

August 2017	Village considers USDA-RD Loan/Grant Commitment with possible Public Information Meeting, Go/No Go Decision
July 2018	Project Survey and Design Engineering Complete
September 2018	Village Council and USDA-RD approves Construction Bidding
November 2018	Village Council and USDA-RD considers award of project Construction Contract(s)
November 2019	Project Construction, Phased Connections Complete

PERMIT REQUIREMENTS

The proposed WWTP will require a groundwater discharge permit. The collection and treatment systems will require a Part 41 construction permit. A storm water notice of coverage will be needed for the WWTP construction. A soil erosion and sediment control permit will also be required from the County before construction can commence.

SUSTAINABILITY CONSIDERATIONS

Energy efficiency will be incorporated into the design wherever possible. It is anticipated that the raw sewage will be pumped up to the treatment facility and that the water will flow by gravity through the treatment process and then to the discharge point.

TOTAL PROJECT COST ESTIMATE (ENGINEER'S OPINION OF PROBABLE COST)

The total capital cost for the recommended alternative (conventional gravity collection sewers and aerated lagoon facility) is estimated to be \$XXXX million. This includes the estimated construction, land acquisition, legal, engineering and administrative costs. Cost estimates for both the collection system and wastewater treatment for the project are included in Table C1 (a) and Table C2 (c).

ANNUAL OPERATING BUDGET

Income

There are no existing public sewers in the service area and therefore no existing user rate structure exists. Income is anticipated to be through a combination of sewer user rate (commodity & capacity) charges. The projected income for the first full year of operation (2018) is expected to be \$XXXXXX.

Annual O&M Costs

Operations, Maintenance, and Replacement (OM&R) costs are expected to be \$XXXXXX for the first full year of operation (2018). These costs include Operating Expenses and Repair, Replacement, and Improvement Fund items. Details of the estimated OM&R costs are included in Table C4.

Debt Repayments

For purposes of developing a preliminary Operating Budget for the recommended alternative, an estimated 45% grant from USDA-RD is used. The anticipated debt repayment for loans to pay for capital project costs are approximately \$XXXXXX per year. The debt repayment schedule is provided in Table C5.

Reserves

As required by USDA-RD, Arcadia Township will be required to build a reserve fund of 10% of the total loan debt within the first 10 years of the loan. The annual operating budget includes collection of \$XXXXXX per year to meet that obligation.

CONCLUSIONS AND RECOMMENDATIONS

As previously mentioned there have been a number of meetings with Arcadia Township officials to determine the best service district to meet environmental protection concerns of their existing property owners and the long term residential and commercial growth needs.

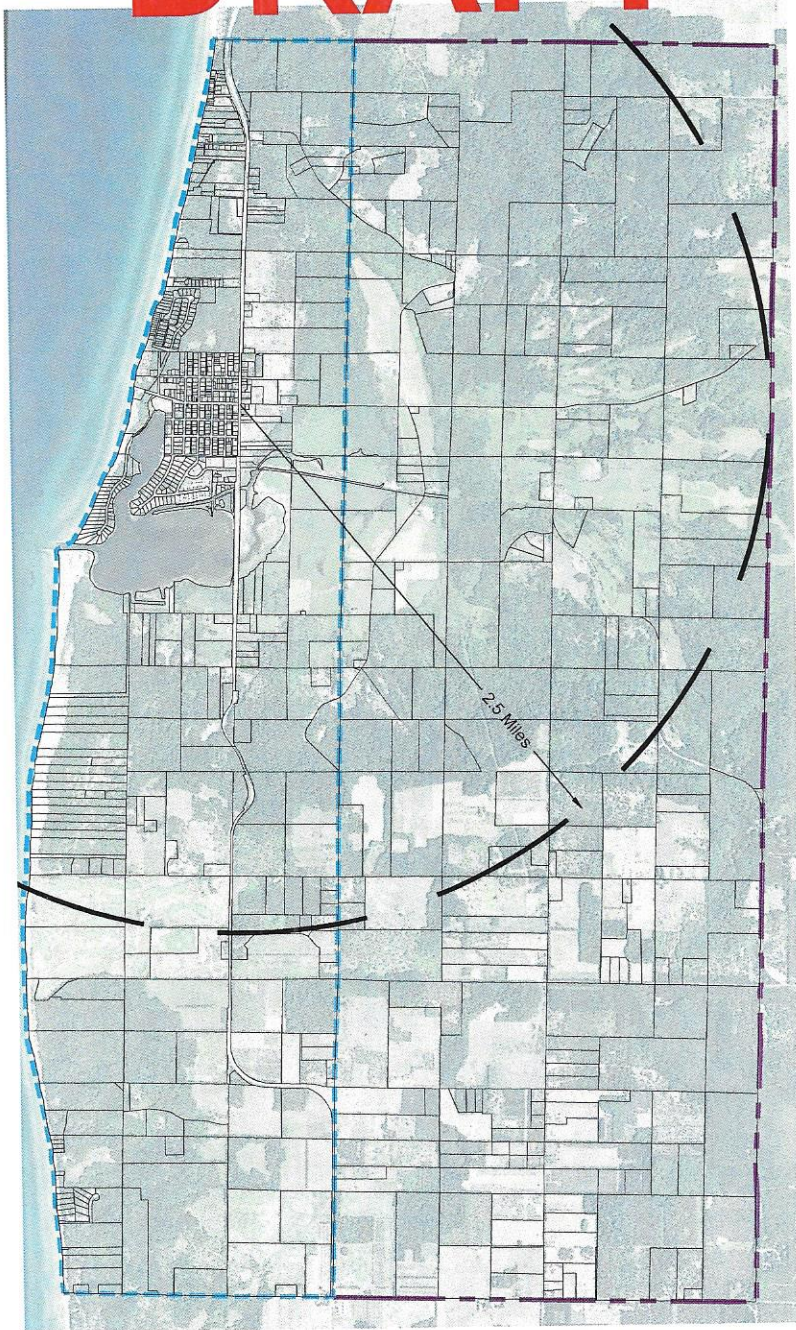
Each of the alternatives presented above represents a relatively high capital cost for a community of the size of Arcadia is not and considered to be affordable based on meeting held with the Township Council and other stakeholders during the planning of this project based on conventional financing. Specifically, Arcadia's median household income of \$48,269 is in the range identified by USDA-RD as intermediate level, qualifying the community for substantial financial assistance. Absent substantial financial assistance, it is not expected that this project will be financially feasible for this community.

