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MEETING SUMMARY
Forest Park/Berry Watershed Area Stakeholder Committee
June 28, 2011

Travis Avenue Baptist Church Welcome Center
6:30 – 8:30 p.m.

AGENDA

1. Welcome
2. System Maintenance vs. System Capacity
3. Recap of How We Got Here
4. Review Alternatives
5. Questions & Discussion

City of Fort Worth Staff Members present:

- Greg Simmons, P.E., Assistant Director, Transportation & Public Works (TPW)
- Don McChesney, P.E., Engineering Manager, TPW Storm Water Management
- Steve Eubanks, P.E., Senior Professional Engineer, TPW Storm Water Management
- Linda Young, P.E., Senior Professional Engineer, TPW Storm Water Management
- Ranjan Muttiah, P.E., Professional Engineer, TPW Storm Water Management
- Eric Fladager, AICP, Comprehensive Planning Manager
- Cristi Lemon, Neighborhood Education Manager
- Regis Andrez, Neighborhood Education Specialist
- Joe Komisarz, Business Manager
- Linda Sterne, Communications Officer, TPW Storm Water Management

Watershed Consultants present:

- Burton Johnson, P. E., Michael Baker Jr. Corporation - Feasible Options Study Project Manager
- Chris Johnson, P. E., CFM, Assistant Vice President, Texas Water Resource, Michael Baker Jr., Corporation
- Pam Roach, President, Pam Roach Public Relations – Feasible Options Study Public Involvement Consultant
- Zubin Sukheswalla, PE, CFM, Project Manager, AECOM
- Terry M. Barr, P. E., CFM, Halff & Associates

- Dorian French, P. E., Brown & Gay Engineers

Stakeholders present:

- Alonzo Aguillar
- David Barrett, Brentmoor N. A.
- John Belknap
- Alex Clarke, Frisco Heights N. A.
- Charles Crouch
- Al Davis
- Richard Deniker
- Paul Dennehy, Berry Street Initiative
- Lee F. Hampton
- LaWayne Hauser, SWM CAC
- James Hawks, Paschal N. A.
- George Jensen
- Dorothy J. Luck
- Lito Rodriguez
- Will Stallworth
- Richard Smith
- Sue C. Smith
- Robert Snoke, Rosemont N. A.
- Paula Trayham, Frisco Heights N.A
- Judy Williams, Westland N. A.

SYSTEM MAINTENANCE vs. SYSTEM CAPACITY

Greg Simmons, P.E., Assistant Director of Transportation & Public Works

STAFF PRESENTATION

[\(Click here to view slides 1-14\)](#)

We’ve been working on evaluating the area for quite some time to identify what can be done to improve the drainage in ways that are affordable and acceptable to the community. This is the third in a series of meetings with the Forest Park Berry area and we’re here tonight to report our progress.

Two common questions throughout this process have been:

1. How Does Existing Maintenance of the Storm Water System Relate to Existing Flooding Problems?
 - Deterioration of the City’s existing storm water system occurred over many decades. Prior to 2006, when the Storm Water Utility was established, maintenance was primarily reactive, taking action when a serious problem showed up. With the establishment of the Storm Water Utility the City now has the resources to actively seek to find and truly correct deficiencies in the system.
 - The City is aware that it has a great obligation to maintain the storm water system, and has a long way to go before it catches up with decades of strictly reactive maintenance. Now, we have a program in place to effectively maintain the system. If you see a

problem with any part of the storm water system please report the problem by calling (817) 392-8100.

2. What if the Existing System Was Kept Up To Speed, Would Flooding Problems Still Exist?

The Answer is YES.

- The pipes just aren't large enough to handle the amount of runoff produced in heavy rains. Based upon the slope of the land, all of the water that flows through streets, yards, and drainage ditches is trying to drain into a pipe system that eventually delivers the water to the Trinity River just north of the Zoo.
- In one area of the watershed all of the water is being directed to a 3.5' diameter pipe system. During intense rains it would take a 10' diameter pipe to adequately drain the runoff generated from this area.
- Even if the entire system was working at its designed capacity, it is still not large enough to handle very intense rains.

As a result, the City is left with two dilemmas as we go through the process of identifying feasible options: (1) A pipe system that hasn't been maintained well and (2) a pipe system that even if maintained well, still is not large enough to handle intense rains.

So, while we're about the business of trying to get our maintenance program up-to-speed and correct the problems that have accumulated over decades, we're also trying to figure out how we can get a system with the capacity to handle this level of rain.

