

# CITY OF MASON

## Capital Improvement Plan



Fiscal Years: 2014 – 2019

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Adopted by the Mason Planning Commission: October 14, 2014

# City of Mason Capital Improvements Plan



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**CITY OF MASON  
CAPITAL IMPROVEMENTS PLAN**

After the Zoning Ordinance, a Capital Improvements Plan (CIP) can be a very significant tool for implementation of the Master Plan. A CIP is a plan for the community's most immediate public improvement needs, scheduled over a period of six years. Infrastructure improvements usually included in a CIP are water system upgrades (supply and distribution), sewer system enhancements (collection and treatment), storm water management, and streets and sidewalks maintenance. Additional projects to be incorporated are public facilities improvements, such as parks and other public buildings, as well as major equipment purchases and replacements.

Projects listed in this Plan are shown in the general order of their priority, with the intent that the most-needed projects are accomplished first and scarce financial resources are allocated appropriately.

For the street component, a roadway evaluation method called PASER (Pavement Surface Evaluation and Rating) was utilized. This involves physically inspecting and evaluating each lineal mile of street and assigning it a rating between 1 and 10 (poor to excellent).

The CIP is intended to be more of a planning document than a construction schedule. Obviously, completion of the various projects contained within the CIP is fully dependent on the availability of funds and other conditions beyond the City's control.

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## **SECTION I. PUBLIC SERVICES**

### **City Hall**

The Zoning and Development Department is currently using a portion of the elections storage room to store permits and other miscellaneous departmental records. It is evident that there is not enough storage space for the needs of both departments. The west end of the shelter area of the basement corridor is currently being used to store miscellaneous materials, such as excess carpet, holiday decorations, and other building materials. Staff would benefit from the construction of a single wall across the west end of this room to secure the materials stored in this area and the materials that would be moved from the elections room. The estimate for this project is \$2,500.

City Hall currently has metal halide exterior light fixtures in both building mounted lights and parking lot lights. Replacing exterior metal halide light fixtures with energy efficient LED fixtures will reduce energy consumption and the frequency of bulb replacement, thus reducing staff time spent on bulb replacement. The estimated cost for fixture replacement is approximately \$7,500.

### **Library**

The Capital Area District Library Board released a study in July 2007, which identified current and future needs of the District and Mason's library. In preliminary discussions, the District is looking to the City to provide the land necessary to build a facility that is estimated at 17,000 square feet. The estimated cost for the Mason library branch is \$5,971,045. In the August 2008 election, a millage to fund extensive upgrades to the existing CADL facilities as well as construct new facilities in select locations was defeated. CADL is currently working on a new strategy to fund the facility maintenance needs.

The library's restrooms are currently located in the basement and are accessible only by stairs, making them inaccessible to persons with disabilities. As there are currently no plans to expand or construct a new library facility, it is necessary to bring the existing facility up to ADA standards and relocate the restrooms to the first floor garage area. The project would be extensive as it would require framing, electrical, plumbing, insulation, etc. Relocation would eliminate the functionality of the garage area. Included in the project is an option to block up the garage door with matching brick and re-grade the driveway approach to shed storm water away from the building. The cost to relocate the bathrooms, block wall, and re-grading is estimated at \$75,000.

The current Library facility was constructed in 1938. Much of the building is original, including its windows. The windows are constructed of wood or metal frames and single panes of glass and are in need of replacement. Several windows in the main circulation area are of substantial size, nearly 24 square feet, allowing an enormous amount of air infiltration. Continuing to permit air infiltration puts a strain on heating and cooling costs and also threatens the stability and undermines the environmental condition of the Library's contents and the condition of the

structure itself. There are 27 windows in total needing replacement at an estimated cost of \$20,775.

The existing boiler was installed in the 1950s and is reaching the limits of its functional abilities. Staff is anticipating that replacement of this unit will need to be done within the next six years. The replacement estimate is \$35,000.

The buildings plumbing system does not provide adequate hot water to perimeter fixtures. Additional local water heaters are necessary to provide adequate hot water in the basement bathrooms and staff bathroom. The estimate for installing local water heaters is \$2,500 to \$5,000.

The drinking fountain in the Library is showing age and there are concerns that its age may pose a future health risk. Replacement to a new unit will ensure the safety of Library occupants. Replacement cost is estimated at \$500.

### **Police Protection**

With a newly occupied and larger, more efficient, state of the art police facility, the department's focus is more toward service improvements to the community, development of prospective opportunities for future police officers, and enhancement to patrol services. To meet this end, the Mason Police Department will establish a six member reserve police officer unit and update the department's arsenal.

Police reserves have two primary functions in today's law enforcement agency: to augment patrol and staff major events that require additional personnel resources. They also serve as a possible resource to cultivate future police officer candidates. The latter becomes a viable option as the organization and the reserve officer become familiar with each other. However, reserve officers must be properly screened, trained, equipped, and monitored—the equipment being a large investment in city resources. Preliminary start-up costs will include training and equipment for individual officers:

• Equipment includes two sets of year-round full uniforms and firearm	\$2,500.00 per RO	\$15,000.00
• Six lockers for equipment storage	\$1,300.00 ea.	\$7,800.00
• Preliminary training and qualification to start	<u>\$2,000.00 ea. pr RO</u>	<u>\$12,000.00</u>
	Total (projected)	\$34,800.00

Current police officer duty pistols were purchased in August, 2002. Although they have been dependable, wear does occur through regular firearms training and the extremely varying conditions of Michigan's weather. To minimize the potential of a fatal failure of a weapon, ammunition is replaced annually and it becomes necessary to eventually replace the firearms themselves. Therefore, the department will be requesting the replacement of all duty pistols for all sworn personnel and two additional pistols for occasions when weapons may be taken out of service:

• Fifteen Glock 21 pistols with Trijicon night sites	\$500.00 ea.	\$7,500.00
• Thirteen holsters and ammo carriers	<u>\$100.00 ea pr.</u>	<u>\$1,300.00</u>
	Total (projected)	\$8,800.00

## Fire Protection

This document is a complement to the Projection for Fixed Asset Expenditures Exceeding \$5000.00 spreadsheet submitted along with it.

The NFPA (National Fire Protection Association) 1911 “Inspection, Maintenance, Testing, and Retirement of In-Service Automotive Fire Apparatus” recommends that fire apparatus manufactured prior to 1991 but less than 25 years old be placed in reserve status and any pre-1991 apparatus be replaced.

Tanker 807 is a 1984 Wolverine and is currently the oldest vehicle in the fleet. Tanker 807 is used primarily on structure fires in our non-hydranted areas. Having the second tanker allows for an initial 10,000 gallons of water at a rural structure fire, which helps to supply our firefighters with much needed water until mutual aid tankers arrive. It allows the City to participate in the Tanker Task Force while still keeping a tanker in our service area should we get another call. Due to its age and condition this truck should be considered for replacement.

Engine 809 is a 1990 Grumman built on an HME chassis. It currently responds as our first out pumper in the townships and for mutual aid and second out in the city. As it is a pre-1991 apparatus, NFPA recommends that it be put in reserve or replaced.

Squad 815 was built in 1992 on a Chevrolet chassis. It has been re-assigned as our rehabilitation vehicle bringing much needed supplies to aid our firefighters at long term incidents. It is also used to deliver specialized equipment as needed.

Brush 810 is a 1993 Dodge ½ ton short box pick-up truck that was converted to a brush truck by our members. It should be considered for replacement with a more versatile vehicle that fits the current needs of the department.

Tower 808 is a 2001 Pierce Dash 105’ aerial platform. Tower 808 continues to work well and only has required minimal maintenance.

The Officers car is a 2001 Ford Expedition that was formerly the Chiefs car and police vehicle prior to that. The Expedition still runs good. The City will hopefully get several more years of use out of this vehicle.

Pumper/Tanker 811 is a 2007 HME on a Kenworth chassis. Pumper/Tanker 811 is our first response tanker. It has a low maintenance vehicle and continues to run well. The City should get many years of service from this truck.

Rescue 806 is a 2010 Spencer on a Spartan chassis. Rescue 806 is our primary response vehicle for fires in the city and all rescue operations. It has been a great addition to our fleet and continues to be a reliable truck.

Rescue 806 is equipped with on board rescue tools purchased in 2010. The other extrication tools are currently on Tower 808 as a back-up. The extrication tools are sufficient for the next five years or so.

The Chiefs car is a 2013 Ford Expedition and was replaced in 2013.

Turnout gear includes a fire coat, bunker pants, suspenders, boots, Nomex hood, helmet and gloves. Also each firefighter has a wild land jacket, extrication gloves and a safety vest.

MIOSHA part 74 has recently adopted the NFPA recommendation which calls for the replacement of front line firefighters gear every 5 years and second line firefighters gear every 10 years.

We have been replacing turnout gear for the past several years and are currently at the maintenance point replacing about 5 to 7 sets per year.

Our Self Contained Breathing Apparatus (SCBA) and confined entry cart are in good working order sufficient at this time. SCBA packs are flow tested annually and repaired as necessary. The packs are five years old and the cylinders have just had their first of three hydrostatic tests. Life of an SCBA cylinder is 15 years from the manufacture date.

The Infrared camera is adequate at this time, as a new battery charger was purchased for it. It is carried on Rescue 806. The camera was purchased thru a county wide Homeland Security grant. It is recommended to purchase another camera to be placed on Engine 809.

Our commercial washer is in good working order at this time. However, the dryer only works intermittently. Due to its age, parts are hard to find. If parts are not available, it will need to be replaced.

The Bauer Air Tank Fill Station was purchased with a FEMA grant in 2005. It is maintained quarterly under a service contract and remains in good working order.

There do not seem to be any issues with the HVAC systems at Station 1.

The carpeting in the office area of Station 1 is getting in rough shape. Replacement of the flooring should be performed within the next few years, maybe replacing the worst areas with floor tile. It could be done in phases over a couple of years.

Currently, six pagers are replaced per year. Pagers are carried by all of our members every day under many conditions and have a fairly high failure rate. Without a reliable paging system, the volunteer organization cannot function.

A ventilation system is recommended for Station 1 to properly vent vehicle exhaust. This is needed from both a firefighter safety perspective by not breathing exhaust fumes, and for energy efficiency. Currently the exhaust mixes with all of the air in the apparatus bay and mezzanine.

Some of the air in the bay is vented via fans and louvers on the south and east walls. This method is highly inefficient for the following reasons. By allowing the exhaust to mix with the building air, it does not get rid of all of the fumes and allows for soot to settle in the building. Also during the winter months, this method of ventilation exhausts heated air from the bay into the atmosphere. It is recommended that a different type of ventilation system attach to each apparatus exhaust pipe. This captures all of the exhaust fumes and does not vent the ambient air in the winter thus saving on heating costs. A new ventilation system is estimated to cost about \$60,000.

The fire sprinkler system in Station 1 should be expanded from the office area to include the apparatus bays. Fire stations provide essential services to the community, which should be protected in order to avoid interruption of emergency response service capabilities. The time and future cost to repair or rebuild the fire station as well as replace or repair the damaged vehicles and equipment would be difficult. Automatic sprinkler protection should be considered a means for protecting the community's investment in the fire station.

The current radio system used by Ingham County is not going to be supported by the manufacturer after 2017. The County is just beginning to discuss the possible replacement of the radios and system. Depending on the outcome of those discussions, we may have to share in the purchase of updating of our existing Fire and Police radios.

## **Cemetery**

### Maple Grove Cemetery

As of September 2013, the amount of burial spaces available for sale is as follows:

Full lots (5 spaces): 5

Half lots (2 spaces): 13 (when we need more 1/2 lots we split full lots)

A total of 51 available spaces

The number of sales and burials vary, but a range during the past 3 years is:

19-52 burials annually including cremations

6-19 spaces sold annually

Based on the number of single spaces available, it appears that there is approximately one year remaining to accommodate sales. This number is always changing because one space is lost when a half lot is sold. Currently, sales are primarily restricted to Sections T and U on the western side.

To gain access to the remaining undeveloped sections, the installation of new drives is needed. In addition, it is recommended that a second ingress/egress to the cemetery be constructed. The logical location would be at North and East Streets. With the closing of the old bridge from North Jefferson Street several years ago, this left only one way in and out; not a desirable situation. It creates problems for the flow of traffic during large funerals, and would impede emergency medical services if required during a funeral procession.

The Cemetery Board recently approved a concept drawing from Wolverine Engineers and Land Design Collaborative to expand Maple Grove Cemetery. Expanding the cemetery will require installing additional streets.

Current estimates for the cemetery expansion are as follows:

Second entrance	\$50,000
Cemetery expansion	\$150,000

City staff is currently studying the feasibility of including the drives in the local street improvement program. The initial expansion of a single road to provide additional burial spaces was included in the City's budget in fiscal year 2013.

