

2.0 COMMUNITY INFORMATION

As required by DMA2K, a community profile must be developed for the county and any jurisdictions participating in this effort. Because of the multiple jurisdictions involved in this plan, this section presents a demographical as well as historical description, if available, of each jurisdiction that will be adopting this plan. This brief profile of each jurisdiction gives some insight as to what types of communities exist in the County and provides a better understanding of the effect natural hazards, to be discussed in later sections, may have on this population. In numerous cases, the communities themselves provided the information that follows.

2.1 County Profile

Shelby County is located in western Ohio, approximately 40 miles north of Dayton. It is bordered by Auglaize County to the north, Logan and Champaign counties to the east, Miami County to the south and Darke and Mercer counties to the west. The County encompasses approximately 409.3 square miles of land, with a population of 49,423 according to the 2010 Census. The County consists of 14 townships including Clinton, Cynthian, Dinsmore, Franklin, Green, Jackson, Loramie, McClean, Orange, Perry, Salem, Turtle Creek, Van Buren, and Washington. Please refer to Appendix B for a map of the political boundaries.



The incorporated areas of Shelby County include Anna, Botkins, Fort Loramie, Jackson Center, Kettlersville, Lockington, Port Jefferson, Russia, and Sidney. According to the 2010 Census, the largest areas of population are the City of Sidney (21,229), the Village of Anna (1,567), the Village of Fort Loramie (1,478), and the Village of Jackson Center (1,462). Other Incorporated jurisdictions in the order of descending population include: Botkins, Russia, Port Jefferson, Lockington and Kettlersville.

The City of Sidney is the County Seat. The County has combined the Sidney-Shelby County Chamber of Commerce for the purpose to enhance the business climate in Shelby County in an effort to serve, support, and promote the Corporation and its Members. The Sidney-Shelby County Chamber of Commerce offers a significant resource within the community to promote growth and development. Manufacturing and agriculture are the leading industries in Shelby County.

2.2 County History

Shelby County was established in 1819. The county was named for General Isaac Shelby, an officer in the American Revolution who was noted for his bravery and honesty, and was elected Governor of Kentucky. Even though it was his namesake, it is believed that General Shelby did not ever visit this area. The people of the County chose the name Shelby because many of the settlers were from Kentucky and admired General Shelby. Additional information on Shelby County, Ohio can be found at the following website: www.shelbycountyhistory.org

2.3 Jurisdictions

Sidney

The City of Sidney is strategically located 40 miles north of Dayton, 85 miles west of Columbus, 100 miles south of Toledo, and 120 miles east of Indianapolis. According to the Census of 2010, there are 21,229 people, 8,344 households and 5,577 families residing in the City. The population density is 1,766 people per mi². There are 9,265 housing units at an average density of 772

people per mi². The median income for a household in Sidney is \$41,360 and the per capita income for the City is \$19,796. Please note that the financial data presented above and for those jurisdictions below are 2012 data. Additional information on the history of Sidney, Ohio can be found at: <http://www.sidneyoh.com/Visitors/history-sidney-ohio.asp>.

Anna

Anna is located forty-five miles north of Dayton, Ohio. According to the Census of 2010, there are 1,567 people, 551 households and 429 families residing in the Village. The population density is 1,521 people per mi². There are 589 housing units at an average density of 572 people per mi². The median income for a household in Anna is \$55,912 and the per capita income for the Village is \$19,984. Additional information on the history of Anna, Ohio can be found at: <http://villageofannaoh.com/about.htm>.

Botkins

According to the Census of 2010, there are 1,155 people, 480 households and 315 families residing in the Village. The population density is 932 people per mi². There are 507 housing units at an average density of 409 people per mi². The median income for a household in Botkins is \$46,121 and the per capita income for the Village is \$21,508. Additional information on the history of Botkins, Ohio can be found at: <http://www.botkinsohio.com/community/history.php>.

Fort Loramie

According to the Census of 2010, there are 1,478 people, 530 households and 396 families residing in the Village. The population density is 1,540 people per mi². There are 564 housing units at an average density of 588 people per mi². The median income for a household in Fort Loramie is \$66,959 and the per capita income for the Village is \$24,808. Additional information on the history of Fort Loramie, Ohio can be found at: <http://www.fortloramie.com/history>.

