RICE TOWNSHIP

The township is located in the north central section of Sandusky County and the 2010 census stated that 1,370 people live in the unincorporated portions of the Township. The total land area is 23.2 square miles at an elevation of 591 feet. There are no municipalities located in Rice Township. There are 59.1 people/square miles in the township.

Additional demographic and population projections for Rice Township are as follows:

2010 DEMOGRAPHIC INFORMATION					
	2010 Census	Square Mile	Population/ Square Mile	MHI	LMI %
Rice Township	1,370	23.2	59.1	$56,302	47.9

20 YEAR PROJECTED DEMOGRAPHIC INFORMATION						
	2010 Population	2010 Estimated Water Demand (100 gpcd)	2010 Estimated Water Demand/ Square Mile	2030 Population Estimate*	2030 Estimated Water Demand (100 gpcd)	2030 Estimated Water Demand/ Square Mile
Rice Township	1,370	137,000 gpd	590.5 gpd	1,289	128,900 gpd	5,560 gpd
* Ohio Department of Development - Sandusky County Projected Rate of Change - .059% to 2030						

Groundwater Resources - The groundwater source for most of the township would be developed from carbonate aquifer at depths less than 300 feet with yields varying between 100 to 500 gallons per minute. There is one ODNR test well located west of Wightman's Grove south of King Road. The well is at 340 feet in depth and produces 475 gpm. There are also three (3) industrial wells that have a listed production rate between 50 and 750 gpm. The raw water quality for Test Well C is listed as follows:

EXISTING WELL PRODUCTION AND WATER QUALITY	
	Test Well C
Depth (feet)	340
Bedrock (feet)	180
Yield (gpm)	475
Hardness (mg/l)	1,850
Iron (mg/l)	.37
Calcium (mg/l)	484
Dissolved Solids (mg/l)	2,370
Sulfates (mg/l)	1,520
Hydrogen Sulfide (mg/l)	1.2

Rice Township could provide a groundwater supply for a regional water treatment facility.

Surface Water Resources - Rice Township has thee (3) substantial streams that provide storm water drainage to Lake Erie. To the west, Muddy Creek flows northeast, Fishing and Little Muddy Creek combine in the central portion of the Township, and the Sandusky River flows northeast through the eastern portion of Rice Township.

Public Water Systems - There are no municipal public water systems located in Rice Township. The Township does have eight (8) privately owned public water systems throughout the Township. Sandusky County owns and operates a ground water treatment facility at the Shorewood Subdivision. The facility has two (2) wells and no treatment other than the addition of chlorine and a polyphosphate.

Wastewater Treatment Systems - There are no municipal wastewater treatment plant systems located in Rice Township. There are two (2) private NPDES permitted package treatment plants in the Township -- Fremont Plastic Molds and Apollo Mobile Home Park.

Proposed Water Service

There were a number of transient non-community water systems in Rice Township that received Notice of Violations from Ohio EPA. The violations vary from Total Coliform Maximum Contaminant Levels, Failure to Sample, and Treatment Deficiencies. The systems are listed as follows:

Charles Gonya, AMLC #1
Charles Gonya, AMLC #2
Grates Silver Top Tavern
Hetrick AMLC
Riverfront Marina #2

There were also two (2) community public water systems that received Notice of Violations -- Apollo Mobile Home Park and Shorewood Village Subdivision.[5]

The Sandusky and Rice Township Planning Area for water service is in the area north and northeast of the City of Fremont. The area includes the Port Clinton Road Corridor from Fremont to north of the Turnpike. The 1997 Comprehensive General Plan indicated that this area includes approximately 660 residential units with a number of commercial establishments. The current population in 1997 was estimated at 2000 and the commercial water demand was at 75,000 gpd. Also within this planning area is an existing water treatment plant that serves the Shorewood Village Subdivision.