### **Parks/Recreation/Forestry**

The City's master plan and recreation plan support continued expansion of non-motorized trails, including a north and south route to connect to the outlying townships as well as connector trails to existing parks, schools and other institutional uses. Phase III is proposed to link the east side of the city, including Bond, Laylin, Rayner Parks and the High School to the existing Hayhoe Riverwalk Trail (1.4 miles).

A southern trailhead is needed for the Hayhoe Riverwalk Trail. The former 848 S. Jefferson parcel would serve this purpose well. A new parking area, ADA accessible trail linkage, signage and site work is needed to provide area residents access to this community asset. Approximate cost for construction is \$50,000.

The pedestrian bridge within the Maple Grove Cemetery marks the confluence of several City amenities, Maple Grove Park (5 acres), the Mason Community Garden (2.5 acres), the Hayhoe Riverwalk Trail (2.5 miles), parking facilities and the Sycamore Creek. The necessity of having a safe and accessible pedestrian bridge at this location is critical to the functionality of each of these amenities. An eight foot wide new pedestrian bridge is recommended to provide a safe and accessible means of crossing the Sycamore Creek. New trailhead signage, in combination with existing parking, will serve as the Hayhoe Riverwalk Trail's first formal trailhead. The existing bridge was originally designed for vehicular traffic. The existing bridge has reached the end of its lifespan and can no longer safely service vehicular traffic. The City does not foresee replacement for vehicular access, but rather for pedestrian purposes. The primary vehicular access to the cemetery and park remains on the west side at the intersection of East Street and West Columbia Street.

The current bridge is heavily used by pedestrians accessing the river walk trail and cemetery. Providing a quality bridge will ensure pedestrian safety and barrier-free access. The proposed bridge design is much more likely to invite regional users to the trail system and provide an alternate means of transportation for users. The City's recreation plan proposes using the proposed bridge and trailhead site as the beginning point of continuing the non-motorized trail system through the east side of the City, providing closer trail access to a greater number of residents (approximately 3,500). More significantly, the proposed new route provides important links between parks, schools, and natural resources. The project is fully funded from multiple

sources, including the City of Mason, Michigan Department of Natural Resources, George and Lisa Hayhoe, Dart Foundation, Tri-County Bicycle Association, and Elaine Ferris and is scheduled for completion in 2015. The estimated cost for replacement is approximately \$92,000.

Mason’s public tree inventory has been affected by storm damage in the past few years. Several windstorms have destroyed or damaged a number of mature trees in the downtown neighborhoods, particularly along Oak, Elm and Cherry Streets. These mature trees require evaluation by City arborists, maintenance and in some cases removal.

The past two years the City has invested an additional \$10,000 per year in tree maintenance. The City has accelerated its tree management program. An additional \$10,000 should be planned for maintenance of mature trees, including in some cases, removal and replacement. A program to plant legacy trees is in the planning process. This program would allow residents to donate and plant trees in their name. It is hopeful that 150 legacy trees will be planted before Mason’s 150<sup>th</sup> sesquicentennial. Trees that are donated will be kept on record in the legacy tree program.

From alternate funding sources and/or in partnerships with other donors and organizations, the City should watch for opportunities to implement the goals identified in the Mason Five-Year Recreation Plan including: Attracting a YMCA; installing more public art; attracting a local movie theater.

Hayes Park has had an increase in the number of people using the tennis courts to play pickle ball. A restroom at the south end of the park would provide easy access to a restroom for the people using the playground, pavilion, and also the tennis courts. The City of Mason would have control of this restroom and provide the necessary maintenance. This restroom is estimated to cost \$25,000.

Both Hayes and Bond parks have limited accessibility to persons with disabilities. Curbs and lawns areas separate parking from facilities. Curb cuts and barrier-free sidewalk is necessary to provide adequate accessibility in these parks. Updates are estimated at \$2,500 for each park.

The restroom at Hayes Park ball field needs to be upgraded to replace aging fixtures and accommodate person with disabilities, including sidewalks, fixtures, and drinking fountain. The estimated cost for this project is \$5,000.

**Downtown Development Authority**

The DDA has completed their fourth amendment to the Downtown Development Plan. The goal of the DDA is to establish and maintain the vitality of the central business district of the city by halting property value deterioration, rehabilitating property which becomes blighted, vacant, or functionally obsolete, and promoting economic growth, business activity, and employment opportunities within the District. Plan Amendment Number 4 includes the following proposed capital improvements:

- Streetscape amenities \$50,000
- Capital improvements (124 & 140 E. Ash) \$50,000
- Electrical improvements \$50,000

- Property rehabilitation (façade grants) \$300,000
- Parking lot \$50,000

**A full description of the DDA's proposed capital improvements may be found in the Downtown Development Authority Plan in Appendix E.**

**TABLE 1 PUBLIC SERVICES**

	<u>Cost/\$</u>	<u>Source of \$</u>
<b><u>City Hall</u></b>		
Basement storage room	\$2,500	General fund
Upgrade exterior light fixtures to LED	\$7,500	General fund
<b><u>Mason Public Library</u></b>		
New Bathrooms (ADA compliant)	\$75,000	General fund, Grant
Window Replacement	\$20,775	General fund, Grant
New Boiler	\$35,000	General fund
Hot water system upgrade	\$5,000	
<b><u>DDA</u></b>		
Streetscape amenities	\$50,000	TIF
Capital improvements (124 & 140 E. Ash)	\$50,000	TIF
Electrical improvements	\$50,000	TIF
Property rehabilitation	\$300,000	TIF
<b><u>Police Protection</u></b>		
Police Reserve Unit	\$34,800	General fund, Grant
Pistols & Holsters	\$8,800	General fund, Grant
<b><u>Fire Protection</u></b>		
<b><u>Apparatus/Vehicles</u></b>		
Tanker 807 replacement	\$400,000	General fund
Engine 809 replacement (Non customized)	\$500,000	General fund
Brush 810 replacement	\$35,000	General fund
Officer vehicle replacement	\$35,000	General fund
<b><u>Fire/Rescue Equipment</u></b>		
Turnout gear (36 sets)	\$90,000	General fund, Grant
Extrication tools	\$20,000	General fund
Infrared camera	\$12,000	General fund
<b><u>Station Equipment</u></b>		
Carpet (Office and training area), Station 1	\$10,000	General fund
Commercial clothes dryer	\$5,000	General fund
Portable radios (26)	\$78,000	General fund, County
Truck radios (7)	\$25,000	General fund, County
Ventilation System, Station 1	\$60,000	Grant
Pagers (40)	\$18,000	Grant
Sprinklers (truck bays)	\$20,000	General fund, Grant
<b><u>Parks/Recreation/Forestry</u></b>		
Complete Hayhoe Riverwalk Linear Park		

• Pedestrian Bridge & Trailhead Signage	\$92,000	Private donation, Grant
• Howell Road/Delhi Township Link	\$750,000	General fund, Grant
• Phase III Loop	\$750,000	General fund, Grant
• Southern Trailhead	\$50,000	General fund, Grant
 <u>Bond Park</u>		
Resurface parking lot	\$100,000	General fund
Barrier-free upgrades	\$2,500	General fund/grants
 <u>Hayes Park</u>		
Resurface parking lot, north & south	\$120,000	General fund
Construct a new restroom and the south end of park	\$25,000	General fund
Barrier-free upgrades (curb cut & sidewalk)	\$2,500	General fund/grants
North restroom improvements	\$5,000	General fund/grants
 <u>Maple Grove Cemetery</u>		
Second entrance, phases I and II	\$200,000	General and street funds
 <u>Rayner Park</u>		
Bridges	TBD	General fund, grants, donations
Pavilion roof replacement	\$10,000	General fund, grants
 <u>Street Trees</u>		
Street trees, replacement and new	\$10,000	General and street funds

## **SECTION II. UTILITIES / INFRASTRUCTURE**

### **POTW (Publicly Owned Treatment Works) Plant**

Currently the City of Mason is subject to an Administrative Consent Order (ACO) that requires the plant to be able to accommodate secondary treatment of the current flows and the results of a 3.9 inch rain over a 24 hour period. The City has put great effort into identifying potential sources of inflow and infiltration (I & I) and to date has eliminated the most significant sources of I & I. However, it is likely that the point of diminishing returns has been reached in the attempts to eliminate I & I. Now it is prudent to turn an eye toward other improvements required to meet the ACO and position the City for future growth and development. The next step should be identifying and making systematic improvements at the Publically Owned Treatment Works (POTW).

The POTW process begins with the raw sewage from the City entering the plant at the head works (or entrance works). The current head works has a bar screen which must be cleared manually by the plant operators; an air lift and serpentine channel for grit removal; provisions for chemical addition; and, a flume to measure the influent flows. The current system was constructed with the plant improvements of the 1970's and is effectively reaching the end of its useful life. In addition, the bar screen is inefficient in removal and requires the plant operators to manually clean the screen. A new entrance works would provide more efficient grit and debris removal; eliminate the need for manual cleanings and be the first step in the increase in the treatment plant capacity.

After sewage passes through the head works, it flows into pumps which lift the sewage up to the primary clarifiers. After the capacity issues are addressed by the construction of a new head works, the next system bottle neck becomes these pumps which do not have the capacity to handle the current flows in addition to the ACO directed rain event. Incorporating larger, more efficient submersible pumps into the head works construction would alleviate the current constrictions in the POTW process.

Finally, the ability to move the water from the aeration tanks to the secondary clarifiers has been identified as a restriction in the system. By adding a second line between the aeration tanks and the secondary clarifiers, this capacity could be increased which in turn would help to address the concerns laid out in the ACO.

#### Estimated Costs

Head Works System and Pump Upgrades

Pipe Addition between Aeration Tanks and Secondary Clarifiers

Total cost for this project is \$1,600,000.

Effluent generated from the POTW plant is currently treated with chlorine gas to disinfect it before being released. Chlorine gas is toxic and carcinogen and in high concentrations can cause death. Additionally, it is expensive. Typically the wastewater treatment plant pays around \$15,000 for chemicals and cylinder rentals for disinfection and de-chlorination. Not included are the costs to maintain chlorination and de-chlorination equipment, transfer water used, and ongoing training.

Two primary clarifiers are planned for 2017/2018 plant expansion. The cost is expected to be \$5,250,000.

Switching to a ultra-violet disinfection system would eliminate many of the associated costs and hazards in the chlorination system. Estimated cost: \$750,000 (2014).

Currently the final treatment process of the wastewater includes using sand filters. These filters require a large amount of costs to operate and maintain. In the final treatment process of the wastewater the final effluent must be pumped to the filter cells, filtered through fine sand filters and then backwashed, (when the flow through the filters become restricted). During the backwashing cycle the wastewater being backwashed requires an additional pumping process. Installation of Two (2) final clarifiers would eliminate the need to use these filter cells resulting in a cost savings of repairing the pumps, the filter cell maintenance, the cost of sand, and the electricity needed to operate the pump motors. The wastewater would flow through the final clarifiers by the use of gravity. The total costs of installing Two (2) final clarifiers at the wastewater treatment plant, along with the cost savings that would result in the elimination these filter cells, is still being determined.

The digester boiler/heat exchanger at the POTW is in need of replacement. This project should be a priority, as it is a vital piece of equipment. The cost for this project is estimated at \$40,000.

The existing filter cells will have to be reconditioned in the near future should the final clarifiers not be installed. The estimated cost is \$30,000.

### **Department of Public Works**

A new facility will need to be built when and if the POTW plant is expanded or at which time funds are available. This new facility will house all public works activities and equipment for the future expansion and needs of the City of Mason. Currently the Public Works Facility on North Jefferson Street has five buildings, which includes an old block building which has been used for an office for the department and two old POTW Digesters that are used for salt/sand storage. The current size of the public works facilities is 12,000 square feet combined.

The proposed facility would be approximately 20,000 square feet and cost \$2,600,000. The building would need to include, at a minimum, the following:

- Two (2) work bays with hoist
- Storage for all city vehicles
- Tool crib/supply room
- Restroom/locker room for both male and female employees
- Lunch/break room
- Two to four offices
- Outside storage area
- Police impoundment yard
- Salt and sand storage facility

## **Water System**

The SCADA software that controls our water collection and distribution system is owned and operated under licensure. The current system is supported under Windows XP. After 2015, the Windows XP based SCADA software will no longer be eligible for technical support and service. The newest version of SCADA available to purchase is Windows 7-64 bit operating system and the Open BSI license to go along with it. This estimated cost is: \$25,000 for the main SCADA station and \$10,000 for our Back up laptop station.

