INFRASTRUCTURE STUDY GROUP

CITY OF LATHRUP VILLAGE

27400 Southfield Road, Lathrup Village, Michigan 48076

INITIAL MEETING
AGENDA

THURSDAY, APRIL 25, 2019
Conference Room – Second Floor

7:00pm

AGENDA ITEMS

A. **Welcome and Overview**
B. **Major Committee Goals**
C. **Overview of Financials**
D. **Systems**
    A. **Sewer**
    B. **Water**
    C. **Roads**
    D. **Sidewalks**
    E. **Ditches / Culverts**
E. **Cost Estimates by Infrastructure Category**
F. **Next Steps**
G. **Next Meeting**
H. **Adjourn**

Financals – How did we get here?:

- Municipalities across the state are struggling because a combination of revenues falling drastically due to the 2008 housing crash, reduced State revenue sharing, and the effects of Headlee\Proposition A.

Proposition A:

- Limits the individual taxable value (TV) growth of a parcel to the lesser of inflation or 5%
- The city's taxable value fell by $75M from 2007 to 2014 which equates to a 40% cut in revenue. Unfortunately, because TV increases are limited to a maximum of 5%, even if we have 5% + growth, our revenue will not reach 2007 levels until 2027.

Headlee:

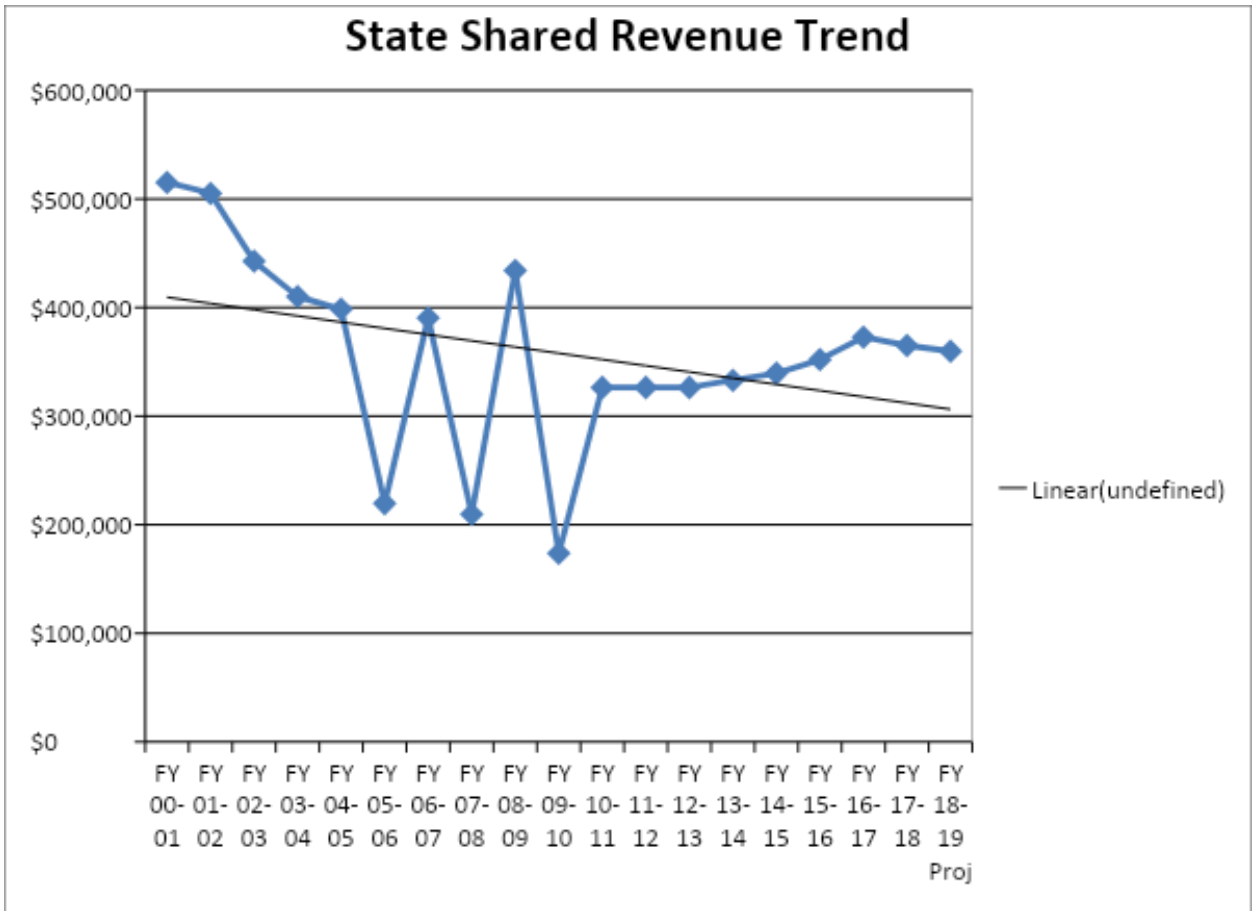
- Lowers millage rates in years where TV increases such that city receives no more tax revenue than the prior year adjusted for inflation.