A computer model of the proposed planning area water system was completed using a WaterCad computer program. This program allows data to be entered concerning pipe size, length, and condition; high service pumps, storage tanks, elevations, and projected flow data.

This model utilizes hydrant flow test data provided by the City. By running the computer model with this flow information, the computer program can then evaluate and determine appropriate waterline size in order to meet distribution system requirements.

It should be noted that in a complex system with several variables that it is not always possible to duplicate actual field results. The goal of this process is to create a model that will produce results that are reasonably close to actual field results. Although the results may not match exactly, this process works very well for evaluating proposed improvement. As such, the distribution modeling should be used only as a guide for selecting waterline sizes, locations, along with any additional storage improvements.

The computer model analyzed the available flow based on a residual pressure of 20 psi at selected fire hydrant locations. Required fire flows are determined by the type of building construction and total floor area in square feet. Table E-1 lists the amount of water required to be available for fire fighting purposes for two hour durations with domestic consumption at the 24 hour maximum rate. Available fire flows were then determined by the model and then compared to minimum fire flows as listed in Table E-1.

TABLE E-1
MINIMUM FIRE FLOWS

Classification	Needed Fire Flow	Duration (hours)
One- and Two-Family Dwellings	500 - 1,000 gpm	2
Small Commercial	1,500 - 2,000 gpm	2
Medium Commercial and Industrial	2,000 - 3,000 gpm	3
Large Commercial and Industrial	3,500 gpm	3
Note: The above-listed fire flows are dependent on type of building construction material, total floor area of structure, and distances between structures.		

This planning area consists of portions of both townships. As previously discussed in the above Northern Ballville Service Area, this area was also included in the 1974 Regional Facility Master Plan and 1997 Sandusky County Water and Sewer General Plan. It was again recommended that the City of Fremont be the supplier of potable water. The Fremont water treatment facility has available capacity to provide the design peak daily demand and the existing water distribution lines with the 2 mg elevated storage tank located north of the County fairgrounds would support the construction of a regional distribution system in this planning area. The water distribution study

completed in 1997 also evaluated the capability of the City of Fremont's water distribution to supply an adequate volume and pressure for both current and future water demands for this planning area. The suggested water distribution improvements from this study have been incorporated into this distribution model.

The Sandusky/Rice Township Service Area to be evaluated and modeled includes Port Clinton Road north to the Turnpike exchange and then west to Fangboner Road, also north of the Turnpike exchange to approximately Artz Road, east to the Sandusky River and west to Church Road.