**TABLE 2 UTILITIES / INFRASTRUCTURE**

<u>Department of Public Works</u>	<u>Cost/\$</u>	<u>Source of \$</u>
<u>Department of Public Works</u>		
<ul style="list-style-type: none"> <li>New public works facility</li> </ul>	\$2,600,000	Water/Sewer Fund
<u>Water System</u>		
<ul style="list-style-type: none"> <li>Paint inside of south water tower</li> <li>Up- grade software for SCADA System by 2015</li> <li>Cathodic protection for Ash Street and Hayes Park wells</li> <li>Upgrades to system in conjunction with street program</li> <li>Bulk water selling station</li> <li>Windmill power/Solar – water/waste water plant</li> <li>Run water main under US 127 to Dart</li> <li>Howell Road Well – Add treatment and controls</li> </ul>	<ul style="list-style-type: none"> <li>\$110,000</li> <li>\$35,000</li> <li>\$15,000</li> <li>Ongoing</li> <li>\$20,000</li> <li>\$384,750</li> <li>TBD</li> <li>\$550,000</li> </ul>	<ul style="list-style-type: none"> <li>Water/Sewer Fund</li> <li>Water/Sewer Fund</li> <li>Water/Sewer Fund</li> <li>Water/Sewer Fund</li> <li>Water/Sewer Fund</li> <li>Water/Sewer Fund</li> <li>TBD</li> <li>Water/Sewer Fund</li> </ul>
<u>Storm Water System</u>		
<ul style="list-style-type: none"> <li>Red Cedar River Watershed Management Plan</li> <li>Replacing curb markers, and buy supplies for storm water program                             <ul style="list-style-type: none"> <li>Permit costs</li> </ul> </li> <li>D.P.W. Facility – Replace Asphalt at the DPW Yard                             <ul style="list-style-type: none"> <li>2015-16 Repave DPW yard and parking lot</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>\$14,600</li> <li>\$500 per year</li> <li>\$6,500 a year</li> <li>\$35,000</li> </ul>	<ul style="list-style-type: none"> <li>Water/Sewer Fund</li> <li>Water/Sewer Fund</li> <li>Water/Sewer Fund</li> </ul>
<u>Motor Vehicle Pool</u>		
<ul style="list-style-type: none"> <li>Front End Loader</li> <li>Pioneer pump 6"</li> <li>Mini excavator</li> </ul>	<ul style="list-style-type: none"> <li>\$95,000</li> <li>\$35,000</li> <li>\$72,000</li> </ul>	<ul style="list-style-type: none"> <li>MVP Fund</li> <li>MVP Fund</li> <li>MVP Fund</li> </ul>

- |                              |           |          |
|------------------------------|-----------|----------|
| • Dump Truck – 3-5 years out | \$132,000 | MVP Fund |
| • Street Sweeper             | \$250,000 | MVP Fund |

**POTW (Publicly Owned Treatment Works)**

**Sanitary Sewer System**

- |  |              |                  |
|--|--------------|------------------|
| • Digester boiler/heat exchanger                                   | \$40,000     | Water/Sewer Fund |
| • Upgrades in connection with street program (as encountered)      | TBD          | Water/Sewer Fund |
| • Upgrade controls for the lift stations (Main Court Lift Station) | \$20,000     | Water/Sewer Fund |
| • Eliminate I&I/repairs as needed                                  | \$30,000/yr. | Water/Sewer Fund |
| • Backup generator for Curtis Street lift station                  | \$30,000     | Water/Sewer Fund |
| • Backup generator for Hunting Meadows lift station                | \$25,000     | Water/Sewer Fund |
| • Sewer camera repairs/upgrades                                    | \$25,000     | Water/Sewer Fund |
| • Upgrade to head works and clarifier piping                       | \$1,600,000  | Water/Sewer Fund |
| • Ultra-violet disinfection system                                 | \$750,000    | Water/Sewer Fund |
| • Two primary clarifiers   | \$5,250,000  | Water/Sewer Fund |
| • Two (2) final clarifiers   | TBD          | Water/Sewer Fund |
| • Final clarifier reconditioning                                   | \$30,000     | Water/Sewer Fund |

### **SECTION III. STREETS**

Mason has 12.25 miles of Major Streets and 19.11 miles of Local Streets and 2.21 miles of cemetery drives that it maintains. The City receives Act 51 state funds for maintenance of these streets based on a formula developed by the Michigan Department of Transportation allocating a certain dollar value per mile. The City augments its streets program funding with General Fund tax revenues through a millage that was approved by the voters in 1995 and amended in 2004.

A five-year Street Improvement Plan has been in place for a number of years and has helped the City to maintain its street network at a high level of quality. The five-year plan is reviewed and updated annually as priorities and funding change. The current five-year plan is included in Appendix C.

A roadway evaluation method called PASER (Pavement Surface Evaluation and Rating) was utilized to categorize the condition of the street system. This involves the physical inspection of each lineal mile of street within the City and assignment of a rating between 1 (poor) and 10 (excellent). An inspection was made in 2001 and again in 2004. This evaluation was conducted again in 2012 and has been forwarded to be formatted and organized at the Tri-County Regional Planning Commission and the Michigan Department of Transportation.

## **APPENDIX A – Utilities/Infrastructure**

### **Background Information**

#### **Sanitary Sewer System**

The sewage collection and treatment system consists of a 1.5 MGD activated sludge treatment plant, 32 miles of sewer line including interceptors, and five lift stations. Improvements at the plant include an addition to the building and a .66 million gallon sludge storage tank to the existing .30 million gallon storage tank. The Waste Activated Sludge System has been installed and activated.

The City, like most other communities in Michigan, operates under a National Pollutant Discharge Elimination System permit (NPDES) administered by the MDEQ. This permit establishes the allowable effluent levels to be discharged to the receiving waters, namely Sycamore Creek. The NPDES permit went into effect on July 1, 2014, and will expire at midnight on October 1, 2017.

A study was completed by Wolverine Engineers to determine the best method of providing sewer service to areas on the undeveloped east side of Mason. The feasibility study has identified six districts, known as the Rayner Creek Utility District, that are served via a common lift station and force main. During 2005, as part of the Temple Street extension from M-36 to Kipp Road, the sewer and pump station have been constructed to serve District 3 as this area develops. A copy of the sanitary sewer service district map is included in Appendix A.

#### **Storm Water System**

The current gravity system consists of concrete drainage pipes ranging from 6 inches to 42 inches in diameter, along with corrugated metal pipes up to 72 inches in diameter. These pipes are connected to the street network through a series of catch basins. Eventual outflow is to one of the three creeks flowing through town - the Sycamore, Willow or Rayner - since the system is separated from the sanitary sewer system.

In 2002, the City was notified that it would be required to comply with the Federal Phase II Storm Water Regulations. The City had been working with a consortium of 18 neighboring jurisdictional agencies within Ingham, Eaton and Clinton counties; collectively known as the Greater Lansing Regional Committee (GLRC). The intent of the GLRC was to seek voluntary permits for each of its members and to approach the regulations on a watershed basis. This methodology seemed logical and would allow the sharing of resources and expenditures for the unfunded mandate.

Mason received its Certificate of Coverage under the National Pollutant Discharge Elimination System (NPDES) general permit in July 2014. Some of the requirements of the storm water program were development of an Illicit Discharge Elimination Plan, Public Education Plan, and a Watershed Management Plan (WMP). The WMP was developed over 2004 and 2005, involving several public and stakeholder meetings. Using the WMP as guidance, each community developed a Storm Water Pollution Prevention Initiative Plan (SWPPI). The SWPPI is the pollution prevention

action plan outlining best management practices for communities and developments, plus public educational actions. The GLRC has divided into several committees and subcommittees to develop the required actions. The first permit cycle expired in April 2008, and a new permit will be issued in October of 2014 at which time both the WMP and SWPPI have been updated. The new permit cycle starts in September 2013. There are best management practices that need to be adopted per our discharge permit from MDEQ for storm water controls in the City of Mason.

The current storm water system is separate from the sanitary sewers. Catch basins located in the streets carry the water to these pipes which eventually discharge to the Sycamore Creek, Willow and Rayner County Drains, where the treated sanitary sewage discharge is considered to be a point source discharge. Storm water discharge is considered to be a non-point discharge. This distinction becomes important in understanding State and Federal regulations.

Maintenance of the storm water system is divided between the City and the Ingham County Drain Commission. (The county has designated drains that flow through the City such as the Willow and Rayner Creek Drains.) It does become confusing sometimes as to who takes care of what and where.

Detention ponds are required on developments where the city engineer determines that the runoff will be too great for the catch basins and storm sewer located in the street. Many of the newer developments have these ponds on site.

On July 28 and 29, 2011, a severe storm dropped over 7 inches of rain in approximately 24 hours. This flooded Rayner and Sycamore Creeks forcing a sanitary sewer overflow at the POTW, disabling the ISD lift station and damaging storm drains and a couple streets.

It has become evident that the ponds in Rayner Park (part of Rayner Creek), controlled by the Ingham County Drain Commissioner, need to be dredged to allow water detention and storm water settlement. This could be a future expense, as the City is in operation of this park.

### **Current Regulations**

The EPA began its first round of storm water management requirements in 1992. At that time, and after a great deal of discussion, communities under 100,000 population that owned wastewater plants and vehicle maintenance garages were exempt from the regulations. This was accomplished through a last minute amendment to a federal Intermodal Surface Transportation Act that was passed. Since that time, EPA has wasted no time in working on Phase II of the Storm Water Management regulations. Due to a status change designated by the U.S. Census Bureau in 2000, Mason became part of the Greater Lansing Urban Area. The City received its NPDES Permit for storm water in November of 2008, expiring in April 2013. The City will now have two permits one new permit that is just for the City of Mason and another permit for the for the water shed. This starts in October of 2014.

### **SANITARY SEWER OVERFLOWS AND INFLOW/INFILTRATION**

Sanitary Sewer Overflows (SSOs) are the discharge of untreated, or partially treated wastewater to public waterways, over land as well as (this one is significant) the flooding of a basement for reasons other than a plugged, or broken sewer lead. Inflow is the direct introduction of storm water into the sanitary sewer system by means of a cross connection, or possibly an open sanitary manhole. City staff believes that a significant inflow source stems from many of the homes in town through footing tiles and sump pumps. Infiltration is the leaking of ground and surface water into the sanitary system through cracks in the pipes and manholes, or through bad joints in the sewer lines. Inflow and infiltration (I/I) can cause SSOs and both have been ongoing problems in most municipal sanitary systems since the first pipe went into the ground.

POTW systems are required to report any release of untreated sewage into the receiving stream to the MDEQ. A verbal notification is followed by a written report. Violations carry penalties such as fines and possible jail time. Evidently some communities had discharges that were not reported, while other communities didn't even bother to respond to the survey. Because of this the MDEQ is meeting with those communities with SSO issues and drafting an agreement/plan as to how and when the SSO problem will be corrected. This "agreement" is also called an Administrative Compliance Order (ACO) and is a legally binding document containing fines (\$1500 to \$2500 per day) for future SSO events.

To further complicate the problem, the courts have determined that owners of POTW systems may be liable for any backups into basements. Cities are no longer protected by the Act of Nature clause, even if they are able to show that they maintain the system in a responsible manner.

In February and May of 2001, May of 2004, and January and September of 2008, the City experienced some serious run-off events that forced the bypass of untreated sewage. In addition, approximately ten residents reported flooded basements. In June 2010, the City received a letter from MDEQ with a draft ACO and instructions that a representative from the department will be meeting with City representatives.

## **SSO UPDATE**

In September 2010, representatives from the City of Mason and MDEQ held a meeting in regard to the issue of the Sanitary Sewer Overflows (SSOs). The MDEQ claims that the City of Mason is in violation of its NPDES permit, due to the SSO events that have occurred in the past, and corrective actions are needed to prevent future SSO events. As requested by the MDEQ, The City of Mason has installed metering devices in the collection system of the older subdivisions to check for Inflows and Infiltration (I/I), which are now collecting data. This is to determine if footing drains are possibly connected to the sanitary sewer system. In addition, as requested by the MDEQ, the City of Mason has installed a high flow, metering device at the entrance of the wastewater treatment plant. The device was installed in June of 2012. The City of Mason is moving forward to meet the MDEQ requests.

Based on observations and published studies, City staff suspects that residential sump pumps and footing tiles significantly contribute to I/I problems. Once a severe rainstorm ends and the initial surge in the sewage flow passes, the daily average flow will remain higher than normal for several

weeks. Inspections of sewer lines in residential areas show increasing flows as one proceeds downstream of the line, plus the "sewage" is extremely clear. Once the ground becomes saturated, sump pumps and footing tiles contribute an enormous amount of water.

