DEPARTMENT OF PUBLIC SERVICES

ANNUAL REPORT: 2019

2019 Public Services Departments Report

The goal of the Public Services Department is to provide the residents and the businesses of Alma with services that assist in maintaining public health and provide basic services and help improve the quality of life. The City of Alma's Public Services Department provides safe, potable water; sanitary sewer utilities and treatment; and the collection of household refuse which help maintain public health. Basic services such as transportation are maintained through the use of street construction, street surface maintenance, and snow removal. The Public Services Department also helps improve the quality of life for area residents with its efforts to provide safe, pleasant parks; maintaining a system of walking trails along the Pine River, and maintaining buildings for public use such as the Library, as well as several picnic shelters.

The Public Services Department for The City of Alma is responsible for many functions and services that the residents of Alma receive from their municipal government. The Department is actually composed of four separate divisions which act semi-independent of one another but are also directly related in many ways. Each of these divisions has a clearly defined set of responsibilities although a certain amount of overlap does occur in some areas.

Engineering –responsible for preparing and issuing construction drawings and documents, construction inspections on City owned projects, and the construction of all public works projects.

Public Works Division – this Division is composed of the Municipal Garage Services Division and the Buildings and Grounds Division. This Division is responsible for the maintenance on all City streets, along with the maintenance and repairs for the sanitary sewers and the storm sewer system; and all City owned buildings, City Parks, operation and maintenance of Riverside Cemetery, and maintenance of the buildings at Gratiot Community Airport. This Division is also responsible for the operation of the City motor pool, which maintains nearly the entire City owned inventory of vehicles, equipment and tools.

Wastewater Treatment – this Division is responsible for the proper treatment and disposal of sanitary sewer waste. This process includes the operation and maintenance of the treatment plant itself along with the operation and maintenance of fourteen sanitary sewer pump stations located throughout the City.

GAWA/Water Distribution - this Division is responsible for the proper treatment of domestic potable water and the distribution of water to City residents and businesses. This division's daily operations include the maintenance and operation of the water distribution system, water wells, water storage tanks and the treatment plant itself.

These broad descriptions outline each Division's responsibilities. Most of the functions performed by the Public Services Department are by their very nature services that the City residents expect and depend upon twenty-four hours a day, seven days a week; and are for the most part expected to be invisible to the local residents. The Public Services Department attempts to provide these services with a minimum of disruption to the lives of City Residents, and to supply the best level of service possible within the parameters established by our resources.

Engineering Department:

Engineering Division Employees: 3 (1 Engineering Technician, 1 Public Services Admin. Assistant, and Public Services Director)

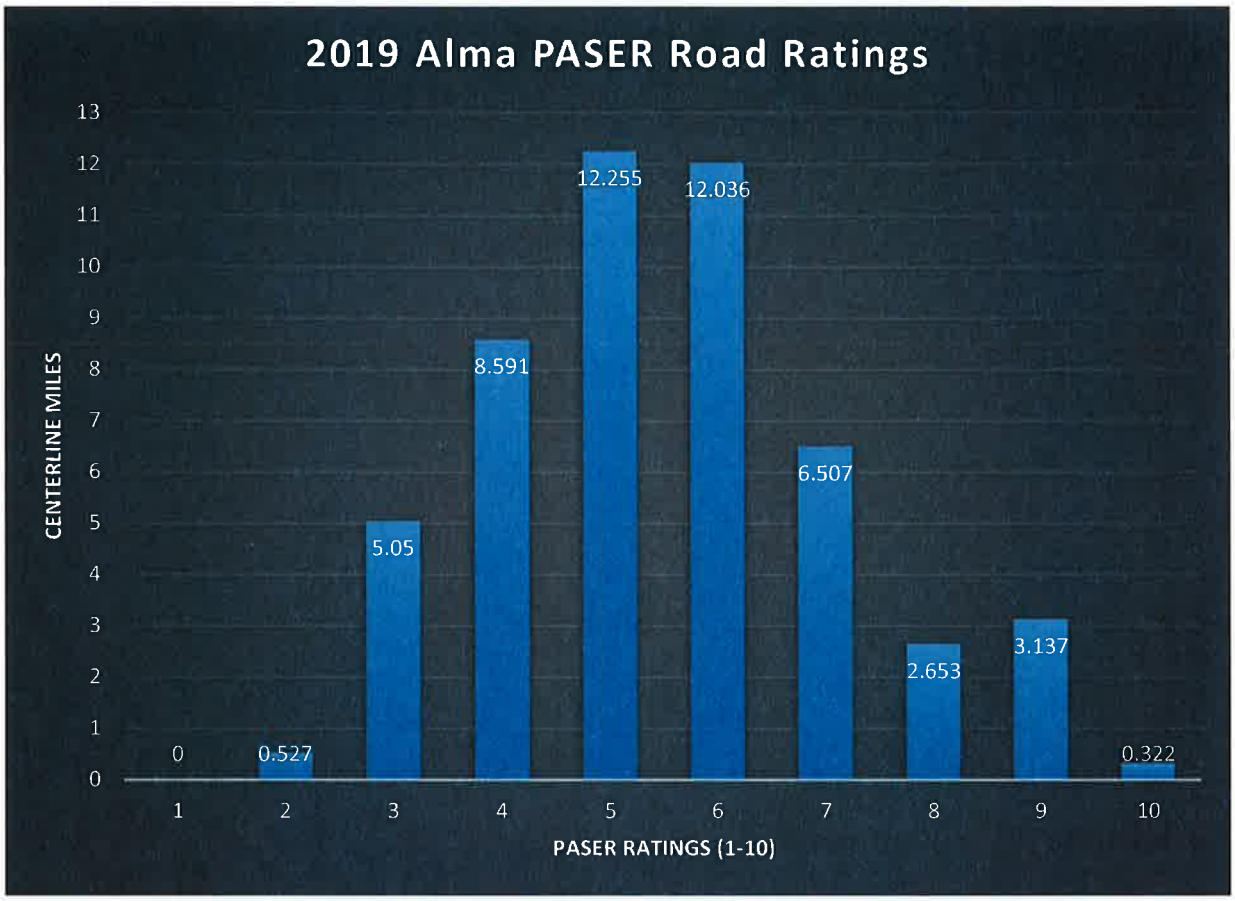
The Engineering Division of the City of Alma is responsible for oversight of all engineering projects for Public Works Projects whether the engineering occurs directly by this department or with the use of engineering consultants. Projects such as the street reconstruction projects, some of our water main projects, many of the building construction projects are typically performed by City staff of this division. While other projects require special technical skills that only engineering firms with a large staff generally possess. The use of engineering and architectural consultants is useful in acquiring specialized skills, and it also provides engineering for projects that require larger man-power requirements than can be performed by City of Alma engineering staff.