We recommend that Arcadia Township work closely with USDA-Rural Development to identify and pursue all available grant and low-interest loan funds potentially applicable or appropriate to this project. Using the USDA-RD financing package and User Charge model, Arcadia can identify the ultimate feasibility of public wastewater treatment in comparison to other methods to mitigate current and future community health risks (e.g. public water system).

Absent a public wastewater treatment system, the likelihood of healthy commercial or industrial economic development is low.

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SANITARY SEWER INITIAL STUDY AREA



NORTH
1" = 3000'

LEGEND

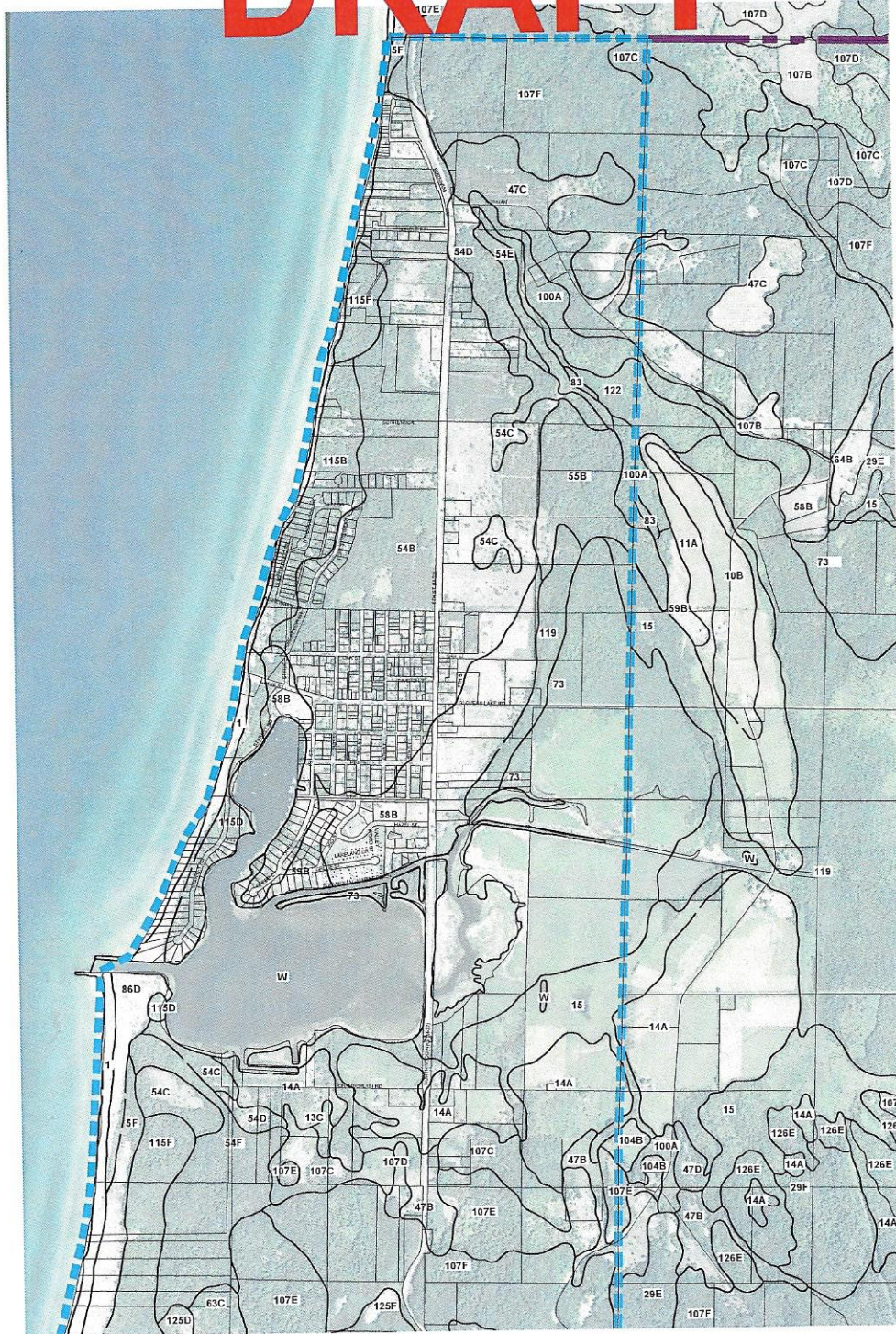
- | | |
|------------------------|--------------------------------|
| ■ RESIDENTIAL BUILDING | — ARCADIA TWP PARCELS |
| ▲ COMMERCIAL BUILDING | --- INITIAL STUDY AREA BOUNDRY |
| ▼ CHURCH | --- ARCADIA TWP BOUNDARY |
| ● RESTAURANT / BAR | |
| ● VILLAGE BUILDING | |