Under a pending consent order between the City of Mason and the MDEQ, the City must be able to certify that the City's POTW is capable of providing secondary treatment to wastewater flows up to the 25-year/24-hour design storm event of 3.9 inches without bypassing during normal POTW operations. On March 15, 2013 the City requested an extension of one (1) calendar year in providing the MDEQ written certification and necessary supporting documentation that the Mason Publicly Owned Treatment Works (POTW) is capable of providing secondary treatment or the ability to store peak wastewater flows up to the 25-year/24 hour design storm event of 3.9 inches without bypassing any stage of treatment during normal POTW operations while meeting all NPDES Permit effluent limitations or causing SSOs on the collection system. As of June 2014, there has not been a design storm event meeting the design criteria and there is insufficient data to extrapolate to the design storm event with a confidence interval suitable for certification. The City is currently requesting an additional extension.

Beginning in the summer of 2006, the City will provide "sump pump collectors" as part of its local streets maintenance program. The next step is the need to develop policy as to determine who must connect to the collectors. This will be difficult and it will literally entail evaluation of each residential and commercial building.

The latest SSO at the wastewater treatment plant occurred on April 19, 2013. An approximate 1,020,000 gallons was bypassed to the Rayner Drain. The DEQ does not normally respond by letter to the SSO notification reports. The last letter on file from the DEQ regarding SSO's was dated August 12, 2009. This letter contains the SSO's the wastewater treatment plant has had during the period of 2001 to 2009. I will put a copy of this letter in your mailbox. The wastewater treatment plant had two SSO's after these dates. On July 28, 2011 approximately 1,140,000 gallons was bypassed and on April 19, 2013 approximately 1,020,000 gallons was bypassed to the Rayner Drain.

## **APPENDIX B – Water System**

The City's water system consists of six wells, two 500,000 gallon elevated storage towers and one one-million gallon ground storage tank and approximately 45 miles of water main in various sizes (4" to 16"). The City has a centralized treatment facility; the water is pumped through raw water mains to the treatment plant to remove Radium 226 and 228 as well as iron.

The City of Mason Water Treatment Plant went on line in November of 2008 and the treatment process is working well. The process is consistently removing radium 226 and 228 down to an average of 1 pQL (pico-qui per liter) which is 4 pQL less than the MCL of 5 pQL. The iron removal process is also working well as the plant receives iron coming in to the plant at .44 ppm and on average removes the iron down to less than .02 ppm.

The improved water quality from the plant is helping the City of Mason to comply with the Radium rule and the Lead and Copper rule. The city has passed all the radium tests since the plant has gone on line on 2008 and is now in compliance with the Radium rule. Another benefit of the improved water quality is the City of Mason has now passed four rounds of lead and copper sampling which put the city in compliance with the Lead and Copper rule. The results of being in compliance with these two rules has helped reduce the amount of samples required for Lead and Copper testing and radium testing for the City. This has saved a lot of man hours and resident's time spent collecting samples for the City of Mason.

The City is moving forward with new well number nine, currently under construction. Well number eight is being lined to keep the formation open as this well has caved in. Well number eight will need to have further cleaning done to try to bring back production in the future and Hayes Park well will need to be rebuilt in the next few years. Well number nine has the same problem and it is being scheduled for the same process if the repairs for well number eight work. The City is looking at putting treatment at Howell road well if future demand calls for more water. The City will continue to look for the next well site for future development.

The City currently has a Wellhead Protection Plan approved by the MDEQ. The City will need to keep the plan up to date and enforce its well head protection plan.

Upgrades to the older, undersized water lines will continue in conjunction with the street improvement plan. Recent improvements to the water distribution system include the instillation of Variable Frequency Drives (VFDs) on the wells, construction of the new water plant, and ground water storage tank, new 8" water main on Ash and Steele Streets, and a new 12" main on Temple Street.

The City of Mason's utilities are comprised of the drinking water, the sanitary sewer (collection and treatment), and the storm sewer systems. The following narrative will discuss the current status of capacities and system components, current regulations and other issues for each system.

Definitions are provided below for various abbreviations that will be used in the discussion of the City's utilities.

**Psi:** pounds per square inch (water pressure)

**EPA:** Environmental Protection Agency (Federal)

**g.p.m:** gallons per minute

**MCL:** Maximum Contaminate Level is the maximum permissible level of a contaminant in drinking water.

**MGD:** Million Gallons per Day (1.0 MGD equals 1,000,000 gallons per day)

**MG:** Million Gallons

**MDEQ:** Michigan Department of Environmental Quality (oversees all drinking water, sanitary and storm water regulations)

**POTW:** Publicly Owned Treatment Works (includes the entire sanitary sewer system; collection, lift stations and treatment plant). The Wastewater Treatment Plant is referred to as the POTW Plant

## **DRINKING WATER SYSTEM**

### **Current Components and Capacities**

The City's Water System Reliability Study and Contingency Plan of the entire water system were updated in 2014 by Wolverine Engineering. The City of Mason water treatment plant went on line in November of 2008. This facility is taking water from all the wells, treating it to remove Radium and Iron and storing it in the 1 million gallon ground storage tank. The water is then pumped from the ground storage out to the distribution system to the two 500,000 elevated storage tanks to maintain pressure on the system (65-80psi). The plant can pump 4,500 gallons per minute with all three high service pumps running, but the treatment plant can only produce 1,736 gallons of treated drinking water per minute when in operation.

Table B-1 lists information on the water system's wells, storage tanks and water mains. Table B-2 contains the current information on the wells. The notes at the bottom of the table provide further explanation of terminology.

The concept of Firm Capacity is an important consideration for the water system. Ideally, the City should be able to meet the daily water demand, and provide fire protection, in the event the largest producing well is out of service. It does happen on occasion despite all the best maintenance efforts.

Regarding fire protection, pursuant to recommendations by the Insurance Services Office, the fire flow duration should be three (3) hours for recommended fire flows of 3000 and 3500 g.p.m.

These flows are not unreasonable for the industrial areas on the North and South ends of Mason. The following table shows the current storage calculations:

Water Storage Calculations for 3-Hour Fire Flow	
Average Demand (766 gpm)	137,880 gallons per 3 hours
Fire Flow (3,500 gpm)	630,000 gallons per 3 hours
Well Supply (1,675 gpm)	-301,500 gallons per 3 hours
Storage Needed Based Upon Fire Flow	466,380 gallons

Based upon these calculations, water storage provided by the 2 elevated water towers is adequate.

Given the recent improvements and modifications made within the City, the addition of a water tower, the addition of a 1 million gallon ground storage tank, the replacement of water meters, the new control system, and the cleaning and rehabilitation of the wells, the City of Mason finds itself in a comfortable position relating to water supply.

**Current Regulations**

**Radionuclides:** The original Radium Rule was first published in 1976 and revised in 1991. Since then water system operators have been required by the Federal Environmental Protection Agency (EPA) and the Michigan Department of Environmental Quality to periodically sample the drinking water for radioactivity. The reasoning behind this is attributed to the development and operation of nuclear reactors and radio nuclide-generating devices which result in the production of radioactive elements. However, there are naturally occurring radioactive elements such as uranium, thorium and radium which may originate in the shale and coal bearing layers that are interspersed throughout the municipal aquifer.

Since Mason began testing for radium in the mid 1990’s, specifically the isotopes of Total Alpha, Radium 226 and Radium 228, the results have always been below the Maximum Contaminant Level (MCL). The monitoring for radium was done in the distribution system. In December 2003, a change in the Radium Rule by the EPA required water systems to sample at the “point of entry”, or in Mason’s case, at each of its wells. This new requirement put 2 of the wells over the MCL for Combined Radium 226/228 with most of the remaining wells just below the standard. In other words, Mason was out of compliance with a Federal Drinking Water standard and would need to take corrective action.

Consultants were hired in the summer of 2005 to study the problem and present some possible treatment alternatives that would be in the best interests of, and to serve our community for years to come. The study was done in such a way as to allow Mason to apply to the MDEQ for a low interest loan through the Drinking Water Revolving Fund program to help fund the project. With adequate funding secured, the facility was constructed and completed in 2008. The facility is a centralized hydrous manganese oxide (HMO) treatment plant that was recommended by the study to meet the radium MCL.

**Arsenic Rule:** On January 16, 2001, President Clinton signed the new arsenic rule that would lower the MCL from the existing 50 parts per billion (ppb) to 10 ppb. This became effective January 16, 2006 and it is impacting smaller communities. Fortunately, most of the monitoring for arsenic in Mason's water has indicated non-detectable levels.

**Lead & Copper Rule:** These two metals pose potential health risks if the exposure is of sufficient duration and their concentrations are high. In 1992, the Federal Environmental Protection Agency began requiring all public water supplies to annually test for lead and copper. What are actually being monitored are the corrosive characteristics of drinking water on household plumbing. With the addition of the new water treatment plant, the City of Mason now has a consistently higher water quality, which has resulted in passing four consecutive sets of lead and copper tests. After passing these sets of 40 samples the City is now in reduced monitoring to 20 tests every three years.

The MCL for lead and copper is .015 mg/l and 1.3 mg/l, respectively. Samples for the tests are collected at 20 different households throughout the city once every three years. The sampling procedure is to flush the water tap for 10 minutes, do not use the water for 6 hours and then collect the first draw. This assumes that the corrosiveness of the water will leach the lead and copper from the pipes and faucet. Historically, Mason has had difficulties meeting the copper limit. Part of the problem lies in the requirement that allows residents to perform the actual sampling, many times the proper protocol is not followed. Water softeners can also negatively affect the results. The City has found that the centralized water treatment has corrected this chronic problem.

**TABLE B-1**

**CURRENT WATER SYSTEM COMPONENTS**

Revised July 2012

<u>Well Name</u>	<u>Year Commissioned</u>
Park Street Well #1 (abandoned in 2011)	1931
Curtis Street Well #2 (abandoned in 2007)	1958
Howell Road Well #3 (standby in 2008)	1974
Hayes Well #4	1987
West Ash Well #5	1989
Franklin Well #6	1992
Kipp Road Well #7	2002
Temple Street Well #8	2009
Temple Street Well #9	2014

FIRE HYDRANTS: Approximately 600

2 ELEVATED STORAGE TANKS (500,000 Gallons each), Constructed in 1995 & 2004

1 Ground Storage Tank (1,000,000 gallons) Constructed 2008

<b>FINISHED WATER MAIN</b>	<b>(Lineal Feet)</b>
4 Inch	32,820
6 Inch	79,506
8 Inch	63,810
10 Inch	7,000
12 Inch	58,269
16 Inch	900
<b>Total</b>	<b>242,305 (45.9 miles)</b>

<b>RAW WATER MAIN</b>	<b>(Lineal Feet)</b>
8 Inch	5,208
12 Inch	5,259
16 Inch	7,837
<b>Total</b>	<b>18,304 (3.5 miles)</b>

NOTES:

- The original water main consists of cast iron, much of which remains in service today.
- Since the early 1970's, upgrades have been made with ductile iron pipe.
- Raw water main is high-density polyethylene pipe.

**TABLE B-2**

**CURRENT WELL CHARACTERISTICS**

**Revised June 2014**

ACTUAL RATED DEPTH CAPACITY

<u>WELL</u>	<u>(ft.)</u>	<u>STATUS</u>	Permit( <u>gpm</u> )	Actual( <u>gpm</u> )
Howell #3	213	Standby	350	325
Hayes Park #4	245	Active	350	350
Ash #5	272	Active	250	250
Franklin #6	346	Active	500	350
Kipp #7	358	Active	350	350
Water Plant #8	400	Active	391	250
Temple St. #9	352	Under const.		
<b>TOTAL CAPACITY</b>			<b>2,191 gpm</b>	<b>1,550 gpm</b>
<b>FIRM CAPACITY</b>			<b>1,691 gpm</b>	<b>1,200 gpm</b>

NOTES:

- Firm Capacity represents the total capacity minus the largest producing well.
- Howell #3 is not connected to the new raw water lines.
- Howell road well is normally in standby mode; emergency use only.

**TABLE B-3**

**CURRENT & PAST WATER PRODUCTION**

Revised May 2013

<u>YEAR</u>	<u>YEARLY TOTAL (MG)</u>	<u>DAILY AVERAGE (MGD) (gpm)</u>	<u>MONTHLY MAXIMUM (MGD) (gpm)</u>	<u>MONTHLY MINIMUM (MGD) (gpm)</u>
2004	256	.890 618	1.570 1090	.349 242
2005	328	.895 622	1.646 1143	.527 366
2006	324	.888 617	1.567 1,088	.531 368
2007	346	.949 659	1.771 1,230	.579 402
2008	345	.943 655	1.848 1,283	.540 375
2009	314	.860 597	1.842 1,279	.395 274
2010	304	.832 577	1.326 921	.422 293
2011	317	.869 603	1.164 808	.610 422
2012	298	.816 567	1.164 795	.507 352
2013	287	.785 545	1.372 952	.322 224

**NOTES:**

- The Maximum Day on record is 1.848 MGD recorded in July 2008.

