

**STUDY SESSION  
OF THE UNIVERSITY CITY COUNCIL**  
5th Floor of City Hall  
6801 Delmar  
**January 27, 2020**

**AGENDA**

Requested by the City Manager

**1. MEETING CALLED TO ORDER**

The Study Session of the City Council was held in Council Chambers on the fifth floor of City Hall, on Monday, January 27, 2020. Mayor Terry Crow called the Study Session to order at 6:30 p.m.

In addition to the Mayor, the following members of Council were present:

Councilmember Steven McMahon  
Councilmember Paulette Carr  
Councilmember Jeffrey Hales  
Councilmember Tim Cusick  
Councilmember Stacy Clay; (*Excused.*)  
Councilmember Bwayne Smotherson

Also in attendance were City Manager, Gregory Rose; City Attorney, John F. Mulligan Jr.; Members of the Stormwater Task Force; Mark Holly, Eric Stein, Gary Aronberg, John Samuel Tieman, Todd Thompson, Bobette Patton, and Robert Criss.

**2. CHANGES TO REGULAR COUNCIL AGENDA**

Hearing no changes to the Agenda, Mayor Crow turned the meeting over to Councilmember Carr.

**3. STORMWATER TASK FORCE REPORT AND PRESENTATION**

Councilmember Carr stated this long-awaited report from the Storm Water Task Force is an exceptional product created by some of the hardest working people in U City. As such, it is her extreme pleasure to introduce the Chairperson of this Task Force, Dr. John Tieman.

Dr. Tieman stated with Resolution 2017-10 the Storm Water Task Force was established on the 26th of June, 2017. The appointed members are engineers and scientists, as well as concerned citizens. Many are motivated by professional dedication or the fact that they have been personally impacted by stormwater.

- **River Des Peres Flooding**

Hurricane Ike made big news on Sunday, December 14, 2008, and reminded the entire community of the City's stormwater problems. This resulted in Council's decision to create the Storm Water Task Force.





- ❖ Between 3 and 5 1/2 inches of rain fell in less than six hours
- ❖ Residents, who had only experienced inches of rain before, were now facing 8 to 10 feet of water. That flow could be roughly 10 miles per hour and 15 feet per second; the volume and speed of which no one can withstand or outrun
- ❖ Flooded Wilson Ave and Cambridge
- ❖ Flooded basements and submerged cars
- ❖ 350 homes were damaged and 275 were condemned
- ❖ Two neighbors, Louise Bryant; age 64 and Willie Johnson; age 81 lost their lives
- ❖ The bottom right picture depicts the Wilson Avenue buyout area where houses used to be

- **Creek Bank Erosion**

Stormwater is not a rare problem, and for some, the creek banks of the River Des Peres are continuously eroding and impacting their homes.

- ❖ On the left is a house on Hanley south of Shaftsbury where in the next few years creek bank erosion will cause the loss of an air conditioner compressor, and in the next 15 years, a loss of the entire house
- ❖ On the right is another site on Shaftsbury across from the Natatorium where a homeowner had to build a bank stabilization wall at her own expense



- **Yard Flooding**

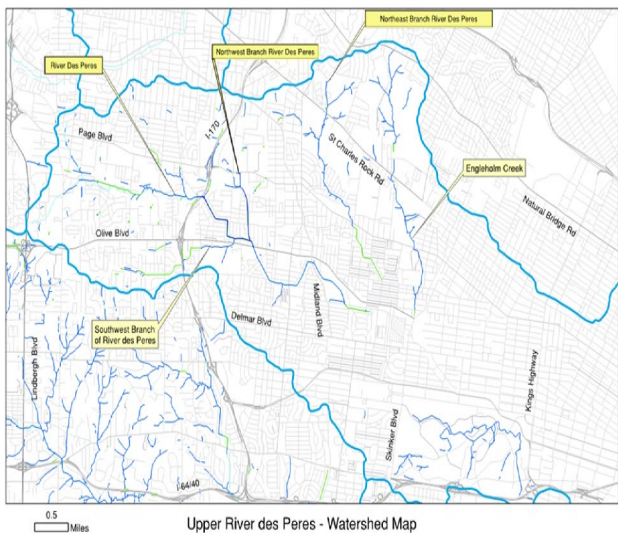
Some problems are far uphill from the River Des Peres or Engleholm Creek. This picture depicts flooding that occurred in a yard near Lewis Park.



