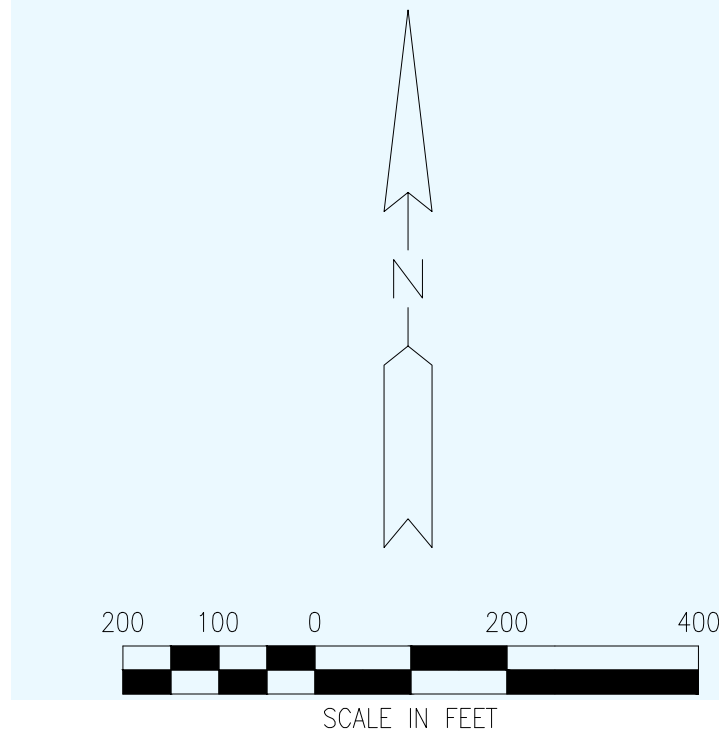
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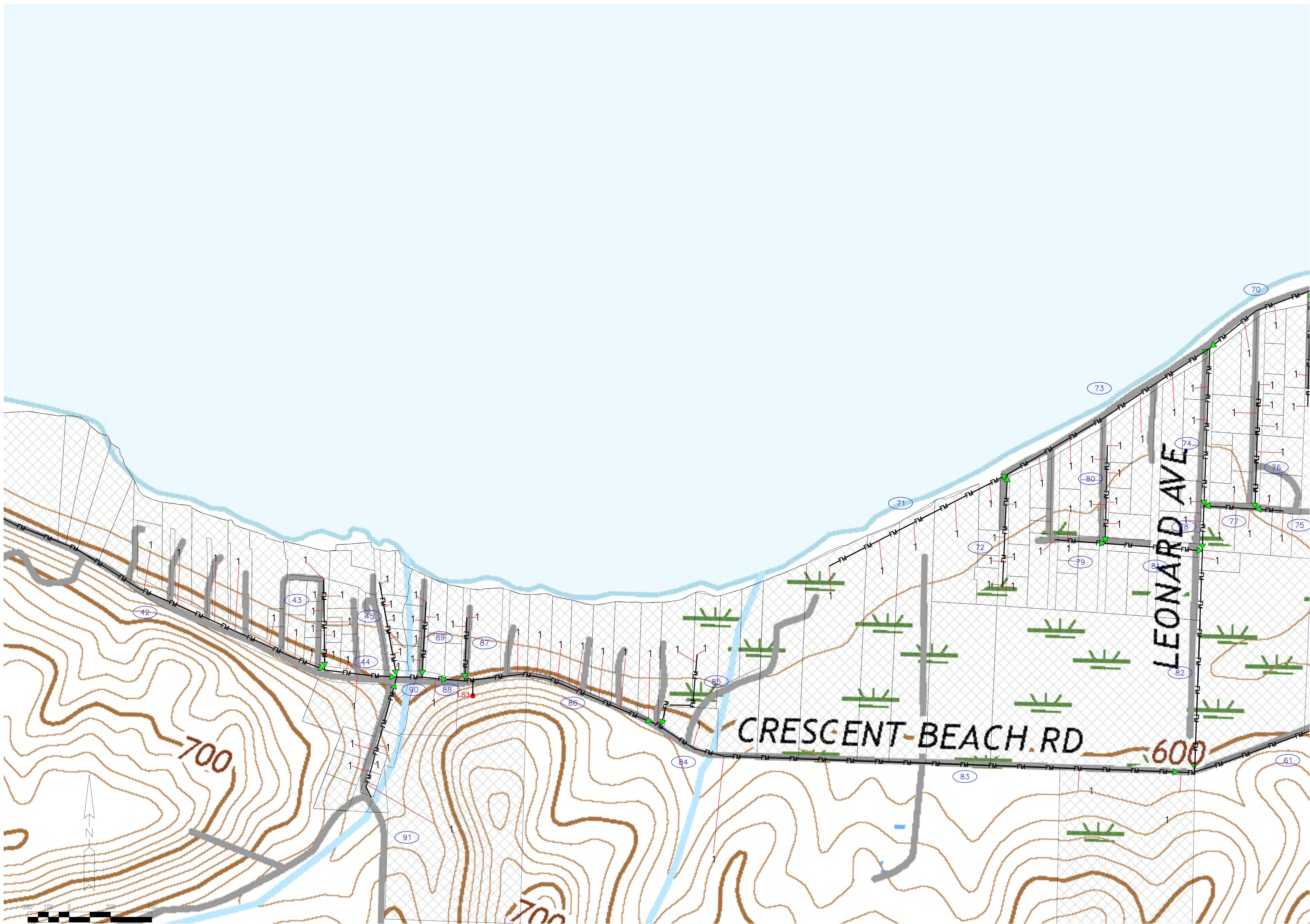
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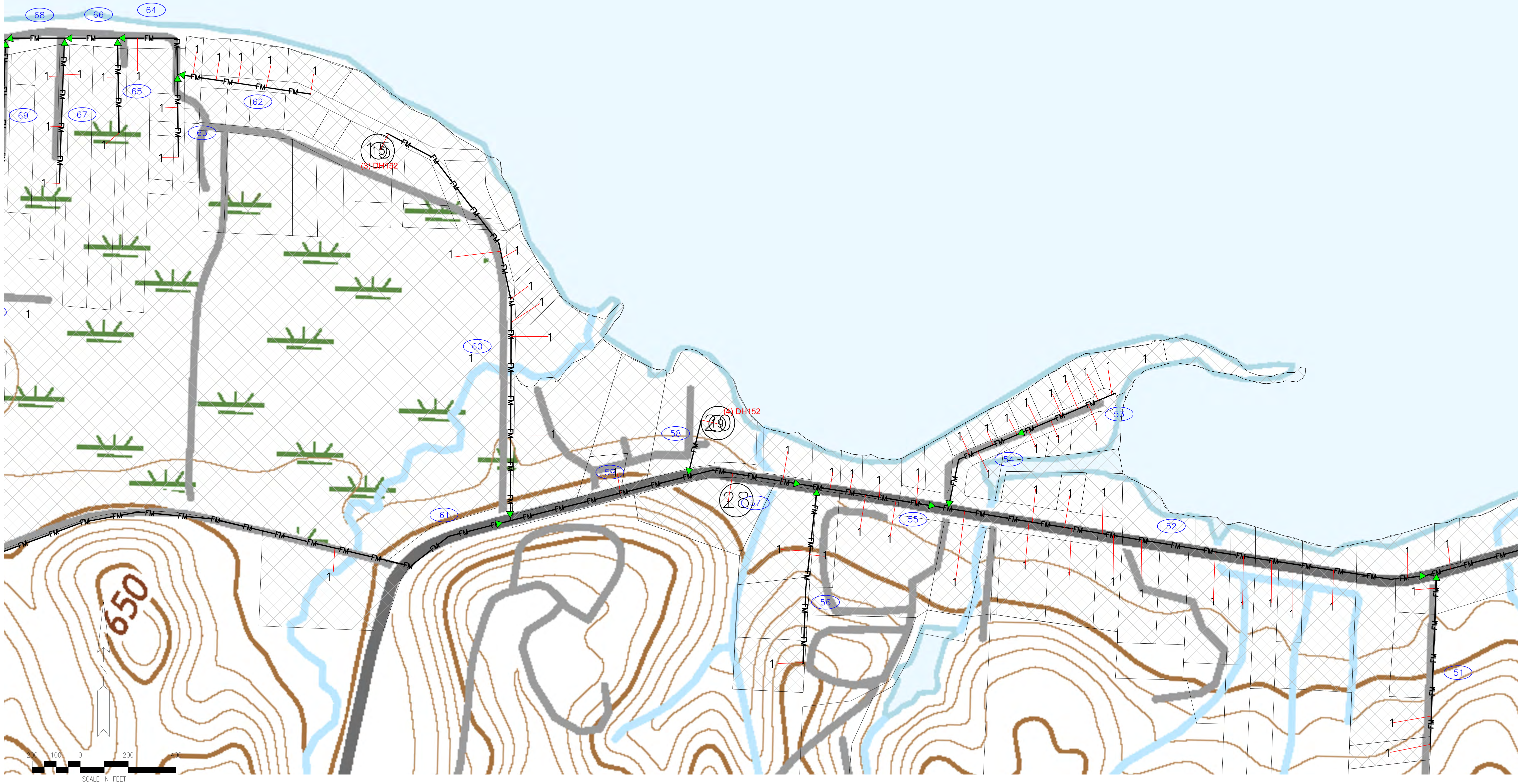
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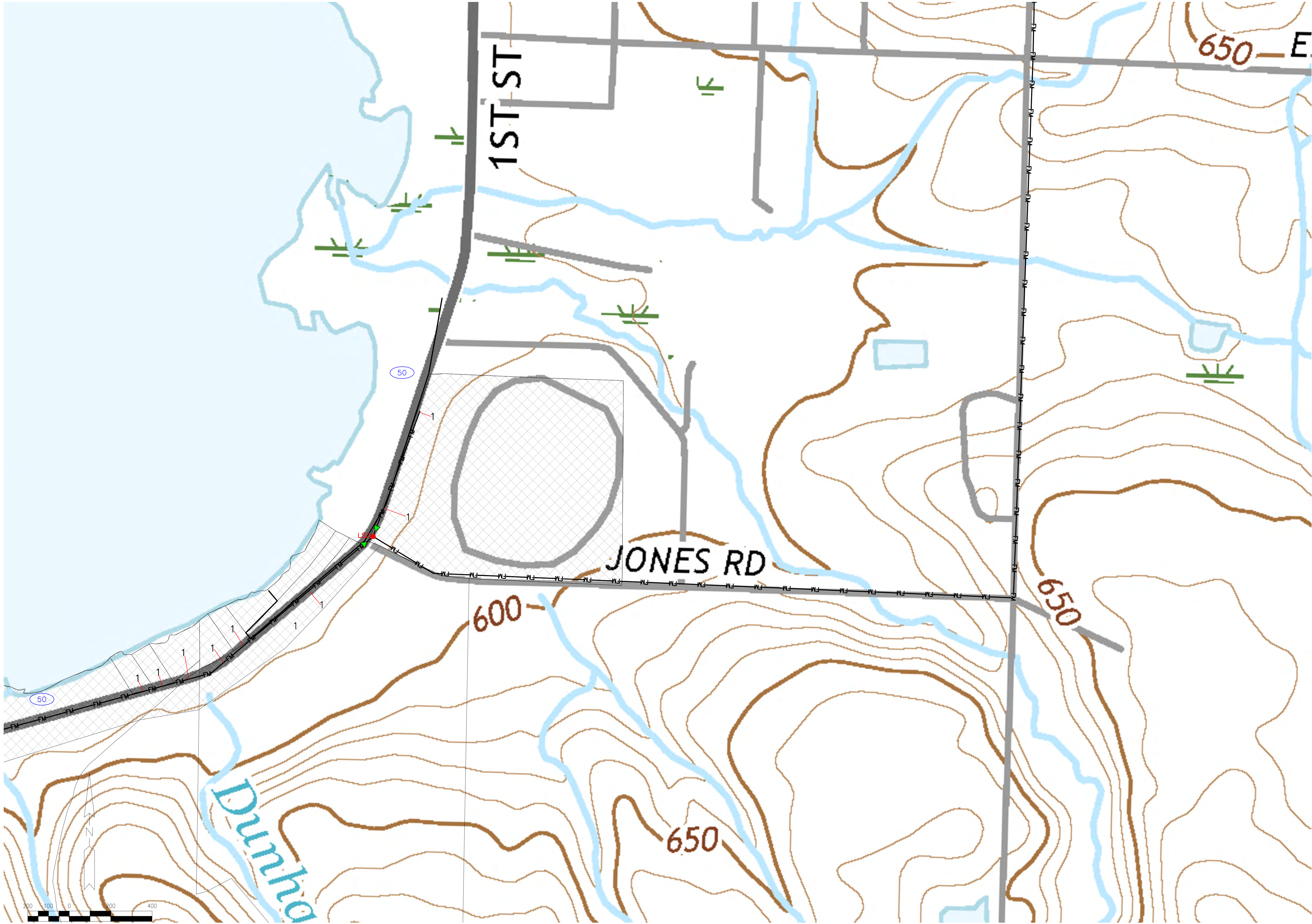
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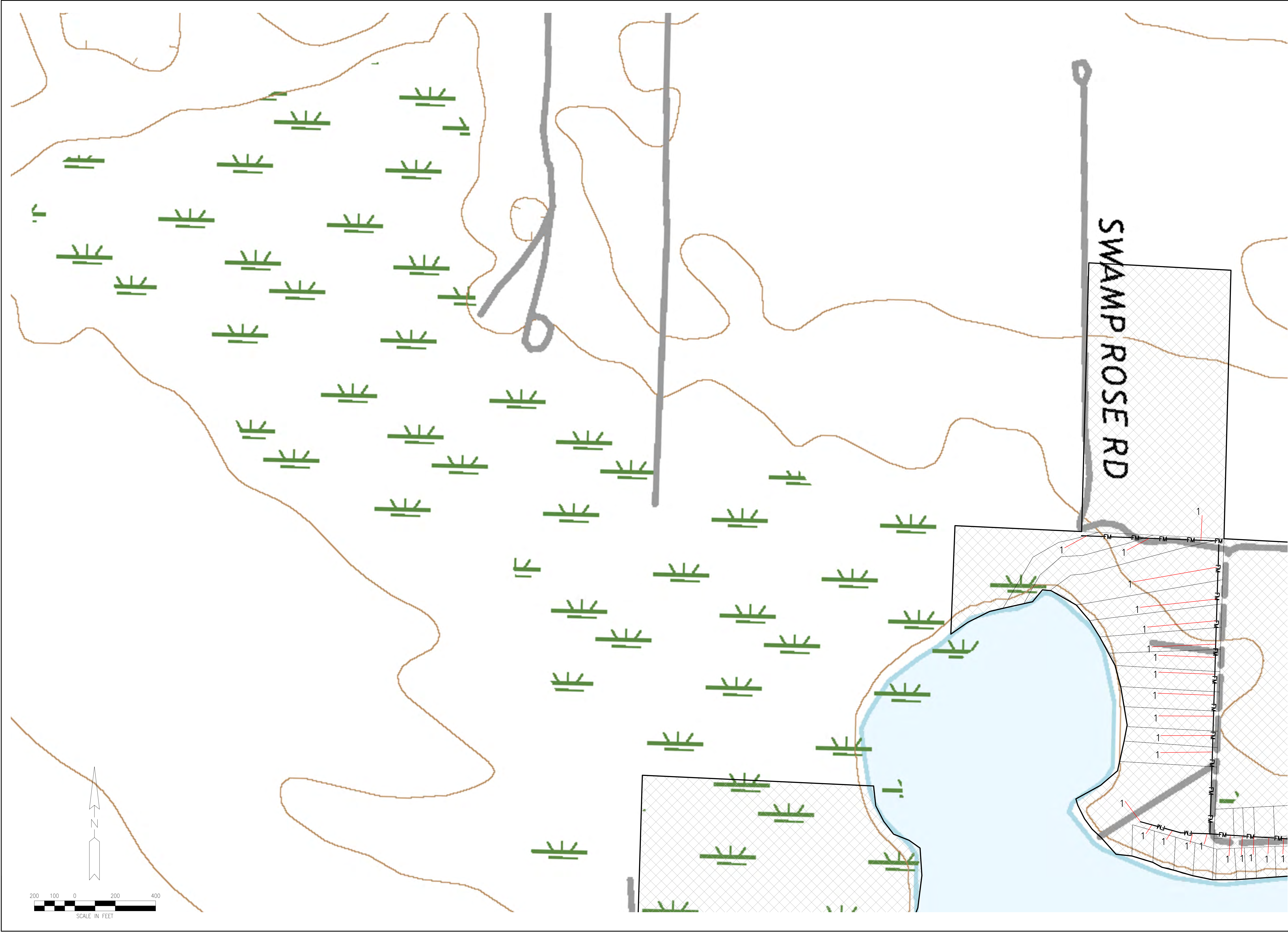
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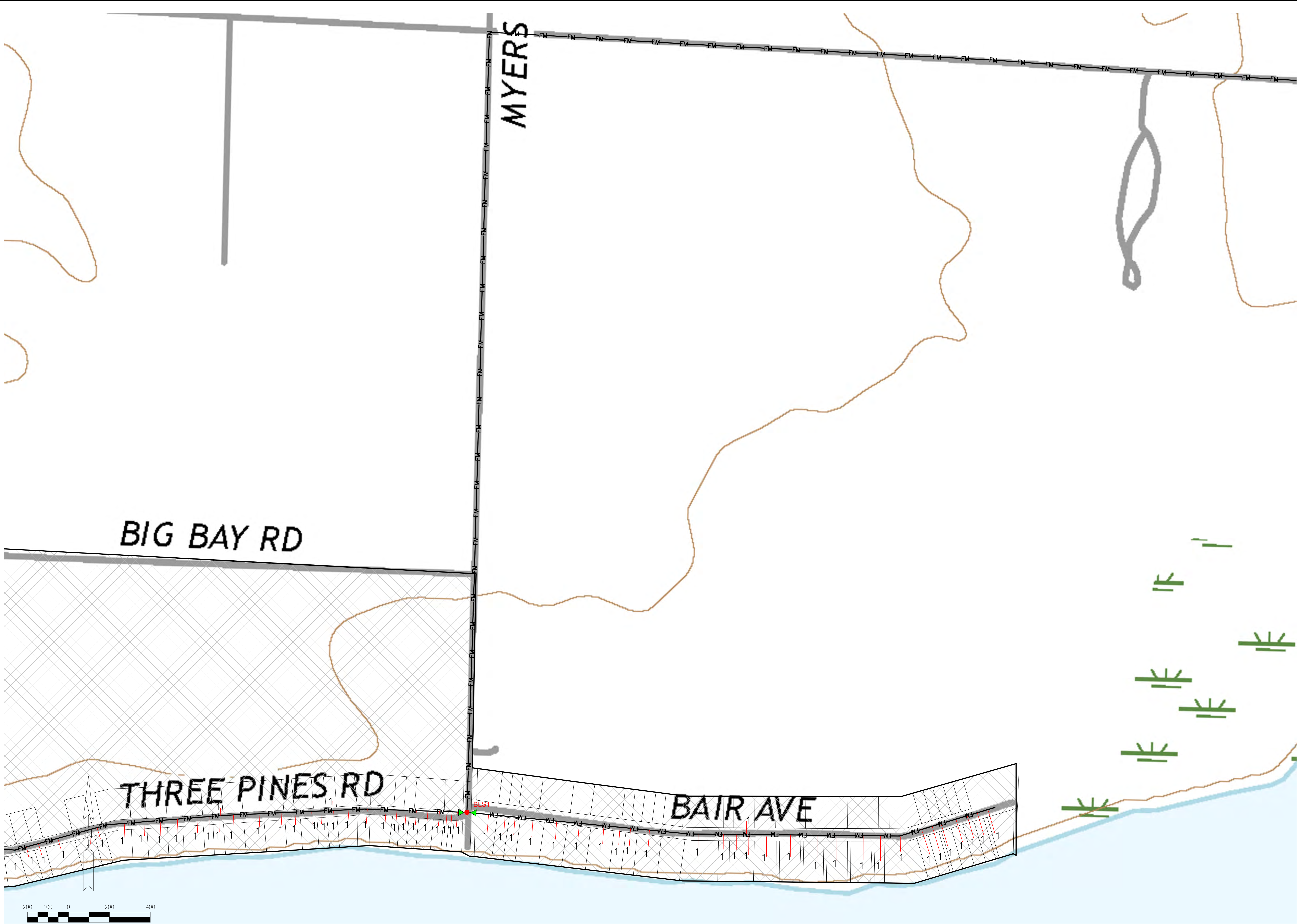
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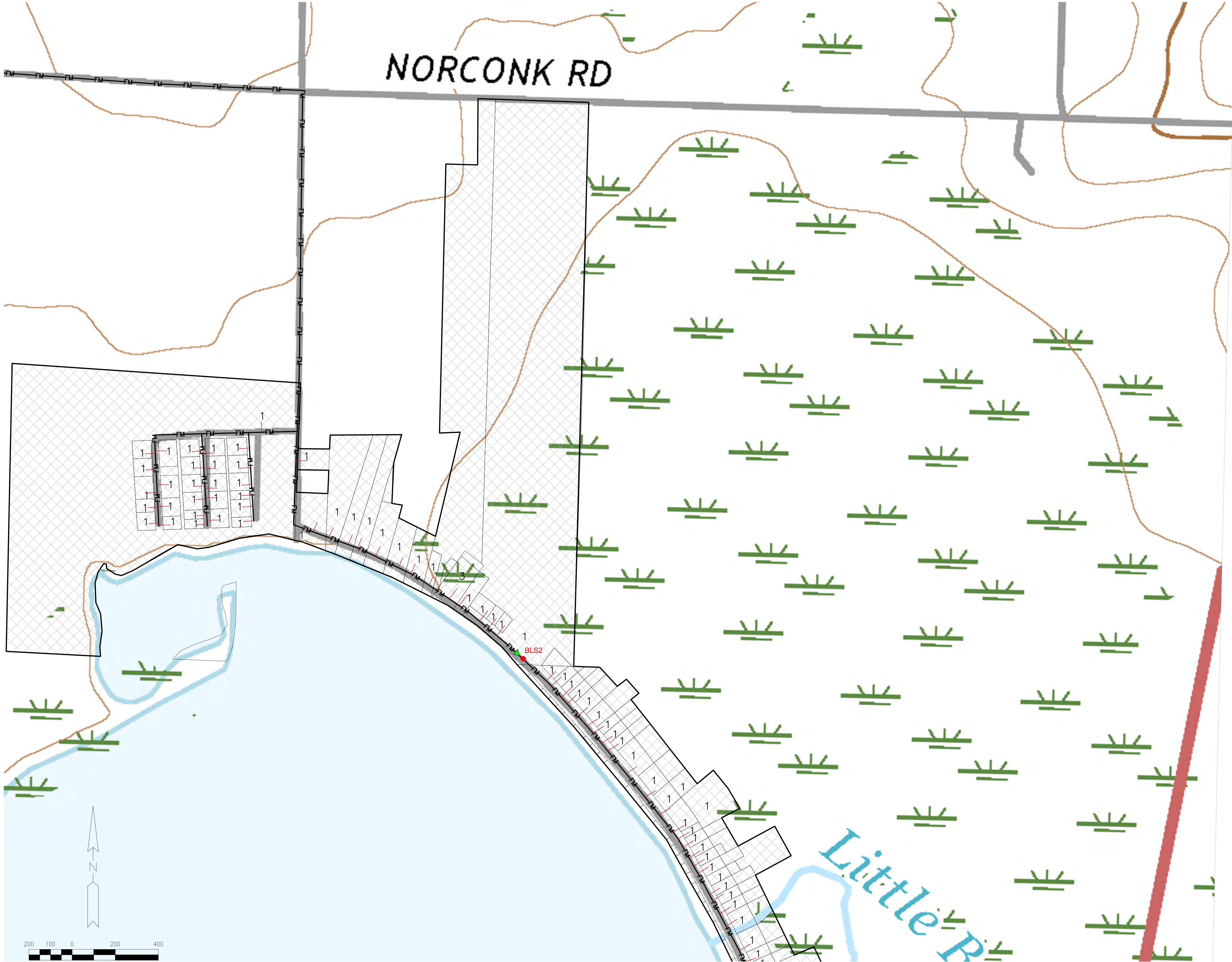
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SHEET  
BL-3

