

Memorandum

Department of Public Works



TO: Michael O. Geisel, P.E.
City Administrator

FROM: James A. Eckrich, P.E. *JAE*
Public Works Dir. / City Engineer

DATE: February 14, 2019

Please forward to PPW for review
prior to sending to full City Council

RE: Chesterfield Valley Storm Water Mater Plan
Engineering Services Contract – Thomas and Hutton

As you know, the City of Chesterfield contracts with Thomas and Hutton for Engineering services related to the Chesterfield Valley Storm Water Mater Plan. Thomas and Hutton was originally selected by the City of Chesterfield as the firm most qualified to perform these Engineering services in 2003. Since that time, Thomas and Hutton has created and maintained the storm water master plan model and provided excellent service to the City of Chesterfield. Chesterfield Valley Stormwater modeling poses significant technical engineering challenges. When the levee was originally re-certified in 1997, the City elected to utilize state of the art software, AdICPR (Advanced Interconnected Pond Routing) to model precipitation events, ground permeability characteristics and dynamic three dimensional flow characteristics. Prior stormwater models used two dimensional flow and the AdICPR software provided a better and more accurate model. Each and every channel, reservoir, and structure in Chesterfield Valley is incorporated into this model.

The City of Chesterfield initially sought recommendations from the software creator to identify engineering firms who had extensive experience with the AdICPR product. They identified Thomas and Hutton as a premier firm highly experienced in the use of their modeling software. It should be noted that AdICPR's strength is modeling three dimensional flow, in minute time increments. It should also be noted that the flat topographic characteristics of Chesterfield Valley are more similar to coastal hydrology than our normal upland relief hydrology. Thomas and Hutton was engaged to create the AdICPR model for Chesterfield Valley and it has been continuously updated with each development as the stormwater infrastructure changes. Literally hundreds of hours of professional engineering have been incorporated into the model. Each link, node, reservoir, pipe, and tributary area has multiple individual modeling variables which result from engineering judgement. Not only is it imperative that the institutional knowledge be maintained and consistent

judgement be employed with each future iteration, it is equally important that the responsibility and liability associated with each one of these decisions be maintained.

As detailed in the attached memorandum from Senior Civil Engineer Chris Krueger, the City Engineering Staff recommends that we continue using Thomas and Hutton for Engineering services related to the Chesterfield Valley Storm Water Master Plan. Not only does Thomas and Hutton provide excellent service, there would be substantial costs in transferring the storm water model to another firm. Additionally, it is beneficial for the City of Chesterfield to use a firm outside our regional area (T&H is located in Savannah, Georgia) as this minimizes the chances for a conflict of interest associated with a development.

Please remember that there is no requirement to “bid” Engineering services. In fact, it is a violation of Missouri Law to secure certain professional services (including Engineering) through a bidding process. Thomas and Hutton was previously selected as the firm most qualified to perform this service. Therefore, entering into a new contract with Thomas and Hutton would be compliant with both Missouri Law and the City’s Purchasing Policy.


Action Recommended

This matter should be forwarded to the Planning and Public Works Committee of City Council. Should the PPW Committee support the Staff recommendation, it should recommend to the full City Council approval of a new contract with Thomas and Hutton in an amount not to exceed \$250,000. Funding for this contract is provided from the Chesterfield Valley Special Projects fund and has no impact on the City’s General Fund.

Memorandum

Department of Public Works



DATE: February 14, 2019
TO: James A. Eckrich, P.E., Public Works Director/City Engineer
FROM: Chris Krueger, P.E., Senior Civil Engineer 
RE: Chesterfield Valley Storm Water Master Plan Model
Professional Services Contract

As you know, the City of Chesterfield includes 4,380 acres of levee protected area, known as "Chesterfield Valley". Because Chesterfield Valley is levee protected, all of the rain that falls within it must be collected then pumped out. Because of this unique arrangement, storm water detention and conveyance facilities within Chesterfield Valley are not regulated by the Metropolitan St. Louis Sewer District (MSD). Instead, the Monarch-Chesterfield Levee District (MCLD) regulates the levee protected area and only water quality requirements are regulated by MSD. The MCLD maintains the Monarch Chesterfield Levee and all related features, including the existing pump stations that discharge storm water from inside the levee out to the Missouri River or Bonhomme Creek. The City of Chesterfield Public Works Department coordinates with the MCLD and reviews storm water facilities within Chesterfield Valley against the Chesterfield Valley Storm Water Master Plan (CVSWMP).

Storm water management within Chesterfield Valley pre-dates the incorporation of the City of Chesterfield. Our files are littered with references to the "Booker Plan", which divided Chesterfield Valley into seven watersheds and created the original storm water management plan for Chesterfield Valley. After the Flood of 1993 subsided development within Chesterfield Valley exploded. The City of Chesterfield realized it needed to update and adjust the "Booker Plan". Accordingly, in 2003 the City of Chesterfield City Council authorized approval of a contract for engineering and storm water modeling services with Thomas and Hutton Engineering (T&H). Thomas and Hutton was selected as the most qualified for two primary reasons: 1) T&H's excellent experience with Interconnected Channel and Pond Routing Software (ICPR); and 2) Thomas and Hutton did not perform work in the St. Louis area, ensuring there would be no "conflict of interest" for engineering services within Chesterfield Valley. As part of its contract, T&H was to complete a comprehensive storm water master plan, maintain the associated master plan model, and provide ongoing engineering services for the City. T&H completed its first master plan model in 2005 using the above-referenced ICPR software. This model reflected as-developed conditions in Chesterfield Valley at that time and laid the groundwork for future storm water facilities in undeveloped areas.