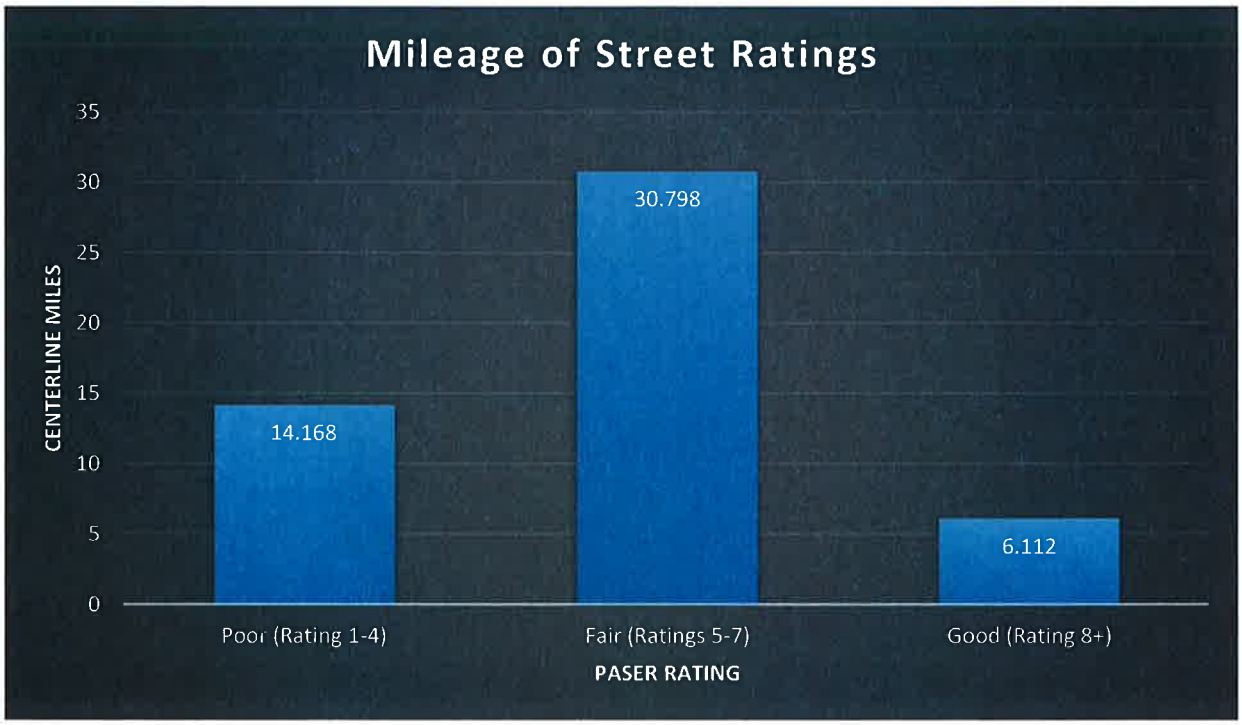
This division is responsible for construction management of all Public Works projects, construction inspection for public works projects, and for private construction that is occurring with the Public Right of Way or on Public Property. Engineering also is responsible for verification that construction meets the standards of the specifications and the construction drawings. Engineering is responsible to see that new water mains, sanitary sewers, and force mains are all pressure tested and meet standards before final acceptance.