	Year 1	Year 2
TV:	$1M	$1.1M
Millage:	1 Mill	.909 Mill
Revenue:	$1,000	$1,000

- This Millage Reduction Factor (MRF) is applied in any year that total TV in a city increases. In years where TV decreases, cities CANNOT raise their millage rates back up. Millage rates will always fall over time unless residents vote to do a Headlee Override.
- Lathrup voters approved a Headlee Override in 2010, which allowed us to raise our millage rates back to the chartered maximum of 20 mills. However, as TV started increasing during the recovery, millage rates again started getting permanently reduced.
- The only way to increase revenue is to build new structures in the city (e.g. Michigan First's addition adds substantial tax revenue). However, because we are essentially built out, our revenue remains stagnant.

State Shared Revenue:

- Over the years, the State has balanced its budget at the expense of municipalities. They have drastically cut revenue sharing. LV now gets about $200K less than we received back in the late 90's.


State Shared Revenue Trend
$600,000
$500,000
$400,000
$300,000
$200,000
$100,000
$0
FY 00-01
FY 01-02
FY 02-03
FY 03-04
FY 04-05
FY 05-06
FY 06-07
FY 07-08
FY 08-09
FY 09-10
FY 10-11
FY 11-12
FY 12-13
FY 13-14
FY 14-15
FY 15-16
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FY 17-18
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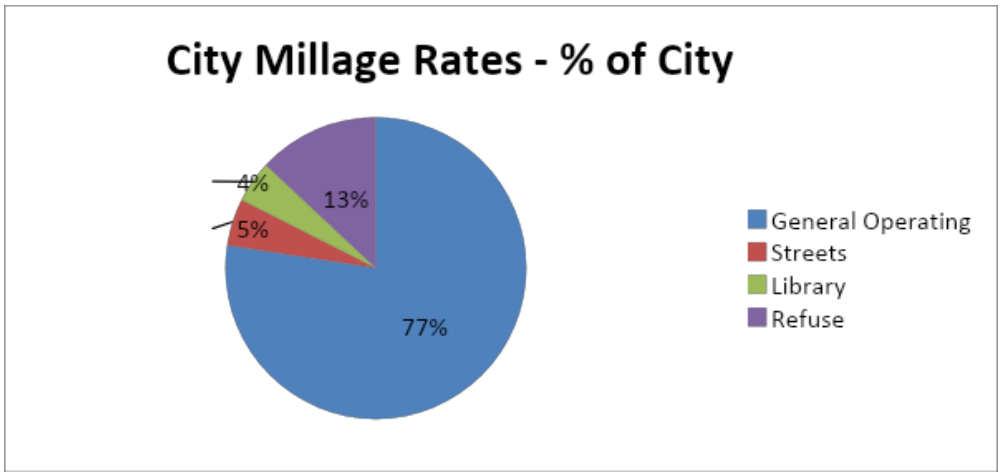
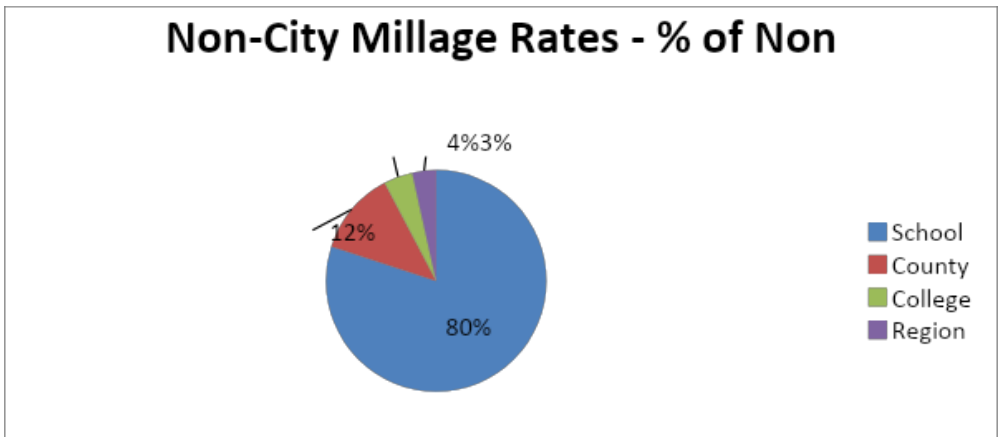
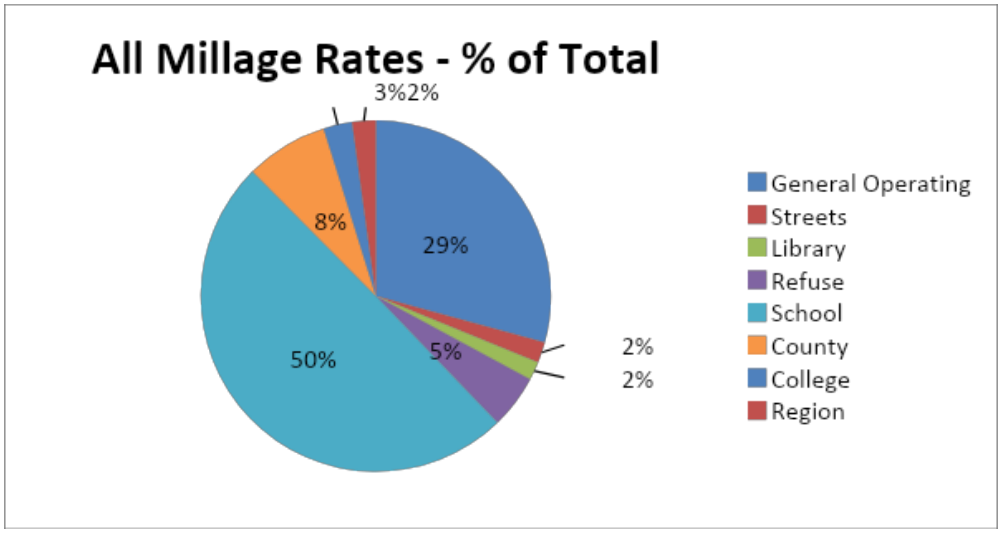
FY 17/18 Millage Rates (Total Millage = 58.8557 – But we pay such high Taxes!

City Millage Rates:		Other Millage Rates	
General Operating	17.2204 (77%)	School	29.2947 (80%)
Streets	1.1138 (5%)	County	4.4908 (12%)
Library	1.0000 (4%)	College	1.5555 (4%)
Refuse	2.9001 (13%)	Region	1.2804 (3%)
Total:	22.2343 mills		36.6214 mills







Sanitary Sewer:

- Waste from all drains and toilets inside a facility go the Sanitary Sewer (SS). The SS is a separate system from the storm drains.
- We have 145,000 linear feet (approximately 26 miles) of sewer pipe ranging from 8 to 24 inches in size. 82% of the pipe is vitrified clay with the remaining 18% made out of concrete. Sewer pipes generally have about a 50 year life to them. Sewer pipes typically have a grout joint every 3 feet.
- During the 696 construction, the SS was split into two systems with 11 Mile Road serving as the divider. The north system flows toward our 3 million gallon overflow tank (located behind the Michigan First building). When waste begins accumulating faster than we can get rid of it, it fills the tank. When the tank is full, we either force a Sanitary Sewer Overflow (SSO), which is not permitted, or waste begins to backup into basements.
- We outflow our SS to the Evergreen Farmington Sewer Disposal System (EFSDS). We are permitted to outflow @ a maximum rate of 3.35 cubic feet per second (CFS) total for both systems. For example, if the south system is flowing at 1 CFS, then the north side will flow at a maximum of 2.35 CFS.
- Tanks are currently being constructed upstream (north) of LV. Once these tanks are completed, we will be able to increase our outflow rate.
- As of 2012-13, 66% of the south side sewer lines were in need of repair. Lathrup initiated a Cure in Place Program (CIPP), which forms a new pipe inside the existing pipe, to fix this issue. This program is now complete. The north side used a CIPP program in 1994 that replaced 20% of the system and then did another 40% of the system in 2008. About 14 miles of pipe have been replaced via CIPP. Generally, the lines, north and south are in good condition. One big benefit from CIPP pipes is that there are no joints to allow ground water infiltration.
- Our system gets lots of Infiltration and Inflow (I/I) where ground water enters the SS. This occurs through breaks in pipes due to root damage, decaying grouting joints and bad service connections. Ground water unnecessarily adds to the system (especially during heavy rains) making it difficult to outflow at a rate greater than or equal to the inflow. This can cause an SSO. Our dysfunctional storm drain system adds to the problem as the sewer pipes sit in water longer than they should. The pressure on the ground water around the pipe forces the water in. Normal contents of the pipe do not normally flow out of the pipe as it is a gravity-based (versus pressure) system.
- In addition, we also get I/I in the SS via manholes that are flush with the ground. To correct this, we rehabilitated 230 manholes by raising them 6 to 12 inches off the ground. This prevents inflow from the frame and cover.

- The biggest form of ground water in the SS comes from the footing drains of houses. Homes built after approximately 1965-70 have their footing drains connected to the storm drains and their water does not go into the SS. However, the remainder of the homes have footing drains connected to the SS (see map for more information). The solution here is to disconnect the footings in these houses and use a sump pump to pump the water to the storm drain system. However, this would cost about $10 to $15K per home. Also note that the existence of a sump pump does not necessarily mean a connection to the storm drain, as there are times when a pump is needed to push water uphill to the sanitary sewer connection. About 40% of the south side homes have footing drains connected to the SS. Most homes on the north side are connected to the SS.
- We have a grout repair program budgeted for the next two year for the south side. This process uses a robotic packer that fits inside the pipe (no excavation required) and detects the joints. It then seals the joint and blows in compressed air. If air leaks, then material is fed in under pressure and continues until the air no longer leaks.
- Lathrup has undergone these I/I repairs because we are under a consent order (either from the MI DNR or Oakland County) to fix the problem. This order was put in place around 2006 (?) when we experienced SSOs and our waste was dumped into the storm sewer. We are still under decree. We focused on the south side as there was more I/I there and by lowering the outflow rate of the south side, we can maximize the usage of the tank on the north side.
- CIPP repair of lines costs about $35 to $85 per foot. Excavate and replace costs about $150 per foot. Robotic grouting costs about $15 to $25 per foot and has an expected life of about 10 years.
- The current Sewer Rate includes a debt service factor ($7.69 per 1,000 cubic feet) that pays for the two bond issues the city took out that provided funds for the repairs noted above. There is a Sewer bond initiated in 2007 for approximately $1.5M and a Michigan State Revolving Fund (SRF) bond initiated in 2010 for $850K. The funds from these bonds have been completely used and the city will be paying them off until 2026 & 2029, respectively. There is also an “Operations & Maintenance” component ($12.75), which pays for tank maintenance, repairs, grouting, etc. There is also a component for the city ($6.25) to pay for city staffing of the system. Lastly, there is a rate of $55.01 paid to the EFSDS for taking our sewage.
- A new sewer rate typically goes into effect in July (beginning of the new fiscal year).

Water System:

- We have 31 miles of water main (pipe) in the city. 17 miles (55%) was installed prior to 1930. 24 miles was installed prior to 1972. Given the life expectancy of a water main line is 50 years, our system is very outdated and explains why we have 15 to 30 water main breaks per year. About 90% of our system is ready for replacement.