RECAP OF HOW WE GOT HERE

Burton Johnson, P.E., *Project Manager, Michael Baker Jr. Corp.*

CONSULTANT PRESENTATION

[\(Click here to view slides 15 - 66\)](#)

Mr. Johnson opened with a timeline describing the remaining steps of the project.

Timeline (After tonight's stakeholder meeting)

- Public feedback will be obtained and evaluated
- Additional study of measures based upon public feedback
- Online survey (available thru July 15) and continued outreach activities
- Additional meetings will be held, if necessary
- Public meeting to report findings and recommendations in October (Note: this item was updated to reflect the updated schedule)

- August 2011 – Recommendation of measures to carry forward for more detailed study and potential implementation

Description of the Watershed

- The Forest Park/Berry watershed comprises 813 acres (a little over one square mile). When it rains, all of the water drains into the same pipe system which is under capacity, only capable of handling about 1.3 inch of rain per hour. Rainfall that exceeds 1.3 inches/hour overwhelms the system and can pose a flood threat.
- The largest share of damages over time are expected at the 2.6 inch per hour level. Based on historical averages it is estimated that this intensity of rain has about a 10% chance of happening in any given year. The best information available to us would suggest that the 2004 storm had a rain intensity of about 2.2 inches per hour.

Possible Mitigation Measures

- *INCREASE CONVEYANCE* - Build bigger pipes and channels. Solutions primarily involving increased conveyance are cost prohibitive as well as being extremely disruptive to the community.
- *INCREASE STORAGE* – Create designated areas to direct water and store it there (versus where it's being stored now which is in houses and streets). **This is the most reasonable strategy.**
- *AVOIDANCE* -
 - Flood -proof home (e.g. install flood walls around properties)
 - City acquisition of the flood prone properties. At this point the City would only consider this in cases where the property owner volunteers to sell the property.
- *COPING* – dealing with the flood problems. Purchasing flood insurance, installing flood warning systems.. **This is not the preferred solution.**

Local Drainage Improvements

If we construct areas to store water, we still have to get water to those areas and we must avoid just moving the flood from one place to another. This means that new pipe would have to be installed to convey the water from where it currently accumulates to the new storage areas.

Expected Annual Damage

Comparing the expected damages over time against different sized rainfall events indicates that, over a long period of time, the largest damages will come from rainfall events in the neighborhood of a 10-year frequency event. This event is equivalent to

about a 2.6-inch rainfall in one hour. Currently, the existing drainage system can handle about one-half of this, or about 1.3 inches of rainfall per hour.

Past studies, which were seeking to identify solutions that would protect property owners from a 3.8 inch/hour event, identified very large storage basins as a possible solution. Such basins would be very expensive and impractical to construct. If the focus is on the 2.6-inch event described above, a smaller detention basin could be constructed that would provide a more reasonable, while still meaningful and effective, amount of storage.

Based on this, the resultant desired volume of storage is about 68-acre feet - the equivalent of about 6 feet deep of water covering an area the size of the Paschal High School Campus. While this is still a large amount, and finding such volume is challenging, it is much more obtainable than the massive basins previously considered.

The Challenge

The challenge of this process is that we have to identify solutions that work; that we can afford; and that are acceptable to the community. The solutions must also be:

- Integrated into designated storm water areas
- Minimally disruptive to homes and businesses
- A community amenity where possible
- Coordinated with other ongoing public and private initiatives
- Consistent with good stewardship of tax payer dollars

A lot of these work against each other, however.

THE PROBLEM
(Broken down into Five Study Areas)
[Go to presentation slides 28 - 58](#)

The study areas somewhat align with the existing drainage systems and the Rosemont neighborhood, which encompasses over half of the Forest Park/Berry watershed.

The following are watershed-wide measures that have been considered or suggested:

- Enlarge pipes in the ground to get water to storage areas
- Alleyway Detention – Construct underground detention modules in alley ways
- Underground Storage tied to Road Reconstruction – Buried modular storage containers on top of which low-traffic level amenities can be constructed such as ball fields, parks, parking lots, etc. Can be installed in tandem with street construction.
- Railroad Right-of-Way detention – Underground system or above-ground swale adjacent to the track. If options are identified that involve the railroad the City will pursue these.
- Transit-Oriented Development – new pedestrian-friendly development around commuter rail stations which could attract redevelopment. The City could impact such development to provide flood relief.