WADE TRIM  
10850 East Traverse Highway, Suite 220  
Onekama, MI 49675  
231.847.7400  
www.wadetrim.com

REV#	DATE	DESCRIPTION	BY

[illegible]

**WAIDE  
TRIM**

TWO LAKES SEWER AUTHORITY  
5435 MAIN ST  
ONEKAMA, MI 49675

SEWER STUDY FOR USDA FINANCING APPLICATION

XXXXXXXXXX

ISSUED FOR:	DATE:	BY:
JOB NO. TLS2001.01C		
SHEET BL-4		

PROJECT MANAGER: - FIELD BOOK INFORMATION: -  
C:\PW\WORK\GBOCART\00878763\CSP-PLTS-SEWERLAYOUT.DWG - BL-5 - PLOTTED 10/26/2021 11:24 AM BY: BOGART, GARTH



SHEET	BL-5
JOB NO.	TLS2001.01C

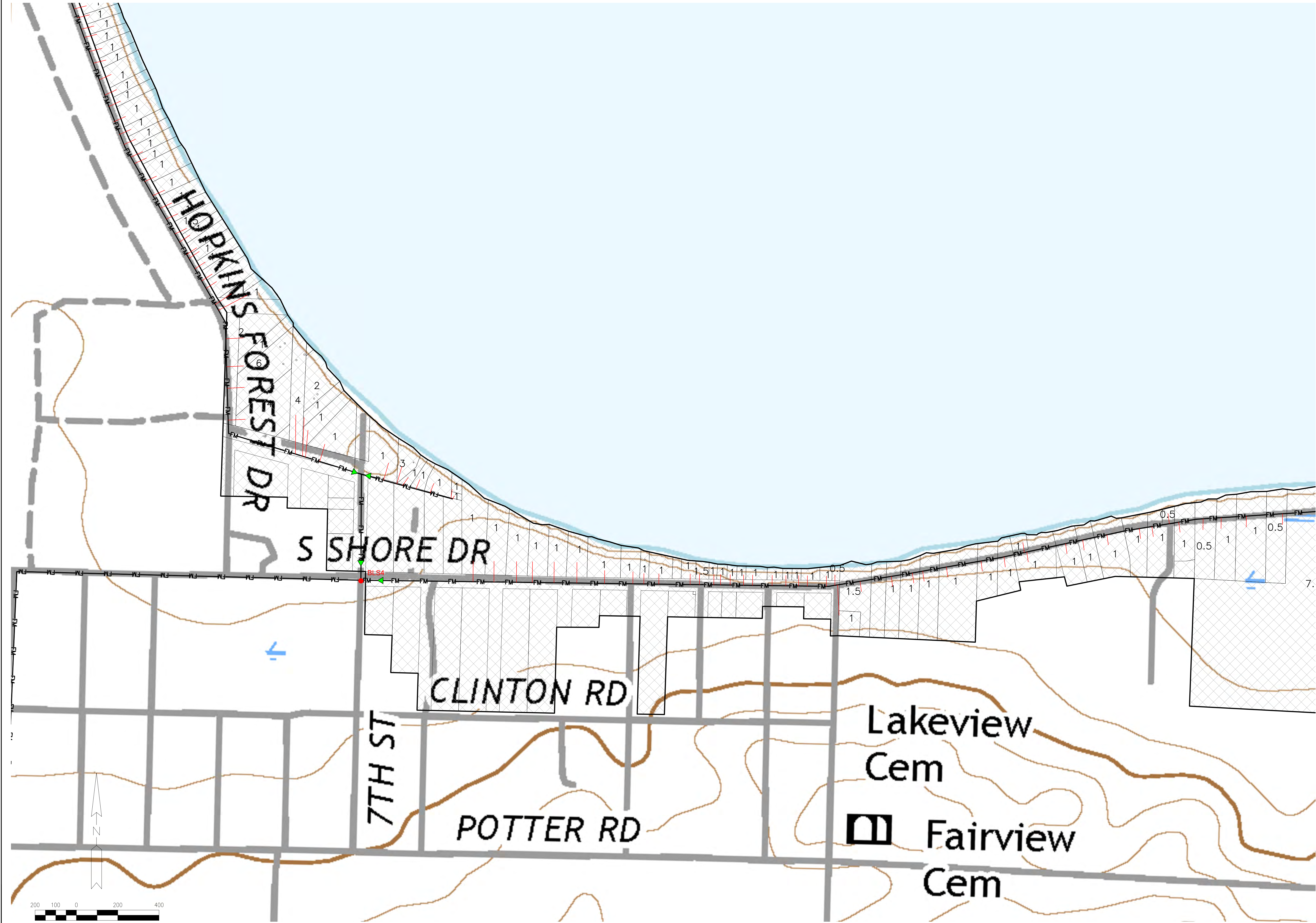
TWO LAKES SEWER AUTHORITY  
5435 MAIN ST  
ONEKAMA, MI 49675  
SEWER STUDY FOR USDA FINANCING APPLICATION  
XXXXXXXXXX



10850 East Traverse Highway, Suite 2260  
Onekama, MI 49675  
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REV#	DATE	DESCRIPTION	BY

PROJECT MANAGER: - FIELD BOOK INFORMATION: -  
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REV#	DATE	DESCRIPTION	BY

10850 East Traverse Highway, Suite 2260  
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TWO LAKES SEWER AUTHORITY  
5435 MAIN ST  
ONEKAMA, MI 49675

SEWER STUDY FOR USDA FINANCING APPLICATION

XXXXXXXXXX

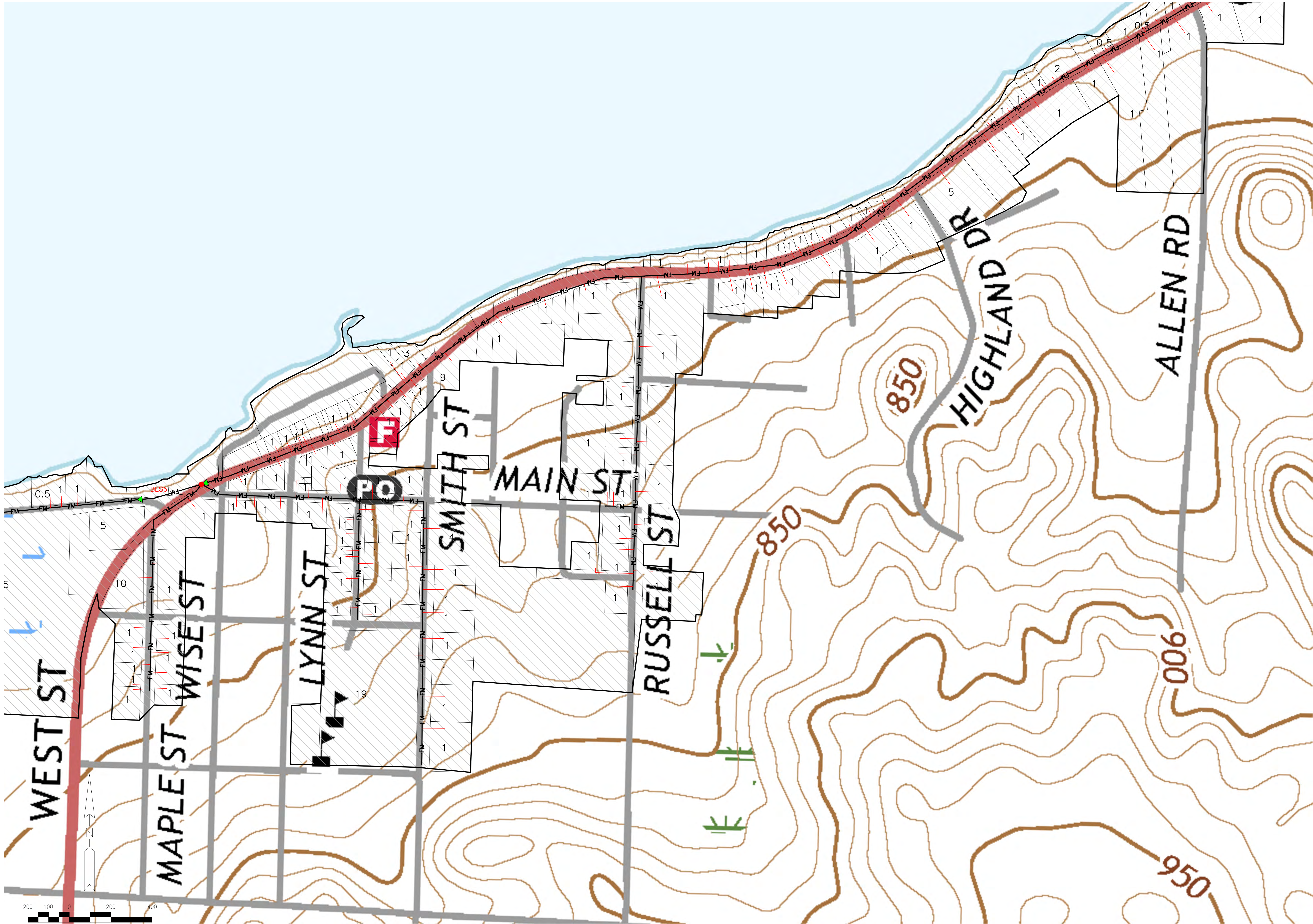
ISSUED FOR:	DATE:	BY:

JOB NO. TLS2001.01C
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SHEET BL-6
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PROJECT MANAGER: -  
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FIELD BOOK INFORMATION:-





ATTACHMENT 3  
PRESENT WORTH ANALYSIS

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## Collection System Present Worth Analysis October 26, 2021

**Community Name:**

Two Lakes Sewer Authority

Federal Discount Rate for Water Resources Planning (Interest Rate)  $i =$  -0.005  
Number of Years,  $n =$  40 years

<b>Alternative 1:</b>	
Low Pressure Sewer Collection	
Initial Capital Costs =	\$34,477,000
Annual Operations & Maintenance Costs =	\$562,000
Future Salvage Value =	\$5,000
Present Worth of 40 years of O & M =	\$24,954,560
Present Worth of 40 yr Salvage Value =	\$6,110
<b>Alternative 2</b>	
<b>Total Present Worth =</b>	<b>\$59,425,450</b>

<b>Alternative 2:</b>	
STEP Collection	
Initial Capital Costs =	\$34,267,000
Annual Operations & Maintenance Costs =	\$631,000
Future Salvage Value =	\$5,000
Present Worth of 40 years of O & M =	\$28,018,376
PW =	$\frac{\text{Annual OM} \cdot (1+i)^n - 1}{i \cdot (1+i)^n}$
Present Worth of 40 yr Salvage Value =	\$6,110
PW =	$\text{FSV} \cdot \frac{1}{(1+i)^n}$
<b>Alternate 1</b>	
<b>Total Present Worth =</b>	<b>\$62,279,266</b>

### Short Lived Depreciated Assets (of Selected Alternative - STEP SYSTEM)

Item	Years of Life Expectancy	Number of Units	Replaceme Cost	Funds to Set Aside Yearly
Residential Pump (assume 10% need replaced)	15	98	\$1,150	\$7,513
Pump Controls	15	98	\$575	\$3,757
Pump Vault Filter pack	10	925	\$230	\$21,275
LS pumps	15	14	\$11,500	\$10,733
LS Controls	15	7	\$5,750	\$2,683
Vehicles	10	1	\$34,500	\$3,450
				<u>\$50,000</u>

Note:

This is not intended to include every piece of equipment in the system. It is to itemize the critical equipment or maintenance items that money should be set aside for via rates and charges.

No short lived assets with more than 15 years of life expectancy



## Treatment Present Worth Analysis October 26, 2021

**Community Name:**

Two Lakes Sewer Authority

**Federal Discount Rate for Water Resources Planning (Interest Rate) i =** -0.005

**Number of Years, n =** 40 years

Alternative 1 Connection to LRBOI WWTP	Alternative 2 Onekama Village WWTP	Alternative 3 TLSA Mech WWTP	Alternative 4 TLSA Lagoon WWTP
Initial Capital Costs = \$8,787,000	Initial Capital Costs = \$13,052,000	Initial Capital Costs = \$8,750,000	Initial Capital Costs = \$13,010,000
Annual Operations & Maintenance Costs = \$396,000	Annual Operations & Maintenance Costs = \$339,000	Annual Operations & Maintenance Costs = \$328,000	Annual Operations & Maintenance Costs = \$274,000
Future Salvage Value = \$10,000	Future Salvage Value = \$195,000	Future Salvage Value = \$75,000	Future Salvage Value = \$195,000
Present Worth of 40 years of O & M = \$17,583,640	Present Worth of 40 years of O & M = \$15,052,662	Present Worth of 40 years of O & M = \$14,564,227	Present Worth of 40 years of O & M = \$12,166,458
PW = $\text{Annual OM} \frac{(1+i)^n - 1}{i(1+i)^n}$	PW = $\text{Annual OM} \frac{(1+i)^n - 1}{i(1+i)^n}$	PW = $\text{Annual OM} \frac{(1+i)^n - 1}{i(1+i)^n}$	PW = $\text{Annual OM} \frac{(1+i)^n - 1}{i(1+i)^n}$
Present Worth of 40 yr Salvage Value = \$12,220	Present Worth of 40 yr Salvage Value = \$238,293	Present Worth of 40 yr Salvage Value = \$91,651	Present Worth of 40 yr Salvage Value = \$238,293
PW = $\text{FSV} \frac{1}{(1+i)^n}$	PW = $\text{FSV} \frac{1}{(1+i)^n}$	PW = $\text{FSV} \frac{1}{(1+i)^n}$	PW = $\text{FSV} \frac{1}{(1+i)^n}$
Alternate 1 Total Present Worth = \$26,358,420	Alternate 1 Total Present Worth = \$27,866,368	Alternate 1 Total Present Worth = \$23,222,576	Alternate 1 Total Present Worth = \$24,938,165

### Short Lived Depreciated Assets (of Selected Alternative- TLSA MECH WWTP)

Item	Years of Life Expectancy	Number of Units	Replacement Cost	Funds to Set Aside Yearly
aeration blower	15	3	17250	\$3,450
submerible mixer	15	1	11500	\$767
airlift pump	15	2	23000	\$3,067
air compressor	10	1	5750	\$575
discharge pumps	15	2	17250	\$2,300
flow meter	15	1	11500	\$767
misc monitoring and pneumatic equipment	5	1	5750	\$1,150
LS Pump Controls	15	2	5750	\$767
LS pumps	15	4	23000	\$6,133
Air Release Valve	15	29	575	\$1,112
				\$21,000

Note:

This is not intended to include every piece of equipment in the system. It is to itemize the critical equipment or maintenance items that money should

be set aside for via rates and charges.

No short lived assets with more than 15 years of life expectancy

ATTACHMENT 4  
PROJECT ALTERNATIVE COST ESTIMATES

---



Cost Summary  
LPS Collection  
Updated 9/23/2021

Land & Rights	\$69,000
Total Construction Cost	\$26,089,000
Construction Contingencies (10%)	\$2,616,000.0
Legal Services	\$225,800.00
Engineering (15%)	\$4,316,000.00
Total Project Cost	\$33,316,000.00
1st Year O&M	\$562,000

Bond Anticipation Note (BAN)

Amount of Note =	\$3,406,350 (3/4 of Eng & Legal borrowed)
Interest Rate =	5%
Length of Note (Years) =	1.5
Interest Accumulated =	\$255,000

Capitalized Interest

Borrow 1/2 amount 1st year=	1/2 Proj Cost*(24/24)=	\$16,658,000
Borrow remainder 2nd year=	1/2 Proj Cost*(12/24)=	\$8,329,000
		<hr/>
		\$24,987,000

(avg borrowed over 2 yrs

Average payment =	\$24,987,000 of construction)
Interest Rate =	1.250%
Length of Construction =	2
Interest Accumulated =	\$625,000

Alternative

LPS Collection System

Initial Capital Cost =	\$33,316,000
1/2 of 1st Year O&M =	\$281,000
Interest on BAN =	\$255,000
Capitalized Interest =	\$625,000
Total Project Capital Cost =	\$34,477,000



**Preliminary Engineer's Estimate**  
**Two Lakes Sewer Authority**  
**Total System**  
**Low-Pressure Grinder Collection System**  
**Manistee County, Michigan**  
**June 30, 2021**

The project estimate is Wade Trim's pre-design opinion of probable cost based upon the available information. Assumes one grinder pump station per connection, 1.25" service from grinder station to main in road.

<u>Description</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Amount</u>
<b><u>RD Eligible Collection Sanitary Sewer</u></b>				
1 Mobilization (5%)	1	LS	\$1,106,000	\$1,106,000
2 Traffic Maintenance and Control	1	LS	\$339,250.00	\$339,250
3 Temporary Soil Erosion and Sedimentation Control	1	LS	\$230,000.00	\$230,000
4 Dewatering	1	LS	\$690,000.00	\$690,000
5 1.25" Dia, HDPE	92,500	LF	\$20.70	\$1,914,750
6 2" Dia, HDPE	30,600	LF	\$24.15	\$738,990
7 3" Dia, HDPE	23,400	LF	\$29.90	\$699,660
8 4" Dia, HDPE	29,300	LF	\$35.65	\$1,044,545
9 6" Dia, HDPE	35,200	LF	\$43.70	\$1,538,240
10 8" Dia, HDPE	1,700	LF	\$52.90	\$89,930
11 Air Release Structure	89	EA	\$5,750.00	\$511,750
12 Cleanout Structure	128	EA	\$3,450.00	\$441,600
13 Residential Ginder Pump Station, Simplex (DH071-93)	925	EA	\$9,200.00	\$8,510,000
14 Residential Group Ginder Pump Station, Simplex (DH152-93)	13	EA	\$13,800.00	\$179,400
15 Intermediate Submersible Pump Station, Duplex	4	EA	\$172,500.00	\$690,000
16 Transmission Submersible Pump Station, Duplex	2	EA	\$230,000.00	\$460,000
16 Protective Lining in Wet Well	6	EA	\$13,800.00	\$82,800
17 Activated Carbon Odor Control System	6	EA	\$16,100.00	\$96,600
18 Chemical Injection Equipment	3	LS	\$172,500.00	\$517,500
18 Permanent Stand-By Generator	6	EA	\$86,250.00	\$517,500
19 Property Acquisition	6	EA	\$11,500.00	\$69,000
20 8" SDR 35 PVC San Sewer main	5,900	LF	\$46.00	\$271,400
21 4' Dia Sanitary Manhole	19	EA	\$4,025.00	\$76,475
22 4" Sanitary Service Line	5,400	LF	\$28.75	\$155,250
20 Asphalt	59,140	SY	\$28.75	\$1,700,275
21 Aggregate Shoulder	44,440	SY	\$5.75	\$255,530
22 Turf Establishment	72,850	SY	\$2.30	\$167,555
23 Portable Generator	1.00	EA	\$86,250.00	\$86,250

**Estimated Construction Cost: \$23,180,000**

**RD Non-Eligible Collection Sanitary Sewer**

1 Abandon Existing Septic Tanks	979	EA	\$805.00	\$788,095
2 Intercept Existing Service Line	979	EA	\$1,150.00	\$1,125,850
3 Electric service connection	925	EA	\$1,150.00	\$1,063,750

**Estimated Construction Cost: \$2,978,000**

**Total Construction Cost: \$26,158,000**



**Short Term Assets**  
**Two Lakes Sewer Authority**  
**LPS Collection System**  
**Manistee County, Michigan**  
**August 23, 2021**

<u>Description</u>		<u>life</u> <u>expectancy</u>	<u># of units</u>	<u>Replacement</u> <u>Cost</u>	<u>Annual Amount</u>
<b><u>STEP Collection</u></b>					
1	Residential Pump	15	925	\$2,300.00	\$141,833
2	Pump Controls	15	925	\$575.00	\$35,458
3	LS pumps	15	12	\$11,500.00	\$9,200
4	LS Controls	15	6	\$5,750.00	\$2,300
5	Vehicles	10	2	\$34,500.00	\$6,900
				<b>RR&amp;I</b>	<b>\$196,000</b>



**Operation & Maintenance  
Two Lakes Collaborative Sewer Authority  
LPS Collection System  
Manistee County, Michigan  
August 23, 2021**

Assumes 4 FT operator & 50 % of admin costs.

<u>Description</u>		<u>Annual Amount</u>
<b><u>LPS Collection</u></b>		
1 Personnel		\$460,000
2 Administrative		\$58,000
3 Energy		\$7,000
4 Chemicals		\$11,000
5 Monitoring and testing		\$0
6 Profesional services		\$6,000
7 Residuals Disposal		\$0
8 Vehicles		\$8,000
9 Misc		\$12,000
<b>Total</b>		<b>\$562,000</b>



Cost Summary  
STEP Collection  
Updated October 26, 2021

Land & Rights	\$80,500	
Total Construction Cost	\$26,153,500	
Construction Contingencies (10%)	\$2,624,000.0	
Legal Services	\$224,800.00	
Engineering	\$4,010,000.00	
Total Project Cost	\$33,093,000.00	
1st Year O&M	\$631,000	\$316,000.0

Bond Anticipation Note (BAN)

Amount of Note =	\$3,176,100 (3/4 of Eng & Legal borrowed)
Interest Rate =	5%
Length of Note (Years) =	1.5
Interest Accumulated =	\$238,208

Capitalized Interest

Borrow 1/2 amount 1st year=	1/2 Proj Cost*(24/24)=	\$16,546,500
Borrow remainder 2nd year=	1/2 Proj Cost*(12/24)=	\$8,273,250
		<u>\$24,819,750</u>

	(avg borrowed over 2 yrs
Average payment =	\$24,819,750 of construction)
Interest Rate =	1.250%
Length of Construction =	2
Interest Accumulated =	\$620,494

Alternative

STEP Collection System

Initial Capital Cost =	\$33,093,000
1/2 of 1st Year O&M =	\$316,000
Interest on BAN =	\$238,000
Capitalized Interest =	\$620,000
Total Project Capital Cost =	\$34,267,000



**Preliminary Engineer's Estimate**  
**Two Lakes Sewer Authority**  
**STEP Collection System**  
**Manistee County, Michigan**  
**October 26, 2021**

The project estimate is Wade Trim's pre-design opinion of probable cost based upon the available information. Assumes one pump station per connection, 1.25" service from pump station to main in road.

<u>Description</u>		<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Amount</u>
<b><u>RD Eligible Collection Sanitary Sewer</u></b>					
1	Mobilization (5%)	1	LS	\$1,159,000.00	\$1,159,000
2	Traffic Maintenance and Control	1	LS	\$339,250.00	\$339,250
3	Temporary Soil Erosion and Sedimentation Control	1	LS	\$230,000.00	\$230,000
4	Dewatering	1	LS	\$690,000.00	\$690,000
5	1.25" Dia, HDPE	97,900	LF	\$20.70	\$2,026,530
6	2" Dia, HDPE	33,900	LF	\$24.15	\$818,685
7	3" Dia, HDPE	25,700	LF	\$29.90	\$768,430
8	4" Dia, HDPE	29,300	LF	\$35.65	\$1,044,545
9	6" Dia, HDPE	35,400	LF	\$43.70	\$1,546,980
10	8" Dia, HDPE	1,700	LF	\$52.90	\$89,930
11	Air Release Structure	89	EA	\$5,750.00	\$511,750
12	Cleanout Structure	128	EA	\$3,450.00	\$441,600
13	Install New Septic Tanks	979	EA	\$5,750.00	\$5,629,250
14	Residential Pump Station, Orenco BPP PF10	979	EA	\$4,600.00	\$4,503,400
15	Intermediate Submersible Pump Station, Duplex	5	EA	\$172,500.00	\$862,500
16	Transmission Submersible Pump Station, Duplex	2	EA	\$230,000.00	\$460,000
17	Protective Lining in Wet Well	7	EA	\$13,800.00	\$96,600
18	Chemical Injection	3	EA	\$172,500.00	\$517,500
19	Activated Carbon Odor Control System	7	EA	\$16,100.00	\$112,700
20	Permanent Stand-By Generator	7	EA	\$86,250.00	\$603,750
21	Property Acquisition	7	EA	\$11,500.00	\$80,500
22	Asphalt	44,440	SY	\$28.75	\$1,277,650
23	Aggregate Shoulder	44,440	SY	\$5.75	\$255,530
24	Turf Establishment	72,850	SY	\$2.30	\$167,555
25	Portable Generator	1	EA	\$86,250.00	\$86,250
<b>Estimated Construction Cost:</b>					<b>\$24,320,000</b>
<b><u>RD Non-Eligible Collection Sanitary Sewer</u></b>					
1	Pump Existing Septic Tanks	0	EA	\$402.50	\$0
2	Electric service connection	979	EA	\$1,150.00	\$1,125,850
3	Abandon Existing Septic Tank	979	EA	\$805.00	\$788,095
<b>Estimated Construction Cost:</b>					<b>\$1,914,000</b>
<b>Total Construction Cost:</b>					<b>\$26,234,000</b>