- **Watershed**

University City is part of a large watershed comprised of over 13 square miles that extend from U. City into Olivette, Overland, Vinita Park, Bel-Nor, Greendale, Charlack, Hanley Hills, Pagedale, Normandy, and Hillside.

This diagram illustrates the boundaries that constitute the River Des Peres watershed with Engleholm Creek; a familiar hotspot.



Mr. Holly stated at the initiation of this project the only data available to the Task Force was data collected by MSD from 1994 through 2017. This data indicated that MSD had received roughly 900 complaints. However, when reviewed in greater detail the Task Force determined that some households had filed multiple complaints which brought the total down to 600 households.

- ❖ Sewer overcharge was the only description provided on these complaints; therefore, it was difficult to get a clear sense of the types of problems that were showing up in these households
- ❖ Some of the complaints were clustered in a small area, so MSD's mitigation for one household could have actually been mitigation for several households

To fully learn the extent of the problems and gather more data, the Task Force developed a survey in the latter part of 2017 which asked residents questions about:

- ❖ Standing water in yards and streets
- ❖ Flooding of streets, yards, houses, businesses, and creeks
- ❖ Erosion to yards and creeks
- ❖ Basement flooding

An electronic link to this survey was provided in the February edition of *ROARS*. The survey remained active for four months and resulted in the receipt of less than 100 survey responses. The Task Force then inserted a full-blown copy of the survey, along with the link in *ROARS* and the responses increased to slightly over 300. About a third of these were paper responses and there were a few residents who submitted a response but wished to remain anonymous.

Data from both the physical and electronic surveys were analyzed and in February 2019 the Task Force completed a summary of the data.

- ❖ Standing water was reported by 201 households and of that, 122 reports discussed its impact on the public streets
- ❖ Flooding; (*flash flooding or intense high-speed gushes of water*) was reported by 117 households
  - 34 reports involved creeks
  - 83 reports were not related to creeks
- ❖ Yard erosion was reported by 78 households
  - 27 reports were related to creek banks
- ❖ Basement flooding was reported by 152 households
  - Some of the 152 reported sites may likely overlap with other reports
  - 88 households reported that basement flooding occurs multiple times throughout the year; (*the Task Force believes this should be a major area of focus*)

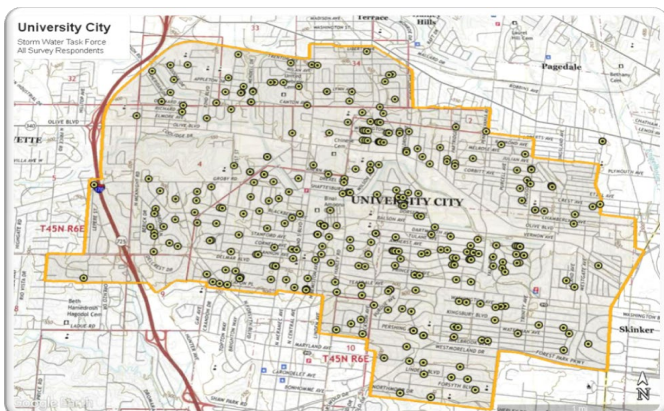
Mr. Holly stated the Task Force also reached the following conclusions:

- ❖ An analysis of both the MSD data and survey responses revealed that once the reports to MSD were subtracted out there were approximately 800 households that had experienced some type of water problems in the past.
- ❖ The data is voluminous and requires extensive site visits and an engineering analysis that is beyond the ability of part-time volunteers to complete.
- ❖ Differentiation between public, private, and identification of remedial projects require a detailed evaluation by full-time staff or engineering consultants.