Water Distribution System Inventory			
Water Main Components	**Installation Year**	**Quantity (LF)**	**% of Total Main**
Meter Pits	-	2	-
Hydrants	-	243	-
Gate Valves	-	303	-
6" Inside Dia. Water Main	Before 1930	41,500	25.00%
	1931 - 1958	9,700	5.80%
	1959 - 1972	19,000	11.50%
	1973 - 2000	1,300	0.80%
8" Inside Dia. Water Main	Before 1930	39,200	23.50%
	1931 - 1958	7,000	4.20%
	1959 - 1972	10,000	6.00%
	1973 - 2000	20,800	12.50%
	After 2001	4,400	2.50%
12" Inside Dia. Water Main	Before 1930	11,200	6.80%
	1973 - 2000	2,700	1.50%

- Water mains typically run in the greenbelt between the sidewalk and the road. Unfortunately, they cannot always be placed in the greenbelt due to roots or other utilities and as a result, can end up underneath the edge of the road. Because of this, it is always best to coordinate water main replacement with road repaving.
- Most pipe is cast iron pipe which significantly narrows over time, which reduces pressure. Newer pipe is made out of C900 plastic and does not narrow over time.
- Because our pressure is reduced, our 245 hydrants do not pump ideally (which raises homeowner's insurance rates) and the system provides less than ideal water pressure for residents.

- The system has 300 gate valves which can turn off/on water to different areas of the system. However, many gate valves do not work properly (or at all). This is very problematic as water main breaks are forced to repaired "under pressure," which is more difficult, takes longer and costs more money. The city also has to pay for all the water that is wasted when this happens. A gate replacement program has been suggested for the upcoming Capital Improvement Plan (CIP).
- Water main repairs cannot be done via CIPP and require excavation to remove and replace. The cost is about $150 per foot ($792K per mile).
- Santa Barbara (from 11 to 12 Mile Road) and part of San Diego are the next big replacement projects and will start this summer. This area was chosen as it will help to restore pressure to the largest area.
- We have a high percentage of water loss from water main breaks, hydrant flushing, etc. A water loss study was also suggested to be put in the new CIP. The study uses a process to detect leaks, which often find their way into the SS via defective grout joints.
- Water mains are required to be at least ten feet from SS lines.
- Water mains are typically only on one side of the street. To get water to homes on the opposite side of the street, service leads run perpendicular to and underneath the street. Service leads run from the water main to the homeowner's shutoff valve. The hole for the water main under the road is bored with a horizontal bore so that the road does not get torn apart. Excavations are required to attach new service leads to both the water main and shutoff valve. Homeowners are responsible for the line from the shutoff valve to their home.
- Water main replacement is currently in the CIP over a 20 year period. However, the City Engineer recommends replacing 15,570 feet as soon as possible. This will help to restore better pressure and fire protection to a large swath of residents. These replacements should be coordinated with any street resurfacing program the committee recommends.
- Due to the large number of water main breaks in the city, there is a lot of sediment in the lines. The SFFD has had problems with this sediment clogging their engine pumps during fire calls.
- The current total water rate is $39.38 per 1,000 cubic feet. This rate has a component for capital improvements ($8.21), city administration ($15.50) and SOCWA ($15.67). Capital improvements to the water system are typically funded via the water rate versus a millage tax.

Road System:

- The city has 21.14 miles of local streets and 7.36 miles of major streets. 11 Mile Road and Evergreen Road (our side) are owned by the city and we are responsible for their upkeep. Southfield Road and 12 Mile Road are owned by the RCOC. Evergreen was repaved last summer with the aid of a substantial (50%) federal grant.
- In 2003, Lathrup approved Charter amendments. As an incentive for approval, the city promised to use up to 2 mills of the increased millage for a road improvement program. This program completed in 2010. However, the city has still continued to dedicate mills to the road programs since 2010.
- The city receives ACT 51 money from the state to allocate toward the roads. This money is divided by the state into local and major street allocations. In addition, LV usually transfers some money from the General Fund to the Local Streets fund each year. However, with the lowered property values and the squeeze put on municipalities by the state, there is not a lot of money available for this transfer.
- With the money the city can afford to spend on road programs, we can repave about .4 miles of road per year. As a result of this insignificant amount, our road surfaces degradation rate is accelerating.
- The city has about $600K in triparty funds (County, RCOC & LV) saved for the Southfield Road project. In addition, the Downtown Development Authority (DDA) has about $1M saved for work that will be necessary in the DDA district when the project comes to fruition.
- PASER ratings are done to assess the quality of our residential roads with a rating of 1 being worst and 10 being best. Roads with ratings of 1 to 3 typically require a rip out and replacement. Although, in some situations, the base of these roads can be salvaged, eliminating the need for a rip out. Ratings greater than 3 allow for resurfacing.
- The last time a gravel road was paved was in 2005 (part of Lacrosse). Residents were assessed for this. The city charter allows for (but does not require) charging an assessment to residents on and near a gravel road that is paved for the first time.
- Generally, the cost to resurface a road is about $60 per foot. A rip out and replace generally costs about $100K per 450 feet or $1.2M per mile.