**Operation & Maintenance**  
**Two Lakes Collaborative Sewer Authority**  
**STEP Collection System**  
**Manistee County, Michigan**  
**October 26, 2021**

<u>Description</u>		<u>Annual Amount</u>
1	Utilities	\$7,000
2	Contract Waste Disposal	\$73,000
3	Salaries/Benefits	\$460,000
4	Contract Services Other-Lab/Testing	\$0
5	Other-Vehicles	\$4,000
6	Administrative/Office	\$58,000
7	Supplies	\$12,000
8	Other-Chemicals	\$11,000
9	Legal	\$6,000
<b>Total</b>		<b>\$631,000</b>



**Short Term Assets**  
**Two Lakes Sewer Authority**  
**STEP Collection System**  
**Manistee County, Michigan**  
**October 26, 2021**

<u>Description</u>	<u>life</u> <u>expectancy</u>	<u># of units</u>	<u>Replacement</u> <u>Cost</u>	<u>Annual Amount</u>
<b><u>STEP Collection</u></b>				
1 Residential Pump (assume 10% need replaced)	15	98	\$1,150.00	\$7,513
2 Pump Controls	15	98	\$575.00	\$3,757
3 Pump Vault Filter pack	10	925	\$230.00	\$21,275
4 LS pumps	15	14	\$11,500.00	\$10,733
5 LS Controls	15	7	\$5,750.00	\$2,683
6 Vehicles	10	1	\$34,500.00	\$3,450
			<b>RR&amp;I</b>	<b>\$50,000</b>



Cost Summary  
LRBOI WWTP Connection  
Updated September 23, 2021

Land & Rights	\$35,000
Other - Connection Fee	\$341,000
Total Construction Cost	\$6,268,000
Construction Contingencies (10%)	\$630,000.0
Legal Services	\$56,200.00
Engineering (15%)	\$1,040,000.00
Total Project Cost	\$8,370,000.00
1st Year O&M	\$396,000

Bond Anticipation Note (BAN)

Amount of Note =	\$822,150 (3/4 of Eng & Legal borrowed)
Interest Rate =	5%
Length of Note (Years) =	1.5
Interest Accumulated =	\$61,661

Capitalized Interest

Borrow 1/2 amount 1st year=	1/2 Proj Cost*(24/24)=	\$4,185,000
Borrow remainder 2nd year=	1/2 Proj Cost*(12/24)=	\$2,092,500
		\$6,277,500

(avg borrowed over 2 yrs of

Average payment =	\$6,277,500 construction)
Interest Rate =	1.250%
Length of Construction =	2
Interest Accumulated =	\$156,938

Alternative

LRBOI WWTP Connection

Initial Capital Cost =	\$8,370,000
1/2 of 1st Year O&M =	\$198,000
Interest on BAN =	\$62,000
Capitalized Interest =	\$157,000
Total Project Capital Cost =	\$8,787,000



**Preliminary Engineer's Estimate  
Two Lakes Sewer Authority  
Connection to LRBOI Treatment System  
Manistee County, Michigan  
June 8, 2021**

The project estimate is Wade Trim's pre-design opinion of probable cost based upon the available information. Connection and O&M costs provided by the LRBOI. Transmission costs include forcemain from the Bear lake Collection Area to the south side of Portage Lake, and the forcemain from Portage Lake South to the LRBOI treatment facility.

<u>Description</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Amount</u>
<b>WWTP</b>				
1 TLSA Service Connection	1	EA	\$340,572.50	\$340,573
<b>Estimated Construction Cost:</b>				<b>\$341,000</b>
<b><u>Transmission Sanitary Sewer</u></b>				
1 Mobilization (5%)	1	LS	\$301,000.00	\$301,000
2 Traffic Maintenance and Control	1	LS	\$34,500.00	\$34,500
3 Temporary Soil Erosion and Sedimentation Control	1	LS	\$11,500.00	\$11,500
4 Dewatering	1	LS	\$11,500.00	\$11,500
5 6" Dia, HDPE	74,000	LF	\$43.70	\$3,233,800
6 Pump Station, Self Priming	3	EA	\$230,000.00	\$690,000
7 Permanent Stand By Generator	3	EA	\$86,250.00	\$258,750
8 Protective Lining in Wet Well	3	EA	\$11,500.00	\$34,500
9 Activated Carbon Odor Control System	3	EA	\$13,800.00	\$41,400
10 Property Acquisition	3	EA	\$23,000.00	\$69,000
11 Electricity to Sites	3	EA	\$11,500.00	\$34,500
12 Air Release Structure	49	EA	\$5,750.00	\$281,750
13 Cleanout Structure	74	EA	\$3,450.00	\$255,300
7 Asphalt	14,800	SY	\$28.75	\$425,500
8 Aggregate Shoulder	14,800	SY	\$4.60	\$68,080
9 Chemical injection @ Pump Station	3	LS	\$172,500.00	\$517,500
10 Turf Establishment	14,800	SY	\$2.30	\$34,040
<b>Estimated Construction Cost:</b>				<b>\$6,303,000</b>
<b>Total Construction Cost:</b>				<b>\$6,644,000</b>



**Short Term Assets**  
**Two Lakes Sewer Authority**  
**Connection to LRBOI WWTP**  
**Manistee County, Michigan**  
**August 23, 2021**

<u>Description</u>	<u>life</u> <u>expectancy</u>	<u># of units</u>	<u>Replacement</u> <u>Cost</u>	<u>Annual Amount</u>
<b><u>LS &amp; FM Only</u></b>				
1 LS Pump Controls	15	3	\$5,750.00	\$1,150
2 LS pumps	15	6	\$23,000.00	\$9,200
3 Air Release Valve	15	49	\$575.00	\$1,878
			<b>RR&amp;I:</b>	<b>\$12,000</b>



**Operation & Maintenance  
Two Lakes Sewer Authority  
Connection to LRBOI WWTP  
Manistee County, Michigan  
August 23, 2021**

Assumes 0.25 FT operator for lift station and force mains.

<u>Description</u>		<u>Annual Amount</u>
<b><u>Lagoon WWTP</u></b>		
1	Treatment Cost @\$4.5/1000 gal w/ 0.18 MGD	\$339,998
2	Personnel	\$28,750
3	Energy	\$4,600
4	Chemicals	\$17,250
5	Monitoring and testing	\$0
6	Profesional services	\$2,300
7	Residuals Disposal	\$0
8	Misc	\$2,300
	<b>Total</b>	<b>\$396,000</b>



Cost Summary  
Onekama Village WWTP Lagoon Connection  
Updated September 23, 2021

Land & Rights	\$749,000
Total Construction Cost	\$9,130,000
Construction Contingencies (10%)	\$987,000.0
Legal Services	\$56,200.00
Engineering (15%)	\$1,629,000.00
Total Project Cost	\$12,551,000.00
1st Year O&M	\$339,000

Bond Anticipation Note (BAN)

Amount of Note =	\$1,263,900 (3/4 of Eng & Legal borrowed)
Interest Rate =	5%
Length of Note (Years) =	1.5
Interest Accumulated =	\$94,793

Capitalized Interest

Borrow 1/2 amount 1st year=	1/2 Proj Cost*(24/24)=	\$6,275,500
Borrow remainder 2nd year=	1/2 Proj Cost*(12/24)=	\$3,137,750
		\$9,413,250

(avg borrowed over 2 yrs

Average payment =	\$9,413,250 of construction)
Interest Rate =	1.250%
Length of Construction =	2
Interest Accumulated =	\$235,331

Alternative

Onekama Village WWTP Connection	
Initial Capital Cost =	\$12,551,000
1/2 of 1st Year O&M =	\$170,000
Interest on BAN =	\$95,000
Capitalized Interest =	\$236,000
Total Project Capital Cost =	\$13,052,000



**Preliminary Engineer's Estimate**  
**Two Lakes Sewer Authority**  
**Connection to Onekama Village Owned Lagoon WWTP**  
**Manistee County, Michigan**  
**June 8, 2021**

The project estimate is Wade Trim's pre-design opinion of probable cost based upon the available information. Assumes existing facility has no additional capacity and improvements are required to treat full TLSA anticipated flows.

	<u>Description</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Amount</u>
	<b>Lagoon Site</b>				
1	Land Acquisition, Purchase and Survey	40	Acre	\$3,450.00	\$138,000
2	Hydrogeological Investigation	1	LSUM	\$57,500.00	\$57,500
3	Clear and Grub	40	Acre	\$2,300.00	\$92,000
4	High Rate Lagoons earthwork	17,750	CY	\$4.60	\$81,650
5	High Rate Lagoons lining, 60 mil hdpe	180,000	SF	\$2.01	\$362,250
6	Storage Lagoons earthwork	94,400	CY	\$4.60	\$434,240
7	Storage Lagoons aerators	4	EA	\$17,250.00	\$69,000
8	install power/cabling	4	EA	\$28,750.00	\$115,000
9	lining, storage lagoon, 60 mil hdpe	900,000	SF	\$2.01	\$1,811,250
10	Electrical Utility	1	LSUM	\$28,750.00	\$28,750
11	Electrical Sw Gr, MCC, Standby Receptacle	1	LSUM	\$86,250.00	\$86,250
12	Flow Control Manholes, 4' diameter	3	EA	\$5,750.00	\$17,250
13	Flow Control Manholes, 8' diameter	2	EA	\$13,800.00	\$27,600
14	12 inch PVC SDR 35 sewer(inc trench \$18/LF)	1,000	LF	\$48.61	\$48,611
15	24 inch PVC SDR 35 sewer (inc trench \$18/Lf)	2,000	LF	\$78.07	\$156,147
16	12 inch gate valves	12	EA	\$8,395.00	\$100,740
17	24 inch gate valves	2	EA	\$28,750.00	\$57,500
18	Manholes, 10 feet, pump station and valve vault	2	EA	\$16,100.00	\$32,200
19	18" gate valves	2		\$41,400.00	\$82,800
20	18" check valves	2		\$43,700.00	\$87,400
21	18" HDPE force main	6,000	LF	\$108.10	\$648,600
22	Pumps, 3000 gpm, Installed	2	EA	\$86,250.00	\$172,500
23	Storage Building	1	LSUM	\$28,750.00	\$28,750
	<b>Irrigation Site</b>			\$0.00	
23	Land Acquisition, Purchase from Onekama Village	72	Acre	\$5,861.81	\$422,051
24	Land Acquisition, Purchase and Survey	48	Acre	\$3,450.00	\$165,600
25	Clear and Grub	48	Acre	\$1,150.00	\$55,200
26	Land Leveling	48	Acre	\$1,150.00	\$55,200
27	Irrigation Pond earthwork	25,000	CY	\$4.60	\$115,000
28	Irrigation Pond lining	122,500	SF	\$2.01	\$246,531
29	Pump Station, Manhole wetwell, 8 feet	1	EA	\$13,800.00	\$13,800
30	Valve Vault	1	EA	\$23,000.00	\$23,000
31	6 inch gate valves	8	EA	\$2,300.00	\$18,400
32	6 inch check valves	3	EA	\$2,300.00	\$6,900
33	6 inch DIP fittings in valve vault	1	LSUM	\$6,900.00	\$6,900
34	Centerpivot irrigator	3	EA	\$51,750.00	\$155,250
35	8 inch HDPE, Directionally Drilled	1,500	LF	\$52.90	\$79,350
36	FM, Magnetic, 6 inch	1	EA	\$11,500.00	\$11,500
37	electrical	1	LSUM	\$11,500.00	\$11,500

**Estimated Construction Cost: \$6,122,000**

**Transmission Force Main to WWTF**

1	Mobilization (5%)	1	LS	<u>\$179,000.00</u>	<u>\$179,000</u>
2	Traffic Maintenance and Control	1	LS	<u>\$34,500.00</u>	<u>\$34,500</u>
3	Temporary Soil Erosion and Sedimentation Control	1	LS	<u>\$11,500.00</u>	<u>\$11,500</u>
4	Dewatering	1	LS	<u>\$11,500.00</u>	<u>\$11,500</u>
5	6" Dia, HDPE	42,500	LF	<u>\$43.70</u>	<u>\$1,857,250</u>
6	Pump Station, Self Priming	2	EA	<u>\$230,000.00</u>	<u>\$460,000</u>
7	Permanent Stand By Generator	2	EA	<u>\$86,250.00</u>	<u>\$172,500</u>
8	Protective Lining in Wet Well	2	EA	<u>\$11,500.00</u>	<u>\$23,000</u>
9	Activated Carbon Odor Control System	2	EA	<u>\$13,800.00</u>	<u>\$27,600</u>
10	Property Acquisition	2	EA	<u>\$11,500.00</u>	<u>\$23,000</u>
11	Electricity to Sites	2	EA	<u>\$11,500.00</u>	<u>\$23,000</u>
12	Air Release Structure	29	EA	<u>\$5,750.00</u>	<u>\$166,750</u>
13	Cleanout Structure	43	EA	<u>\$3,450.00</u>	<u>\$148,350</u>
14	Asphalt	8,500	SY	<u>\$28.75</u>	<u>\$244,375</u>
15	Aggregate Shoulder	4,250	SY	<u>\$4.60</u>	<u>\$19,550</u>
16	Chemical injection @ Pump Station	2	LS	<u>\$172,500.00</u>	<u>\$345,000</u>
17	Turf Establishment	4,250	SY	<u>\$2.30</u>	<u>\$9,775</u>

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**Estimated Construction Cost: \$3,756,650**

**Total Construction Cost: \$9,878,650**

Design Note: Lagoon Site quantities reduced to only provide storage for 60% of original full build out design flow. Initial services are 60% of full buildout. Only proposing to construct 4 of 6 total storage ponds at initial construction. All other components would match full build out as they are single lagoons and pipes. Remaining storage lagoons could be added as needed as more connections are added.



**Short Term Assets**  
**Two Lakes Sewer Authority**  
**Connection to Onekama Village Owned Lagoon WWTP**  
**Manistee County, Michigan**  
**August 23, 2021**

<u>Description</u>	<u>life</u> <u>expectancy</u>	<u># of units</u>	<u>Replacement</u> <u>Cost</u>	<u>Annual Amount</u>
<b><u>Lagoon WWTP</u></b>				
1 aerator	15	6	\$17,250.00	\$6,900
2 effluent pump	15	2	\$86,250.00	\$11,500
3 irrigation pump	15	3	\$17,250.00	\$3,450
4 flow meter	15	1	\$11,500.00	\$767
5 misc monitoring and equipment	5	1	\$5,750.00	\$1,150
6 LS Pump Controls	15	2	\$5,750.00	\$767
7 LS pumps	15	4	\$23,000.00	\$6,133
8 Air Release Valve	15	29	\$575.00	\$1,112
			<b>Annual RR&amp;I Cost:</b>	<b>\$32,000</b>



**Operation & Maintenance  
Two Lakes Sewer Authority  
Connection to Onekama Village Owned Lagoon WWTP  
Manistee County, Michigan  
August 23, 2021**

Assumes 0.5 FT operator & 50% of admin costs. Onekama service charge assumed as 1/4 of current Village customer O&M cost ( $0.25 * \$26.47 \text{ per month} * 1000 \text{ TLSA users} * 12 \text{ months}$ )

<u>Description</u>		<u>Annual Amount</u>
<b><u>Lagoon WWTP</u></b>		
1 Onekama Service Charge		\$91,310
1 Personnel		\$57,500
2 Administrative		\$57,500
3 Energy		\$40,250
4 Chemicals		\$17,250
5 Monitoring and testing		\$5,750
6 Profesional services		\$5,750
7 Residuals Disposal		\$57,500
8 Misc		\$5,750
<b>Total</b>		<b>\$339,000</b>



Cost Summary  
 TLCSA Mechanical WWTP  
 Updated September 23, 2021

Land & Rights	\$265,000
Total Construction Cost	\$6,393,000
Construction Contingencies (10%)	\$666,000.0
Legal services	\$56,200.00
Engineering	\$990,000.00
Total Project Cost	\$8,370,000.00
1st Year O&M	\$328,000

Bond Anticipation Note (BAN)

Amount of Note =	\$784,650 (3/4 of Eng & Legal borrowed)
Interest Rate =	5%
Length of Note (Years) =	1.5
Interest Accumulated =	\$58,849

Capitalized Interest

Borrow 1/2 amount 1st year=	1/2 Proj Cost*(24/24)=	\$4,185,000
Borrow remainder 2nd year=	1/2 Proj Cost*(12/24)=	\$2,092,500
		\$6,277,500

(avg borrowed over 2 yrs

Average payment =	\$6,277,500 of construction)
Interest Rate =	1.250%
Length of Construction =	2
Interest Accumulated =	\$156,938

Alternative

TLCSA Mechanical WWTP

Initial Capital Cost =	\$8,370,000
1/2 of 1st Year O&M =	\$164,000
Interest on BAN =	\$59,000
Capitalized Interest =	\$157,000
Total Project Capital Cost =	\$8,750,000



**Preliminary Engineer's Estimate**  
**Two Lakes Sewer Authority**  
**Mechanical WWTP**  
**Manistee County, Michigan**  
**June 8, 2021**

The project estimate is Wade Trim's pre-design opinion of probable cost based upon the available information. Assumes no equalization basin is required, a surface infiltration discharge is allowed at Erdman Road WWTP site.