ARCADIA TOWNSHIP
MANISTEE COUNTY, MICHIGAN
RD WASTEWATER PER & ER

FIGURE A1



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SOILS MAPPING



NORTH
1" = 1000'

LEGEND

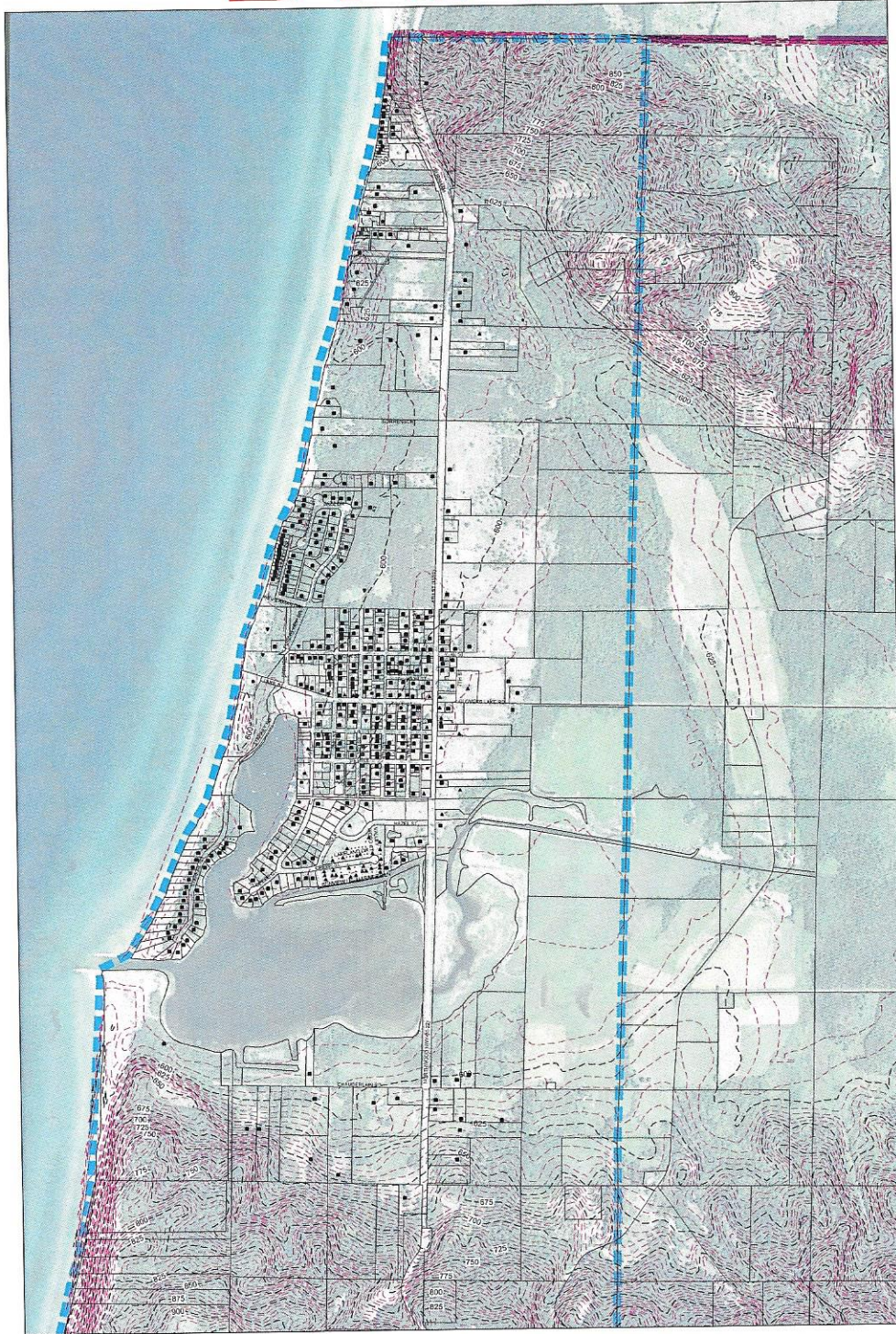
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|------------------------|---------------------------------|
| ■ RESIDENTIAL BUILDING | — ARCADIA TWP PARCELS |
| ▲ COMMERCIAL BUILDING | --- INITIAL STUDY AREA BOUNDARY |
| ▼ CHURCH | — ARCADIA TWP BOUNDARY |
| ● RESTAURANT / BAR | — MANISTEE SOIL LINES |
| ● VILLAGE BUILDING | |