The CVSWMP and model were continuously reviewed and updated as development occurred from 2005 to 2018. In 2018, the model was comprehensively reviewed and updated to ensure it remained accurate. As part of this review, Public Works staff completed a survey of all existing channels, pipes, and culverts within Chesterfield Valley. We recorded invert elevations, channel width, pipe size, and composition materials of the existing storm water facilities. City staff then worked with T&H to incorporate the updated data into the model thereby ensuring the continued accuracy of the storm water model. Accordingly, we are confident that the storm water model accurately reflects the stormwater facilities that have been installed to-date, which enables us to continue to implement required stormwater facilities and make informed decisions as development occurs. For example, as development occurs, a developer will occasionally want to construct storm water facilities that differ from those contained within the model. In those cases, T&H will re-run the model and analyze the proposed alternative. Provided the alternative is functionally equivalent to the originally proposed improvement and there is no negative impact to the CVSWMP the alternative improvement may be accepted. Having current information for all existing stormwater facilities is critical to analyze proposed alternatives. The cost for T&H to perform functional equivalence studies is reimbursed by the developer proposing the change.

The storm water master plan model includes seven (7) watersheds and 492 nodes that connect 505 segments. Segments include pipes, culverts, open channels, and reservoirs. Nodes are points that typically connect the segments. The model includes pump stations, which are located in watersheds four, five, six, and seven. A schematic of the model is shown below in Figure 1.

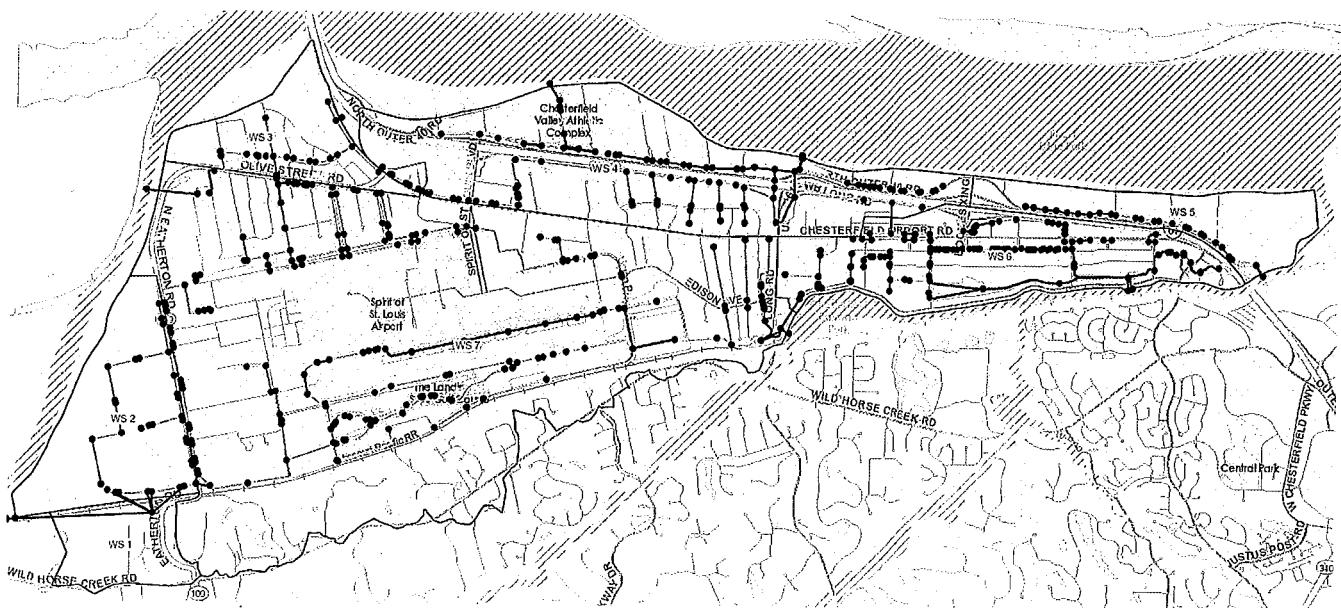


Figure 1: 2018 Valley Storm Water Master Plan Model

Thomas and Hutton was formed in 1946 and has an extensive history of performing storm water management services throughout the United States. They have a team of engineers, hydrologists, and GIS specialists that provide storm water services for both small and large-scale projects. T&H has effectively managed and updated the model, worked with other agencies (including FEMA and the MCLD) as necessary, and provided

prompt and professional service to the City. As referenced previously, T&H is located in Savannah, Georgia and does not typically provide design services in the St. Louis Area. This eliminates the chance for a conflict of interest on a local development project and ensures our consultant is acting in the best interest of the City of Chesterfield

After reviewing this matter in detail, it is my opinion that the City of Chesterfield should continue its relationship with T&H. Not only has T&H provided excellent service to the City of Chesterfield, but they also house and maintain the current stormwater model. Additionally, Engineering services are procured based on qualifications and I do not believe another firm can match the qualifications and service that T&H has provided. Even if another consultant could match T&H's service, there would be an associated cost to transfer the model to another firm. **Accordingly, I recommend that the City of Chesterfield continue to contract with T&H for engineering and storm water modeling services in Chesterfield Valley. This will necessitate the execution of a revised contract, and a purchase order in an amount not to exceed \$250,000.** These costs are not included in the City's annual budget, as they are paid through the Chesterfield Valley TIF Account. It is anticipated that this contract and purchase order will allow T&H to provide continued engineering services for the City over the next five years.

If you have questions or need additional information, please let me know.