<u>Description</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Amount</u>
<b>WWTP</b>				
1 Mechanical WWTP Equipment	1	LS	\$670,450.00	\$670,450
2 Equipment Installation	1	LS	\$115,000.00	\$115,000
3 Concrete Tanks for Plant	1	LS	\$471,500.00	\$471,500
4 Property Acquisition	10	Acre	\$3,450.00	\$34,500
5 Building, 45'x80'	1	LS	\$690,000.00	\$690,000
6 Building Electrical & Mechanical	1	LS	\$115,000.00	\$115,000
7 Site work	1	LS	\$115,000.00	\$115,000
8 Headworks	1	LS	\$115,000.00	\$115,000
<b>Estimated Construction Cost:</b>				<b>\$2,326,000</b>

**Surface Infiltration Discharge**

9 Land Acquisition, Purchase and Survey	60	Acre	\$3,450.00	\$207,000
10 Clear and Grub	40	Acre	\$1,150.00	\$46,000
11 Land Leveling	40	Acre	\$1,150.00	\$46,000
12 Infiltration Pond earthwork	25,000	CY	\$4.60	\$115,000
13 Pump Station, Manhole wetwell, 8 feet	1	EA	\$13,800.00	\$13,800
14 Valve Vault	1	EA	\$23,000.00	\$23,000
15 6 inch gate valves	8	EA	\$2,300.00	\$18,400
16 6inch check valves	3	EA	\$2,300.00	\$6,900
17 6 inch DIP fittings in valve vault	1	LSUM	\$6,900.00	\$6,900
18 6 inch HDPE, Directionally Drilled	1,500	LF	\$46.00	\$69,000
19 FM, Magnetic, 6 inch	1	EA	\$11,500.00	\$11,500
20 electrical	1	LSUM	\$11,500.00	\$11,500

**Estimated Construction Cost: \$575,000**

**Transmission Force Main**

1	Mobilization (5%)	1	LS	\$179,000.00	\$179,000
2	Traffic Maintenance and Control	1	LS	\$34,500.00	\$34,500
3	Temporary Soil Erosion and Sedimentation Control	1	LS	\$11,500.00	\$11,500
4	Dewatering	1	LS	\$11,500.00	\$11,500
5	6" Dia, HDPE	42,500	LF	\$43.70	\$1,857,250
6	Pump Station, Self Priming	2	EA	\$230,000.00	\$460,000
7	Permanent Stand By Generator	2	EA	\$86,250.00	\$172,500
8	Protective Lining in Wet Well	2	EA	\$11,500.00	\$23,000
9	Activated Carbon Odor Control System	2	EA	\$13,800.00	\$27,600
10	Property Acquisition	2	EA	\$11,500.00	\$23,000
11	Electricity to Sites	2	EA	\$11,500.00	\$23,000
12	Air Release Structure	29	EA	\$5,750.00	\$166,750
13	Cleanout Structure	43	EA	\$3,450.00	\$148,350
14	Asphalt	8,500	SY	\$28.75	\$244,375
15	Aggregate Shoulder	4,250	SY	\$4.60	\$19,550
16	Chemical injection @ Pump Station	2	LS	\$172,500.00	\$345,000
17	Turf Establishment	4,250	SY	\$2.30	\$9,775

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<b>Estimated Construction Cost:</b>	<b>\$3,756,650</b>
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<b>Total Construction Cost:</b>	<b>\$6,657,650</b>
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**Short Term Assets**  
**Two Lakes Sewer Authority**  
**Mechanical WWTP**  
**Manistee County, Michigan**  
**August 23, 2021**

<u>Description</u>	<u>life</u> <u>expectancy</u>	<u># of units</u>	<u>Replacement</u> <u>Cost</u>	<u>Annual Amount</u>
<b><u>Mechanical WWTP</u></b>				
1 aeration blower	15	3	\$17,250.00	\$3,450
2 submerible mixer	15	1	\$11,500.00	\$767
3 airlift pump	15	2	\$23,000.00	\$3,067
4 air compressor	10	1	\$5,750.00	\$575
5 discharge pumps	15	2	\$17,250.00	\$2,300
5 flow meter	15	1	\$11,500.00	\$767
6 misc monitoring and pneumatic equipment	5	1	\$5,750.00	\$1,150
7 LS Pump Controls	15	2	\$5,750.00	\$767
8 LS pumps	15	4	\$23,000.00	\$6,133
9 Air Release Valve	15	29	\$575.00	\$1,112
<b>Estimated Annual RR&amp;I Cost:</b>				<b>\$21,000</b>



**Operation & Maintenance  
Two Lakes Sewer Authority  
Mechanical WWTP  
Manistee County, Michigan  
August 23, 2021**

Assumes 1 FT operator & 50% admin cost

<u>Description</u>		<u>Annual Amount</u>
<b><u>Mechanical WWTP</u></b>		
1	Utilities	\$58,000
2	Contract Waste Disposal	\$57,000
3	Salaries/Benefits	\$115,000
4	Contract Services Other-Lab/Testing	\$6,000
5	Other-Vehicles	\$0
6	Administrative/Office	\$57,000
7	Supplies	\$12,000
8	Other-Chemicals	\$17,000
9	Legal	\$6,000
	<b>Total</b>	<b>\$328,000</b>



Cost Summary  
TLCA Lagoon  
Updated September 23, 2021

Land & Rights	\$575,000
Total Construction Cost	\$9,296,000
Construction Contingencies (10%)	\$987,000.0
Legal Services	\$56,200.00
Engineering (15%)	\$1,628,000.00
Total Project Cost	\$12,542,000.00
1st Year O&M	\$274,000

Bond Anticipation Note (BAN)

Amount of Note =	\$1,263,150 (3/4 of Eng & Legal borrowed)
Interest Rate =	5%
Length of Note (Years) =	1.5
Interest Accumulated =	\$94,736

Capitalized Interest

Borrow 1/2 amount 1st year=	1/2 Proj Cost*(24/24)=	\$6,271,000
Borrow remainder 2nd year=	1/2 Proj Cost*(12/24)=	\$3,135,500
		\$9,406,500

(avg borrowed over 2 yrs

Average payment =	\$9,406,500 of construction)
Interest Rate =	1.250%
Length of Construction =	2
Interest Accumulated =	\$235,163

Alternative

TLCA Lagoon WWTP

Initial Capital Cost =	\$12,542,000
1/2 of 1st Year O&M =	\$137,000
Interest on BAN =	\$95,000
Capitalized Interest =	\$236,000
Total Project Capital Cost =	\$13,010,000



**Preliminary Engineer's Estimate**  
**Two Lakes Sewer Authority**  
**TLSA Owned Lagoon WWTP**  
**Manistee County, Michigan**  
**June 8, 2021**

The project estimate is Wade Trim's pre-design opinion of probable cost based upon the available information. Assumes a suitable treatment and land application site is found between the two collection areas.

	<u>Description</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Amount</u>
	<b>Lagoon Site</b>				
1	Land Acquisition, Purchase and Survey	40	Acre	\$3,450.00	\$138,000
2	Hydrogeological Investigation	1	LSUM	\$57,500.00	\$57,500
3	Clear and Grub	40	Acre	\$2,300.00	\$92,000
4	High Rate Lagoons earthwork	17,750	CY	\$4.60	\$81,650
5	High Rate Lagoons lining, 60 mil hdpe	180000	SF	\$2.01	\$362,250
6	Storage Lagoons earthwork	94,400	CY	\$4.60	\$434,240
7	Storage Lagoons aerators	4	EA	\$17,250.00	\$69,000
8	install power/cabling	4	EA	\$28,750.00	\$115,000
9	lining, storage lagoon, 60 mil hdpe	900,000	SF	\$2.01	\$1,811,250
10	Electrical Utility	1	LSUM	\$28,750.00	\$28,750
11	Electrical Sw Gr, MCC, Standby Receptacle	1	LSUM	\$86,250.00	\$86,250
12	Flow Control Manholes, 4' diameter	3	EA	\$5,750.00	\$17,250
13	Flow Control Manholes, 8' diameter	2	EA	\$13,800.00	\$27,600
14	12 inch PVC SDR 35 sewer(inc trench \$18/LF)	1,000	LF	\$48.61	\$48,611
15	24 inch PVC SDR 35 sewer (inc trench18/lf)	2,000	LF	\$78.07	\$156,147
16	12 inch gate valves	12	EA	\$8,395.00	\$100,740
17	24 inch gate valves	2	EA	\$28,750.00	\$57,500
18	Manholes, 10 feet, pump station and valve vault	2	EA	\$16,100.00	\$32,200
19	18" gate valves	2		\$41,400.00	\$82,800
20	18" check valves	2		\$43,700.00	\$87,400
21	18" HDPE force main	6,000	LF	\$108.10	\$648,600
22	Pumps, 3000 gpm, Installed	2	EA	\$86,250.00	\$172,500
23	Storage Building	1	LSUM	\$28,750.00	\$28,750
	<b>Irrigation Site</b>				
24	Land Acquisition, Purchase and Survey	120	Acre	\$3,450.00	\$414,000
25	Clear and Grub	120	Acre	\$1,150.00	\$138,000
26	Land Leveling	120	Acre	\$1,150.00	\$138,000
27	Irrigation Pond earthwork	25,000	CY	\$4.60	\$115,000
28	Irrigation Pond lining	122,500	SF	\$2.01	\$246,531
29	Pump Station, Manhole wetwell, 8 feet	1	EA	\$13,800.00	\$13,800
30	Valve Vault	1	EA	\$23,000.00	\$23,000
31	6 inch gate valves	8	EA	\$2,300.00	\$18,400
32	6inch check valves	3	EA	\$2,300.00	\$6,900
33	6 inch DIP fittings in valve vault	1	LSUM	\$6,900.00	\$6,900

34	Centerpivot irrigator	3	EA	\$51,750.00	\$155,250
35	8 inch HDPE, Directionally Drilled	1,500	LF	\$52.90	\$79,350
36	FM, Magnetic, 6 inch	1	EA	\$11,500.00	\$11,500
37	electrical	1	LSUM	\$11,500.00	\$11,500

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<b>Estimated Construction Cost:</b>	<b>\$6,114,000</b>
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**Transmission Force Main to WWTF**

1	Mobilization (5%)	1	LS	\$179,000.00	\$179,000
2	Traffic Maintenance and Control	1	LS	\$34,500.00	\$34,500
3	Temporary Soil Erosion and Sedimentation Control	1	LS	\$11,500.00	\$11,500
4	Dewatering	1	LS	\$11,500.00	\$11,500
5	6" Dia, HDPE	42,500	LF	\$43.70	\$1,857,250
6	Pump Station, Self Priming	2	EA	\$230,000.00	\$460,000
7	Permanent Stand By Generator	2	EA	\$86,250.00	\$172,500
8	Protective Lining in Wet Well	2	EA	\$11,500.00	\$23,000
9	Activated Carbon Odor Control System	2	EA	\$13,800.00	\$27,600
10	Property Acquisition	2	EA	\$11,500.00	\$23,000
11	Electricity to Sites	2	EA	\$11,500.00	\$23,000
12	Air Release Structure	29	EA	\$5,750.00	\$166,750
13	Cleanout Structure	43	EA	\$3,450.00	\$148,350
14	Asphalt	8,500	SY	\$28.75	\$244,375
15	Aggregate Shoulder	4,250	SY	\$4.60	\$19,550
16	Chemical injection @ Pump Station	2	LS	\$172,500.00	\$345,000
17	Turf Establishment	4,250	SY	\$2.30	\$9,775

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<b>Estimated Construction Cost:</b>	<b>\$3,756,650</b>
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<b>Total Construction Cost:</b>	<b>\$9,871,000</b>
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Design Note: Lagoon Site quantities reduced to only provide storage for 60% of original full build out design flow. Initial services are 60% of full buildout. Only proposing to construct 4 of 6 total storage ponds at initial construction. All other components would match full build out as they are single lagoons and pipes. Remaining storage lagoons could be added as needed as more connections are added.



**Short Term Assets**  
**Two Lakes Sewer Authority**  
**TLSA Owned Lagoon WWTP**  
**Manistee County, Michigan**  
**August 23, 2021**

<u>Description</u>	<u>life</u> <u>expectancy</u>	<u># of units</u>	<u>Replacement</u> <u>Cost</u>	<u>Annual Amount</u>
<b><u>Lagoon WWTP</u></b>				
1 Aerator	15	4	\$17,250.00	\$4,600
2 Effluent Pump	15	2	\$86,250.00	\$11,500
3 Irrigation Pump	15	3	\$17,250.00	\$3,450
4 Flow Meter	15	1	\$11,500.00	\$767
5 Misc Monitoring and Equipment	5	1	\$5,750.00	\$1,150
6 LS Pump Controls	15	2	\$5,750.00	\$767
7 LS Pumps	15	4	\$23,000.00	\$6,133
8 Air Release Valve	15	29	\$575.00	\$1,112
<b>Estimated Annual RR&amp;I Cost:</b>				<b>\$29,000</b>



**Operation & Maintenance  
Two Lakes Sewer Authority  
TLSA Owned Lagoon WWTP  
Manistee County, Michigan  
August 23, 2021**

Assumes 1 FT operator & 50% of admin costs

<u>Description</u>		<u>Annual Amount</u>
<b><u>Lagoon WWTP</u></b>		
1 Personnel		\$115,000
2 Administrative		\$57,500
3 Energy		\$37,950
4 Chemicals		\$11,500
5 Monitoring and Testing		\$5,750
6 Professional Services		\$5,750
7 Residuals Disposal		\$34,500
8 Misc		\$5,750
<b>Total</b>		<b>\$274,000</b>



Cost Summary  
Total Project - STEP Collection with Mechanical WWTP  
Updated November 1, 2021

Land & Rights	\$345,000	
Total Construction Cost	\$32,547,000	
Construction Contingencies (10%)	\$3,290,000.0	
Legal Services	\$281,000.00	
Engineering	\$5,000,000.00	
Total Project Cost	\$41,463,000.00	
1st Year O&M	\$959,000	\$480,000.0

Bond Anticipation Note (BAN)

Amount of Note =	\$3,960,750 (3/4 of Eng & Legal borrowed)
Interest Rate =	5%
Length of Note (Years) =	1.5
Interest Accumulated =	\$297,056

Capitalized Interest

Borrow 1/2 amount 1st year=	1/2 Proj Cost*(24/24)=	\$20,731,500
Borrow remainder 2nd year=	1/2 Proj Cost*(12/24)=	\$10,365,750
		<hr/>
		\$31,097,250

	(avg borrowed over 2 yrs
Average payment =	\$31,097,250 of construction)
Interest Rate =	1.250%
Length of Construction =	2
Interest Accumulated =	\$777,431

Total Project Costs

STEP Collection System with Mechanical WWTP

Initial Capital Cost =	\$41,463,000
1/2 of 1st Year O&M =	\$480,000
Interest on BAN =	\$297,000
Capitalized Interest =	\$777,000
Total Project Capital Cost =	\$43,017,000



**Preliminary Engineer's Estimate**  
**Two Lakes Sewer Authority**  
**STEP Collection System with Mechanical WWTP**  
**Manistee County, Michigan**  
**October 26, 2021**

The project estimate is Wade Trim's pre-design opinion of probable cost based upon the available information. Assumes one pump station per connection, 1.25" service from pump station to main in road. Assumes no WWTP equalization basin is required, a surface infiltration discharge is allowed at Erdman Road WWTP site.