Sidewalks:

- Sidewalks with significant cracks or a rise greater than 2 inches are required to be replaced. The city ordinance in LV (and most cities) makes it the responsibility of the property owner to maintain the sidewalk.
- The DDA Clean-up Crew (currently DPS workers) has assessed the business frontage sidewalks. The plan is for them to continue to assess residential sidewalks as well. We hope that there might be some code enforcement help in assessing sidewalks (could police do some of this?).
- Assessors are noting if a block repair is required due to a city tree caused issue. While the sidewalk is the property owner's responsibility regardless of cause, LV might be agreeable to providing some relief in these situations. A count is necessary to assess the potential cost and to determine if there is any possibility of providing assistance.
- When blocks are identified for repair or replacement, it is the property owner's responsibility to have it fixed by a set deadline. In the past, the city has attained a low contracted rate that property owners can take advantage of to replace their defective sidewalk blocks. The city has discussed this approach for the current program.

Storm Ditches & Culverts:

- Maintenance of ditches and culverts are the responsibility of the property owner. It is has been almost a decade (possibly more) since any attention has been paid to the storm ditches and culverts.
- Culverts are the tubes that go underneath the driveways. Theoretically, water will flow from ditch-to-ditch through the culverts. They are designed to drain the city's roads.
- On any given street, the ditch system is designed to flow in one direction eventually leading to a storm drain. However, due to lack of maintenance, a large percentage of ditches do not flow due to tree roots, accumulated sediment, blocked culverts, improperly installed rain gardens, etc. In some cases ditches have been filled in by residents without providing a means for water to continue flowing.
- About 15 years ago, the city encouraged rain gardens in the ditch to soak up excess water. However, most rain gardens were not created using appropriate design methods and resulted in additional blockages.
- When a ditch is blocked, water backs up all the way upstream of the blockage. Water in many areas will back up so bad that it covers the sidewalks and lawns. Drainage takes days or even weeks. For example, recently, 5 days after a moderate rain, about 10% of the sidewalks still had water on them during a 2 mile walk. Over time, this will damage both vegetation and sidewalks.
- When the water backs up, SS lines sit longer covered with water and under pressure. This allows unnecessary I/I.
- Ditches need to be assessed. Normally, non-conforming ditches and culverts would have been identified by code enforcement and corrected on an ongoing basis. However, this has been ignored for so long that it has become a large issue.
- Some residents have "infiltration ditches." This method uses a perforated culvert tube at the bottom of the ditch that is completely surrounded in pea gravel. Waffle grates are often also installed and connected to the tube. The rest of the ditch is covered in dirt and grass planted. When completed, there is no ditch to speak of and water drains into the tube and is carried off to the storm drain. The former ditches behind Panera Bread were converted to this system. The cost to do this is about $67 per foot, but needs to be done on an entire street side—i.e., individual houses cannot do this unless everyone on their side of the street does so as well.
- Storm sewers have not been videotaped since 1990.
- Storm sewers run into the Rummel system and eventually out to the Rouge River.

Ditch and Culvert Maintenance

The street-side drainage system in Lathrup Village is crucial for the proper and timely disposal of rainwater. Portions of the system are older than the city's 1953 charter, and maintenance is equally crucial for the drainage system to function correctly.

There are three main features of the drainage system: Ditches, culverts and storm drains. Maintaining these features is a partnership between Lathrup Village residents and the Department of Public Service (DPS) staff. Like many outdoor projects, upkeep of the drainage system is a continuous process. Stagnant water can breed mosquitoes and algae, attract unwanted wildlife, and cause an unpleasant odor.