- **Google Earth Map**

Mr. Holly stated in addition to obtaining these statistics members felt it was important to look for clumps in the data by physically visiting the sites to see what was going on and where these houses were located. This information was loaded onto a Google Earth Map and colored markers were used to easily identify gradient problems.

- ❖ In some cases where the indicator appeared to identify one household when the map was scaled up, there could be six households clustered in a very tight band.
- ❖ As a result of these clusters, mitigation for one home could result in mitigation for several households



- **Debris in Creeks**

Mr. Stein stated when members of the Task Force walked areas of River Des Peres and the Engleholm Creek they discovered that some culverts were blocked by debris which reduces conveyance and exacerbates flooding. This is just one example of what they found.



Other examples:

- ❖ The Engleholm Creek at Kingsland. There are three, 23-foot culverts going under the roadway and two of them are two-thirds full of sediment.
- ❖ The Groby Street Bridge won't even pass a two-year flood elevation; which the City experienced on July 22nd of last year.
- ❖ The Pennsylvania Bridge by the Dog Park had water on the I-Beams approaching the deck, and there was quite a bit of sediment under the bridge. This is only a quarter mile from the tunnel.

The Task Force informed Public Works officials of their observations wherein more questions evolved after learning of the jurisdictional confusion regarding maintenance of these creeks and culverts:

- ❖ Who owns culverts?
- ❖ Who is responsible for maintenance?
- ❖ Who is responsible for backyard flooding and erosion?
- ❖ Which basement backups are a public problem and which are private?
- ❖ Who is responsible for creek bank stabilization?

- **Telemetering Rain Gauges**

Mr. Stein stated the Task Force began to give consideration to a warning system for the very flashy River Des Peres and Engleholm Creek and found that it could be a feasible option for U City.

The community is fortunate to have some historical data in the Watershed which operates a network of rain gauges in conjunction with Project Clear. And the folks there were kind enough to give members of the Task Force log-in privileges that allowed them to monitor those gauges. In addition, there is a USGS Stream Gauge located at the Purdue Bridge in Heman Park. And when you put all of this data together you can get the historical data needed to design a flood prediction algorithm, which has been done, courtesy of Professor Criss of Wash U. Mr. Stein stated there are numerous logistical details associated with methods of warnings, but surprisingly, the Task Force discovered that it would only cost the City between ten and twenty thousand dollars for a network of three or four fully automated telemetering rain gauges and the software needed to process the data and make these flood predictions.

Mr. Stein stated three members of the Task Force, including himself, Professor Criss and Mr. Aronberg are members of the Flood Warning Committee, and therefore have the resources to do a lot of the heavy lifting. However, some support will be needed from Public Works to help with the installation process.

- **Problem Sites**

Members of the Task Force visited a sampling of the problem sites along the River Des Peres and Engleholm Creek and talked with some of the homeowners.

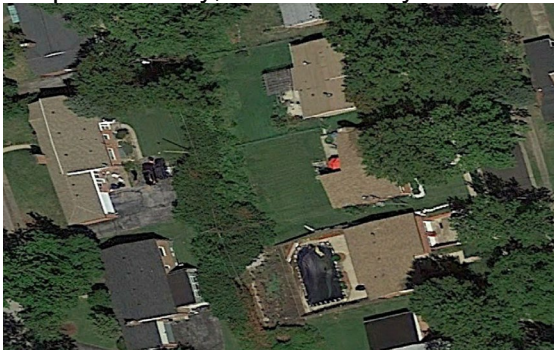
They observed:

- ❖ Overland flow from large areas concentrating in yards, causing erosion, ponding, and interior damage to homes
- ❖ Blocked culverts

They Discovered:

- ❖ The problems are complex
- ❖ The analysis needed to address these problems is complex
- ❖ The choices for mitigation are complex

This is a photograph depicting the site along Glenside Lane, and the yellow arrows (*on PowerPoint version*) represent the flow of water coming through these yards. What's important to recognize is that this water is coming down a slope, flowing from three or four backyards to the next, and then concentrating in the backyard of a resident who had an in-ground swimming pool. The mud and debris from this flow of water filled the pool so often that the owner finally had to decide to remove the pool. Today, this is the only form of mitigation available to our residents.