<u>Description</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Amount</u>
<b><u>RD Eligible Collection Sanitary Sewer</u></b>				
1 Mobilization (5%)	1	LS	\$1,159,000.00	\$1,159,000
2 Traffic Maintenance and Control	1	LS	\$339,250.00	\$339,250
3 Temporary Soil Erosion and Sedimentation Control	1	LS	\$230,000.00	\$230,000
4 Dewatering	1	LS	\$690,000.00	\$690,000
5 1.25" Dia, HDPE	97,900	LF	\$20.70	\$2,026,530
6 2" Dia, HDPE	33,900	LF	\$24.15	\$818,685
7 3" Dia, HDPE	25,700	LF	\$29.90	\$768,430
8 4" Dia, HDPE	29,300	LF	\$35.65	\$1,044,545
9 6" Dia, HDPE	35,400	LF	\$43.70	\$1,546,980
10 8" Dia, HDPE	1,700	LF	\$52.90	\$89,930
11 Air Release Structure	89	EA	\$5,750.00	\$511,750
12 Cleanout Structure	128	EA	\$3,450.00	\$441,600
13 Install New Septic Tanks	979	EA	\$5,750.00	\$5,629,250
14 Residential Pump Station, Orenco BPP PF10	979	EA	\$4,600.00	\$4,503,400
15 Intermediate Submersible Pump Station, Duplex	5	EA	\$172,500.00	\$862,500
16 Transmission Submersible Pump Station, Duplex	2	EA	\$230,000.00	\$460,000
17 Protective Lining in Wet Well	7	EA	\$13,800.00	\$96,600
18 Chemical Injection	3	EA	\$172,500.00	\$517,500
19 Activated Carbon Odor Control System	7	EA	\$16,100.00	\$112,700
20 Permanent Stand-By Generator	7	EA	\$86,250.00	\$603,750
21 Property Acquisition	7	EA	\$11,500.00	\$80,500
22 Asphalt	44,440	SY	\$28.75	\$1,277,650
23 Aggregate Shoulder	44,440	SY	\$5.75	\$255,530
24 Turf Establishment	72,850	SY	\$2.30	\$167,555
25 Portable Generator	1	EA	\$86,250.00	\$86,250
26 Pump Existing Septic Tanks	0	EA	\$402.50	\$0
27 Electric service connection	979	EA	\$1,150.00	\$1,125,850
28 Abandon Existing Septic Tank	979	EA	\$805.00	\$788,095
<b>Collection Land &amp; Construction Cost:</b>				<b>\$26,234,000</b>
<b><u>WWTP</u></b>				
1 Mechanical WWTP Equipment	1	LS	\$670,450.00	\$670,450
2 Equipment Installation	1	LS	\$115,000.00	\$115,000
3 Concrete Tanks for Plant	1	LS	\$471,500.00	\$471,500
4 Property Acquisition	10	Acre	\$3,450.00	\$34,500
5 Building, 45'x80'	1	LS	\$690,000.00	\$690,000
6 Building Electrical & Mechanical	1	LS	\$115,000.00	\$115,000
7 Site work	1	LS	\$115,000.00	\$115,000
8 Headworks	1	LS	\$115,000.00	\$115,000
<b>WWTP Land &amp; Construction Cost:</b>				<b>\$2,326,000</b>

**Surface Infiltration Discharge**

1	Land Acquisition, Purchase and Survey	60	Acre	\$3,450.00	\$207,000
2	Clear and Grub	40	Acre	\$1,150.00	\$46,000
3	Land Leveling	40	Acre	\$1,150.00	\$46,000
4	Infiltration Pond earthwork	25,000	CY	\$4.60	\$115,000
5	Pump Station, Manhole wetwell, 8 feet	1	EA	\$13,800.00	\$13,800
6	Valve Vault	1	EA	\$23,000.00	\$23,000
7	6 inch gate valves	8	EA	\$2,300.00	\$18,400
8	6inch check valves	3	EA	\$2,300.00	\$6,900
9	6 inch DIP fittings in valve vault	1	LSUM	\$6,900.00	\$6,900
10	6 inch HDPE, Directionally Drilled	1,500	LF	\$46.00	\$69,000
11	FM, Magnetic, 6 inch	1	EA	\$11,500.00	\$11,500
12	electrical	1	LSUM	\$11,500.00	\$11,500

**Surface Discharge Land & Construction Cost: \$575,000**

**Transmission Force Main**

1	Mobilization (5%)	1	LS	\$179,000.00	\$179,000
2	Traffic Maintenance and Control	1	LS	\$34,500.00	\$34,500
3	Temporary Soil Erosion and Sedimentation Control	1	LS	\$11,500.00	\$11,500
4	Dewatering	1	LS	\$11,500.00	\$11,500
5	6" Dia, HDPE	42,500	LF	\$43.70	\$1,857,250
6	Pump Station, Self Priming	2	EA	\$230,000.00	\$460,000
7	Permanent Stand By Generator	2	EA	\$86,250.00	\$172,500
8	Protective Lining in Wet Well	2	EA	\$11,500.00	\$23,000
9	Activated Carbon Odor Control System	2	EA	\$13,800.00	\$27,600
10	Property Acquisition	2	EA	\$11,500.00	\$23,000
11	Electricity to Sites	2	EA	\$11,500.00	\$23,000
12	Air Release Structure	29	EA	\$5,750.00	\$166,750
13	Cleanout Structure	43	EA	\$3,450.00	\$148,350
14	Asphalt	8,500	SY	\$28.75	\$244,375
15	Aggregate Shoulder	4,250	SY	\$4.60	\$19,550
16	Chemical injection @ Pump Station	2	LS	\$172,500.00	\$345,000
17	Turf Establishment	4,250	SY	\$2.30	\$9,775

**Transmission Land & Construction Cost: \$3,756,650**

**Total Estimated Land & Construction Cost: \$32,891,650**



**Operation & Maintenance**  
**Two Lakes Collaborative Sewer Authority**  
**STEP Collection System With Mechanical WWTP**  
**Manistee County, Michigan**  
**October 26, 2021**

<u>Description</u>		<u>Annual Amount</u>
<b><u>STEP Collection System</u></b>		
1	Utilities	\$7,000
2	Contract Waste Disposal	\$73,000
3	Salaries/Benefits	\$460,000
4	Contract Services Other-Lab/Testing	\$0
5	Other-Vehicles	\$4,000
6	Administrative/Office	\$58,000
7	Supplies	\$12,000
8	Other-Chemicals	\$11,000
9	Legal	\$6,000
	<b>Total</b>	<b>\$631,000</b>
<b><u>Mechanical WWTP</u></b>		
1	Utilities	\$58,000
2	Contract Waste Disposal	\$57,000
3	Salaries/Benefits	\$115,000
4	Contract Services Other-Lab/Testing	\$6,000
5	Other-Vehicles	\$0
6	Administrative/Office	\$57,000
7	Supplies	\$12,000
8	Other-Chemicals	\$17,000
9	Legal	\$6,000
	<b>Total</b>	<b>\$328,000</b>
<b>Total O&amp;M Estimate:</b>		<b>\$959,000</b>



**Short Term Assets**  
**Two Lakes Sewer Authority**  
**STEP Collection System with Mechanical WWTP**  
**Manistee County, Michigan**  
**October 26, 2021**

<u>Description</u>	<u>life expectancy</u>	<u># of units</u>	<u>Replacement Cost</u>	<u>Annual Amount</u>
<b><u>STEP Collection</u></b>				
1 Residential Pump (assume 10% need replaced)	15	98	\$1,150.00	\$7,513
2 Pump Controls (assume 10% need replaced)	15	98	\$575.00	\$3,757
3 Pump Vault Filter pack	10	925	\$230.00	\$21,275
4 LS pumps	15	14	\$11,500.00	\$10,733
5 LS Controls	15	7	\$5,750.00	\$2,683
6 Vehicles	10	1	\$34,500.00	\$3,450
<b>Collection Estimated Annual RR&amp;I Cost:</b>				<b>\$50,000</b>
<b><u>Mechanical WWTP</u></b>				
1 aeration blower	15	3	\$17,250.00	\$3,450
2 submerible mixer	15	1	\$11,500.00	\$767
3 airlift pump	15	2	\$23,000.00	\$3,067
4 air compressor	10	1	\$5,750.00	\$575
5 discharge pumps	15	2	\$17,250.00	\$2,300
5 flow meter	15	1	\$11,500.00	\$767
6 misc monitoring and pneumatic equipment	5	1	\$5,750.00	\$1,150
7 LS Pump Controls	15	2	\$5,750.00	\$767
8 LS pumps	15	4	\$23,000.00	\$6,133
9 Air Release Valve	15	29	\$575.00	\$1,112
<b>WWTP Estimated Annual RR&amp;I Cost:</b>				<b>\$21,000</b>
<b>Total Estimated Annual RR&amp;I Cost:</b>				<b>\$71,000</b>

ATTACHMENT 5  
LAGOON DESIGN

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## Two Lakes Sewer Authority

### BASIS OF DESIGN

#### Lagoon System with Spray Irrigation System Seasonal Discharge

##### Introduction:

This Basis of Design is prepared to document the assumptions made for estimating project costs for the lagoon system option for wastewater treatment and disposal.

##### Influent Data:

Average Day Flow (ADF):	300,000 gpd (0.92 ac-ft/day) (208 gpm)
Maximum Day Flow (MDF)	450,000 gpd (312 gpm)
Maximum Instantaneous Flow	600,000 gpd (416 GPM)
BOD	250 mg/l (626 ppd)
Suspended Solids	250 mg/l (626 ppd)
Total Phosphorus	12 mg/l

All wastewater is from domestic sources, there is no allowance for industrial or agricultural contribution to the influent.

##### Lagoon Sizing

Primary Cells shall be aerated-facultative for odor control and relatively high degree of treatment. Assume an organic loading of 1 lbs BOD/1000 cf per day ( 43,560 lbs BOD/ac-ft per day), and 24 days detention time. The controlling parameter is detention time of 24 days, yielding a requirement of 22.08 ac-ft. Use two primary high rate aerated lagoon cells of 11 ac-feet each, max depth of 8 feet.

##### Aerators:

Assume floating, aspirating aerators, 3 Hp, 3 in each cell. Oxygen demand=1.1(Influent BOD)=1.1(626)=689 ppd.

Each 3 Hp aerator provides 2 lbs oxygen per HP-hour, for a total of 864 ppd oxygen provided.

##### Storage Requirements

Storage Time=7 months

Storage Requirement=7x30x.92=193.2 ac-ft. Use 6 storage cells, 32.5 ac-ft each, 7 feet max depth.

### Lagoon Effluent Pumping

Assume filling the irrigation pond in four 8 hour days. So, provide two 3,000 gpm pumps (one standby). Assume 6,000 feet from lagoon effluent PS to irrigation pond.

### Spray Irrigation Sizing

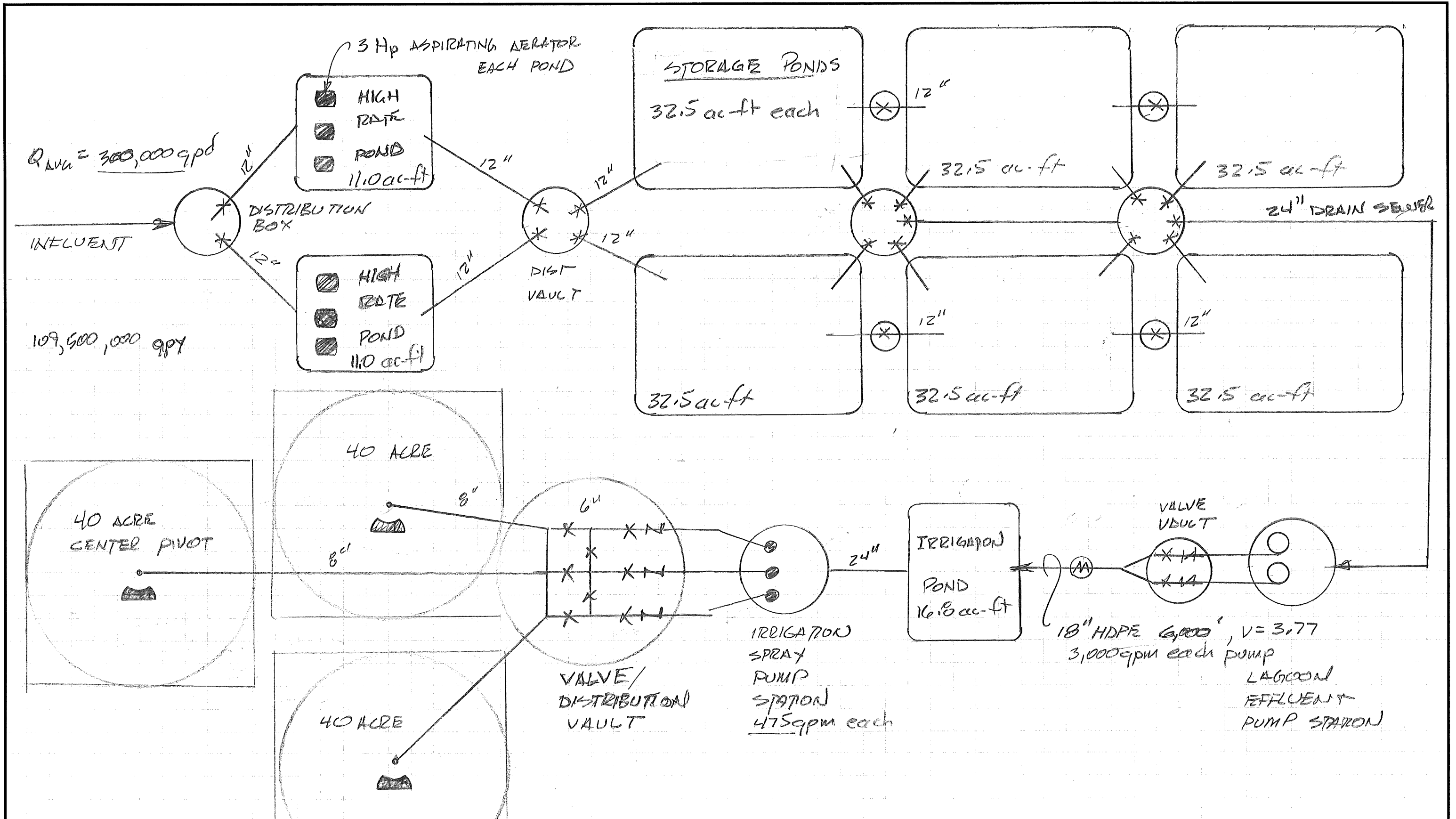
Assume 2 inches per week, or  $1/6$  ft per week for 5 months or 20 weeks, so  $.92 \text{ ac ft/day} \times 365 \text{ days} = 335.8 \text{ ac ft annual} / (20 \text{ weeks} / 1/6 \text{ ft per week}) = 100.74 \text{ acres}$ . Assume three, forty acre fields, each with a center pivot spray irrigator.

### Irrigation Pumping

Average minimum irrigation rate:  $335.8 \text{ ac -ft in 20 weeks} = 2.4 \text{ ac-ft/day}$  (782,000 gpd)(543 gpm). Assume actual application is 4 days/week, or  $4.2 \text{ ac-ft/day}$  (1,368,480 gpd)(950 gpm). Assume 3 irrigation pumps, each 475 gpm/40 psi, two operating 4 days a week for 20 weeks, alternating 40 acre fields and pumps as convenient, maintaining a max of 2 inches per week in each field.

### Irrigation Pond

Assume the pond holds 7 days of flow at irrigation rates, or  $7(2.4 \text{ ac-ft/day}) = 16.8 \text{ ac-ft}$ . Make the pond 8 feet deep.



ATTACHMENT 6  
MECHANICAL WWTP DESIGN

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# Aero-Mod, Inc.