Ditches: Homeowners are responsible for the removal of debris from ditches along their property. Leaves, branches and twigs, clumps of grass clippings, weeds, stones and trash impede the flow of water.

Homeowners with shallow ditches should feel free to dig them out with shovels and similar implements (avoid using power tools for this task). What to do with excess soil? Simply scatter it among gardens and landscaping.

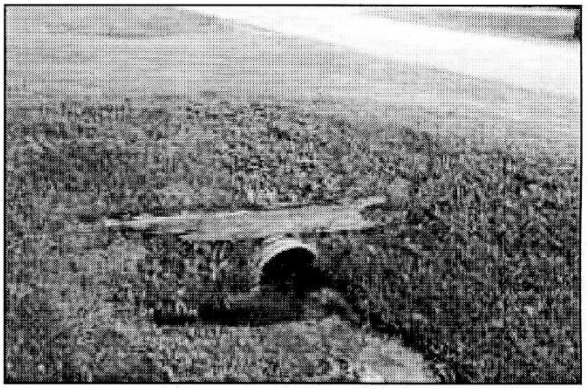
Culverts: These are the wide tubes – often made of galvanized steel – beneath driveways and sidewalks that connect the ditches. And like ditches, homeowners are responsible for keeping culverts free of debris at the entrances. This is especially important during the autumn leaf season.

Homeowners are responsible for replacing culverts beneath driveways and private walkways if they rupture or heave due to winter's freeze-and-thaw cycle. Culvert replacement requires a permit that can be obtained at City Hall; the cost is $40 and includes an inspection at the time of installation.

Drains: The domed grates that cover storm drains throughout Lathrup Village are known as "beehives." Homeowners are encouraged to remove debris observed on or around beehives to help ensure the flow of water. DPS staff is responsible for all structural maintenance and repair of beehives and drains.

When homeowners suspect that a storm drain is damaged or clogged, they are welcome to request a DPS inspection.

Call the city's customer service line, 248-557-2600, extension 222.



Ordinance Language

Sec. 30-41. - Maintenance of ditches and culverts. It shall be the duty of every property owner to maintain all stormwater ditches and culverts constructed or installed in the area between his property line and the centerline of any street or alley abutting upon his property in a condition free of waste, dirt, plant growth, and other obstructions which block or obstruct the designed flow of stormwater in the ditch or culvert. All ditches and culverts which are so obstructed as to allow the unreasonable accumulation or impounding of stormwaters are declared to be public nuisances and are subject to the abatement and special assessment provisions as provided in this Code.
(Ord. No. 409-10, pt. II, 10-18-2010)

To raise an additional $1M per year for road system capital improvements via millage rates:

Current Taxable Value in LV: $128,611,000

Required Mills to raise $1M = $1,000,000/$128,611,000 = .00778

To an individual homeowner, this would mean an additional $778 in annual taxes per every $100,000 in Taxable Value.

To raise an **additional** $875,000M per year for water system capital improvements (water main replacement) via water rates:

Current Water Rate $.03938 (SOCWA $.01567 + LV $.01550 + Capital Improvement $.00821)

FY 18/19 expected use: 16,072,000 cu ft to be purchased (after loss):

Rate to raise additional $875,000: $\frac{\$875,000}{16,072,000 \text{ cu ft}}$ = $.05444 per cu ft

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Already have $.00821 built into the rate to raise funds for capital improvement

16,072,000 cu ft x .00821 =$131,951

Average water bill is 6 units (600 cu ft):

600 cu ft x $.03938 = $23.63

Additional capital fee ($.05444 per cu ft feet to raise $875,000):

600 cu ft x .05444 = $32.66

==⍰ Water bill portion of average monthly invoice goes from $23.63 to $56.29 per month ($32.66 more per month or a $392 per year increase) and $1,006,951 is raised for capital improvements.

To raise a **total** of $875,000 for capital improvements, substitute the .05444 capital rate for the existing capital rate of .00821. The new rate becomes .08561 (.01567 + .01550 + .05444)

600 cu ft x .08561 = $51.37

So the average customer pays a $51.37 per month versus the original $23.63 ($27.74 more per month, or $332.88 per year) and $875,000 Is raised for capital improvement.