NOTE: The Study areas outlined below are listed in the same order as presented during the Stakeholder Committee meeting, and not necessarily in numerical order:

STUDY AREA 5 North of Berry and West of Forest Park (See slide #32 for Area 5 map)

- Current Size – 149 Acres
- Amount of area desired for detention – 13 acre feet
- Measures suggested and/or being considered (See slide #37 for Costs, Volume and potential Impact)
 - Urban Greenway Detention
 - TCU Performing Arts
 - Transit Oriented Development

STUDY AREA 4 - South of Berry and North of Cleburne (See slide 39 for Area 4 map)

- Current Size - 139 acres
- Amount of area desired for detention – 12 acre feet
- Measures suggested and/or being considered (See slide #44 for Costs, Volume and potential impact)

- Fort Worth ISD/Drugstore Underground Detention
- Greenway Detention
- Detention under Transit Parking
- Transit Oriented Development Detention

STUDY AREA 2 - South of Cleburne (See slide #46 for Area 2 map)

- Current Size – 127 Acres
- Amount of Area desired for detention – 11 acre feet
- Measures suggested and/or being considered (See slide #50 for Costs, Volume, and potential impact)
 - Industrial site Detention
 - Greenway Detention
 - Transit Oriented Development Detention

Disadvantages:

- Acquiring large business interests is very expensive
- Must consider loss of jobs
- Loss of tax base

STUDY AREA 1 - South of Biddison (See slide #52 for Area 1 map)

- Current Size – 214 Acres
- Amount of Area desired for detention - 18-acre feet desired for storage
- Measures suggested and/or being considered (See slide #54 for Costs, Volume and potential impact)
 - Industrial site Detention
 - Greenway Detention
 - Transit Oriented Development Detention
 - BNSF Railroad Corridor along W. Biddison Street

STUDY AREA 3 - Across Berry Street toward Paschal High School (See slide #56 for Area 3 map)

- Current Size 184 Acres
- Amount of area desired for detention - 15 acre feet
- Measures suggested and/or being considered (See slide #58 for Costs, Volume and potential impact)
 - Paschal Detention

- Greenway Detention

How Do We Get the Desired Volume of 68-Acre feet? (See presentation slide #'s 59-60)

The Most Affordable Way

- Transit Oriented Development Detention (23 acre feet)
- Greenway Detention (45 acre feet)
- Local drainage improvements would be needed to support these options

Total volume = 68 Acre feet

Total Costs = between \$18M and \$28M

Level of Service = 2.6"/hour of storm water runoff

The Most Acceptable Way

- Transit Oriented Development Detention (23 acre feet)
- Detention under Transit Parking (12 acre feet)
- Paschal Detention (15 acre feet)
- Watershed-wide measures (5 acre feet)
- Detention along the current BNSF Line parallel to Biddison Street
- Plus local drainage improvements would be needed to support these options

Total volume = 55 acres.

Total Costs = \$21M to \$33M

Level of Service= 2.3"/hour of storm water runoff

Plan Comparison Table (See Chart on presentation slide #61)

Measure	Cost	Level of Service
<i>Tunnel Plan</i>	\$50M to \$75M	3.8"
<i>Most Affordable</i>	\$18.6M to \$28M	2.6"
<i>Most Acceptable</i>	\$21M to \$33M	2.3"
<i>Existing System</i>	---	1.3"

- ✓ Tunnel Plan – Expensive and would have to be phased in over several years at a cost of several million dollars per year. Full benefit would not be experienced until completion of entire project.
- ✓ Most Affordable plan (2.6 inches) – Would double the pipe system’s existing capacity.

- ✓ Most Acceptable – (2.3 inches) – Would almost double the system’s existing capacity.
- ✓ Existing System – (1.3 inches) – continued maintenance of existing system

Staying away from homes and working with current infrastructure helps us achieve Acceptability, Affordability and Effectiveness.

SUMMARY

- We have identified a plan that includes:
 - Storage implemented via expected development activity in conjunction with Transit Oriented Development
 - Storage under proposed transit parking facility
 - Storage under Paschal High School Athletic Fields
 - Local improvements to drainage system
- The estimated Cost is \$21 to \$33 million
- Almost doubles the existing system capacity
- Can be phased in over time
- Requires substantial underground detention
- Maintenance of existing and new drainage systems should remain a priority

UNCERTAINTIES

- We’re really hanging a lot of this plan on the expectation of the Transit Oriented Development
- We could have a major flood event
 - When big flood events happen, funding becomes available
 - Shift in public sentiment – people might decide to sell their homes

DISCUSSION, Q & A

1. Regarding underwater storage systems, what happens to the water once it’s stored inside? What is the outward delivery system?