## **SANITARY SEWER SYSTEM (POTW)**

### **Current Components & Capacities**

The sanitary sewer collection system consists of approximately 32 miles of clay, concrete and, as of recently, plastic pipe. The collection system starts as a 6-inch sewer lead from the buildings, which is the responsibility of the property owner to repair and maintain. The sewer leads connect to the lateral sewers located in the streets that ultimately connect to the interceptors that carry the sanitary sewage to the POTW Plant. Table 4 lists the major interceptors in town. The majority of the 6-inch and 8-inch sewers were constructed prior to 1930, using a bituminous sealer for the joints. Since 1958, rubber O-rings have been used for the joints, significantly reducing the possibility of groundwater leakage.

Sewage typically flows by gravity through the lines. There are times when significant changes in elevation occur, particularly during new development, that the sewage must be lifted from a low area to a higher elevation in order to flow. This is accomplished by pump stations, or lift stations. Table 5 lists the five lift stations in the system. The Main Court pump station serves one short street and the Hunting Meadows pump station serves that subdivision. The Curtis St. Lift Station serves the businesses along N. Cedar Street and the county jail facilities. The ISD Lift Station serves the Career Center complex, Dart Container, the Riverwalk Meadows Subdivision, and the commercial district fronting Legion Drive. Temple Street lift station serves the new water treatment plant and the industrial district on Temple Street.

Lift stations are operating about 6-7 hours daily. The City's engineer recommends an upgrade when a lift station's pumps run 8 hours per day. The elimination of Curtis Street Lift Station by relaying about 2700 feet of sanitary sewer at an estimated cost of \$250,000 does not appear to be cost effective.

The sanitary sewage enters the POTW Plant through a 30-inch pipe. The plant is a conventional activated sludge plant. It is a Class B plant with a design flow of 1.5 million gallons per day (MGD). It was constructed in 1958 with additional improvements in 1975-77. Table C-6 gives the basic design criteria of the plant and Table C-7 gives flow and plant loading data for the past several years. The plant load refers to the strength of the sewage that the plant must treat. This is also referred to as the biochemical oxygen demand (BOD). The data for the year 2001 is skewed due to the extremely wet weather experienced in February and May.

### **Current Regulations and Proposed Projects**

All dischargers of treated sewage to public waterways are permitted to do so by means of a National Pollutant Discharge Elimination Systems (NPDES) Permit. This permit is required by the Federal Clean Water Act and administered by the MDEQ. The permit specifies exactly how clean the treated sewage must be. It is a legal document and contains enforceable limits on the final treated water that is discharged (effluent).

Mason has had a NPDES permit since 1973 and it is reissued every 5 years after a formal application has been submitted to MDEQ. The current permit took effect July 1, 2014 and will expire on October 1, 2017. Typically, each reissued permit has effluent limits that are a little more restrictive than the prior one.

Changes in the new NPDES permit include effluent limitations on total copper, total nickel, and total selenium. In addition the City POTW must submit to the MDEQ on or before December 1, 2014 an Asset Management Plan for review and approval. Currently preparations are being made to meet this deadline. The cost for this project is unknown at this time.

**Mercury Analysis:** Mercury has been a metal of concern for many years due to its potential health threats and the fact that it is considered to be a bio-accumulating chemical of concern. In other words, its concentration increases in organisms' tissues as it makes its way up the food chain.

The approved test method for mercury has had a detection limit of .2 micro-grams per liter, or parts per billion. As of July 1999, the EPA approved a new mercury analysis method that has a detection limit of .5 nano-grams per liter (ng/L) or part per trillion. This new method has a detection limit that is 400 times more sensitive. The current limit in the permit is 30 ng/l, but the target water quality standard (the ultimate goal) for the receiving streams is 1.3 ng/l.

A recent requirement in the current permit is the development of a Mercury Minimization Program (MMP). The City's MMP was approved by MDEQ and became effective on April 2, 2009.

Previously, approximately 20,000 gallons of drinking water were used daily in the City of Mason. An alternative pumping system was constructed in 2010 to use treated effluent for the purpose of chlorinating, applying polymer, and supplying pump seal water and spray foam, in place of using treated drinking water, thus saving the City about 7 million gallons of drinking water annually. This is consistent with water conservation and sustainability.

**TABLE B-4**

**INTERCEPTING SEWERS**

**Sycamore Creek Interceptor:** 30-Inch diameter sewer extending from a point approximately where the old city garage on North Jefferson Street sat south along Sycamore Creek to Mable Court. Constructed in 1990 replaced to gain depth and slope to eliminate the Cherry Street lift station.

**Willow Creek Interceptor:** 18-Inch diameter sewer extending from Mable Court (30inch interceptor) west along Willow Creek to Eugenia Drive. The Willow Creek Interceptor was constructed in 1990 to replace the old 15-inch interceptor, which had major infiltration.

**Intermediate School District Interceptor:** 15-Inch diameter sewer extending north from the ISD Lift Station (north of D.P.W. facility) along Sycamore Creek to Howell Road. Constructed in the late 1960s and remains in good condition.

**Legion Drive/Howell Road Interceptor:** 15-Inch diameter sewer extending from the ISD Interceptor north to Howell Road and west, crossing US-127 and Cedar Street, to the end of Legion Drive. It was constructed in 1994 to service businesses on Legion Drive and Dart Container Corporation.

**West Columbia Street Interceptor:** 15-Inch diameter sewer extending west from the 30-inch Sycamore Creek Interceptor at Maple Street to approximately the west city limits. Constructed in 1975 and extended to serve the Coventry Woods and Sycamore Mobile Home Park developments in 1998.

**East Side Interceptor:** Constructed shortly after WWII, 15-inch and 18-inch sewer extending southeasterly from the POTW Plant to Ash Street near Steele Street. In 1976 the interceptor was reconstructed as part of the Publicly Owned Treatment Works expansion.

**East Columbia-Eastside Interceptor:** 24-inch sewer interceptor constructed in 2007. It begins near the intersection of Okemos and Randolph Streets, runs across Bond Park then beside the Rayner Drain to Mathews Street. It then continues easterly along E. Columbia to Lawton St Street.

**TABLE B-5**

**PUMP (LIFT) STATIONS**

Name	GPM/Pump	Year Constructed
ISD Lift Station	300	1971 – Rebuilt in 2011
Curtis St. Lift Station	300	1964
Main Court Lift Station	80	1985
Hunting Meadows Lift Station	90	1992
Temple Street Lift Station	300	2007 – new pumps 2013

**NOTES:**

- All the lift stations have two (2) pumps.

**TABLE B-6**

**POTW PLANT DESIGN DATA**

DESIGN AVERAGE FLOW	1.5 MGD
POPULATION EQUIVALENT (PE)	12,000 PEOPLE
PLANT LOAD	2,400 LBS/DAY

**TABLE B-7**

**POTW PLANT AVERAGE FLOWS AND PLANT LOADS**

**Revised May 22, 2013**

YEAR	PRECIP (In.)	FLOW (MGD)	BOD (Lbs/Day)	BIOSOLIDS (MG/YR)	POP. EQUIV.
1993	37.35	1.417	1247	1.076	6235
1994	35.98	1.247	1222	.745	6110
1995	26.90	1.183	1276	.630	6380
1996	27.67	.970	1560	.950	7800
1997	33.01	1.015	1508	.892	7540
1998	33.40	1.074	1592	.768	7960
1999	27.71	.863	1539	.786	7695
2000	36.13	.881	1569	.840	7845
2001	36.60	1.158	1623	.742	8115
2002	21.84	.992	1792	.775	8960
2003	30.51	.895	1724	.650	8620
2004	35.73	1.053	1642	.452	8210
2005	23.73	.947	1597	1.040	7985
2006	42.73	1.088	1694	.998	8470
2007	31.6	.979	1487	1.456	7435
2008	38.4	1.112	1526	.593	7630
2009	34.33	1.665	1653	.882	8265
2010	16.82	0.985	1915	.672	9575
2011	42.11	1.15	1693	.808	8465
2012	27.28	1.002	1654	.808	8270
2013	39.53	1.024	1697	1.768	8485

**NOTES:**

- 1 PE = .2 lbs of Plant Load
- The Plant Load in 1983, prior to Wyeth Laboratories pretreatment facility, was 3,061 lbs/day (over the design).
- November 1995: Michigan Packaging began operations (increased load).
- May 1996: Wyeth Laboratories ceased operations (decreased flow).
- For 2001, February's average was 1.546 MGD and May's was 1.666 MGD and a total of 7.46" of rain.
- 2004: May - 1.637 MGD average flow; monthly total of 9.41 inches of rain
- Pounds of BOD/Person/Day = 5 LBS Average

## APPENDIX C – Five Year Street Plan

City of Mason								
Local Streets Capital Improvement Plan								
September 22, 2014								
Street	Location	FY	Type of Work	Estimated Street Construction Cost	Estimated Street Construction Cost including Design Engineering & Construction	Estimated Water, Sewer, Storm Construction	Estimated Total Project Cost (Streets, Water & Sewer)	Year of Estimate
Cedar Street	Kipp and Cedar Intersection	2014-2015	Traffic Signals and Crosswalks	\$ 245,000.00	\$ 281,750.00	\$ -	\$ 281,750.00	2012
Cedar Street*	Oak Street to Willow Creek	2014-2015	Varies	\$ 471,000.00	\$ 541,650.00	\$ -	\$ 541,650.00	2012
S. Lansing Street	Maple Street to Ash Street	2014-2015	Pulverize, Shape & Repave	\$ 40,380.00	\$ 46,437.00	\$ 51,910.00	\$ 106,133.50	2014
E. Maple Street	Mark Street to Temple Street	2014-2015	Reconstruction	\$ 196,000.00	\$ 225,400.00	\$ 66,000.00	\$ 301,300.00	2013
Washington Street	Maple Street to Ash Street	2014-2015	Pulverize, Shape & Repave	\$ 118,515.00	\$ 136,292.25	\$ 97,650.00	\$ 248,589.75	2014
				<b>\$ 1,070,895.00</b>	<b>\$ 1,231,529.25</b>		<b>\$ 1,479,423.25</b>	
433 W. Cherry St	433 W. Cherry Street Repairs	2015-2016	Spot Repairs & ROW Repairs	\$ 16,517.50	\$ 18,995.13	\$ -	\$ 18,995.13	2014
S. Cedar Street	Willow Creek to Kipp Road	2015-2016	Mill & Fill	\$ 116,975.00	\$ 134,521.25	\$ -	\$ 134,521.25	2014
E. Maple Street	Rodgers Street to Steele Street	2015-2016	Reconstruction	\$ 243,600.00	\$ 280,140.00	\$ 83,200.00	\$ 375,820.00	2013
E. Maple Street	Steele Street to Lawton Street	2015-2016	Reconstruction	\$ 223,600.00	\$ 257,140.00	\$ 72,200.00	\$ 340,170.00	2013
E. Maple Street	Lawton Street to Mark Street	2015-2016	Reconstruction	\$ 172,000.00	\$ 197,800.00	\$ 55,500.00	\$ 261,625.00	2013

Northbrook		2015-2016	Pulverize, Shape & Repave	\$ 105,000.00	\$ 120,750.00	\$ -	\$ 120,750.00	2012
				<b>\$ 877,692.50</b>	<b>\$ 990,351.25</b>		<b>\$ 1,232,886.25</b>	
W. Ash Street	Peachtree to Hayes Park	2016-2017	Pulverize, Shape & Repave	\$ 61,425.00	\$ 70,638.75	\$ -	\$ 70,638.75	2013
S. Rodgers Street	Ash Street to Elm Street	2016-2017	Pulverize, Shape & Repave	\$ 85,000.00	\$ 97,750.00	\$ -	\$ 97,750.00	2012
E. Elm Street	Jefferson Street to Steele Street	2016-2017	Pulverize, Shape & Repave	\$ 221,500.00	\$ 254,725.00	\$ -	\$ 254,725.00	2012
W. Elm Street	Henderson to Jefferson	2016-2017	Pulverize, Shape & Repave	\$ 86,850.00	\$ 99,877.50	\$ 93,900.00	\$ 207,862.50	2014
Cherry	Jefferson to Rodgers	2016-2017	Pulverize, Shape & Repave	\$ 98,185.00	\$ 112,912.75	\$ -	\$ 112,912.75	2014
Oak	Barnes to Rogers	2016-2017	Pulverize, Shape & Repave	\$ 52,205.00	\$ 60,035.75	\$ -	\$ 60,035.75	2014
N. Jefferson St.	Howell to Royce	2016-2017	Mill & Fill	\$ 164,000.00	\$ 188,600.00	\$ -	\$ 188,600.00	2011
S. Jefferson St.	Oak Street to Kipp Road	2016-2017	Mill & Fill	\$ 292,650.00	\$ 336,547.50	\$ -	\$ 336,547.50	2014
N. Jefferson St.	Columbia to Royce	2016-2017	Mill & Fill	\$ 124,455.00	\$ 143,123.25	\$ -	\$ 143,123.25	2014
				<b>\$ 1,186,270.00</b>	<b>\$ 1,364,210.50</b>		<b>\$ 1,472,195.50</b>	
Kerns Road	Cedar Street to Howell Road	2017-2018	Reconstruct	\$ 615,190.00	\$ 707,468.50	\$ -	\$ 707,468.50	2011
Avon	Entire Length	2017-2018	Pulverize, Shape & Repave	\$ 29,355.00	\$ 33,758.25		\$ 33,758.25	2014
Rayner	Randolph to Columbia	2017-2018	Pulverize, Shape & Repave	\$ 45,120.00	\$ 51,888.00	\$ -	\$ 51,888.00	2014
South St	Northbrook to west City Limits	2017-2018	Pulverize, Shape & Repave	\$ 61,755.00	\$ 71,018.25	\$ -	\$ 71,018.25	2014
				<b>\$ 751,420.00</b>	<b>\$ 864,133.00</b>		<b>\$ 864,133.00</b>	