This next photograph which depicts water running down the street is of Hanley and Carleton Avenues. When Hanley was upgraded 15-years ago Carleton was converted from a through-street to a cul-de-sac. That cul-de-sac has no drainage and now this water runs through several yards located on Carleton and Wellington. This created another complex situation for the Task Force.

- ❖ Water draining down a street
- ❖ No storm sewer inlets
- ❖ Stormwater jumping the curbs and flowing through yards
- ❖ Whose responsibility is it: MSD, City or property owners?

Whether this is a public or a private problem is something Council will have to decide.



Mr. Aronberg stated while the Task Force has provided some examples, they have identified roughly 800 households that have reported some kind of problem. As a group of volunteers they are unable to walk up and down all the creeks or visit all 800 homes to determine whether the problem is associated with tree roots; which some would say is a private problem, or whether there is water running down a street because the inlets have been removed or there is inadequate drainage. As a result of the magnitude and complexity of these problems, the City will need to institute a professional approach to help design and implement some of the projects recommended by the Task Force.

- **Mitigation - Public Projects**

- ❖ Re-grading yards; *(public and private problem)*
- ❖ Buy-out homes; *(public problem)*
- ❖ Stream bank protection
  - Residents have had to incur their own expenses to protect themselves from a 13-mile watershed
- ❖ Flash flood early warning system; *(feasible option)*
- ❖ Education: flood self-help
  - A 6-inch curb could prevent floodwaters from the River Des Peres from entering some low-lying basement stairwells. An educational process that identifies and teaches residents about various prevention methods, and the pros and cons of insurance would be beneficial
- ❖ Storm sewer improvements
- ❖ City Code: minimize flooding and ponding
  - Codes could be implemented to help the City get ahead of the curve where things like the construction of new driveways, demolition, and the rebuilding of homes can change drainage patterns
- ❖ Detention; *(in a built-out community this option has less value, but it can be beneficial)*
- ❖ FEMA Community Rating System (CRS)
  - Flood insurance is heavily subsidized by Congress which is being decreased almost every five-years. There is a possibility U City could enter into a Community Rating System to help reduce that cost
- ❖ Stream maintenance; *(some culverts are owned by MoDOT, the County, and U City)*

- **Mitigation - Private Projects**

- ❖ Small-scale yard re-grading
- ❖ Redirection of roof drains away from structures
- ❖ Remove root obstructions from laterals
- ❖ Flood-proofing structures
- ❖ Flood insurance for houses in and near the floodplain
- ❖ Elevation certificates
  - proof that a house is not below the base flood elevation may benefit some homeowners
  - Residents' whose homes are mapped outside of the floodplain should still obtain insurance

- **Comparison to Neighbors**

	Ladue	Town & Country	Saint Peters	Average
Number of projects	57	38	100	
Total cost of stormwater program	\$114,000,000	\$8,300,000	\$125,000,000	
Population	8576	10975	56076	
Square mileage of city limits	8.59	11.9	21.2	
Cost per capita	\$13,293	\$756	\$2,229	\$5,426
Cost per square mile	\$13,271,246	\$697,479	\$5,896,226	\$6,621,650

**Question: Where should U City fall within these comparisons?**

Mr. Aronberg stated for initial planning the Task Force has recommended a U City stormwater budget of \$40 million dollars for capital projects; (\$6.8 Million/SQMI & \$1,100/person). A review of the Corps of Engineer's Report determined that \$19.5 million dollars have already been estimated for buy-outs.