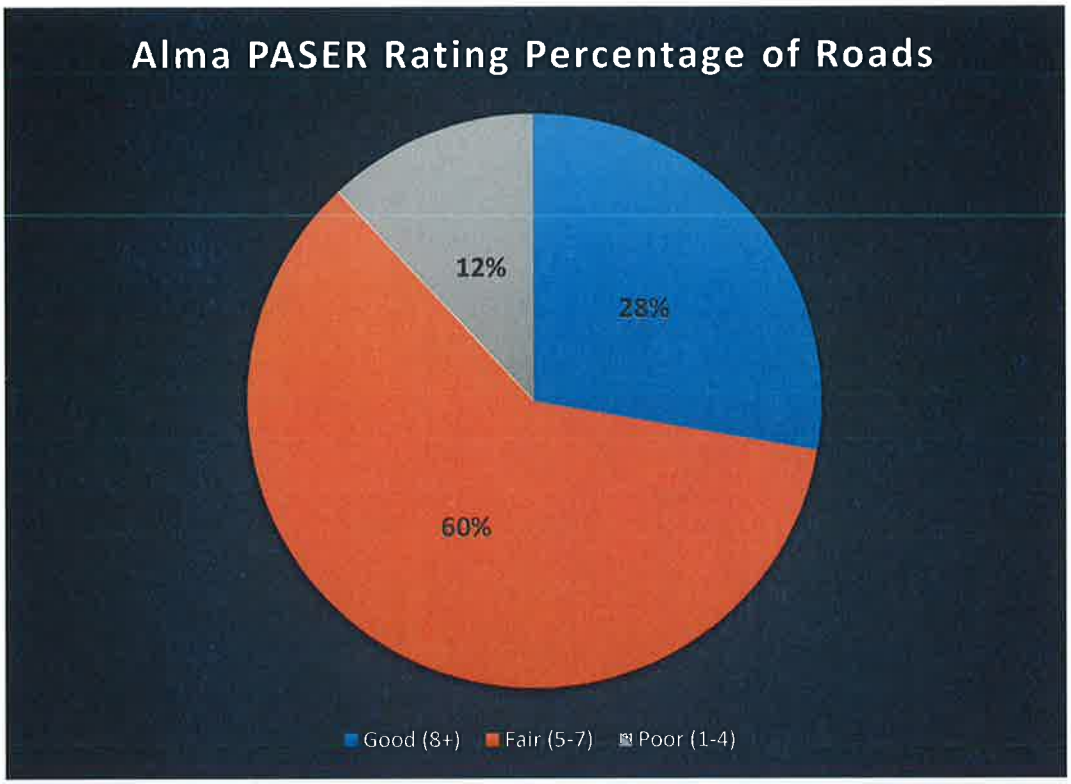
The Engineering Department of the City of Alma provides primarily two services. First it provides engineering and surveying services for City owned infrastructure and construction projects. Secondly, it maintains records on City owned utilities and structures. The staff of the engineering department

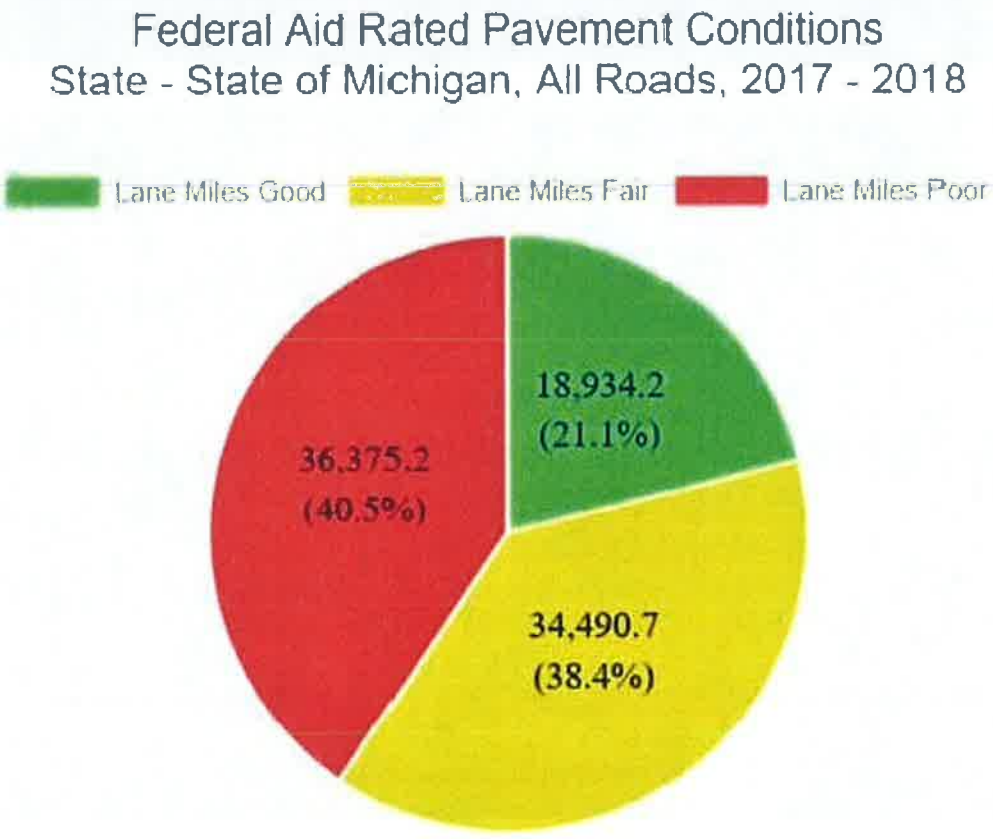
- Issues Public Works Permits
- Creates, updates, and maintains the City's Geographic Information System (GIS)
- Construction Inspections
- Surveying and Layout (for City projects only)
- Prepares Contract Documents
- Provides Engineering Drawings for projects
- Completes annual parcel splits/joins and maintains parcel map framework for City Assessing maps

During the 2019 Calendar year, the Engineering Department engineered two road projects, one being Hayes Avenue re-construction project and the other is the connector between Wheeler Avenue and Sharrar Avenue. In addition, it has overseen the construction of two Streets (Hannah Avenue and Pleasant Avenue) as well as surveying for the upcoming sidewalk replacement program. Most of this work has been done with one full time Engineering Technician. In addition to construction and engineering projects, the department issued 55 Public Services permits. The department also surveyed using the Pavement Surface Evaluation Rating (PASER) system rating over 100 lane miles of City streets. The department also oversaw over $1,020,000 worth of City construction projects.