McRoberts	Columbia to Maple	2018-2019	Pulverize, Shape & Repave	\$ 84,355.00	\$ 97,008.25	\$ -	\$ 97,008.25	2014
Oak	McRoberts to Lansing	2018-2019	Pulverize, Shape & Repave	\$ 61,632.00	\$ 70,876.80	\$ 33,500.00	\$ 109,401.80	2014
Rogers	Ash to Oak	2018-2019	Pulverize, Shape & Repave	\$ 35,185.00	\$ 40,462.75	\$ 19,000.00	\$ 62,312.75	2014
Steele	Ash to Oak	2018-2019	Pulverize, Shape & Repave	\$ 42,540.00	\$ 48,921.00	\$ -	\$ 48,921.00	2014
Walnut Street	Columbia to north end	2018-2019	Pulverize, Shape & Repave	\$ 59,525.00	\$ 68,453.75	\$ -	\$ 68,453.75	2014
Walnut Court	Columbia to Ash Street	2018-2019	Pulverize, Shape & Repave	\$ 98,725.00	\$ 113,533.75	\$ -	\$ 113,533.75	2014
South	Barnes to Rogers	2018-2019	Pulverize, Shape & Repave	\$ 50,750.00	\$ 58,362.50	\$ -	\$ 58,362.50	
Peachtree Place	Columbia to South	2018-2019	Pulverize, Shape & Repave	\$ 391,500.00	\$ 450,225.00	\$ -	\$ 450,225.00	
				<b>\$ 824,212.00</b>	<b>\$ 947,843.80</b>		<b>\$ 1,008,218.80</b>	
Cherry	Rogers to end	2019-2020	Pulverize, Shape & Repave	\$ 101,500.00	\$ 116,725.00	\$ -	\$ 116,725.00	
Barnes	Ash to Kipp	2019-2020	Pulverize, Shape & Repave	\$ 652,500.00	\$ 750,375.00	\$ -	\$ 750,375.00	
Center	Walnut to Bush	2019-2020	Pulverize, Shape & Repave	\$ 87,000.00	\$ 100,050.00	\$ -	\$ 100,050.00	
				<b>\$ 841,000.00</b>	<b>\$ 967,150.00</b>		<b>\$ 967,150.00</b>	
Brookdale	Judy to Willow	2020-2021	Pulverize, Shape & Repave	\$ 72,500.00	\$ 83,375.00		\$ 83,375.00	
Cherry	McRoberts to Henderson	2020-2021	Pulverize, Shape & Repave	\$ 188,500.00	\$ 216,775.00		\$ 216,775.00	
Columbia	Orchard to Walnut	2020-2021	Pulverize, Shape & Repave	\$ 50,750.00	\$ 58,362.50		\$ 58,362.50	
Coppersmith	Sanctuary to Wildemere	2020-2021	Pulverize, Shape & Repave	\$ 108,750.00	\$ 125,062.50		\$ 125,062.50	
Eaton	Entire Length	2020-2021	Pulverize, Shape & Repave	\$ 145,000.00	\$ 166,750.00		\$ 166,750.00	

Elm	McRoberts to Henderson	2020-2021	Pulverize, Shape & Repave	\$ 181,250.00	\$ 208,437.50		\$ 208,437.50	
Columbia	Park to Jefferson	2020-2021	Pulverize, Shape & Repave	\$ 65,250.00	\$ 75,037.50		\$ 75,037.50	
				<b>\$ 812,000.00</b>	<b>\$ 933,800.00</b>		<b>\$ 933,800.00</b>	



**APPENDIX D – Mason Fire Department Fixed Asset Projections (updated June 2013)**

APPARATUS / VEHICLES:						
TANKER 807, WOLVERINE	1984	25 YEARS	2009	\$400,000	HIGH	GENERAL FUND FINANCING
ENGINE 809, GRUMMAN PUMPER	1990	25 YEARS	2015	\$500,000	HIGH	GENERAL FUND FINANCING
SQUAD 815, CHEVROLET	1992	25 YEARS	2017	\$200,000	LOW	GENERAL FUND FINANCING
BRUSH 810, DODGE 4 X 4	1993	20 YEARS	2013	\$50,000	MODERATE	GENERAL FUND DIRECT PURCHASE
TOWER 808, PIERCE DASH	2001	25 YEARS	2026	\$1,000,000	LOW	GENERAL FUND FINANCING
OFFICER, FORD EXPEDITION	2001	15 YEARS	2016	\$35,000	MODERATE	GENERAL FUND DIRECT PURCHASE
PUMPER TANKER 811, HME KW	2007	25 YEARS	2032	\$500,000	LOW	GENERAL FUND FINANCING
RESCUE/PUMPER 806, SPARTAN/SPENCER	2010	25 YEARS	2035	\$750,000	LOW	GENERAL FUND FINANCING
CHIEF, FORD EXPEDITION	2013	10 YEARS	2023	\$35,000	LOW	GENERAL FUND DIRECT PURCHASE
RESCUE BOAT & MOTOR	2012	10 YEARS	2022	\$10,000	LOW	GENERAL FUND DIRECT PURCHASE
BOAT / ICE RESCUE TRAILER	2012	20 YEARS	2042	\$10,000	LOW	GENERAL FUND DIRECT PURCHASE
FIRE / RESCUE EQUIPMENT:						
808'S HURST EXTRICATION TOOLS (JAWS OF LIFE)	2001	15 YEARS	2016	\$20,000	MODERATE	GRANT OR GENERAL FUND

RESCUE/PUMPER 806'S EXTRICATION TOOLS (JAWS OF LIFE)	2010	15 YEARS	2025	\$40,000	LOW	GRANT OR GENERAL FUND
TURNOUT GEAR (36 SETS)	VARIOUS	5 YEARS (1 <sup>ST</sup> LINE) 10 YEARS (2 <sup>ND</sup> LINE)	5-7 / YEAR	\$17,500 / YEAR	IN PROCESS	GENERAL FUND DIRECT PURCHASE
AIR PACKS, SCBA (24 UNITS)	2008	10 YEARS	2018	\$200,000	LOW	GRANT
CONFINED ENTRY CART (MUST BE COMPATIBLE WITH SCBA)	2008	10 YEARS	2018	\$5,000	LOW	GENERAL FUND
BULLARD INFRARED VISION CAMERA	2007	10 YEARS	2017	\$12,000	MODERATE	GRANT OR GENERAL FUND
2 <sup>ND</sup> INFRARED CAMERA		10 YEARS		\$12,000	MODERATE	GRANT OR GENERAL FUND
COMMERCIAL WASHING MACHINE	1994	25 YEARS	2019	\$5,000	LOW	GENERAL FUND
COMMERCIAL DRYER (currently operating intermittently)	1994	> 25 YEARS	2015	\$5,000	MODERATE	GENERAL FUND
BAUER AIR TANK FILL STATION COMPRESSOR	2005	> 20 YEARS	> 2025	\$50,000	LOW	GRANT
FURNACE / AC, OFFICE AREA (STATION 1)	1999	20 YEARS	2019	\$10,000	LOW	GENERAL FUND
FURNACE / AC, TRAINING ROOM (STATION 1)	1999	20 YEARS	2019	\$10,000	LOW	GENERAL FUND
CARPET, OFFICE AND TRAINING AREA (STATION 1)	1999	12 YEARS	2011	\$10,000	MODERATE	GENERAL FUND
PAGERS (40)	2006	6 YEARS	6 / YEAR	\$3,000	IN PROCESS	GENERAL FUND
PORTABLE RADIOS (26)	2006	11 YEARS	2017	\$78,000	MODERATE	GENERAL FUND & INGHAM COUNTY
TRUCK RADIOS (7)	2006	11 YEARS	2017	\$25,000	MODERATE	GENERAL FUND & INGHAM COUNTY

FIRE SAFETY HOUSE	1995	> 25 YEARS	> 2020	\$60,000	LOW	MASON FF'S ASSOCIATION
EXHAUST VENTILATION SYSTEM (STATION 1)	N/A	> 25 YEARS		\$60,000	MODERATE	POSSIBLE GRANT
LOFT (STATION 1)	N/A	> 25 YEARS		\$60,000	LOW	GENERAL FUND DIRECT PURCHASE
FIRE SPRINKLER SYSTEM (STATION 1)	N/A	> 50 YEARS		\$40,000	MODERATE	POSSIBLE 50% RAP GRANT

## **APPENDIX E – Downtown Development Authority Plan**

201 W. Ash St.  
Mason, MI 48854-0370

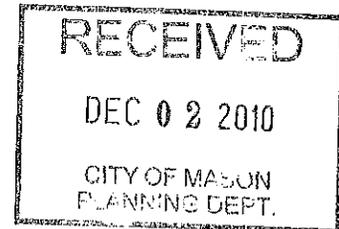


Phone: 517-244-6332  
Fax: 517-244-0252  
City Hall: 517-676-9155

## Downtown Development Authority

December 2, 2010

City of Mason  
Attn: Marty Colburn  
201 West Ash Street  
Mason, MI 48854



Re: DDA Plan Amendment No. 4

Mr. Colburn,

The Downtown Development Authority met on Wednesday, December 1 and approved the fourth amendment of the Downtown Development Plan. The Plan Amendment will be adopted once City Council has approved the document. In addition, Act 197 requires a notice to affected taxing jurisdictions and a public hearing held by City Council.

Please contact me if you have any further questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Marco Broggio". The signature is written in a cursive style with a large, looped initial.

Marco Broggio  
Executive Director

AMENDMENT NO. 4 TO THE  
DEVELOPMENT PLAN/TAX INCREMENT FINANCING PLAN  
OF THE DOWNTOWN DEVELOPMENT AUTHORITY  
OF THE CITY OF MASON

The City of Mason Development Plan/Tax Increment Financing Plan ("Plan"), has been adopted pursuant to the provisions of the Downtown Development Act, 1975 PA 197, as amended ("Act 197"), by the Downtown Development Authority of the City of Mason ("Authority") and approved by the City Council of the City of Mason, Ingham County, Michigan ("City"), pursuant to Ordinance 118 adopted March 16, 1987, and amended by Ordinance 118-A-96, adopted July 1, 1996, Ordinance 118-A-2000, adopted February 19, 2001, and Ordinance 118-A-2003, adopted May 5 2003.

The Plan is hereby further amended by resolution of the Authority duly adopted at a public meeting of the Authority held on the first day of December, 2010, and by City Council approval of this Plan Amendment No. 4 to the Development Plan/tax Increment Financing Plan ("Amendment No. 4") pursuant to Ordinance No. 118-A-2010 duly adopted December \_\_\_\_, 2010 following notice to taxing jurisdictions and public hearing as required by Act 197.

**Introduction to Plan Amendment No. 4**

1. The stated goal of the Authority is to establish and maintain the vitality of the central business district of the City of Mason through the Downtown Revitalization Plan established by the Development Plan/tax Increment Financing Plan of the Authority adopted by the Mason City Council on March 16, 1987, as amended.
2. The goal of the Plan and the Act are to halt property value deterioration, to rehabilitate property which has become blighted, vacant, or functionally obsolete, and to promote economic growth, business activity, and employment opportunities within the District.
3. On May 14, 2009, the Authority adopted the city of Mason downtown Marketing Analysis conducted by McKenna Associates, Inc. to identify the most appropriate business types and

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strategies for attracting new business and retaining existing business. The total cost of this project was \$38,392.07. The Authority also received \$18,875.00 in CDBG funds through MSHDA. The Downtown Mason Market Analysis and Strategic Plan examines 2008 market conditions, uses consumer spending patterns and demographic analysis to identify over and under-served business sectors. This study is a tool for the Authority to target specific business sectors and identify the best spaces and locations for new business that will complement and enhance the existing character of the downtown. The recommendations for the district include the following:

- a) To promote existing businesses, and new eating establishments, especially family style restaurants within downtown.
- b) To become a regional destination by strengthening the City's identity, adding residential units in downtown, improve the appearance of pedestrian connections and most importantly develop an entertainment and dining core.
- c) To improve the connections (visual, vehicular, and pedestrian) and signage directing patrons to appropriate parking.
- d) To develop a parking acquisition management program operated by the Authority.
- e) To add more streetscape amenities, such as benches, lighting, signs and landscaping, and replace existing amenities with uniform materials.
- f) To create a Branding and Community Identity Campaign promoting Downtown Mason as a charming location with historic structures, friendly salespeople, and walkable streets.
- g) To Adopt a Form-Based Overlay District for Downtown Mason.

h) To implement a maintenance program which includes regular sidewalk cleaning, seasonal planting, street tree maintenance, installation and removal of seasonal decorations (lights, banners, signs, garlands, etc.), and snow removal.