Jackson Center

According to the Census of 2010, there are 1,462 people, 576 households and 404 families residing in the Village. The population density is 870 people per mi². There are 644 housing units at an average density of 383 people per mi². The median income for a household in Jackson Center is \$47,892 and the per capita income for the Village is \$18,105. Additional information on the history of Jackson Center, Ohio can be found at: <http://www.jacksoncenter.com/community/history>.

Kettlersville

The Village of Kettlersville is located in the northwest section of Shelby County approximately five miles west of I-75. According to the Census of 2010, there are 179 people, 68 households and 48 families residing in the Village. The population density is 176 people per mi². The median income for a household in Kettlersville is \$45,800 and the per capita income for the Village is \$15,565. Additional information on Kettlersville, Ohio can be found at: https://en.wikipedia.org/wiki/Kettlersville,_Ohio.

Lockington

According to the Census of 2010, there are 141 people, 56 households and 42 families residing in the Village. The population density is 1,763 people per mi². There are 64 housing units at an average density of 800 people per mi². The median income for a household in Lockington is \$44,849 and the per capita income for the Village is \$14,508. Additional information on the history of Lockington, Ohio can be found at the following website: <http://www.shelbycountyhistory.org/schs/canal/lockington.htm>.

Port Jefferson

According to the Census of 2010, there are 371 people, 142 households and 97 families residing in the Village. The population density is 2,182 people per mi². There are 158 housing units at an average density of 929 people per mi². The median income for a household in Port Jefferson is \$30,899 and the per capita income for the Village is \$15,779. Additional information on the history of Port Jefferson, Ohio can be found at: http://en.wikipedia.org/wiki/Port_Jefferson,_Ohio.

Russia

The Village Russia is in the southwestern corner of Shelby County, and is bordered by the Conrail Railroad to the north. According to the Census of 2010, there are 640 people, 224 households, and 173 families residing in the village. The population density is 821 people per mi². There are 242 housing units at an average density of 310 people per mi². The median income for a household in Russia is \$43,375 and the per capita income for the Village is \$20,829. Additional information on the history of Russia, Ohio can be found at http://en.wikipedia.org/wiki/Russia,_Ohio.

2.4 Census Information

2.4.1 County Population Projection

According to U.S. Census figures, the 2010 total population of Shelby County was 49,423. The area of highest population density is the City of Sidney. The largest village is the Village of Anna, with a population of 1,567. The largest unincorporated area is Cynthian Township with a population of 1,991.

The population of Shelby County has increased over the last 190 years. From 1820 to 1880, the population increased by over 19,000 people. From 1890 to 1970, there has been a gradual increase in population with the population growing by 13,041 people. From 1970 to 1980 the population increased by 5,341 people, which was the largest net change experienced by the County. Shelby County is expected to increase in population to 52,666 by 2030. Please refer to the Table 2-1 for more demographic information.

Table 2-1
POPULATION TABLE

Year	Total Population	Year	Total Population
1800	NA	1910	24,663
1810	NA	1920	25,923
1820	2,106	1930	24,924
1830	3,671	1940	26,071
1840	12,154	1950	28,488
1850	13,958	1960	33,586
1860	17,493	1970	37,748
1870	20,748	1980	43,089
1880	24,137	1990	44,915
1890	24,707	2000	47,910
1900	24,625	2010	49,423