2019 Alma PASER Road Ratings
CENTERLINE MILES
13
12
11
10
9
8
7
6
5
4
3
2
1
0
0
0.527
5.05
8.591
12.255
12.036
6.507
2.653
3.137
0.322
1
2
3
4
5
6
7
8
9
10
PASER RATINGS (1-10)


Mileage of Street Ratings
CENTERLINE MILES
35
30
25
20
15
10
5
0
14.168
30.798
6.112
Poor (Rating 1-4)
Fair (Ratings 5-7)
Good (Rating 8+)
PASER RATING


Alma PASER Rating Percentage of Roads
12%
28%
60%
Good (8+)
Fair (5-7)
Poor (1-4)


Federal Aid Rated Pavement Conditions
State - State of Michigan, All Roads, 2017 - 2018
Lane Miles Good
Lane Miles Fair
Lane Miles Poor
18,934.2
(21.1%)
34,490.7
(38.4%)
36,375.2
(40.5%)

2019 Engineering Department Achievements:

In 2019 the Engineering Department achieved the following along with normal everyday operations:

- Completion of data collection and closeout of the SAW grant.
- Began initial data analyzation of the SAW grant.
- Total Phosphorus (TP): 516Lbs. treated at 80% removal efficiency.
- Attained National Association of Sewer Service Companies (NASCO) certification and accreditation in the following categories:
  - ✓ Pipeline Assessment Certification Program (PACP)
  - ✓ Manhole Assessment Certification Program (MACP)
  - ✓ Lateral Assessment Certification Program (LACP)

2019 Major accomplishments Completed:

- Engineered, Field Engineered, and oversaw over $1.02 million in construction projects
- 2018 Street Reconstruction Program
  - ✓ Reconstruction of street surface and storm sewer system on Hannah Avenue
  - ✓ Reconstruction of street surface and storm sewer system on Pleasant Avenue
  - ✓ Replace watermain on Hannah Avenue
  - ✓ Replace watermain on Pleasant Avenue
  - ✓ Replace sanitary sewer main on Hannah Avenue
  - ✓ Replace sanitary sewer main on Pleasant Avenue

Upcoming Projects for the Engineering Department (Next 5 years):

- Annual Sidewalk Replacement Program
- Analyzation & Implementation of SAW Grant Recommendations (both plant & collection system)
- City Park restroom reconstruction and remodel project (Wright Park, Riverside Park, Conservation Park)
- North of Washington Avenue Sanitary Sewer Replacement & Upgrade
- Disinfection Conversion of Wastewater Treatment Plant
- Construction of Lift Station #16
- Plant Blower Replacements
- Lift Station Pump Replacements
- Street reconstruction of the following streets:
  - Hayes Avenue
  - Iowa Street
  - Francisco Avenue
  - Chatterton Street
  - Harvard Avenue
  - Richmond Street
- Sanitary sewer replacements along the following streets:
  - Hayes Avenue
  - Iowa Street
  - Sanitary Sewer north of Washington Avenue (between Pine Avenue & Washington Avenue)
  - Francisco Street

- Harvard Avenue
- Richmond Street

➢ Watermain replacements on the following streets:

- Hayes Avenue
- Iowa Street
- West Center Street
- Chatterton Street
- Francisco Avenue
- Harvard Avenue
- Richmond Street

Public Works Department:

Number of Employees: 11 Full-time Public Works Staff
2 Motor pool/Garage Services certified mechanics
1 part-time clerk
6 seasonal employees

The Public Works Division is responsible for the maintenance of City owned buildings, structures and facilities; along with the operation of City Parks, maintain City motor vehicle fleet, the functions of the City Cemetery and provides the City Forestry Program.

Sanitary Sewer Maintenance:

The City of Alma's sanitary sewer system is composed of approximately 49.5 miles of sanitary sewer main, which is a combination of 48 miles of gravity sewer main and 1.5 miles of force main. Much of the City sewer mains are the original sewers that were installed in the late nineteenth century and the majority installed in the early twentieth century. The sewer mains, manholes and force mains are maintained by crews from the Public Works Division. Maintenance duties primarily involve either repairing broken or collapsed sewer mains and manholes or the cleaning of sanitary sewer mains. Sanitary sewer mains are cleaned on a regular schedule using the Jet Rodder/Vactor truck to scour pipe interiors in order to keep the system operating correctly which helps prevent blockages that could cause sewer "backups" into City resident's homes and businesses. This routine cleaning schedule calls for some sections of main to be cleaned and checked in relatively short periods of time (weekly in some cases) which is caused by the condition of the actual pipe. The sanitary sewer system that is maintained and cleaned is composed of approximately 48 miles of sewer mains ranging in size from four inch to thirty inches in diameter and includes 1044 manholes within the City sewer system and an additional six miles of township sewer main to be maintained under contract with both Pine River and Arcada Townships.

The storm sewer system in the City of Alma is 100% gravity sewers. Storm water is intercepted by catch basin either in the streets or typically near the streets and is conducted directly to the river or to open ditches that ultimately lead to the Pine River. Some home and buildings within the City have roof drains, footing drains, and sump pumps that are also connected to the storm sewer system. There is also a second storm water system within specific areas of the City of Alma that is owned and maintained by the Gratiot County Drain Commission. In some cases, the City storm sewers flow into county drain commission sewers, other times they parallel each other. In most cases the storm sewers that are owned and maintained by the Gratiot County Drain Commission extend beyond the City Corporate Limits and flow through the City to the Pine River.