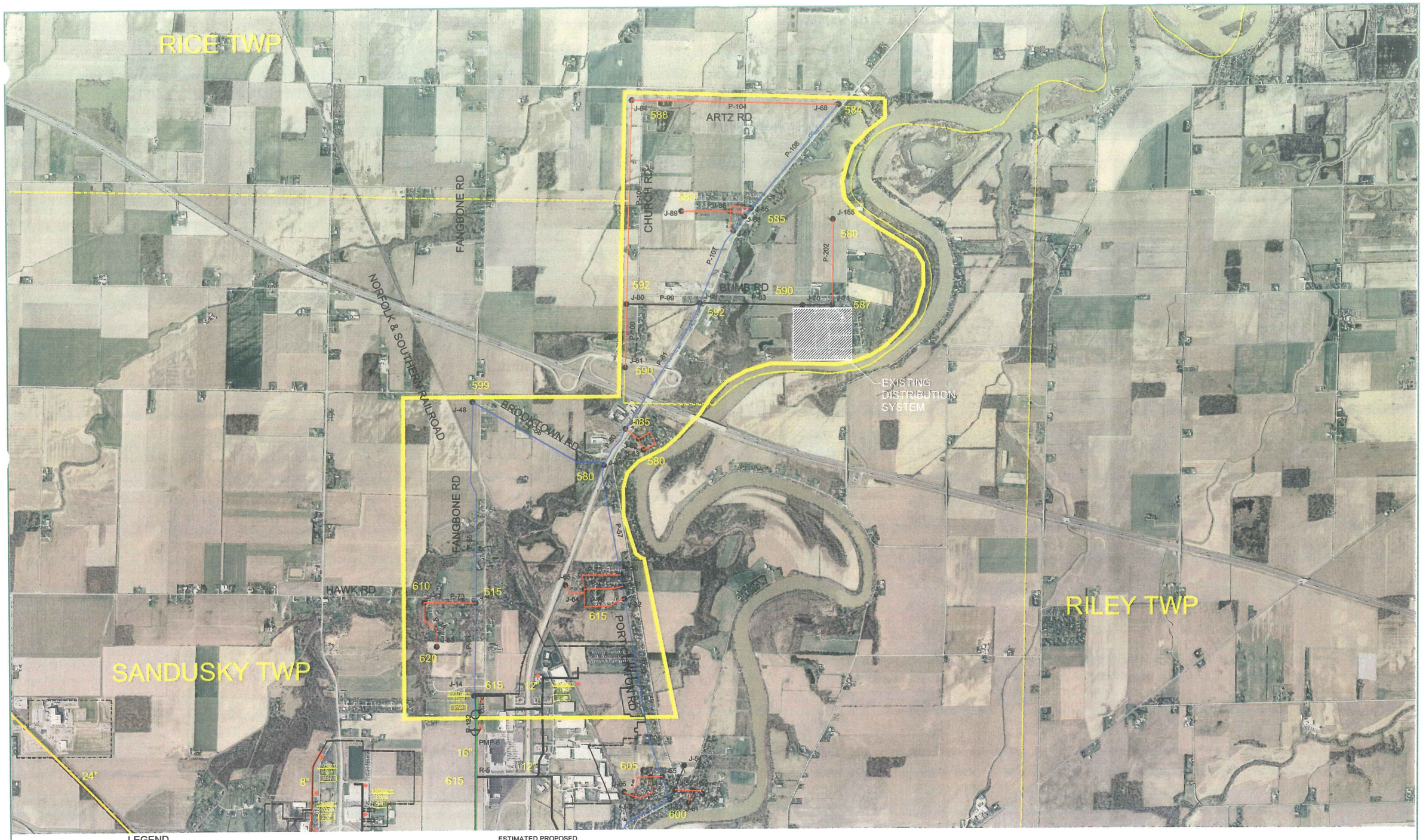
Plate E-1 from the Fremont Area Water District Study illustrates the proposed water distribution improvements necessary to serve this planning area with potable water and minimum residential fire protection. The Sandusky/Rice Township Service Area proposed water distribution improvements included two (2) connection locations to the City of Fremont. Each of the two (2) connection locations was modeled to determine available fire flows and static pressure to the planning area. Available fire flows at 20 psi and projected available static psi for each of the two (2) connection locations were listed in the study. Estimated construction and project costs are identified in Table E-2. Criteria used for the development of the distribution model was based on the following:

1. Available static pressure and fire flows from the City of Fremont.
2. Projected daily peak demand of 508,000 gpd (353 gpm) also includes Shorewood Village Subdivision and projected commercial demand.

SANDUSKY AND RICE TOWNSHIPS PLANNING AREA PROJECTED AVERAGE AND PEAK DAILY FLOWS				
Current Population	Average Daily Flow (100 gpcd)	Average Daily Commercial Flow	Shorewood Village Subdivision	Peak Daily Flow (2.0)
1,075	107,500 gpd	75,000 gpd	25,000 gpd	415,000 gpd
Projected Population	Projected Average Daily Flow (100 gpcd)	Projected Average Daily Commercial Flow	Shorewood Village Subdivision	Projected Peak Daily Flow (2.0)
1,290	129,000 gpd	100,000 gpd	25,000 gpd	508,000 gpd

Current population based on actual house count and 2000 census data that suggested 2.56 people/household. Projected population based on 2013 Sandusky County Comprehensive Plan (20%).