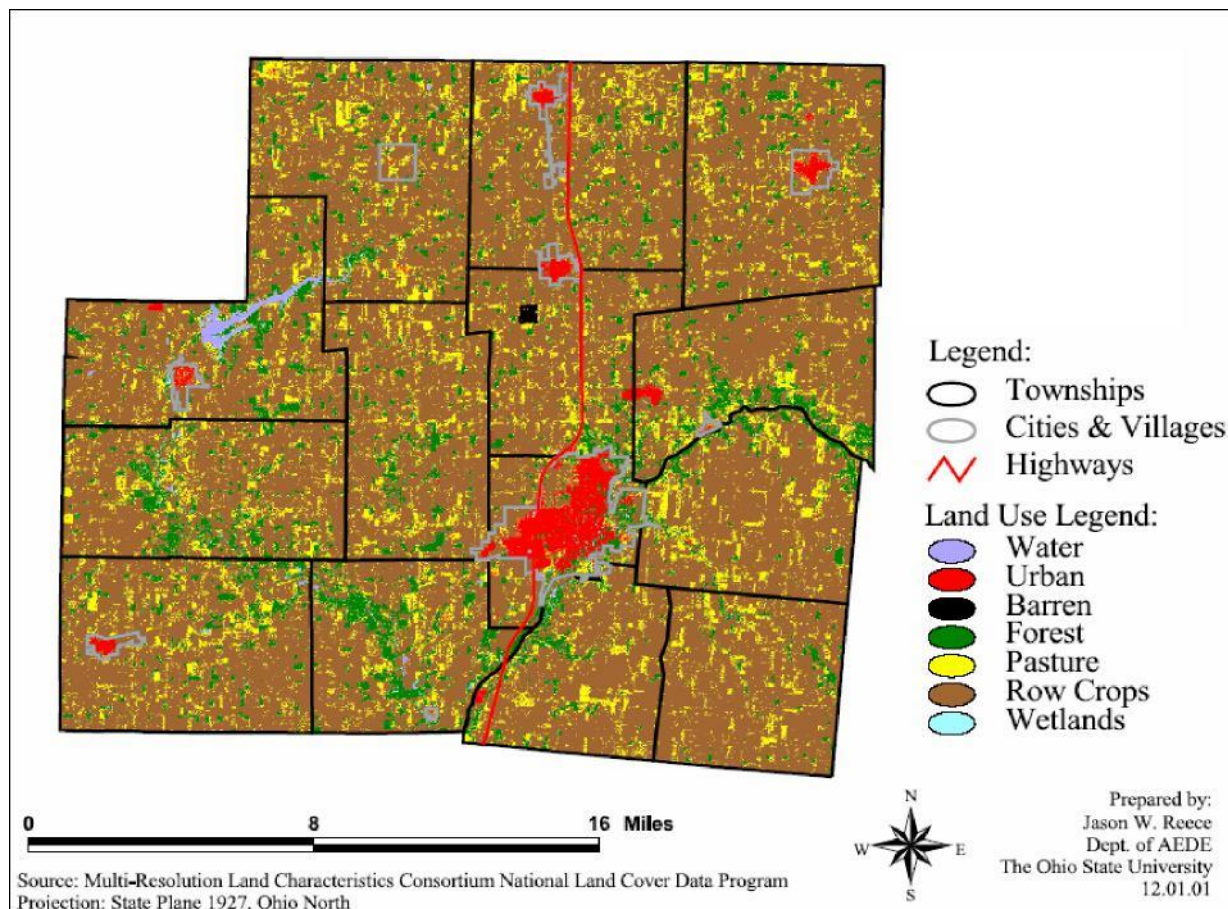
A Shelby County demographic profile is also available on the United States Census Bureau's website and provides more specific information for Shelby County and its political jurisdictions. The website can be accessed through the following link: <http://quickfacts.census.gov/qfd/states/39/39149.html>.

2.5 County Land Use

According to the Comprehensive Plan for Shelby County, it has traditionally been a rural, agriculturally dominated County. Although it has a significant industrial base, interstate access, outstanding water resources, and stable communities, farming continues to be the dominate land use. Shelby County contains approximately 261,000 land acres, of which 81% is agriculture or open space. Approximately 3.4% of the County is classified as "urban," which contains all residential, commercial and industrial development, In addition, about 14.5% of the County contains woodlands. The balance of the County (1%) contains non-forested wetlands, shrub/scrub vegetation, open water, and barren land.

As estimated by the Soil Conservation Service, the County's water acreage consists of approximately 1,823 acres of lakes, including 1,655-acre Lake Loramie, as well as 18 private lakes and ponds of five to 18 acres in size, and numerous smaller ponds. Lake Loramie and several small lakes were originally developed as feeders for the old Miami-Erie Canal System and now are used primarily for recreation. According to the ODNR's Division of Water, approximately 245 linear miles of major streams and rivers, 120 miles of County maintained ditches, and nearly 400 miles of private maintained ditches are used for land drainage. This availability lends itself to many uses by both communities and individuals.

A description of Shelby County's future land use planning can be found in section 6.1.1.



The map above illustrates Shelby County's land use from the early 1990's.