Storm Sewer General Operation:

The storm sewer system in the City of Alma is 100% gravity sewers. Storm water is intercepted by catch basin either in the streets or typically near the streets and is conducted directly to the river or to open ditches that ultimately lead to the Pine River. Some homes and buildings within the City have roof drains, footing drains, and sump pumps that are also connected to the storm sewer system. There is also a second storm water system within specific areas of the City of Alma that is owned and maintained by the Gratiot County Drain Commission. In some cases, the City storm sewers flow into

county drain commission sewers, other times they parallel each other. In most cases the storm sewers that are owned and maintained by the Gratiot County Drain Commission extend beyond the City Corporate Limits and flow through the City to the Pine River.

Starting in 2011 construction began on a multi-year project that is known as the "Storm Water Diversion Project". Much of the project is centered upon storm water collection and transportation to the river, it is also intimately connected to the sanitary sewer system and the health of the sanitary sewer system. Many sump pumps and footing drains are connected directly to the sanitary sewer system which has over time become overwhelmed during wet weather conditions with clean water that does not need to be treated at the Wastewater Treatment Plant. Extreme wet weather conditions cause very high flow rates at the Treatment Plant, which exceeds its design capacity during those times, and causes sanitary sewers to backup into resident's basements in areas of the City.

The routine maintenance and repair of the two systems is the responsibility of crews from the Public Works Division, except for the maintenance of the sanitary sewer lift stations that responsibility resides with the crews of the Wastewater Treatment Plant. Routine maintenance typically includes flushing of sewer mains, cleaning and vacuuming of manholes and catch basins. The sanitary sewer system is cleaned annually, and the storm sewer system is clean on a non-annual basis. Repairs to the system occur on an as need basis, as aging pipe and manholes fail.

Street Lights:

Street lights in the City of Alma are a combination of City owned poles and fixtures that are maintained by the City of Alma and those that are owned and maintained by Consumers Energy. Nearly all of the street lights in the City are non-metered and are connected directly to the Consumer Energy grid directly. The fees for non-metered City owned light fixtures are based upon a monthly rate per light fixture established by the Michigan Public Service Commission (MPSC) that covers the cost of electricity consumed by the fixture. The fees for non-metered Consumers Energy owned light fixtures is also established by the MPSC and is a monthly rental rate for the light fixture. The actual cost depends upon the fixture type and on energy consumed.

Nearly all neighborhood streets are lighted with light fixtures that are owned and maintained by Consumers Energy. The exceptions to that statement are the street lights on Adams Avenue, Luce Court, Heather Lane, and Warwick Drive west of Wright Avenue and Superior Street from Harvard Avenue to N. Court Avenue. Other City owned street lights exist along trails, and the Central Business District of downtown.

City owned Light Fixtures	443
Consumers Energy Light Fixtures	442

Routine street maintenance requires City crews to also maintain the street lights in the Central Business District, parking lot lights in the City owned parking lots also located in the Central Business District and the street lighting located along all of Heather Lane and Warwick Drive from Wright to Charles Avenue as well as the River Walk.

A related subject to the street lights is the Christmas decorations that are installed annually in late October and early November. The Christmas decorations are installed within the Central Business District of downtown and are installed on the light poles and Christmas lights are installed in the downtown trees. The Christmas decorations are switched "turned on" on the day after Thanksgiving and remain on until

after the New Year's holiday. During the month of January, the crews remove the decorations for another season.

Motor Pool:

The Alma Motor Pool is also a part of the Public Works Division and maintains approximately 250 different vehicles and pieces of equipment which range from simple string trimmers to complex heavy-duty equipment such as the Vactor Truck, front end load, backhoe and everything between. The duties of our mechanics range from routine oil changes and preventative maintenance to engine overhauls and modifying equipment to fit the needs of individual departments. Personnel in this department also fabricate and build special tools and equipment to perform very specialized tasks. Such fabricated tools allow employees of other Divisions to perform their job safer and more efficiently. The Motor Pool division also provides routine maintenance to the large fire trucks, pumper trucks, tanker, and ladder truck, although those vehicles do not belong to Motor Pool, those vehicles belong directly to the Fire Department. Most of the maintenance which is completed on the City Fleet is performed by this Motor Pool with few exceptions, such as transmission rebuilding and body work.

Like all other Public Works employees, personnel from this department may be required to be on duty at any time of the day or night to provide equipment maintenance during non-regular scheduled hours. Emergency equipment and vehicles along with construction equipment and tools required to make emergency repairs to utilities must be kept operational during those events.

Buildings and Facilities:

The Public Works Division is responsible for the maintenance of City owned buildings, structures and facilities; along with the operation of City Parks, the functions of the City Cemetery and provides the City Forestry Program.

-Municipal Buildings:

- Municipal Building (City Hall): 18, 398 square foot building built in 1975, located on 4.28 acres of land. Home City Administration, Police Department, and the Fire Department.
- Alma Public Library: 25, 965 square feet built originally in 1961, added onto in 1986 and again in 2006. Located on 4.69 acres.
- Alma Transportation Building: 6550 square feet of floor space constructed in 2009.
- State Street Plaza (two buildings): Main building is 13,350 square feet. Original building was a former grocery store that was purchased and renovated by the City in 1981. Structure shares 1.74-acre site with a three partitioned rental building located on the south edge of the property which is occupied by Centria Autism Services.
- Rental Building: This building is approximately 5,942 square feet and shares a parcel of land with the main building which is 1.74 acres. This building has historically been divided into three buildings which are rented by the City of Alma.
- Buildings & Grounds Building: This building is approximately 8,000 square feet and was constructed in 1977.
- Buildings & Grounds Cold Storage Building: The building is 6,000 square feet that was constructed in 2000.
- Municipal Garage: This building is 23,600 square feet that is situated on a 6.24-acre parcel.