NOW THEREFORE, in consideration of the foregoing, the Development Plan/Tax Increment Financing Plan of the Downtown Development Authority of the City of Mason is hereby amended as follows:

#### DEVELOPMENT PLAN AMENDMENTS

1. Section 3.1 – A DESCRIPTION OF IMPROVEMENTS TO BE MADE IN DEVELOPMENT AREA is amended by amending subsections 3.1 a), 3.1 c), and 3.1 j) thereof, and by adding new subsections 3.1 k), 3.1 l), 3.1 m), 3.1 n), 3.1 o), and 3.1p) to add additional capital improvements, the Liquor License Assistance Program, the planning and branding of community events, a streetscape maintenance program, and increasing the amp service in the district. Which amended and added subsections shall read as follows:

##### 3.1a) Streets, Sidewalks, and Streetscape Amenities

(1) Sidewalk and street improvements will be made throughout the district to increase accessibility and to promote a pedestrian friendly downtown.

(2) Streetscape Amenities – Existing benches, signs, and other streetscapes throughout the downtown district will be removed and replaced with uniform materials. Benches are proposed to be placed on the corners of Maple Street and Jefferson Street; on Jefferson Street and Ash Street; along Mason Street, State Street, Jefferson Street, Ash Street, and Maple Street.

Informational signs will be placed along Columbia Street, Mason Street, State Street, Maple Street, and Ash Street directing patrons to parking and the shops in downtown and the Antiques District.

3.1c) Landscaping - Shrubs and plants will be placed along Mason Street, State Street, Maple

Street, Jefferson Street, and Ash Street to compliment the aesthetic appeal of the streetscapes within the District. Fencing and landscaping around parking lots within the District are also proposed.

3.1j) Rehabilitation of Vacant, Underutilized or Functionally, or Economically Obsolete

Properties – Section 7 of Act 197 authorizes the Authority to undertake the renovation, repair, remodeling, rehabilitation, restoration, and reconstruction of existing buildings, multiple family dwellings, or parking lots within the District as necessary or appropriate to the execution of its plan when, in the opinion of the Authority such activities will aid in the economic growth of the downtown district. In furtherance thereof, the Authority may acquire by, purchase, lease, or otherwise, land and property within the District, improve such land and structures and construct, rehabilitate, restore, equip, improve, maintain, and operate any real estate, including multiple family dwellings, and parking lots for the use, in whole or in part, by public or private persons or corporations, and any combination thereof, and may thereafter dispose of or lease such buildings and properties to public or private users to further the District plan. The purpose of this amended Plan shall be to identify such buildings and structures within the District and acquire such properties which are deteriorated, vacant, underutilized, or functionally and economically obsolete, to be rehabilitated and adapted for reuse by public or private persons or corporations.

3.1k) Liquor License Assistance Program – The Authority will establish a program to assist

eligible businesses within the District in acquiring a liquor license under Section 521a(1)(b) of the Michigan Liquor Control Code, being MCL 436.1101 et. seq. Funds will be available to businesses that have applied with the DDA and have met the requirements under the proposed guidelines for the Liquor License Assistance Program (LLAP).

3.1l) Community Event – A community event is proposed to be held in the downtown with an emphasis in creating a new attraction for the community and promoting Mason as a regional destination. The event will host well known local and regional live entertainment and will support the economic development of the businesses within downtown.

3.1m) Brand and Community Identity Campaign – A plan is proposed to create an attractive and positive image of downtown Mason by working with the City, Chamber of Commerce and downtown merchants in developing a Brand and Community Identity Campaign. The DDA will work with the Chamber of Commerce to update all banners and signage throughout downtown and reinforce the walkable streets and friendly environment downtown Mason has to offer. This campaign will be supported through marketing and advertising efforts and the community event.

3.1n) Maintenance Program – The Authority will establish a program of general maintenance of sidewalk cleaning, seasonal planting, street tree maintenance, installation and removal of seasonal decorations (lights, banners, signs, garlands, etc.), and snow removal.

3.1o) Capital Improvement – The Authority will collaborate with the City to fund special projects.

3.1p) Amp Service – The electrical output on the light posts in the district will be increased to accommodate up to 100 amps.

2. The text of Section 3.3 – “AN ESTIMATE OF THE TIME REQUIRED FOR COMPLETION” is amended to read as follows:

The Development Plan is estimated to be completed within 30 years from the date of approval of this Development Plan/Tax Increment Financing Plan Amendment No. 4.

The estimated completion year is 2040.

3. Section 4.1 – “THE LOCATION, EXTENT, CHARACTER, AND ESTIMATED COST OF

IMPROVEMENTS CONTEMPLATED FOR THE DEVELOPMENT AREA” is amended by amending the

improvements described for Streetscape Amenities by adding improvements consisting of

benches, signs, and other streetscapes, Capital Improvements, Amp Service, and by adding

additional subcategories captioned Rehabilitation of Deteriorated, Blighted, Vacant, or

Functionally or Economically Obsolete Properties, which amended and added subcategories

shall read as follows:

Public Improvements

Streetscape Amenities

<u>Item</u>	<u>Est. Qty.</u>	<u>Description</u>	
1.	20	Black Benches	
2.	16	Directional Signs	
3.	800 ft.	Black Aluminum Fencing	
4.	200	Shrubs and Plants	
5.	200 yards	Mulch and Landscaping	
		TOTAL ESTIMATED COST	\$50,000

Capital Improvement

Participation on special projects within the district not to exceed \$50,000 every five

years. The DDA will provide up to \$50,000 for the improvements at 124 & 140 East Ash

Street. Funds will only be available once a development contract has been signed.

TOTAL ESTIMATED COST            \$300,000

Amp Service

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Increase electrical output in downtown

TOTAL ESTIMATED COST        \$50,000

Rehabilitation of Deteriorated, Blighted, or Functionally or Economically Obsolete

Properties

Buildings and structures within the District which are identified as being deteriorated, blighted, vacant, or functionally or economically obsolete.

TOTAL ESTIMATED COST        \$300,000

4. Section 9.1 captioned "AN ESTIMATE OF THE COST OF THE DEVELOPMENT" is amended by replacing subparagraphs (a), (b), and (f) to read as follows:
- a. The public improvements being proposed in the Amended Development Plan have an anticipated development cost of \$700,000.
  - b. Liquor License Assistance Program estimated to cost \$140,000.
  - c. The parking plan is estimated to cost \$100,000.
  - d. The revolving loan/grant program is estimated to cost \$500,000.
  - e. The plan to retain a part-time director estimated to cost \$25,000 per year for a total cost of \$750,000.
  - f. The Brand and Community Identity Campaign is estimated to cost \$10,000 per year over 30 years for a total cost of \$300,000.
  - g. The community event is estimated to cost \$750,000 over the 30 years of this amended Plan.

i. The plan to establish a grounds maintenance program estimated to cost \$8,000 per year for the total cost of \$240,000 over 30 years.

5. Section 16.0 captioned "OTHER ACTIVITIES WHICH THE AUTHORITY, LOCAL PUBLIC AGENCY, OR GOVERNING BODY DEEMS PERTINENT" is amended to read as follows:

16.2 BRAND AND COMMUNITY IDENTITY CAMPAIGN

A plan is proposed to create an attractive and positive image of downtown Mason by working with the City, Chamber of Commerce and downtown merchants in developing a Brand and Community Identity Campaign. The DDA will work with the Chamber of Commerce to update all banners and signage throughout downtown and reinforce the walkable streets and friendly environment downtown Mason has to offer. This campaign will be supported through marketing and advertising efforts and the community event.

6. Section 21 captioned "A STATEMENT OF THE ESTIMATED IMPACT OF TAX INCREMENT FINANCING ON THE ASSESSED VALUES OF ALL TAXING JURISDICTIONS IN WHICH THE DEVELOPMENT AREA IS LOCATED" is amended to read as follows:

Under a tax increment finance plan, the annual revenue generated in any give year is calculated by multiplying the captured assessed value by the total millage levied by all local taxing jurisdictions.

Commencing in 2010, the Amended Development Plan/TIF Plan provides that the DDA will continue to capture taxes levied against the taxable value of real and personal property in the Downtown District by Ingham County, City of Mason, Lansing Community College, and Capital Area District Library.

Under this fourth Amended Plan, the base taxable value reserved to each taxing jurisdiction in 1987 will remain fixed at all levels established in 1987.

The current taxable value in the DDA District and the amount of taxable value subject to capture is shown on Table 3 Schedules 2A through 2D, which means that only 28.16% of the millage assessed in the DDA is currently subject to capture.

Commencing in 2010, the Amended Development Plan/TIF Plan provides that the taxes levied on the increase in taxable value in the District over the base year of 1987 will continue to be captured to finance the Plan, projects and activities over the next 30 years. The estimated cost of the Amended Development Plan over 30 years, including the cost to complete projects in the original plan and new plan initiatives commencing in 2010 is shown on Table 3 – Schedule 1.

The projections are estimated based on one percent inflation over the next 30 years.

Approved by the Board of the Downtown Development Authority of the City of Mason for submittal to the City Council of the City of Mason by resolution of the Board adopted at a public meeting on December 1, 2010.

Approved by the City Council of the City of Mason on \_\_\_\_\_, 2010 by adoption of Ordinance No. 118-A-2010 subsequent to a notice to affected taxing jurisdictions and a public hearing held by the Council on \_\_\_\_\_, 2010.

\_\_\_\_\_  
Martin A. Colburn, City Clerk

\_\_\_\_\_  
Leon Clark, Mayor

CITY OF MASON DOWNTOWN DEVELOPMENT AUTHORITY  
 COMPARISON OF REVENUE TO EXPENSES  
 TABLE 3 - SCHEDULE 1

<u>YEAR</u>	<u>PROJECTED REVENUE</u>	<u>PROJECTED EXPENSES</u>	<u>REVENUES OVER (UNDER) EXPENSES</u>
2010	86,424	142,050	(55,626)
2011	86,424	86,424	0
2012	86,424	86,424	0
2013	86,424	86,424	0
2014	86,424	86,424	0
2015	86,424	86,424	0
2016	87,672	87,672	0
2017	89,553	89,553	0
2018	92,080	92,080	0
2019	94,632	94,632	0
2020	97,210	97,210	0
2021	99,813	99,813	0
2022	102,443	102,443	0
2023	105,099	105,099	0
2024	107,781	107,781	0
2025	110,491	110,491	0
2026	113,227	113,227	0
2027	115,991	115,991	0
2028	118,782	118,782	0
2029	121,601	121,601	0
2030	124,449	124,449	0
2031	127,325	127,325	0
2032	130,230	130,230	0
2033	133,163	133,163	0
2034	136,126	136,126	0
2035	139,119	139,119	0
2036	142,142	142,142	0
2037	145,195	145,195	0
2038	148,278	148,278	0
2039	151,392	151,392	0
2040	154,538	154,538	0
Total	3,506,872	3,562,499	(55,626)