2.5.1 Topography

The majority of the topographic landscape of Shelby County can be characterized as flat, with minimal rolling hills. While the northern portion of the county is relatively level, the southern area of the county is the most picturesque where moderate hills, and a ravine created by the Miami River is located. The minimal diversification of the landscape creates little difference in the County's highest and lowest topographical point suggested to be only a difference of approximately 280 feet. Elevations range from 1150 feet in the extreme southeast corner of the county to 870 feet just south of Lockington where the Great Miami River exits the county.

2.5.2 Watersheds

Approximately 95% of the County lies in the Upper Great Miami River basin, which flows south to the Ohio River. A small area in northwest Shelby County drains into tributaries of the St. Mary's River and the Auglaize River, which ultimately drain to Lake Erie.

Shelby County is located on a major watershed divide. A small portion of the northwest section of the County drains into small tributaries that are a part of the St. Mary's River system. The St. Mary's is part of the larger Lake Erie watershed. In addition, the Upper Auglaize River watershed encompasses a small section in Dinsmore, McClean and Van Buren townships which is also a part of the Lake Erie watershed. The remaining portions of the County are all part of the Great Miami River watershed. The Great Miami is part of the greater Ohio River watershed.

Loramie Creek Watershed

The Loramie Creek Watershed is located in West Central Ohio, and is comprised of portions of four counties, including Shelby, Darke, Mercer, and Auglaize. The watershed is at the headwaters of the Great Miami River, and once served as a heavily traveled portage route for Native Americans and colonial settlers. The majority of land use in this watershed is agricultural (87%). Several villages and towns exist in the watershed including Anna, Botkins, Fort Loramie, Kettlersville, Lockington, and Russia. Although the western edge of the City of Sidney drains to the Loramie Creek, most of Sidney lies outside the watershed and drains directly to the Great Miami River. The drainage area of this system draining into the Loramie Creek is 265 square miles. See Map C-1, Loramie Creek Watershed, Appendix C.

Great Miami River Watershed

The Great Miami River Watershed is located in the southwest portion of Ohio. This watershed contains 2,360 miles of rivers and streams, including the Great Miami, Stillwater, and Mad Rivers. The drainage area of these rivers in Ohio is 4,277 square miles. Total drainage area including that portion in Indiana is 5,702 square miles. The Great Miami River Watershed includes all or part of 15 counties with the headwaters in Hardin and Auglaize counties and the mouth in Hamilton County. The majority of land use in this watershed is agricultural (80.5%). See Map C-2, Great Miami River Watershed, in Appendix C.

Some of the most significant water resource features in the watershed are the Stillwater Scenic River, the Great Miami buried valley aquifer, the five major dams (dry) and flood protection system of Miami Conservancy District (MCD), and Indian Lake, a remnant of the Miami-Erie Canal system and one the largest lakes in Ohio.

Upper Auglaize River Watershed

The Upper Auglaize River basin is a sub-watershed of the Maumee River basin (Lake Erie drainage basin) located in portions of Auglaize, Allen, Putnam, Van Wert, Shelby, and Paulding counties. Agricultural, predominantly row crop, accounts for 89% of the land use in the Upper Auglaize River basin. Only 2.2% of the total land use is urban (residential and commercial/industrial combined). See Map C-3, Upper Auglaize River Watershed, Appendix C.

2.5.2.1 Aquifers

The carbonate aquifer, which is composed of layers of limestone and dolomite, is the principal source of groundwater in west central Ohio, including Shelby County. Limestone consists of fossilized sea shells, shell fragments, calcareous sands and consolidated limy mud. Its main mineral is calcium carbonate, CaCO_3 . Dolomite is similar to limestone, but has few recognizable fossils; its main mineral is calcium magnesium carbonate, $(\text{Ca}, \text{Mg})\text{CO}_3$. Both limestone and dolomite are commonly referred to as limestone or carbonate rocks. The limestone and dolomite formations, which underlie most of the western portion of Ohio, were deposited between about 400 and 500 million years ago. In most areas of this region, these formations are covered by a layer of glacial till, which is an unsorted mixture of clay, silt, sand, gravel and boulders deposited by glacial activity.

Limestone formations are usually good sources of groundwater because of their naturally formed solution channels, joints and fractures, which provide water storage capacity and pathways for water movement. The number of fractures and other openings in limestone varies greatly from one location to another and affects the amount of water that may be encountered when drilling a well. The position of such openings rarely can be determined from the land surface; therefore, there is always some uncertainty as to the production capability of a proposed well.