## ACTIVATED SLUDGE DESIGN CALCULATIONS

**Project:** Manistee County, MI  
**Engineer:** Wade Trim  
**Act. Sludge Process:** SEQUOX BNR

**Date:** 16-Mar-19  
**Units:** English

### DESIGN CONDITIONS & PARAMETERS

	Influent	Clarifier Effluent		
Flow (Q), MGD	<b>0.180</b>		<b>Aeration Basin</b>	
BOD <sub>5</sub> , mg/l	<b>240</b>	<b>10.0</b>	Retention Time, hours	<b>24.0</b>
BOD <sub>5</sub> , lbs/day	360	15.0	Aeration Tank Volume, Mgal	0.180
BOD <sub>L</sub> , mg/l	351		MCRT, days	<b>18.0</b>
TSS, mg/l	<b>240</b>	<b>10.0</b>	Wastewater Temperature, °C	6
TSS, lbs/day	360	15.0	<b>Aerobic Digester</b>	
Ammonia-N, mg/l	<b>35.0</b>	<b>1.0</b>	Volume, % of Aeration Tank	34.3
Ammonia-N, lbs/day	52.5	1.5	Maximum Solids Conc., mg/l	15,000
TIN, mg/l		<b>5.0</b>	Maximum Solids Conc., %	1.50%
TIN, lbs/day		7.5	Digester Temperature, °C	6
Phosphorus-P, mg/l	<b>7.0</b>	<b>1.0</b>	<b>Sludge Holding Tank</b>	
Phosphorus-P, lbs/day	10.5	1.5	Volume, % of Aeration Tank	0.0
Net Alkalinity Loss, mg/l as CaCO <sub>3</sub>		<b>(173)</b>	Maximum Solids Conc., mg/l	25,000
			Maximum Solids Conc., %	2.50%

### PROJECTED OPERATING CONDITIONS - AERATION BASIN

Mixed Liquor Suspended Solids, mg/l		<b>3,410</b>
Excess MLSS due to Phos-P Uptake/Removal, mg/l	0	
Mixed Liquor Volatile Suspended Solids, %		74%
F/M Ratio, lbs BOD <sub>5</sub> /lb MLVSS		0.09
F/M Ratio, lbs BOD <sub>5</sub> /lb MLSS		0.07
Organic Loading, lbs BOD <sub>5</sub> /1000 cf of tank/day		15.0
Oxygen Requirements (Carbonaceous), mg/l/hr		8.12
Oxygen Requirements (Nitrogenous), mg/l/hr		6.52
Solids Production, lbs/day		284
WAS - Solids Wasted per Day, lbs/day		269
WAS - Solids Wasted per Day, gal/day @ 0.34%		9,472

### PROJECTED OPERATING CONDITIONS - AEROBIC DIGESTER

Volatile Solids Loading in Digester, lbs VSS/1,000 cf of tank/day	24
Volatile Solids Reduction in Digester, %	35%
Solids Wasted from Digester, lbs/day	200
Mass Solids Yield in Process & Digester per Mass Influent BOD <sub>5</sub> , %	60%
Volume Wasted from Digester, gallons/day	1,596
Digester Sludge Age, days	<b>39</b>
Air Required for Stabilization, scfm	88
Air Required for Mixing @ 30 cfm/1000 cf	248

# Aero-Mod, Inc.

## AERATION DESIGN CALCULATIONS

**Project:** Manistee County, MI  
**Engineer:** Wade Trim  
**Diffuser Type Used:** Tubular EPDM Fine Bubble

**Date:** 16-Mar-19  
**Units:** English

	Design	Peak		Design	Peak
Q, MGD	0.180	0.180	TKN <sub>o</sub> , mg/l	43.8	54.7
BOD <sub>o</sub> , mg/l	240	300	TKN <sub>assimilation</sub> , mg/l	11.5	11.5
BOD <sub>rem</sub> , mg/l	240	300	TKN <sub>rem</sub> , mg/l	43.8	54.7
BOD <sub>rem</sub> , lb/day	360	450	TKN <sub>rem</sub> , lb/day	65.7	82.1
O <sub>2</sub> Requirement, lb O <sub>2</sub> /lb BOD <sub>rem</sub>	1.500		O <sub>2</sub> Requirement, lb O <sub>2</sub> /lb TKN <sub>rem</sub>	4.60	

### AERATION REQUIREMENTS - FIRST STAGE

	Design	Peak
Removal in First Stage	65%	72.0%
BOD <sub>oxy</sub> - Oxygen Required for BOD [Q * BOD <sub>rem</sub> * 8.34 * O <sub>2</sub> Req. / 24], lbs O <sub>2</sub> /hr	14.6	20.3
TKN <sub>oxy</sub> - Oxygen Required for TKN [Q * TKN <sub>rem</sub> * 8.34 * O <sub>2</sub> Req. / 24], lbs O <sub>2</sub> /hr	8.2	11.3
<b>Actual Oxygenation Rate (AOR), lbs O<sub>2</sub>/hr</b>	<b>22.8</b>	<b>31.6</b>
<b>Standard Oxygenation Rate (SOR), lbs O<sub>2</sub>/hr</b>	<b>60.2</b>	<b>83.3</b>
SOR = [(AOR * C <sub>s,20</sub> ) / (α * θ <sup>A(T-20)</sup> * (Tau * Ω * β * C <sub>s,20</sub> - C <sub>L</sub> ) * F)]		

Where:	C <sub>s,T,H</sub> Actual Value of D.O. Saturation, mg/l	9.08	C <sub>L</sub> Residual D.O. Conc., mg/l	2.0
	C <sub>s,20</sub> Steady State Value of D.O. Saturation, mg/l	9.08	T Temperature of Water, °C	20
	Tau Oxygen Saturation Value (C <sub>s,T,H</sub> /C <sub>s,20</sub> )	1.000	F Diffuser Fouling Factor	0.90
	α Alpha - Oxygen Transfer Correction Factor for Waste	0.60	θ Theta - Oxygen Transfer Coeff	1.024
	β Beta - Salinity-Surface Tension Correction Factor	0.95	Site Elevation, FASL	800
	P <sub>H</sub> Atmospheric Pressure at Site Elevation, psi	14.28	Ω Omega (P <sub>H</sub> /P <sub>s</sub> )	0.971

**Air Requirement = [SOR / (Oxygen Density \* TE% \* Diffuser Depth) / 60], scfm** **220** **305**

Where:	Oxygen Density, lbs O <sub>2</sub> /cf	0.0175	Diffuser Depth Below Water Surface, ft	13.0
	Transfer Efficiency per Foot of Submergence, %	2.00%		

**Denitrification Credit = [Air Rqmt \* (TKN<sub>oxy</sub> / AOR) \* 50% \* ((TKN<sub>o</sub> - TN<sub>e</sub>) / TKN<sub>o</sub>)], scfm** 35 50

Where:	TN <sub>e</sub> = TKN <sub>o</sub> / 2 (assumed when D.O. control is not used)	
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**Total Aeration Required in Aeration Basin, scfm** **185** **255**

### Air Correction

**icfm = scfm / [((T<sub>std</sub> + 460) / (T<sub>air</sub> + 460)) \* ((P<sub>H</sub> - (RH% \* SVP<sub>Tair</sub>)) / (14.7 - (RH%<sub>std</sub> \* SVP<sub>std</sub>))) \* ((P<sub>A</sub> / P<sub>H</sub>)]**

Where:	T <sub>std</sub> , °F	68	T <sub>air</sub> Maximum Air Temperature, °F	104
	RH% <sub>std</sub>	36%	RH% Maximum Relative Humidity, %	90%
	SVP <sub>std</sub> , psi	0.34	SVP <sub>Tair</sub> Saturated Vapor Pressure of Air @ T <sub>air</sub> , psi	1.058
			P <sub>A</sub> Actual Atmospheric Pressure after Blower Inlet, psi	14.08

Minimum Air Required for Mixing in First Stage Aeration Basin, cfm	126	Side Roll
Minimum Air Required for Mixing in Second & Third Stage Aeration Basin, cfm	118	Side Roll
Minimum Air Required for Operating Full Plant, cfm (mixing requirement for 24 hrs)	380	

	Design	Peak	Design	Peak
Aeration Pressure, in. H <sub>2</sub> O			198	198
psi, std (does not include blower inlet/outlet)			7.1	7.1

	scfm	scfm	icfm	icfm
Aeration Basin - Fine Bubble	185	255	220	303
Aeration Basin - Coarse Bubble	171	171	202	202
Aerobic Digester Tank (sequenced aeration)	124	124	124	124
Bio-P / Selector Tank	17	17	17	17
Clarifier RAS Airlift Pumps & Skimmers	37	37	37	37
Total Air Required	534	604	599	683
Total Air Available			723	807

### POWER REQUIREMENTS

	Unit	Power	Power
Operating Power for Aeration Basin, HP	Blower	18.3	20.7
Operating Power for Digester, HP	Blower	5.4	5.1
Operating Power for Bio-P Fermentation Zone, HP	Blower	0.7	0.7
Operating Power for Clarifier, HP	Blower	1.6	1.5
Operating Power for Anaer. Selector Zone, HP	Mixer	1.0	1.0
Operating Power for Pneumatic System, HP	Air Compr.	0.4	0.4
<b>Operating Power Required at Full Loading, HP</b>		<b>27.4</b>	<b>29.4</b>

**Minimum Power Required to Operate Full Plant, HP** **17.4**

# Aero-Mod, Inc.

## AERATION DESIGN CALCULATIONS

**Project:** Manistee County, MI  
**Engineer:** Wade Trim  
**Diffuser Type Used:** Stainless Steel Coarse Bubble

**Date:** 16-Mar-19  
**Units:** English

### AERATION REQUIREMENTS - SECOND & THIRD STAGE

	Design	Peak
Removal in Second Stage	35%	28.0%
Oxygen Required for BOD $[Q * BOD_{rem} * 8.34 * O_2 \text{ Req.} / 24]$ , lbs $O_2$ /hr	7.9	7.9
Oxygen Required for TKN $[Q * TKN_{rem} * 8.34 * O_2 \text{ Req.} / 24]$ , lbs $O_2$ /hr	4.4	4.4
<b>Actual Oxygenation Rate (AOR), lbs <math>O_2</math>/hr</b>	<b>12.3</b>	<b>12.3</b>
<b>Standard Oxygenation Rate (SOR), lbs <math>O_2</math>/hr</b>	<b>23.3</b>	<b>23.3</b>
$SOR = [(AOR * C_{s,20}) / (\alpha * \theta^{(T-20)} * (\tau * \Omega * \beta * C_{s,20} - C_L) * F)]$		

Where:	<b>C<sub>s,T,H</sub></b> Actual Value of D.O. Saturation, mg/l	9.08	<b>C<sub>L</sub></b> Residual D.O. Conc, mg/l	<b>2.0</b>
	<b>C<sub>s,20</sub></b> Steady State Value of D.O. Saturation, mg/l	9.08	<b>T</b> Temperature of Water, °C	20
	<b>Tau</b> Oxygen Saturation Value (C <sub>s,T,H</sub> /C <sub>s,20</sub> )	1.000	<b>F</b> Diffuser Fouling Factor	1.00
	<b>α</b> Alpha - Oxygen Transfer Correction Factor for Waste	0.75	<b>θ</b> Theta - Oxygen Transfer Coeffi	1.024
	<b>β</b> Beta - Salinity-Surface Tension Correction Factor	0.95		Site Elevation, FASL
	<b>P<sub>H</sub></b> Atmospheric Pressure at Site Elevation, psi/FASL	14.28	<b>Ω</b> Omega (P <sub>H</sub> /P <sub>s</sub> )	0.971

**Air Requirement = [SOR / (Oxygen Density \* TE% \* Diffuser Depth) / 60], scfm** **194** **194**

Where:	Oxygen Density, lbs $O_2$ /cf	0.0175	Diffuser Depth Below Water Surface, ft	<b>13.5</b>
	Transfer Efficiency per Foot of Submergence, %	<b>0.85%</b>		

**Denitrification Credit = [Air Rqmt \* (TKN<sub>oxy</sub> / AOR) \* 50% \* ((TKN<sub>o</sub> - TN<sub>e</sub>) / TKN<sub>o</sub>)], scfm** 23 23

Where:  $TN_e = TKN_o / 2$  (assumed when D.O. control is not used)

**Total Aeration Required in Aeration Basin, scfm** **171** **171**

### Air Correction

$$icfm = scfm / [((T_{std} + 460) / (T_{air} + 460)) * ((P_H - (RH\% * SVP_{T_{air}})) / (14.7 - (RH\%_{std} * SVP_{std}))) * ((P_A / P_H))]$$

Where:	<b>T<sub>std</sub></b> , °F	68	<b>T<sub>air</sub></b> Maximum Air Temperature, °F	<b>104</b>
	<b>RH%<sub>std</sub></b>	36%	<b>RH%</b> Maximum Relative Humidity, %	<b>90%</b>
	<b>SVP<sub>std</sub></b> , psi	0.34	<b>SVP<sub>T<sub>air</sub></sub></b> Saturated Vapor Pressure of Air @ T <sub>air</sub> , psi	1.058
			<b>P<sub>A</sub></b> Actual Atmospheric Pressure after Blower Inlet, psi	14.08

Minimum Air Required for Mixing in Second & Third Stage Aeration Basin, cfm 118 Side Roll

Aeration Pressure, in.  $H_2O$  189 189  
psi, std (does not include blower inlet/outlet) **6.8** **6.8**

	<u>Design</u> scfm	<u>Peak</u> scfm	<u>Design</u> icfm	<u>Peak</u> icfm
Aeration Basin - Coarse Bubble	171	171	202	202

# Aero-Mod, Inc.

## CLARIFIER DESIGN CALCULATIONS

**Project:** Manistee County, MI  
**Engineer:** Wade Trim  
**Clarifier Type Used:** Split-ClarAfor

**Date:** 16-Mar-19  
**Units:** English

### FLOW CONDITIONS

Design Flow, MGD	0.180	
Peaking Factor, hourly	3.00	0.540 MGD
Duration, min	60	
Peaking Factor, sustained	2.50	0.450 MGD
Aeration Tank Volume, Mgal	0.180	
MLSS, mg/l	3,410	
Avg. RAS Recycle Rate, %	150%	

### EQUIPMENT SIZING & SELECTION

Number of Clarifiers	<b>2</b>	Surface Area per Clarifier, sf	256
Clarifier Unit Model	<b>16256</b>	Total Surface Area, sf	<b>512</b>
Bridge Length, ft	16	Total Weir Length, ft	58
Clarifier Unit Width, ft	16	Tank Wall Depth, ft	16.0
Number of Units per Clarifier	1	Tank Water Depth, ft	14.0

### SURFACE OVERFLOW RATE

	Design
Design Flow, gpd/sf	<b>352</b>
Peak Day Flow, gpd/sf	879
Peak Hour Flow, gpd/sf	1,000 * Max allowed to leave clarifier
Max. Flow Allowed Through Clarifier Orifice, gpd/sf	1,000 * Max allowed to leave clarifier

### WEIR OVERFLOW RATE

Design Flow, gpd/lin. ft	<b>3,103</b>
Peak Flow, gpd/lin. ft	8,828

### SOLIDS LOADING RATE

Design Flow, lbs/day/sf	<b>25.0</b>
Peak Flow, lbs/day/sf	43.4

### RETENTION TIME - including RAS

Design Flow, hr	<b>2.9</b>
Peak Flow, hr	1.6

### PEAK FLOW HANDLING - IN-BASIN SURGE STORAGE

Hourly Peak Flow, MGD	0.540	Vol. of In-Basin Surge Storage, gal	7,443
Max. Flow Through Clarifier, MGD	0.512	Capacity of Surge Storage, hr.	6.4
Stored Peak Flow, gpm	19		

# Aero-Mod, Inc.

## TANKAGE DESIGN CALCULATIONS

**Project:** Manistee County, MI  
**Engineer:** Wade Trim  
**Tank Construction:** Cast-in-Place Concrete

**Date:** 16-Mar-19  
**Units:** English

### BIO-P / SELECTOR TANK

<b>Fermentation</b>	Volume Required, gal	<b>10,000</b>	
Number of Tanks	1	Tank Length, ft	7.0
Tank Wall Height, ft	16.0	Tank Width, ft	17.0
Tank Water Depth, ft	14.0	Total Volume, gallons	<b>12,462</b>
Freeboard, ft	2.0	Retention Time, min.	100
<b>Anaerobic Selector</b>	Volume Required, gal	<b>11,250</b>	
Number of Tanks	1	Tank Length, ft	8.0
Tank Wall Height, ft	16.0	Tank Width, ft	17.0
Tank Water Depth, ft	14.0	Total Volume, gallons	<b>14,242</b>
Freeboard, ft	2.0	Retention Time (Design + RAS), min.	46

### AERATION TANK

Volume Selected, gal **180,000**

Tank Wall Height, ft	16.0	Number of Trains	2
Tank Water Depth, ft	14.0	Number of Stages	2

Stage 1		Stage 2	
Number of Tanks	2	Number of Tanks	2
Tank Length, ft	18.0	Tank Length, ft	35.0
Tank Width, ft	25.0	Tank Width, ft	12.0
Area of Each Tank, sf	450	Area of Each Tank, sf	420
Total Volume, gallons	<b>94,248</b>	Total Volume, gallons	<b>87,965</b>