In addition, the buildings and structures located at the Gratiot Community Airport are maintained by The City of Alma and the Public Works Division. These buildings include the Airport Terminal Building, Corporate Hanger Building, and 9 tee hangers.

-Parks and Recreation Areas:

The system of parks within the City of Alma is composed of seven neighborhood parks totaling greater than thirteen acres and four City-wide parks totaling an additional 94.3 acres. The City parks in Alma occupy a total area of approximately 108 acres. The existing recreation facilities are listed below:

- Riverside Park: It is approximately 1.7-acres and includes a picnic shelter structure, play area, boardwalk along the river, lighted walks, benches, landscaping, restrooms and off-street parking.
- King Park: Approximately 2.7-acres and contains picnic tables, benches, ½ court of basketball, play equipment, and a small open playfield, picnic shelter, and restroom building.
- Hampton Park: Approximately 2.3-acres and has picnic tables, ½ basketball court, open playfield, and play equipment with off-street parking available.
- Scottish Heights Park: 1.7-acres containing off-street parking, bicycle equipment, and restroom facilities.
- West Park: Park is 0.74-acres of un-improved City owned park land. Vacant lot that is mowed.
- Holiday Park: 3.7-acres that includes two tennis courts, a basketball court, playground equipment, sand play area, and horseshoe area. Off-street parking is available as well.
- Mill Street Park: 1-acre which includes a play structure, one picnic table, and benches. There is no off-street parking available.
- Scotland Yard Park: 1.5-acre park that is connected to the Riverwalk via a pedestrian bridge. Park is un-developed but holds the farmers market and contains off-street parking.
- Wright Park: 10-acre park with amenities including new play structure, horseshoe area, picnic shelters, picnic tables, play equipment, restrooms, open play area, and a paved walking track.
- Pine River Park and Outdoor Center: Approximately 59 acres. Facilities at this park include playground equipment, picnic shelters, picnic tables, benches, restrooms and a boat launch. The park also includes off-street parking, west most area of the Riverwalk, and several acres off wooded nature area that contains trails.
- Euclid Ball Field: Approximately 20 acres in size and contains two softball fields, two little league baseball fields, bleachers, benches, picnic tables, and a play structure. There is also a concession stand/restroom facility.
- Washington Street Ball Field: The park is approximately 5.5 acres in size. There is one regulation size baseball diamond as well as off-street parking.
- Highland Park: 1.24-acres that include an outdoor pavilion area which is lighted, and contains a sand volleyball court, picnic area, as well as the Riverwalk running through the west edge along the river.
- Riverwalk: The Alma Riverwalk links a number of the City Parks via the waterfront along the Pine River. The Riverwalk extends from the outdoor center of Pine River Park, through

Riverside Park and generally along the Pine River to Euclid Field. Along the way it passes adjacent to the City Library and City Hall. Two pedestrian foot bridges are part of the Riverwalk, one which crosses at Euclid Street near the intersection of Walnut Street; and the second near City Hall to allow access to Scotland Yard from the Riverwalk network

- Fred Meijer Heartland Trail: The Section of the trail within the City Limits is approximately 1.753 miles and that section is maintained by the Public Works Division.

Park maintenance includes the grounds, buildings and playground equipment located within the park boundaries. Restroom facilities must be maintained and cleaned on a regular time schedule. In order to maintain park grounds, they are typically mowed several times in a season which typically equals 1886 acres mowed annually for the parks system. Miscellaneous park building structures include four park restroom structures, five picnic shelters, and numerous playground structures.

Parks, building sites, and the cemetery typically are mowed twenty times in an average season which equals 2214 acres mowed annually. There is an additional 320 acres that are rough mowed once each year.

Forestry Program:

In 1993 the City planned a comprehensive trimming and maintenance schedule to be completed on a seven-year cycle. The tree trimming aspect of this program allows for the systematic trimming of vegetation, the removal of dangerous trees and limbs, which also promotes healthy trees by the removal of dead and diseased materials. In its current configuration the City of Alma's Forestry Program is operated as a proactive plan, with the intended benefits of the protection of property and the safety of the public. The Forestry Program works to remove dead or damaged trees and limbs that pose a danger. The program also functions to plant young trees to replace those that are removed and supplement our existing public trees. At the heart of our forestry program are two certified "line trimmers" that have been trained in methods and procedures for the safe removal of trees and limbs that are in or around power lines. This certification was originally obtained in 2003 and has been maintained so that City crews are able to work around power transmission lines within City Right of Ways. Prior to that time, City crews were not able to work near such lines and that work had to be sub-contracted to qualified individuals.

Riverside Cemetery:

Riverside Cemetery is located in the south-central area of the City, south of the Pine River adjacent to Pine River Park. Presently the cemetery is composed of 38.22 acres plus a mausoleum, and a chapel which is maintained by the Public Works Division. The cemetery also has an additional 19 acres that is currently leased for farming, which will allow for future expansions of the facility southward to Van Buren Road. It is estimated that it will be several decades before the farm leased acreage will be needed for cemetery purposes.

2019 number of burials: 47

2019 number of foundations set: 31

Road Maintenance:

The City of Alma owns and maintains through the Public Works crew approximately 102 lane miles of streets and also maintains approximately 7.8 lane miles of State Trunk Line located within the Corporation Limits with an additional 1.5 lane miles of State Trunk Line located north of the City limits to

M-46. Street maintenance includes such obvious routine duties such as snow removal and repairs to the surface of the street and shoulder such as "pot-hole" repairs and minor resurfacing, to the placement of patches caused by utility repairs. Other activities that are considered routine maintenance would include, street sweeping, installation and replacement of street signs, and traffic control (temporary barricades and signs) for City residents repairing private utilities.