ARCADIA TOWNSHIP
MANISTEE COUNTY, MICHIGAN
RD WASTEWATER PER & ER

FIGURE A2



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TOPO MAPPING



NORTH
1" = 1000'

LEGEND

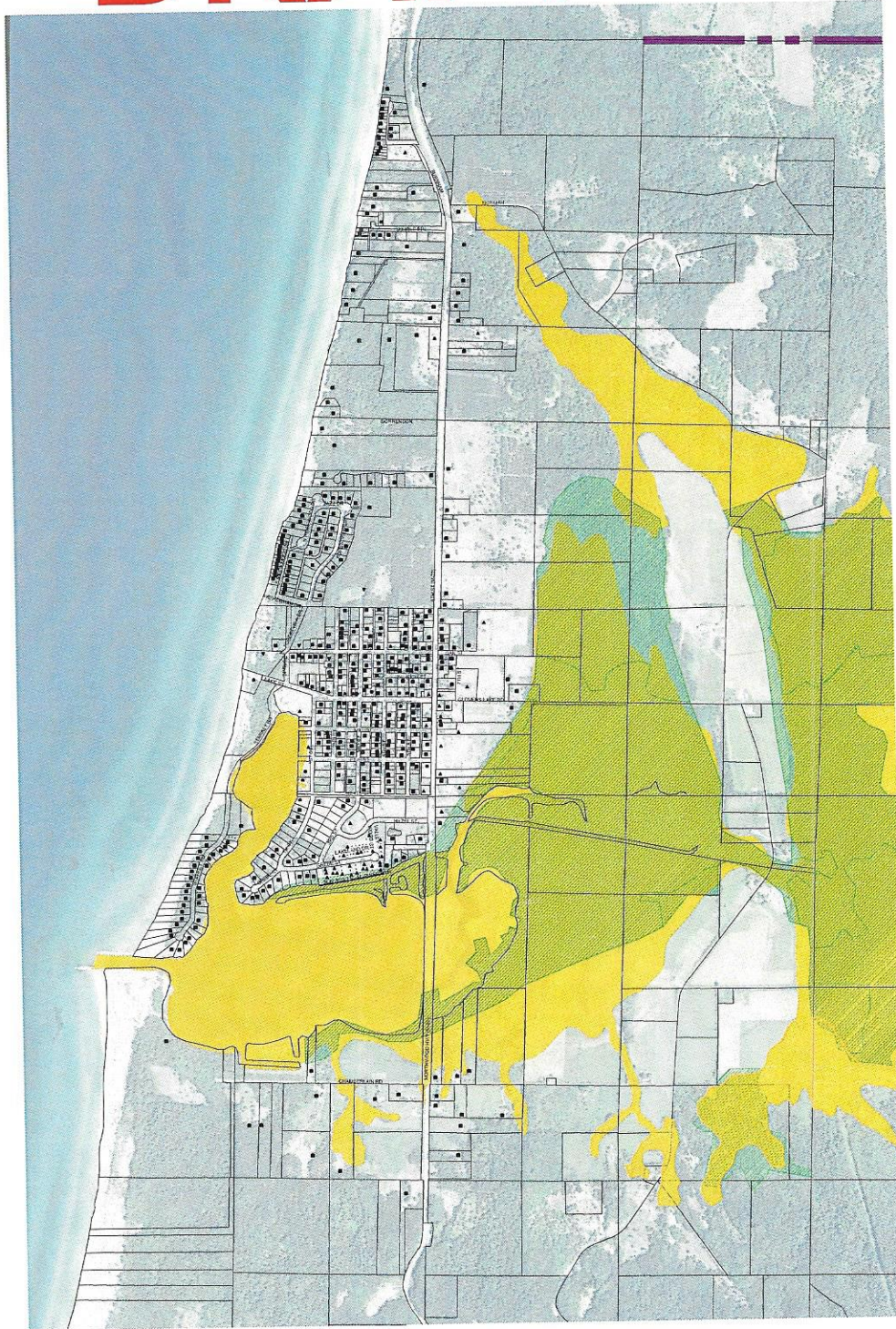
- | | |
|------------------------|-------------------------------|
| ■ RESIDENTIAL BUILDING | — ARCADIA TWP PARCELS |
| ▲ COMMERCIAL BUILDING | — INITIAL STUDY AREA BOUNDARY |
| ▼ CHURCH | — ARCADIA TWP BOUNDARY |
| ● RESTAURANT / BAR | - - - MAJOR CONTOUR LINES |
| ● VILLAGE BUILDING | - - - MINOR CONTOUR LINES |