- **Conclusions**

Stormwater complaints fell under six categories:

- ❖ Stormwater between yards
- ❖ Basement flooding
- ❖ Flooding from creeks
- ❖ Erosion of creek banks
- ❖ Poor stormwater collection in streets
- ❖ Expensive flood insurance

- **Near-Term Recommendations**

- ❖ Flashflood warning system
- ❖ Library of self-help measures
- ❖ Ongoing collection and filing of stormwater complaints and floodplain information
- ❖ Participation in FEMA's Community Rating System to reduce insurance rates
- ❖ Examination of Ordinances: no increase runoff or erosion

**Questions: Should the Storm Water Task Force remain in effect? Is there a role they should/can play in exercising these recommendations?**

- **Long-Term Recommendations**

Approximately 800 stormwater complaints and survey responses were identified. The City will need to engage an engineering consultant or assign a dedicated full-time staff member to:

- ❖ Consolidate complaints into mitigation projects; *(mitigation will require more resources than are now available to the City)*
- ❖ Prioritized public projects; *(may result in fewer projects)*
- ❖ Reestablish MSD's OMCI tax; (a minimal, yet beneficial tax)
- ❖ Continue to pursue buyouts with support of Congress
- ❖ Corps of Engineers: establish benefits and costs
- ❖ FEMA grant by proper authority from River Des Peres & Engleholm Creek.
- ❖ Determine funding responsibility: The City, County, MSD, MoDOT

Councilmember Carr stated she would like to give big hats off to Councilmember Cusick for his persistence to serve and commitment to the work this Task Force has performed.



Councilmember Cusick stated both he and Councilmember Carr look forward to the opportunity to discuss some of these recommendations with the City Manager. But regardless of whether these dedicated individuals continue as a Task Force or a Commission, his goal is to make sure this work; initiated by Councilmember Carr, stays at the forefront of everyone's mind so that some of these astute recommendations are realized.

Councilmember Hales thanked the Task Force for the level of detail and labor put into developing this report. He stated the information regarding Carleton Avenue made him curious to know whether the cul-de-sac had been engineered and built by St. Louis County since Hanley is a County road? Dr. Tieman stated he remembers when Hanley was rerouted and suspects that the engineering documents from twenty or twenty-five years ago probably missed the degree of water running down that street. So he thinks the responsibility is pretty muddled by now. He stated he actually works in this business and both Ladue and Town & Country are his clients. Ladue would be reluctant to take responsibility for fixing Carleton, while Town & Country would fix it. So each community takes a different position. St. Peters has a really different situation because everything in St. Peters, except for their drinking water, belongs to St. Peters. So, in that case, they would take responsibility. It becomes a political question, but theoretically, the construction of an inlet on Carleton would be an MSD or St. Louis County fix. However, if a city has the money, they could accomplish this work much faster by doing it themselves than relying on either of those two entities.

Mayor Crow questioned whether the monies listed for these three cities was the total amount amassed in conjunction with municipal and other funding sources? Dr. Tieman stated all of the funds have come from the City.

Mayor Crow asked if the chart was representing that Ladue has or will set aside \$14 million dollars? Unidentified Task Force Member: It's not a yearly amount and his belief is that it represents a ten-year period. Both Ladue and Town & Country have a park and stormwater sales tax and since the funds were not allocated, they are split between stormwater and parks. But as he understands it, most of U City's parks and stormwater sales tax has been allocated to parks and bonds. So it is a very community-specific issue.

Mayor Crow stated he's sure his colleagues would join him in thanking the Task Force for their dedication to this very professional presentation with just the right amount of detail. He stated the question of whether the Task Force remains in effect could probably be best answered by its members since it involves their time. But what he will say is that seldom has Council seen a group with this depth of knowledge and a presentation that has risen to this level.

#### 4. Adjournment

Mayor Crow adjourned the Council Study Session at 6:11 p.m.

LaRette Reese  
City Clerk