Less routine but still required is the placement and removal of barricades and of traffic control signs for detours caused by several public events throughout the year such as the Highland Festival, Party on State Street, U.S. 27 Motor Tour, Fall Festival, and Come Home for the Holidays as well as others throughout the year.

Street winter maintenance is composed of the snow removal on 48 miles of City streets and 3.90 miles of State Trunk Line, as well as the plowing and removal of snow within the downtown district as well as all City owned parking lots. Winter maintenance is time intensive and involves the distributing approximately 300 tons of road salt per year. Annual weather conditions vary from year to year causing a variation in the number of snow events and the amount of snow that falls in a specific year.

Other Tasks Completed by the Public Works Department:

- ✓ Yard Waste Collection
- ✓ Yard Waste Compost Site
- ✓ Annual Household Hazardous Waste Program
- ✓ Fall Leaf Collection
- ✓ Christmas Tree Collection

2019 Public Works Achievements:

In 2019 the Public Works Department achieved the following along with normal everyday operations:

1. Screened two years of yard waste collections in two weeks, saving $3,000.00
2. Ground and removed over 24 large bumps on the State Trunkline and various locations around the City.
3. Finished ground restoration and seed wright park playground.
4. Dealt with several high-water events of the Pine River.
5. Managed to complete a leafing schedule, despite snow and freezing conditions.
6. Repaired several emergency sewer main obstructions and collapses.

In 2020 the department will strive to undertake larger street surface repair patches, as well as to keep finding and repairing issues with sewer and storm main lines, catch basins, and structures. We have been updating city owned lights to L.E.D. technology, and that will continue until complete. In recent years, finding enough capable seasonal employees and retaining them throughout the year have created deficits in staffing levels creating a need to utilize full-time employees to complete what seasonal employees would regularly be tasked to do.

Wastewater Treatment Department:

Number of Employees: 4 Full-time (1 with 'D' license, 1 with 'C' license, and 2 'A' licensees)
1 Seasonal

The Alma Wastewater Treatment Plant is licensed to treat up to 2.5 Million Gallons of wastewater daily. The Alma facility is a Class B Wastewater Treatment Plant and, as such, at least one operator on staff is thus required to possess a Class B or higher certification from MDEQ to remain within the requirements as established by the Michigan Department of Environmental Quality. The staff is responsible for not only the treatment and processing of the City of Alma's wastewater, but also maintains the treatment plant facility and all of its piping, blowers, mechanical equipment, pumps, as well as 14 lift stations that also include lift stations within both Arcada and Pine River Townships. During calendar year 2019, the plant treated 625.2 million gallons of wastewater.

Traditionally, the plant and the related lift stations run through a 24 hours per day, 7 days a week cycle to process the sanitary waste. Typically, the plant is staffed by its full-time personnel eight hours each day from Monday through Friday. The plant is manned by one full time employee four hours on Saturday and Sunday. The plant and the lift stations contain alarm systems which are triggered by specific actions or lack of certain events. They notify personnel to be sent to problem locations. Also, during times of unusually high flow rates or during periods of floods, and during times of power outages personnel are required to staff the plant for additional time. Power outages require employees to transport and run generators for the various lift stations throughout the City. A generator located at the wastewater treatment plant is used to keep pumps and various motors in the system operational and to keep them from backing up raw sewage into resident's basements.

The Alma Wastewater Treatment Plant has its own laboratory where all routine testing is performed. Daily analyses include the testing of B.O.D. (Biochemical Oxygen Demand), Total Suspended Solids, Volatile Suspended Solids, Total Solids, Total Volatile Solids, Settleability, Total Phosphorus, Ammonia Nitrogen, pH, Dissolved Oxygen, Total Residual Chlorine, and Fecal Coli form. These tests are performed daily on the Plant Influent, the Plant Effluent, and various other streams within the Plant.

For approximately three months each spring and fall, the laboratory also performs most of these analyses for 4 nearby communities who discharge treated wastewater seasonally but do not have their own laboratories.

Our laboratory also has an Atomic Absorption Unit for analyzing metals and routinely samples various industries in the community to check for cadmium, chromium, copper, lead, nickel, and zinc. Several other analyses such as volatile organics, low level mercury, and whole effluent toxicity monitoring require the contracting of a commercial laboratory.

The accuracy of the laboratory testing procedures is monitored each year by our mandated participation in an EPA Quality Assurance Program. The laboratory has to analyze several samples that are sent to the Wastewater Treatment Plant to see if we can accurately measure the amount of pollutants which have been added to each sample. The laboratory has achieved a perfect score on this exercise for sixteen consecutive years.

The Alma facility is a Class B Wastewater Treatment Plant and, as such, at least one operator on staff is thus required to possess a Class B or higher certification from MDEQ to remain within the requirements as established by the Michigan Department of Environmental Quality.

2019 Wastewater Treatment Plant Achievements:

In 2019 the Wastewater Treatment Department achieved the following along with normal everyday operations:

- Carbonaceous Biochemical Oxygen Demand (CBOD5): 12,749Lbs. treated at 97.4% removal efficiency.
- Total Suspended Solids (TSS): 16,412Lbs. treated at 97.1% removal efficiency.
- Total Phosphorus (TP): 516Lbs. treated at 80% removal efficiency.
- Ammonia: 174.5Lbs. treated at a removal efficiency above 95%.
- Ferric Chloride used: 792 gallons in 2019 which is greatly reduced from roughly 500 gallons/month, due to the recent implementation of a Selector Basin. Selector Basins temporarily create anaerobic conditions facilitating the natural removal of phosphorus, thus removing the need for Ferric Chloride.
- Chlorine: 12,733Lbs. used for WWTP Effluent disinfection.
- Waste Activated Sludge: 5,661,613 gallons which was concentrated to roughly 1.8 million gallons
- 260 dry tons of land applied biosolids.