**ARCADIA TOWNSHIP
MANISTEE COUNTY, MICHIGAN
RD WASTEWATER PER & ER**

FIGURE A3



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WETLANDS MAPPING



NORTH
1" = 1000'

LEGEND

- | | |
|------------------------|--------------------------------|
| ■ RESIDENTIAL BUILDING | — ARCADIA TWP PARCELS |
| ▲ COMMERCIAL BUILDING | --- INITIAL STUDY AREA BOUNDRY |
| ▼ CHURCH | --- ARCADIA TWP BOUNDARY |
| ● RESTAURANT / BAR | ■ HYDRIC SOILS HATCH |
| ● VILLAGE BUILDING | ■ WETLANDS HATCH |

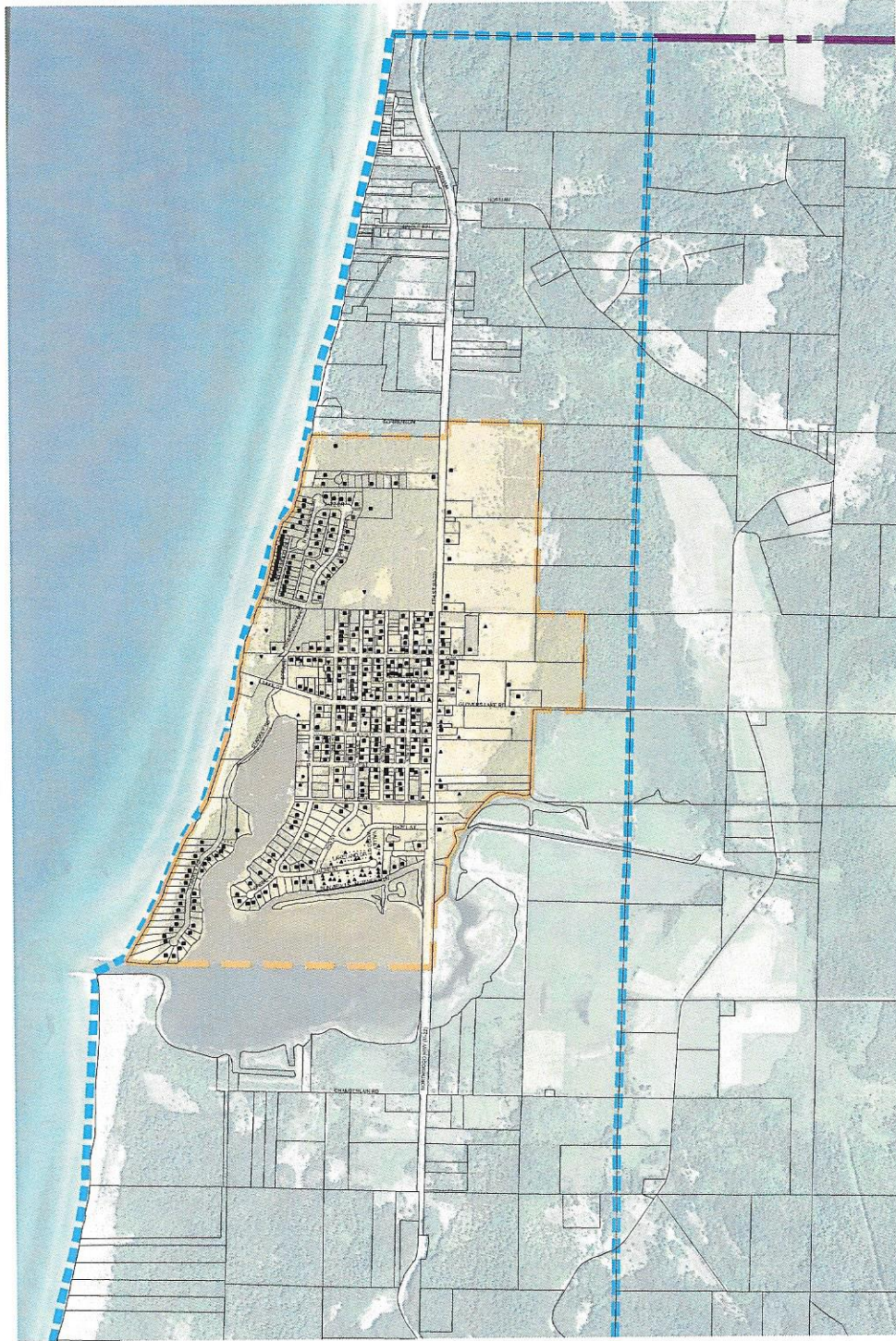
ARCADIA TOWNSHIP