Total volume provided, gal **182,213**

### CLARIFIER TANK

Number of Tanks	2	Tank Length, ft	16.0
Tank Wall Height, ft	16.0	Tank Width, ft	16.0
Tank Water Depth, ft	14.0	Total Volume, gallons	<b>53,617</b>

### AEROBIC DIGESTER TANK

Volume Selected, gal **61,740**

Number of Tanks	2	Tank Length, ft	38.0
Tank Wall Height, ft	16.0	Tank Width, ft	8.0
Tank Water Depth, ft	14.5	Total Volume, gallons	<b>65,944</b>

### OVERALL TANKAGE DIMENSIONS

Total Length, ft	46.0	Wall Thickness, in	12.0
Total Width, ft	79.0	Floor Thickness, in	18.0
Total Area, sf	3,634	Total Concrete for Walls, cy	<b>308</b>
Total Wall Length, LF	519	Total Concrete for Slab, cy	<b>216</b>
		Total Grout for Clarifier, cy	<b>24</b>

**Aero-Mod, Inc.**  
**EQUIPMENT AND SERVICES COST ESTIMATE**

**Project:** Manistee County, MI  
**Engineer:** Wade Trim

**Date:** 16-Mar-19  
**Units:** English

**EQUIPMENT SUPPLIED**

**AERATION EQUIPMENT**

3	Aeration pd blower/sound enclosure package, 25 HP - 460 V, 3 ph	
3	Blower inlet weatherhood	
2	SEQUOX aeration control butterfly valve, pneumatically-actuated	
2	SEQUOX aeration throttling butterfly valve, gear-operated	
2	SEQUOX aeration control butterfly valve, pneumatically-actuated	
2	SEQUOX aeration control butterfly valve, electrically-actuated	
2	Aeration flow conditioner/flow sensor/SS flanged pipe spool	
2	Aeration throttling butterfly valve, gear-operated	
10	Wall mounted aeration assembly, Model WA-PF6-2	- First Stage Aeration Basins
10	Wall mounted aeration assembly, Model WA-HS2-2	- Second Stage Aeration Basins

**BIO-P EQUIPMENT**

1	Aeration control butterfly valve, pneumatically-actuated	
1	Aeration throttling butterfly valve, gear-operated	
3	Wall mounted aeration assembly, Model WAD-HSS2	
1	Bio-P Submersible Mixer - ____ HP - 230/460 V, 3 ph	- Anaerobic Selector Zone

**CLARIFIER & RAS EQUIPMENT**

2	Aero-Mod Split-ClarAto Clarifier System - 256 sf/each
2	Algae Control Transducer - 115V

**DIGESTION, SLUDGE HOLDING & WAS EQUIPMENT**

2	WAS airlift pump, Model AL-400
2	Aeration control butterfly valve, pneumatically-actuated
2	Aeration control butterfly valve, electrically-actuated
2	Aeration flow conditioner/flow sensor/SS flanged pipe spool
8	Wall mounted aeration assembly, Model WAD-HS2-2

**ELECTRICAL & CONTROLS EQUIPMENT**

1	SEQUOX Process Control Panel w/ Allen Bradley PLC, Model SQC-200 Series - 115 V
3	Blower control panel w/ Allen Bradley 6-pulse VFD - 460 V, 3 ph
2	Air compressor, 2.0 HP with 80 gal tank - 460 V, 3 ph
2	Air compressor auto-drain - 115 V wall outlet
1	PureGas regenerative desiccant dryer mounted on 80 gal dry storage tank - 115 V wall outlet
1	D.O. Control System - probe analyzer w/ 4 rail-mounted DO probes

**ANCILLARY EQUIPMENT**

230	Wall mounted walkway & handrail, LF
4	Wall mounted stop plates & frames
LS	Spare Parts
LS	Interior tank installation materials - SS brackets, SS bolts, PVC wall inserts, pneumatic tubing, misc.

**SERVICES**

LS	Freight to jobsite
LS	Aero-Mod equipment dry inspection/equipment start-up & training, two (2) days
LS	Aero-Mod biological training, two (2) days
LS	Operator training school - 2 days at Aero-Mod facilities in Manhattan, KS

<b><u>TOTAL EQUIPMENT COST</u></b>	<b>\$582,900</b>
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<b><u>EST'D INSTALLATION of Aero-Mod EQUIPMENT by Contractor</u></b>	<b>\$100,000</b>
<i>(Includes Interior Tank PVC Piping)</i>	

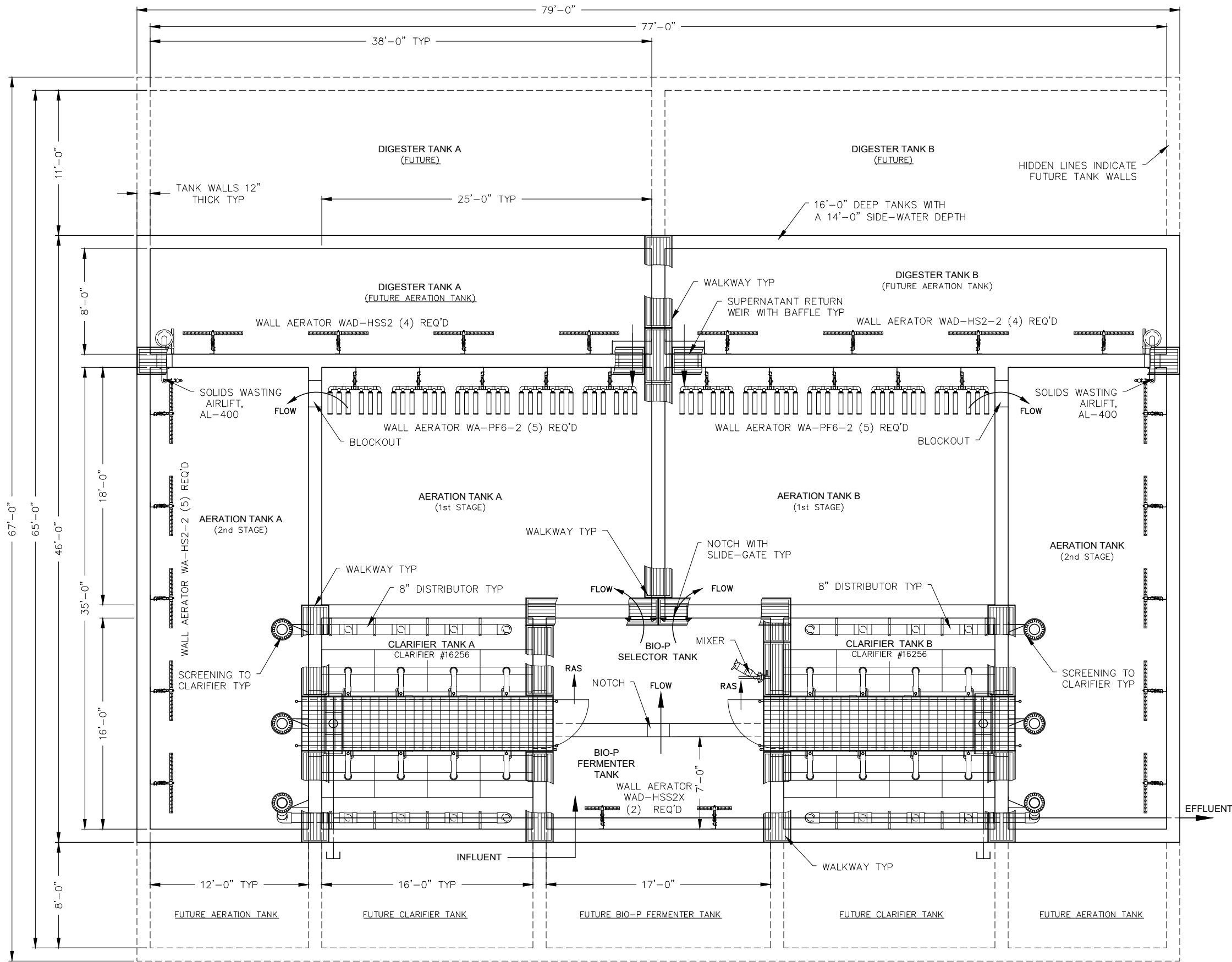
<b><u>ESTIMATED CONCRETE TANK COST by Contractor</u></b>	<b>\$410,000</b>
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Concrete for Tank Walls, cy	308
Installed Concrete Cost, \$/cy	\$800
Concrete for Tank Slab, cy	216
Installed Concrete Cost, \$/cy	\$700
Grout for Clarifier Bottom, cy	24
Installed Concrete Cost, \$/cy	\$550

<b><u>ESTIMATED COST</u></b>	<b>\$1,092,900</b>
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**PLEASE NOTE THE FOLLOWING**

1. Buildings, site work, and auxiliary equipment are not included within this estimate.
2. No RAS pump station and associated electrical requirements are required.
3. Yard piping is not required between each Aero-Mod tank.
4. All associated walkways & handrail for the clarifier and tankage are included in the above estimate.
5. This estimate is valid for 90 days from the above date.



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PHONE: (785) 537-4995  
FAX: (785) 537-0813

7927 U.S. Highway 24  
Manhattan, Kansas 66502

Date: 03/14/19

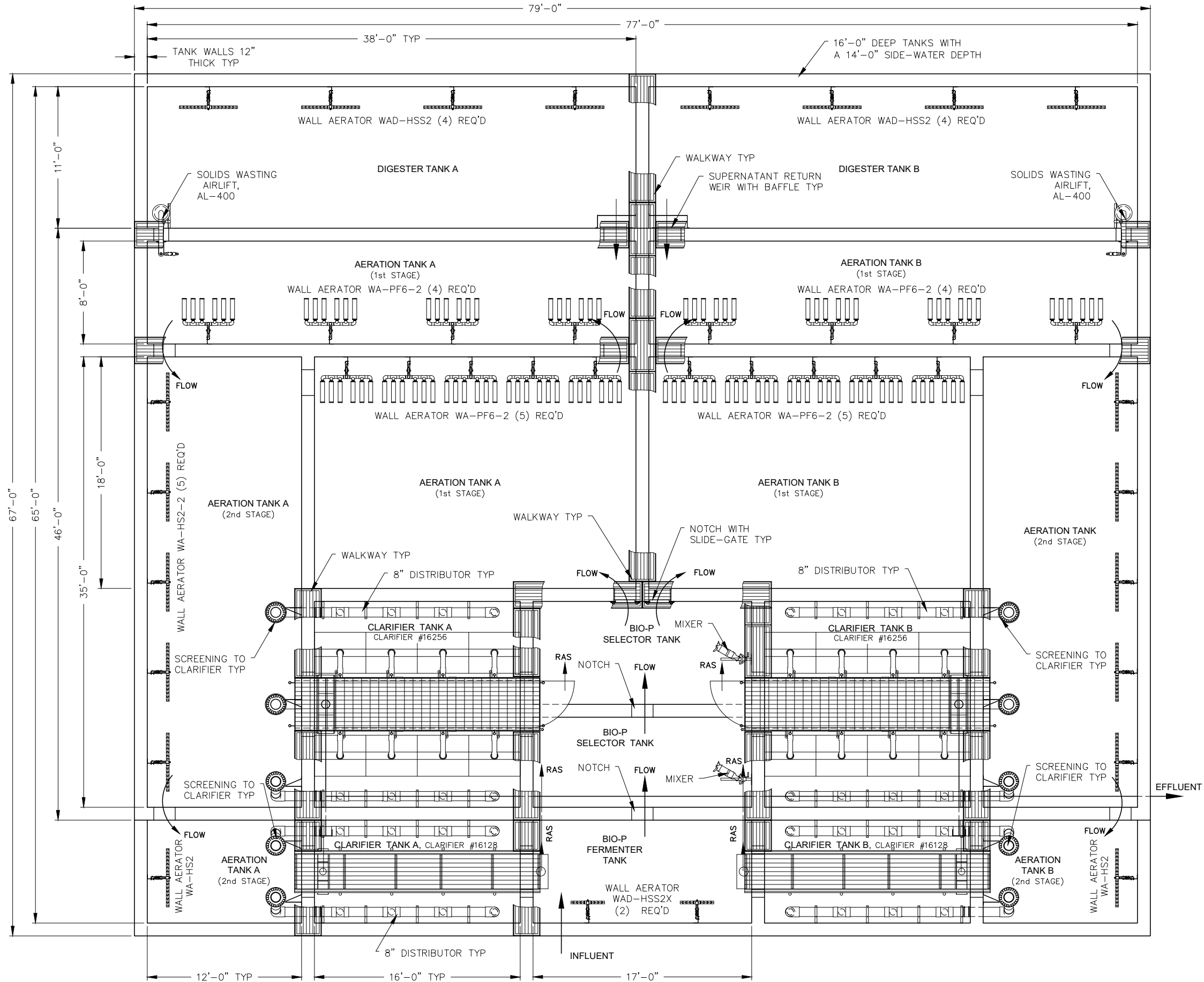
Scale: NTS

Drawn by: MA

Checked by: MA

Title:

PLAN VIEW  
PHASE I - 0.18 MGD  
MANISTEE COUNTY, MI



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7927 U.S. Highway 24  
Manhattan, Kansas 66502

PHONE: (785) 537-4995  
FAX: (785) 537-0813

Title:

Drawn by: MA

Chk by:

Scale: NTS

Date: 03/14/19

PLAN VIEW  
PHASE II - 0.26 MGD  
MANISTEE COUNTY, MI

ATTACHMENT 7  
PER SUMMARY TABLES

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**Operating Budget  
For First Full Year After Construction**

STEP Collection, Mechanical Plant Treatment, 0% Grant, Poverty Interest Rate  
Updated 11/02/2021

**Community Name:** TLCSA **County:** Manistee

**Address:** 5435 Main Street  
PO Box 458  
Onkama, MI 49675

**A. Applicant Fiscal Year:** From: 2025 To: 2026

<b>B. Operating Income:</b>	<b>From Water Sales or Sewer Rates &amp; Charges:</b>	\$1,030,000
	<b>Other (e.g. hydrant rentals, etc)</b>	\$100
	<b>Total Operating Income:</b>	<u>\$1,030,100</u>

<b>C. Operating Expenses:</b>	
Utilities	\$65,000
Contract Waste Disposal-Residuals Disposal	\$130,000
Salaries/Benefits	\$575,000
Contract services Other - Lab Costs	\$6,000
Other - Vehicle Expenses	\$4,000
Administrative/Office	\$115,000
Supplies	\$24,000
Other-Chemicals	\$28,000
Legal	\$12,000
	<u>\$959,000</u>
	<b>Total Operating Expenses:</b>

<b>D.</b>	<b>Net Operating Income:</b>	\$71,100
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<b>E. Non Operating Income:</b>		
Interest:	\$0	
Other: Special Assessment	\$1,373,163	
	<u>\$1,373,163</u>	
	<b>Total Non Operating Income:</b>	\$1,373,163

<b>F.</b>	<b>Net Income</b>	\$1,444,263
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<b>G. Expenditures/Transfers</b>		
Repair, Replacement & Improvement Fund	\$71,000	
Bond Reserve		
Payment to USDA Loan	\$1,373,163	
Payment to Other Loans	\$0	
	<u>\$1,444,163</u>	
	<b>Total Expenditures/Transfers:</b>	\$1,444,163
	<b>Excess/Deficit over net income:</b>	\$100

# Operating Budget Worksheet

STEP Collection, Mechanical Plant Treatment, 0% Grant, Poverty Interest Rate

Updated 11/02/2021

	# of REUs	Cost/year	Total
Operating Income	1065	\$967.14	\$959,000
RR&I			\$71,000
			<u>\$1,030,000</u>
	Cost/month		\$ 80.59

<u>Operating Expenses</u>	STEP Collection	Mech Treatment
Utilities	\$7,000	\$58,000
Residuals Disposal	\$73,000	\$57,000
Salaries/Benefits	\$460,000	\$115,000
Other - Lab or other Costs	\$0	\$6,000
Other - Vehicle Expenses	\$4,000	\$0
Administrative/Office	\$58,000	\$57,000
Supplies	\$12,000	\$12,000
Chemicals	\$11,000	\$17,000
Legal	<u>\$6,000</u>	<u>\$6,000</u>
	\$631,000	\$328,000
	assessments	Cost/year total
Loan payment	1450	\$ 947
Total cost/assessment per year		\$1,373,163
		\$947

Total Cost Per Year	\$	1,914
Total Cost Per Month	\$	160