Groundwater also occurs in lenses (or pockets) of sand and gravel deposited by glacial activity. These deposits occur above the carbonate bedrock and may be imbedded in the glacial till or deposited in layers.

ODNR's Division of Water, maintains a statewide data base of more than 700,000 well logs. The Groundwater Resources Section of the Division manages this valuable data base, which includes some information collected by the U.S. Geological Survey (USGS) and the Ohio Environmental Protection Agency (Ohio EPA). Since 1948, well log information has been collected to increase the understanding of the groundwater resources in Ohio. Geologists and hydro geologists continue to study the state's groundwater resources, and as a result, Ohio is one of only a few states that have been completely mapped for groundwater availability (mapped by river basin, from 1959 to 1962).

Estimates of the size, shape, geologic make-up and yields of aquifers are being mapped county by county. Most of Ohio's counties have a completed map. The map presented in Appendix F (Map E-1), is a generalized representation of the water-bearing formations underlying Shelby County (adapted from map by Kostelnick, 1983). This illustration is based on a hydrogeologic interpretation of the well log data from Shelby County and surrounding areas, to be used only as a guide to understanding the groundwater resources in the County. The remainder of this section provides a brief description of the types of aquifers illustrated on the Map E-1.

AREA A: Permeable Sand and Gravel with High-Yield Potential

Area A illustrates the outwash sand and gravel deposits in the Loramie and Turtle Creek flood plains. These areas may yield large water supplies to properly screened wells. Well yields of up to 500 gpm generally can be obtained from depths of less than 75 feet.

AREA B: Ancestral Teays Valley filled with Glacial Till

This buried valley, illustrated as Area B, is a tributary to the ancestral Teays River valley. Commonly misunderstood to be an underground river, the Teays valley is a remnant of an ancient drainage system that cut a valley into the limestone before the area was glaciated.

Later, with the coming of glaciers, the valleys were completely filled with glacial deposits. Intermittent deposits of sand and gravel can be found imbedded with thick layers of clay-rich glacial till.

Deep sand and gravel deposits in the ancestral Teays valley may yield small industrial and municipal supplies. The coarsest deposits generally occur between 100 and 300 feet below the surface. Yields of up to 500 gpm are possible from properly-constructed wells. Flowing wells have been noted near Salem and Perry townships. Test drilling may be necessary to locate the coarser deposits that have the potential for maximum yields. Deeper drilling into the impermeable shale in the valley floor is not advised.

AREA C: Thick Limestone beneath Glacial Till

The limestone aquifer illustrated as Area C is part of the regional carbonate aquifer which underlies much of west central Ohio. It is overlain by 15 to more than 200 feet of glacial till, consisting principally of clay with intermittent deposits of sand and gravel. Most wells are drilled into the limestone, and yields generally are adequate for domestic and farm water supplies. Where openings in the rock have been enlarged by solution, drilled wells may yield over 150 gpm.

AREA D: Limestone beneath Glacial Till

Area D is also part of the regional carbonate aquifer of west central Ohio. However, the water-bearing bedrock is thinner than in similar formations to the north. Yields of 25 to 100 gpm, considered adequate for industrial and municipal water supplies, may be developed from this aquifer at depths of less than 200 feet. Farm and domestic water supplies can usually be developed at depths of 60 to 120 feet.

AREA E: Shallow Permeable Sand and Gravel

Area E shows the thin outwash deposits in the Loramie Creek area. Shallow, irregular sand and gravel deposits within 75 feet of the surface may yield 25 to 100 gpm to properly screened wells.

AREA F: Carbonate Bedrock

Area F outlines the thin bedrock surface surrounding ancestral valleys. Well yields vary from 10 to 25 gpm from the thin limestone and shale present.

AREA G: Shallow Sand and Gravel with Low-Yield Potential

Thick clay, fine sand, and gravel over impermeable bedrock are found in these ancestral drainage channels, shown as Area G. Yields of 3 to 10 gpm may be developed for domestic supplies in the valley fill material. However, deeper drilling into the shale is not recommended, since dry holes do occur.

2.5.2.2 County Groundwater Resources

Shelby County's primary groundwater source is the carbonate aquifer composed of limestone and carbonate bedrock. In the northern half of the county, yields of greater than 150 gallons per minute (gpm) have been developed from wells penetrating fractured zones in the carbonate

bedrock. Farm and domestic supplies of greater than 10 gpm may be developed from shallow wells. Wells finished in the sand and gravel deposits in the northern part of the County also yield ample water supplies.