3. Minimum fire protection flow rate of 500 gpm at 20 psi.



LEGEND

- PLANNING AREA
- 8" WATERLINE
- 10" WATERLINE
- 12" WATERLINE
- 16" WATERLINE
- 24" WATERLINE
- FIRE HYDRANT
- 255 FIRE HYDRANT ID NUMBER
- 1234gpm / 20psi FIRE HYDRANT FLOW TEST RESULT
- CORPORATION LINE
- TOWNSHIP LINE

DISTRIBUTION MODEL LEGEND

J-99 JUNCTION NODE

ESTIMATED PROPOSED WATERLINE QUANTITIES

8"	30,102'
10"	6,343'
12"	36,597'
16"	21,116'
24"	0'

GRAPHIC SCALE

(IN FEET)
1 inch = 1800 ft.

REFERENCE:
ACAD DWG
R. HEYMAN
1/15/04

JOB #2165-039

FILE: ANALYSIS2A.DWG

SANDUSKY AND RICE TOWNSHIP
PROPOSED DISTRIBUTION SYSTEM

OHIO

PLATE E-1

FREMONT AREA WATER DISTRICT STUDY

POGGEMEYER DESIGN GROUP, INC.
ENGINEERS + ARCHITECTS + PLANNERS

Estimated construction costs for water service are listed as follows:

TABLE E-2
ESTIMATE OF COST
WATERLINE IMPROVEMENTS
SANDUSKY AND RICE TOWNSHIP SERVICE AREA

Item No.	Description	Quantity	Unit	Unit Price	Total Price
1	12" Diameter Waterline, Installed Complete	36,597	L.F.	$48	$1,756,656
2	12" Diameter Valve with Valve Box, Installed Complete	15	Each	$2,600	$39,000
3	Turnpike Jack Bore and Casing	220	L.F.	$360	$79,200
4	10" Diameter Waterline, Installed Complete	6,343	L.F.	$44	$279,092
5	10" Diameter Valve with Valve Box, Installed Complete	5	Each	$2,175	$10,875
6	8" Diameter Waterline, Installed Complete	30,102	L.F.	$36	$1,083,672
7	8" Diameter Valve and Valve Box, Installed Complete	20	Each	$1,450	$29,000
8	Fire Hydrant with Watch Valve, Installed Complete	45	Each	$3,050	$137,250
9	Waterline Connection into Existing Waterline Installed Complete with Tee, Valve, and Valve Box	2	Each	$8,700	$17,400
10	3/4" Service Line, Includes Meter and Pit (60% Participation)	252	Each	$1,200	$302,400
11	Restoration	1	L.S.	$336,835	$336,835
12	Miscellaneous, Includes Mobilization, Insurance, Bonding, and Administrative Costs	1	L.S.	$14,500	$14,500
	SUBTOTAL				$4,085,880
	Contingencies (10%)				$408,588
	TOTAL OPINION OF CONSTRUCTION COST				$4,494,468
	Other Fees (20%) Legal, Design, Engineering, Financing, Construction Observation, Testing, Interest During Construction, and Review Fees				$817,176
	TOTAL OPINION OF PROBABLE COSTS				$5,311,644

Note: Fire hydrants located approximately every 500 feet in high density populated areas and every 1,000 feet in sparsely populated areas

Critical Sewage Areas:

The Sandusky County Health Department, Ohio EPA, and TMACOG has identified Critical Sewage Areas which would include failed or failing onsite sewage systems. System failures could lead to surface and/or groundwater contamination or public health nuisances. These areas have been determined to be places where onsite sewage problems cannot be solved by conventional system upgrade or replacement. These areas became a priority for the Health Department and Ohio EPA to conduct sanitary surveys and general plans for providing public sanitary collection system and treatment alternatives.

There are no Critical Sewage Areas listed at this time in Rice Township.