2019 Major accomplishments Completed:

- ✓ Bypasses installed at Lift Stations 3, 5 & 10
- ✓ Mag-Meters installed at Lift Stations 3, 5, 8 & 12
- ✓ New Phase Converter installed at Lift Station 9
- ✓ Problematic wiring faults repaired at WWTP, 2005 Aeration Basin Panel
- ✓ Lift Station 12 VFD's purchased and installed
- ✓ Lift Stations 11 & 12 Electrical upgrades
- ✓ SAW Grant funded WWTP sustainability study by OHM Advisors, including 20-year CIP plan
- ✓ Currently in the process of replacing Lift Station #13 pump replacement
- ✓ WWTP generator switch gear replacement
- ✓ Unitronics/Vega radar Influent pump controls replacement
- ✓ Installation of new composite samplers
- ✓ Lift Station 3 Force Main repair
- ✓ Pump House lintels were replaced with brick work and tuckpointed
- ✓ Nanodac Digital paperless recorder was installed at the Arcada Twp. flow station
- ✓ Installed Pulse Counter boards at LS's 3, 5, 12 & WWTP (Works with Mission & Mag Meters to record flows accurately)
- ✓ Center & North blower circuits rewired to code for 150 HP
- ✓ Cleaned Aeration Basins 2 South & 4 North

Upcoming Projects for the Wastewater Treatment Department (Next 5 years):

- ➢ SAW Grant Recommended Plant Upgrades & prioritization
- ➢ North of Washington Avenue Sanitary Sewer Replacement & Upgrade
- ➢ Lift Station Meter Replacements
- ➢ Lift Station by-passes
- ➢ VFD Replacements
- ➢ Lift Station Electrical Upgrades

- Disinfection Conversion
- Construction of Lift Station #16
- Plant Blower Replacements
- Lift Station Pump Replacements
- Sanitary Sewer Main replacements:
    - Hayes Avenue
    - Iowa Street
    - Francisco Avenue
    - Chatterton Street
    - Harvard Avenue
    - Richmond Street

Water Distribution/GAWA Treatment Plant:

Number of Employees: 6 Full Time (Number of Employees and Licenses: F1: 3 Employees, F2: 4, F3: 5, F4:1; S:5, S3:1)

The GAWA Treatment plant is an F-1 facility while the water system for the City of Alma is an S2 licensed system and is composed of nearly 70 miles of water main with sizes ranging from 1-inch to 16-inches in diameter, over 1,500 water valves (also ranging from 1-inch to 16-inch), 559 fire hydrants, six production wells, an elevated storage tank and the water treatment plant which is the heart of the system. There are also nearly 3,500 residential, commercial, or water service valves smaller than 2-inch. The Water Division of the Public Works Department operates and maintains the GAWA treatment plant and the water distribution system throughout the City. During the 2019 calendar year, the GAWA plant pumped 254.204 million gallons of water to St. Louis and 288.298 million gallons to the City of Alma. The treatment plant was originally constructed to allow use of the Pine River as a water source for the City. Today, Alma & St. Louis no longer rely on the Pine River as a major source of domestic water, although the plant is still licensed as a surface water treatment plant; the water for both cities is supplied by six production wells; well number 1, 7, 8, 9, 10, and well number 11. Wells three though six no longer exist, they were abandoned and capped in the 1950's and 60's. The water from the river intake station (if necessary) and the six production wells is piped to the Water Treatment Plant where it is treated and pumped into the distribution system of water mains throughout the City. The addition of a new production well, well #12, may be constructed in calendar year 2020 or early 2021. This new well will be critical in replacing the city's water treatment and supply capacity well into the future.

The City of Alma has benefitted from the creation of GAWA through increased reliability and an increase in flow rates of water by creating interconnects with new, larger sized water mains within Alma's distribution system. Reliability was also increased as now there are two water mains that exit the treatment plant whereas before there was only one. Much of the internals of the treatment plant were replaced and sized accordingly.

2019 Water Distribution/GAWA Treatment Plant Achievements:

2019 Major accomplishments Completed:

- ✓ Repaired 12 water main breaks
- ✓ Took over Meter reading duties from Public Works
- ✓ Replaced numerous failed water meters
- ✓ Rebuilt brick planters in front of GAWA Treatment Plant
- ✓ Inspected final clarifier prior to painting in FY 2021
- ✓ Tuckpoint brick and installed louvers and vent fan in Well 1
- ✓ In the process of replacing windows for filter room and second floor feed room
- ✓ Rebuild filter #3 rate control valve actuator
- ✓ Replaced al batteries in SCADA UPS units
- ✓ Replaced failed check valves at Wells 9, 10, and 11

- ✓ In the process of replacing Soda Ash machine

Upcoming Projects for the Water Distribution Department (Next 5 years):

- Lead/Copper/Galvanized water service line inventory
- Watermain replacements:
  - Hayes Avenue
  - Iowa Street
  - Francisco Avenue
  - Chatterton Street
  - West Center Street
  - Harvard Avenue
  - Richmond Street
- Elevated Tank Repainting
- Cathodic Protection for Elevated Tank