The limestone aquifer in the southern portion of the county generally yields 25 to 100 gpm. This water-bearing bedrock is thinner than formations to the north. Sand and gravel deposits may also yield 25 to 100 gpm within 75 feet of the surface from properly screened wells. Valley fill areas can provide up to 10 gpm, but deeper drilling into the shale bedrock below may produce dry holes.

Groundwater is a major water source for rural households in Shelby County. Approximately 41% of all households obtain their water from private wells. Based on an estimated usage of 75 gallons per person per day, 1,380,000 gallons per day (gpd) from private wells are used. Additional private water uses include industry (2,930,000 gpd), golf course and crop irrigation (190,000 gpd each in season) and livestock use (646,000 gpd), mostly from groundwater supplies. The remaining 59% use public water supplies, ground or surface water as the source.

2.5.2.3 Groundwater Levels

The water level in any well typically does not remain constant, but changes depending upon the proximity of adjacent wells and surface streams, and natural rainfall. Groundwater discharge and recharge greatly affect water levels in wells. The ODNR Division of Water monitors groundwater levels in one well in Shelby County. This well is located near Sidney and designated as SH-4 on

Map C-1. This well is one of a number of wells throughout west central Ohio used to monitor the natural seasonal fluctuation, or the effects of nearby pumping, on water levels in the carbonate aquifer.

Observation well SH-4 is 280 feet deep and the depth to limestone is approximately 136 feet. It is representative of many limestone wells in the region. Continuous water level measurements have been recorded at SH-4 since September 1979.

2.6 County Water Utilities

2.6.1 County Jurisdictions Water and Wastewater Systems

Shelby County

The County owns and operates two water treatment plants and four wastewater treatment plants within its limits. The County has one treatment plant at the Arrowhead Hills Subdivision, 75,000 gpd and another one at the Fair Haven County Home, 75,000 gpd. The four wastewater treatment plants are the Arrowhead Hills subdivision wastewater treatment plant (70,000 gpd), the Fair Haven County Home wastewater treatment plant (13,000 gpd), the Hickory Dell subdivision wastewater treatment plant (20,000 gpd) and the Lake Loramie wastewater treatment plant (400,000 gpd).

Sidney

Sidney operates the County's largest water and wastewater treatment plants. The Water Treatment Plant utilizes the Great Miami River, Tawawa Creek and five groundwater wells for its supply. The Water Treatment Plant (WTP) began construction in November 2015 on a new well field to reduce reliance on its surface water sources. The Water Treatment Plant (WTP's) plant's capacity is 10,000,000 gpd.

The Wastewater Treatment Plant (WWTP) began construction November 2015 for upgrading the treatment plant, adding additional process treatment and equipment to improve disinfection and bypass situations. The WWTP's plant capacity is 7,000,000 gpd.

Anna

Anna operates both a water treatment plant and wastewater treatment plant. The water treatment plant has a capacity of 350,000 gpd and services the Anna village limits. The capacity of the wastewater plant is 400,000 gpd.

Botkins

Botkins operates both a water treatment plant and wastewater treatment plant. Both the water treatment plant and the wastewater treatment plant have capacities of 500,000 (gpd) and services the Botkins village limits.

Fort Loramie

Fort Loramie operates a water treatment plant. The water treatment plant has a capacity of 576,000 gpd and services the Fort Loramie village limits. The wastewater is sent to the County wastewater treatment plant.

Jackson Center

Jackson Center operates both a water and wastewater treatment plant. The Village of Jackson Center receives its water from three wells and treats the water in its own facility. The water treatment plant's capacity is 500,000 gpd and the wastewater treatment plant's capacity is 1,800,000 gpd.

Kettlersville

Kettlersville has two water wells for the village and is on the County's sewer system.

Lockington

Lockington uses individual water wells and individual sewer systems.

Port Jefferson

Port Jefferson does not have a water treatment plant. The village uses individual water wells and has a connection to the City of Sidney's sewer system.

Russia

Russia operates both its own water plant and wastewater treatment plant. The capacity of the water plant is 100,000 gpd and the capacity for the wastewater treatment plant is 250,000 gpd.