Consultant Response:

- It’s drained out through a smaller pipe through gravity drainage. Just as an above-ground detention basin has a pipe at the bottom that’s smaller, it meters water out

slowly so it doesn't impact flooding downstream. Unlike a sump (or reservoir), the water doesn't stay there, it moves through gravity drainage.

2. Is there any chance that some side streets are not necessary and streets could be widened to improve storage?

Consultant Response:

- Almost all streets in the community are required to access homes and/or businesses. In residential areas, some cross streets are adjacent to homes and could potentially be utilized, but these streets are still typically used to access garages on corner lots. And even if a suitable street is identified, it must still be located in a lower elevation to provide effective storage. The idea has not been considered previously, and we will take a look at the concept to see if there is some viability.

3. Have you considered repaving streets with porous pave stones, similar to what they have in Portland, Oregon?

Consultant Response:

- Yes, but our soils are primarily clay and clay doesn't absorb water well. Also sediment gets caught in porous pavement and clogs it up, which creates a maintenance issue. The use of porous pavement in some limited circumstances may be helpful but, overall, it is not expected to be a significant part of the solution.

4. Stakeholders from the Rosemont area want you to pursue the Biddison Railroad track option. The place is now called Victory Forest Park. It's a triangular area located on Gordon and Biddison Streets, and the Burlington Northern Railroad tracks. There are about 4 acres or more there which could be used for detention and inexpensively from the railroad because it's abandoned and they don't maintain it.

Consultant Response:

- We will evaluate this opportunity.

5. Question about underground storage. If you ripped up Paschal and other fields and installed underground storage containers, where would you drain the water?

Consultant Response:

- The underground storage units would be connected to a storm pipe, and would gravity drain into the downstream system (similar to a surface detention basin). The outfall pipe would be restricted to meter out these flows. Because of this, the underground

storage units would be constrained regarding depth. They could only be deep enough to allow for gravity flow into the underground pipe system.

6. Would you consider working with existing vacant commercial properties located near Paschal H.S., versus disturbing the playing fields at the Paschal site?

Consultant Response:

- Some of the vacant commercial sites already have existing flooding problems. In addition, the property values along major corridors are excessive and push us beyond the affordability threshold. The nice thing about the playing field at Paschal is that we could work with the school district, bury the storage containers and when we're done, it looks exactly like it did before except they might have a brand new field with a better irrigation system.

7. Do you have a timeline for submitting recommendations to the City?

Consultant Response:

- We're targeting August. That's not a hard deadline but that's our goal. We're not making hard, specific recommendations. We're going to submit a short list of things back to the city that say, "These warrant investigation", but these items will still have to be vetted and explored in more detail.

8. If you were to acquire properties and create linear features, would it be a linear park?

Staff Response (Greg Simmons):

- Any sort of above-ground detention that we do will be done with the mind of integrating the storm water facility into the community as an attractive amenity that is well maintained.

9. What is involved in maintaining underground storage modules and will it be done well?

Consultant Response:

- Maintenance of the underground storage modules is an issue because as silt gets in these boxes, it builds up and causes problems. The concern is not the pipe itself because the velocity is usually high enough that it scours out well. But as silt gets in the modules, it falls out and causes an expense for the City to maintain. We will evaluate maintenance requirements in detail before any decisions are made to make sure we can maintain the storage units.

10. We are very excited about the Biddison Street option but what good is green space without trees planted on them? How does that affect our ability to plant trees?

Consultant Response:

- Trees can be replanted where you have green infrastructure. They also intercept rainfall. If we pursued something in the business area where the cars stacked up during the flood of 2004, it would take the form of streetscape. Furthermore, any “linear” storage would visually look like a channel, but it would be landscaped and designed to take the form of a community amenity (and not just a “ditch”).

11. Is TCU responsible for conducting water runoff studies with all of their redevelopment?

Staff Response – (Don McChesney)

- We’ll work with TCU as they redevelop to see that they don’t make things worse, that’s the requirement the City has. A lot of that area is already impervious so as TCU redevelops, they’re not changing what’s already out there. Our standard is to work with TCU and other agencies so that as they redevelop, they don’t leave the area worse off.

12. Will be notified by the City of when presentations will be made (about this project)?

Consultant Response

- Yes.