MANISTEE COUNTY, MICHIGAN
RD WASTEWATER PER & ER

FIGURE A4

B17670
ENV PROJECT NO.



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SANITARY SEWER SERVICE AREA #1

LEGEND

- | | |
|------------------------|--------------------------------|
| ■ RESIDENTIAL BUILDING | — ARCADIA TWP PARCELS |
| ▲ COMMERCIAL BUILDING | --- INITIAL STUDY AREA BOUNDRY |
| ▼ CHURCH | --- ARCADIA TWP BOUNDARY |
| ◆ RESTAURANT / BAR | --- SERVICE AREA BOUNDARY #1 |
| ● VILLAGE BUILDING | --- SERVICE AREA #1 |



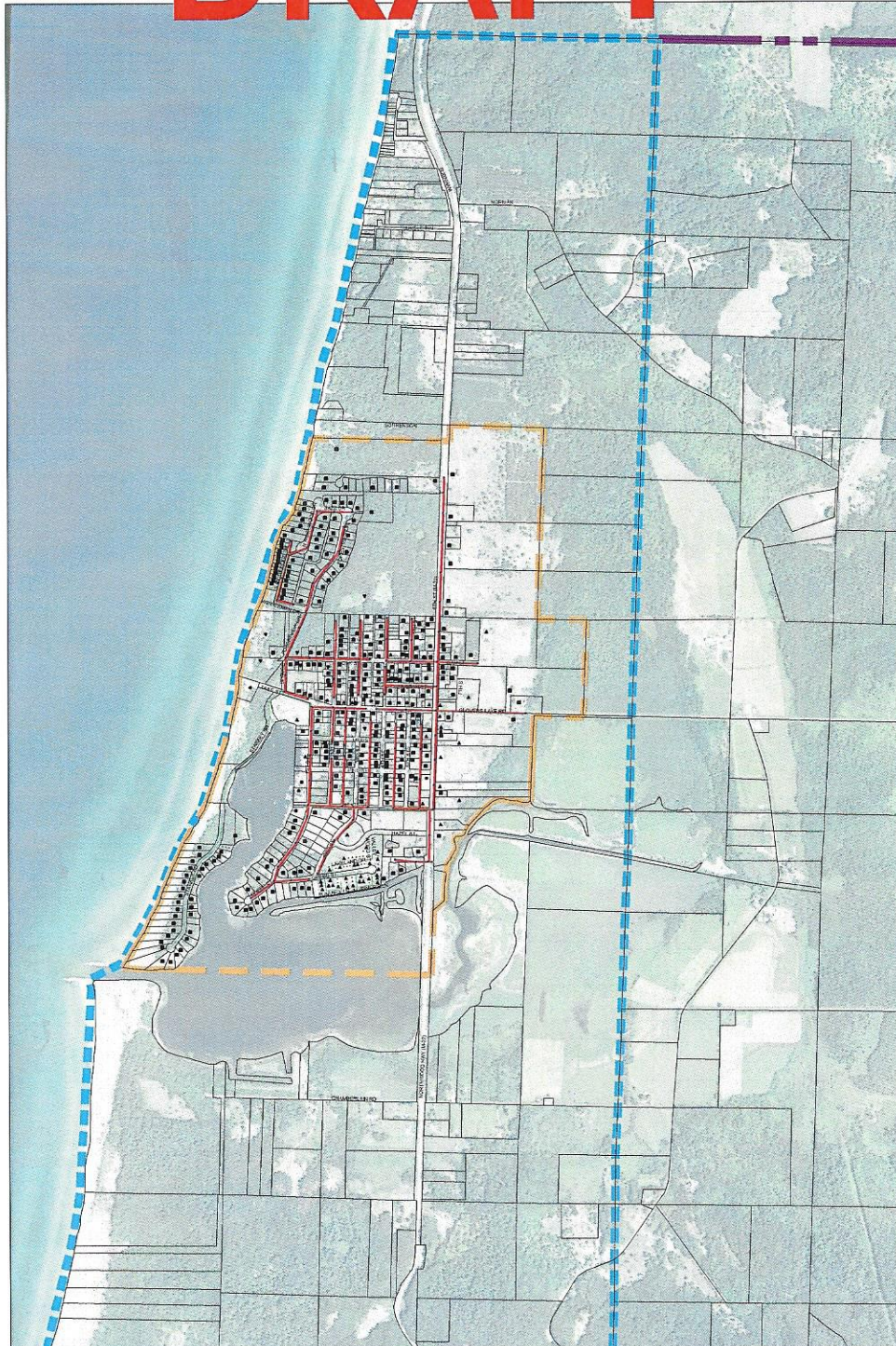
NORTH
1" = 1000'