CITY OF MASON DOWNTOWN DEVELOPMENT AUTHORITY  
PROJECTED REVENUE AND CAPTURED REVENUE FOR CITY OF MASON

as of October 14, 2010

TABLE 3 - SCHEDULE 2A

<u>YEAR</u>	<u>PROJECTED TAXABLE VALUE 1% INFLATION</u>	<u>PROJECTED CONSTRUCTION</u>	<u>PROJECTED TAXABLE VALUE</u>	<u>DDA CAPTURE</u>	<u>MILLAGE</u>	<u>TOTAL</u>	<u>PROJECTED REVENUE CAPTURED TAXES</u>
2010	8,862,501	6,000	8,868,501	3,068,991	13.25	117,508	40,664
2011	8,862,501	6,000	8,868,501	3,068,991	13.25	117,508	40,664
2012	8,862,501	6,000	8,868,501	3,068,991	13.25	117,508	40,664
2013	8,862,501	6,000	8,868,501	3,068,991	13.25	117,508	40,664
2014	8,862,501	6,000	8,868,501	3,068,991	13.25	117,508	40,664
2015	8,862,501	6,000	8,868,501	3,068,991	13.25	117,508	40,664
2016	8,906,814	6,000	8,912,814	3,113,304	13.25	118,095	41,251
2017	8,973,615	6,000	8,979,615	3,180,105	13.25	118,980	42,136
2018	9,063,351	6,000	9,069,351	3,269,841	13.25	120,169	43,325
2019	9,153,984	6,000	9,159,984	3,360,474	13.25	121,370	44,526
2020	9,245,524	6,000	9,251,524	3,452,014	13.25	122,583	45,739
2021	9,337,979	6,000	9,343,979	3,544,469	13.25	123,808	46,964
2022	9,431,359	6,000	9,437,359	3,637,849	13.25	125,045	48,202
2023	9,525,673	6,000	9,531,673	3,732,163	13.25	126,295	49,451
2024	9,620,929	6,000	9,626,929	3,827,419	13.25	127,557	50,713
2025	9,717,139	6,000	9,723,139	3,923,629	13.25	128,832	51,988
2026	9,814,310	6,000	9,820,310	4,020,800	13.25	130,119	53,276
2027	9,912,453	6,000	9,918,453	4,118,943	13.25	131,420	54,576
2028	10,011,578	6,000	10,017,578	4,218,068	13.25	132,733	55,889
2029	10,111,694	6,000	10,117,694	4,318,184	13.25	134,059	57,216
2030	10,212,810	6,000	10,218,810	4,419,300	13.25	135,399	58,556
2031	10,314,939	6,000	10,320,939	4,521,429	13.25	136,752	59,909
2032	10,418,088	6,000	10,424,088	4,624,578	13.25	138,119	61,276
2033	10,522,269	6,000	10,528,269	4,728,759	13.25	139,500	62,656
2034	10,627,492	6,000	10,633,492	4,833,982	13.25	140,894	64,050
2035	10,733,766	6,000	10,739,766	4,940,256	13.25	142,302	65,458
2036	10,841,104	6,000	10,847,104	5,047,594	13.25	143,724	66,881
2037	10,949,515	6,000	10,955,515	5,156,005	13.25	145,161	68,317
2038	11,059,010	6,000	11,065,010	5,265,500	13.25	146,611	69,768
2039	11,169,600	6,000	11,175,600	5,376,090	13.25	148,077	71,233
2040	11,281,296	6,000	11,287,296	5,487,786	13.25	149,557	72,713

CITY OF MASON DOWNTOWN DEVELOPMENT AUTHORITY  
PROJECTED REVENUE AND CAPTURED REVENUE FOR INGHAM COUNTY

as of October 14, 2010

TABLE 3 - SCHEDULE 2B

<u>YEAR</u>	<u>PROJECTED TAXABLE VALUE 1% INFLATION</u>	<u>PROJECTED CONSTRUCTION</u>	<u>PROJECTED TAXABLE VALUE</u>	<u>DDA CAPTURE</u>	<u>MILLAGE</u>	<u>TOTAL</u>	<u>PROJECTED REVENUE CAPTURED TAXES</u>
2010	8,862,501	6,000	8,868,501	3,068,991	9.54	84,605	29,278
2011	8,862,501	6,000	8,868,501	3,068,991	9.54	84,605	29,278
2012	8,862,501	6,000	8,868,501	3,068,991	9.54	84,605	29,278
2013	8,862,501	6,000	8,868,501	3,068,991	9.54	84,605	29,278
2014	8,862,501	6,000	8,868,501	3,068,991	9.54	84,605	29,278
2015	8,862,501	6,000	8,868,501	3,068,991	9.54	84,605	29,278
2016	8,906,814	6,000	8,912,814	3,113,304	9.54	85,028	29,701
2017	8,973,615	6,000	8,979,615	3,180,105	9.54	85,666	30,338
2018	9,063,351	6,000	9,069,351	3,269,841	9.54	86,522	31,194
2019	9,153,984	6,000	9,159,984	3,360,474	9.54	87,386	32,059
2020	9,245,524	6,000	9,251,524	3,452,014	9.54	88,260	32,932
2021	9,337,979	6,000	9,343,979	3,544,469	9.54	89,142	33,814
2022	9,431,359	6,000	9,437,359	3,637,849	9.54	90,032	34,705
2023	9,525,673	6,000	9,531,673	3,732,163	9.54	90,932	35,605
2024	9,620,929	6,000	9,626,929	3,827,419	9.54	91,841	36,514
2025	9,717,139	6,000	9,723,139	3,923,629	9.54	92,759	37,431
2026	9,814,310	6,000	9,820,310	4,020,800	9.54	93,686	38,358
2027	9,912,453	6,000	9,918,453	4,118,943	9.54	94,622	39,295
2028	10,011,578	6,000	10,017,578	4,218,068	9.54	95,568	40,240
2029	10,111,694	6,000	10,117,694	4,318,184	9.54	96,523	41,195
2030	10,212,810	6,000	10,218,810	4,419,300	9.54	97,487	42,160
2031	10,314,939	6,000	10,320,939	4,521,429	9.54	98,462	43,134
2032	10,418,088	6,000	10,424,088	4,624,578	9.54	99,446	44,118
2033	10,522,269	6,000	10,528,269	4,728,759	9.54	100,440	45,112
2034	10,627,492	6,000	10,633,492	4,833,982	9.54	101,444	46,116
2035	10,733,766	6,000	10,739,766	4,940,256	9.54	102,457	47,130
2036	10,841,104	6,000	10,847,104	5,047,594	9.54	103,481	48,154
2037	10,949,515	6,000	10,955,515	5,156,005	9.54	104,516	49,188
2038	11,059,010	6,000	11,065,010	5,265,500	9.54	105,560	50,233
2039	11,169,600	6,000	11,175,600	5,376,090	9.54	106,615	51,288
2040	11,281,296	6,000	11,287,296	5,487,786	9.54	107,681	52,353

CITY OF MASON DOWNTOWN DEVELOPMENT AUTHORITY  
PROJECTED REVENUE AND CAPTURED REVENUE FOR LANSING COMMUNITY COLLEGE

as of October 14, 2010

TABLE 3 - SCHEDULE 2C

<u>YEAR</u>	<u>PROJECTED TAXABLE VALUE</u>	<u>PROJECTED CONSTRUCTION</u>	<u>PROJECTED TOTAL TAXABLE VALUE</u>	<u>DDA CAPTURE</u>	<u>MILLAGE</u>	<u>TOTAL</u>	<u>PROJECTED REVENUE CAPTURED TAXES</u>
2010	8,862,501	6,000	8,868,501	3,068,991	3.81	33,789	11,693
2011	8,862,501	6,000	8,868,501	3,068,991	3.81	33,789	11,693
2012	8,862,501	6,000	8,868,501	3,068,991	3.81	33,789	11,693
2013	8,862,501	6,000	8,868,501	3,068,991	3.81	33,789	11,693
2014	8,862,501	6,000	8,868,501	3,068,991	3.81	33,789	11,693
2015	8,862,501	6,000	8,868,501	3,068,991	3.81	33,789	11,693
2016	8,906,814	6,000	8,912,814	3,113,304	3.81	33,958	11,862
2017	8,973,615	6,000	8,979,615	3,180,105	3.81	34,212	12,116
2018	9,063,351	6,000	9,069,351	3,269,841	3.81	34,554	12,458
2019	9,153,984	6,000	9,159,984	3,360,474	3.81	34,900	12,803
2020	9,245,524	6,000	9,251,524	3,452,014	3.81	35,248	13,152
2021	9,337,979	6,000	9,343,979	3,544,469	3.81	35,601	13,504
2022	9,431,359	6,000	9,437,359	3,637,849	3.81	35,956	13,860
2023	9,525,673	6,000	9,531,673	3,732,163	3.81	36,316	14,220
2024	9,620,929	6,000	9,626,929	3,827,419	3.81	36,679	14,582
2025	9,717,139	6,000	9,723,139	3,923,629	3.81	37,045	14,949
2026	9,814,310	6,000	9,820,310	4,020,800	3.81	37,415	15,319
2027	9,912,453	6,000	9,918,453	4,118,943	3.81	37,789	15,693
2028	10,011,578	6,000	10,017,578	4,218,068	3.81	38,167	16,071
2029	10,111,694	6,000	10,117,694	4,318,184	3.81	38,548	16,452
2030	10,212,810	6,000	10,218,810	4,419,300	3.81	38,934	16,838
2031	10,314,939	6,000	10,320,939	4,521,429	3.81	39,323	17,227
2032	10,418,088	6,000	10,424,088	4,624,578	3.81	39,716	17,620
2033	10,522,269	6,000	10,528,269	4,728,759	3.81	40,113	18,017
2034	10,627,492	6,000	10,633,492	4,833,982	3.81	40,514	18,417
2035	10,733,766	6,000	10,739,766	4,940,256	3.81	40,919	18,822
2036	10,841,104	6,000	10,847,104	5,047,594	3.81	41,327	19,231
2037	10,949,515	6,000	10,955,515	5,156,005	3.81	41,741	19,644
2038	11,059,010	6,000	11,065,010	5,265,500	3.81	42,158	20,062
2039	11,169,600	6,000	11,175,600	5,376,090	3.81	42,579	20,483
2040	11,281,296	6,000	11,287,296	5,487,786	3.81	43,005	20,908

CITY OF MASON DOWNTOWN DEVELOPMENT AUTHORITY  
 PROJECTED REVENUE AND CAPTURED REVENUE FOR CAPITAL AREA DISTRICT LIBRARY

as of October 14, 2010

TABLE 3 - SCHEDULE 2D

<u>YEAR</u>	<u>PROJECTED TAXABLE VALUE 1% INFLATION</u>	<u>PROJECTED CONSTRUCTION</u>	<u>PROJECTED TOTAL TAXABLE VALUE</u>	<u>DDA CAPTURE</u>	<u>MILLAGE</u>	<u>TOTAL</u>	<u>PROJECTED REVENUE CAPTURED TAXES</u>
2010	8,862,501	6,000	8,868,501	3,068,991	1.56	13,835	4,788
2011	8,862,501	6,000	8,868,501	3,068,991	1.56	13,835	4,788
2012	8,862,501	6,000	8,868,501	3,068,991	1.56	13,835	4,788
2013	8,862,501	6,000	8,868,501	3,068,991	1.56	13,835	4,788
2014	8,862,501	6,000	8,868,501	3,068,991	1.56	13,835	4,788
2015	8,862,501	6,000	8,868,501	3,068,991	1.56	13,835	4,788
2016	8,905,814	6,000	8,912,814	3,113,304	1.56	13,904	4,857
2017	8,973,615	6,000	8,979,615	3,180,105	1.56	14,008	4,961
2018	9,063,351	6,000	9,069,351	3,269,841	1.56	14,148	5,101
2019	9,153,984	6,000	9,159,984	3,360,474	1.56	14,290	5,242
2020	9,245,524	6,000	9,251,524	3,452,014	1.56	14,432	5,385
2021	9,337,979	6,000	9,343,979	3,544,469	1.56	14,577	5,529
2022	9,431,359	6,000	9,437,359	3,637,849	1.56	14,722	5,675
2023	9,525,673	6,000	9,531,673	3,732,163	1.56	14,869	5,822
2024	9,620,929	6,000	9,626,929	3,827,419	1.56	15,018	5,971
2025	9,717,139	6,000	9,723,139	3,923,629	1.56	15,168	6,121
2026	9,814,310	6,000	9,820,310	4,020,800	1.56	15,320	6,272
2027	9,912,453	6,000	9,918,453	4,118,943	1.56	15,473	6,426
2028	10,011,578	6,000	10,017,578	4,218,068	1.56	15,627	6,580
2029	10,111,694	6,000	10,117,694	4,318,184	1.56	15,784	6,736
2030	10,212,810	6,000	10,218,810	4,419,300	1.56	15,941	6,894
2031	10,314,939	6,000	10,320,939	4,521,429	1.56	16,101	7,053
2032	10,418,088	6,000	10,424,088	4,624,578	1.56	16,262	7,214
2033	10,522,269	6,000	10,528,269	4,728,759	1.56	16,424	7,377
2034	10,627,492	6,000	10,633,492	4,833,982	1.56	16,588	7,541
2035	10,733,766	6,000	10,739,766	4,940,256	1.56	16,754	7,707
2036	10,841,104	6,000	10,847,104	5,047,594	1.56	16,921	7,874
2037	10,949,515	6,000	10,955,515	5,156,005	1.56	17,091	8,043
2038	11,059,010	6,000	11,065,010	5,265,500	1.56	17,261	8,214
2039	11,169,600	6,000	11,175,600	5,376,090	1.56	17,434	8,387
2040	11,281,296	6,000	11,287,296	5,487,786	1.56	17,608	8,561