ARCADIA TOWNSHIP
MANISTEE COUNTY, MICHIGAN
RD WASTEWATER PER & ER

FIGURE A5



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GRAVITY SANITARY SEWER COLLECTION SYSTEM
SERVICE AREA #1



LEGEND

- | | |
|------------------------|-------------------------------|
| ■ RESIDENTIAL BUILDING | ▬ INITIAL STUDY AREA BOUNDARY |
| ▲ COMMERCIAL BUILDING | ▬ ARCADIA TWP BOUNDARY |
| ▼ CHURCH | ▬ SERVICE AREA BOUNDARY #1 |
| ● RESTAURANT / BAR | ● PROPOSED SAN MH |
| ● VILLAGE BUILDING | ◆ PROPOSED PUMP STATION |
| ▬ ARCADIA TWP PARCELS | ▬ PROPOSED 8" SAN SEWER |
| | ▬ PROPOSED FORCEMAIN SEWER |

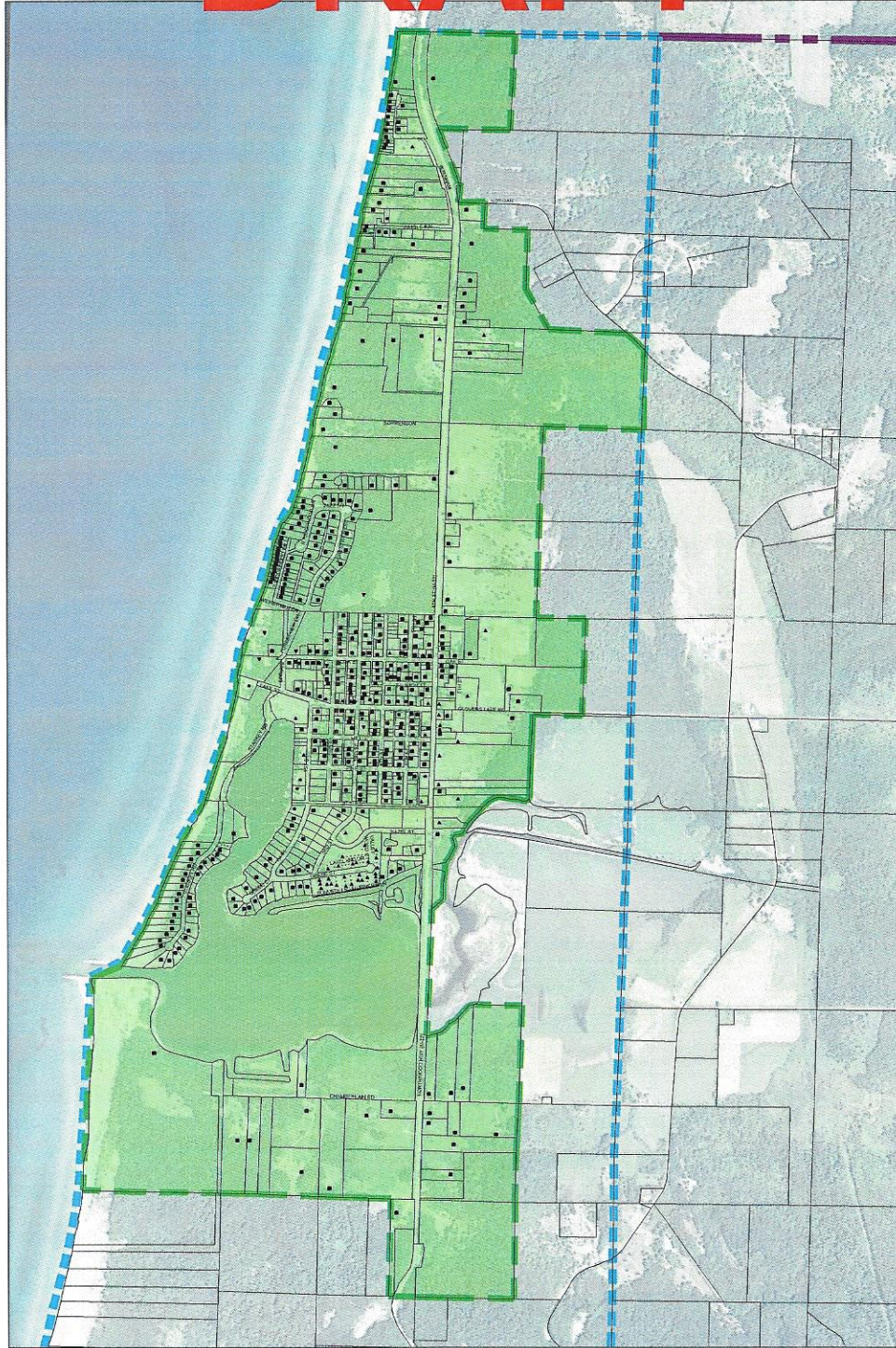
ARCADIA TOWNSHIP
MANISTEE COUNTY, MICHIGAN
RD WASTEWATER PER & ER

FIGURE A6

F&V PROJECT NO. 111720



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SANITARY SEWER SERVICE AREA #2



LEGEND

- | | |
|------------------------|---------------------------------|
| ■ RESIDENTIAL BUILDING | — ARCADIA TWP PARCELS |
| ▲ COMMERCIAL BUILDING | --- INITIAL STUDY AREA BOUNDARY |
| ▼ CHURCH | --- ARCADIA TWP BOUNDARY |
| ◆ RESTAURANT / BAR | --- SERVICE AREA BOUNDARY #2 |
| ● VILLAGE BUILDING | ■ SERVICE AREA #2 |

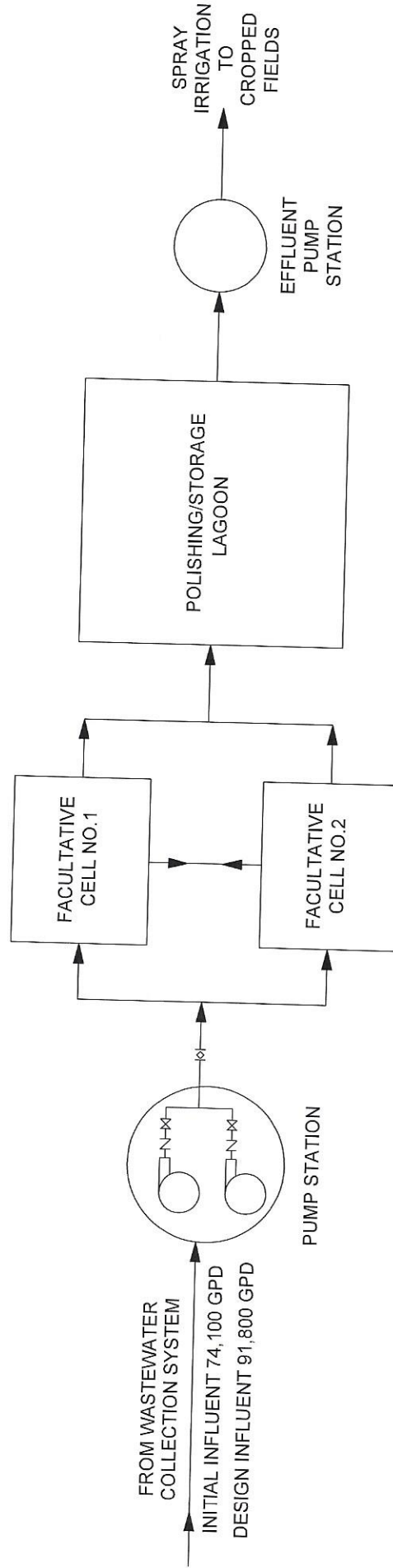
ARCADIA TOWNSHIP
MANISTEE COUNTY, MICHIGAN
RD WASTEWATER PER & ER

FIGURE A7

ENVIRONMENTAL SYSTEMS



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ARCADIA TOWNSHIP
MANISTEE COUNTY, MICHIGAN
FACULTATIVE LAGOON DIAGRAM

FIGURE A10

