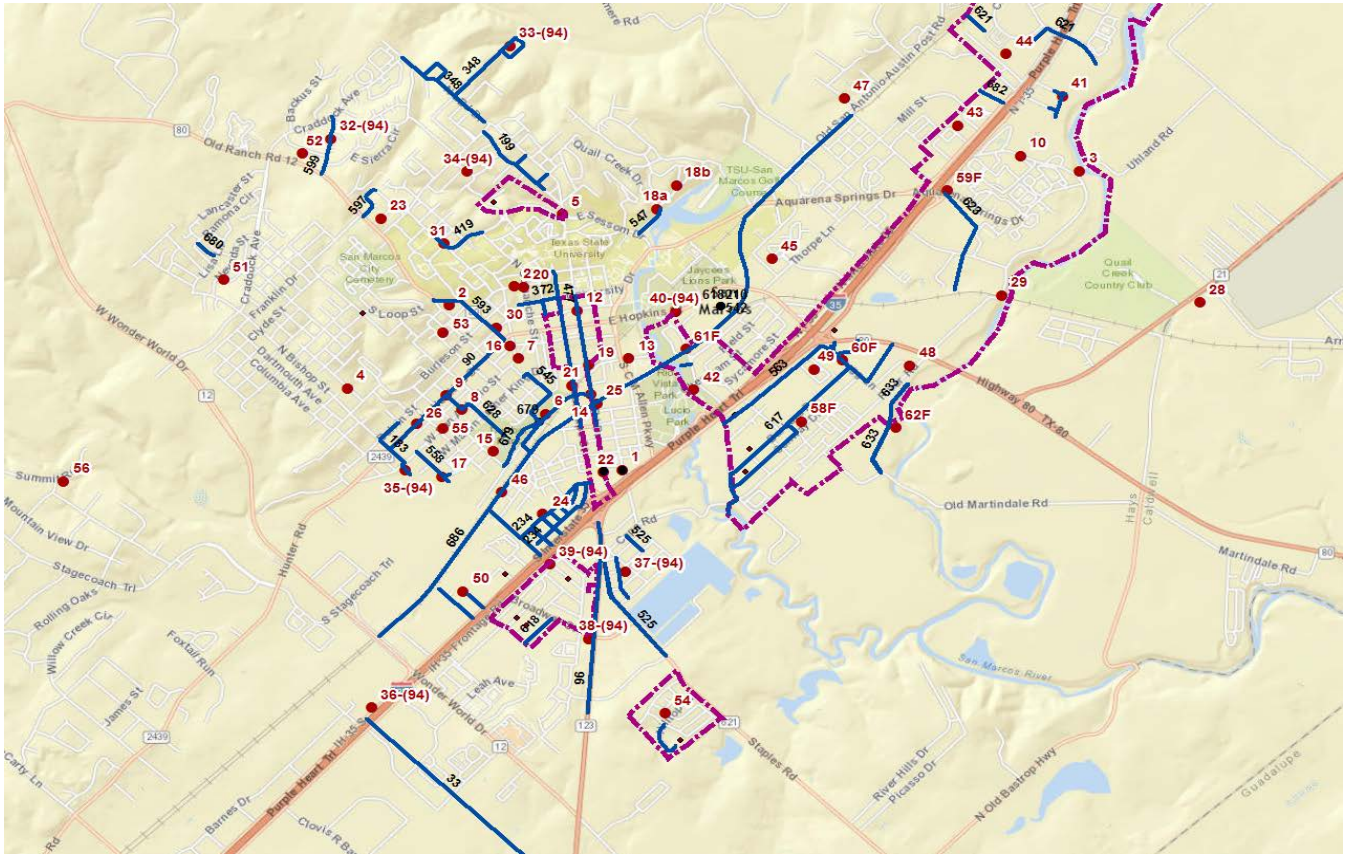
Field Assessment Report (Hot Spots)



Site No.: *1* **Location:** *700 Blk McKie St (Willow Springs Creek)* BACK TO MAP

Project covered by CIP #683 according to the new "2018-2027 CIP"

SITE SUMMARY

Project constructed: Culvert Upgraded to __" RCP.

OPT B

OPT C

OPT D

Challenges

OPT A *Adding culverts to existing structure will not result in significant change to level of service. Significant reconstruction (new bridge) is required to realize any reduction in overtopping frequency. The potential improvement in level of service may not justify the cost.*

OPT B

OPT C

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *1* **Location:** ***700 Blk McKie St (Willow Springs Creek)*** BACK TO MAP

BACKGROUND INFO

Date: *12/20/13* Time: *14:00* Attendees: *SW, TW, CS, KCP*

Flood Complaint Summary: *Low water crossing*

Watershed: *Willow* Hydro Subbasin: *W5-4*

Est. Drainage Area (ac): *2,500* Est. Flood Freq. (yrs): *2* *(RAS: <2)*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes:

Local Storm Drain System? Y / N Notes: *SD inlet along McKie St at parking lot*

GIS Data Available? Y / N

Related Flood Complaint(s): *Site 22 is located 400 ft upstream*

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other:

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None

Inches: *~4* Date: *10/31/13* Notes: *Road overtopped but not closed*

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear

Notes:

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry

Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid

Notes:

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None

Notes:

Future Erosion / Debris Potential: Y / N Notes: *channel and structure appear stable*

Affected Properties: *0*

Affected Buildings: *0*

Affected Roadways: *1* *McKie Street*

Other:

City Staff Input: *Crossing floods every 2-3 yrs. Crossing is part of proposed channel improv. project from Ellis Dr to McKie St; includes replacing (2) small RCP culverts with (1) 54" CMP. (SW)*

Citizen Input:

Notes:

Site No.: *1* **Location:** ***700 Blk McKie St (Willow Springs Creek)*** BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Limited bridge conveyance capacity, large drainage area*
Roadway Elev ~567'; 2yr WSE = 569.5'; 10yr WSE = 572.4'; 25yr WSE = 573.59'

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements / Vegetation Mgmt / Curb & Gutter / Driveway Adjustments / Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Significant bridge upgrade required to reduce overtopping and closure frequency*

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

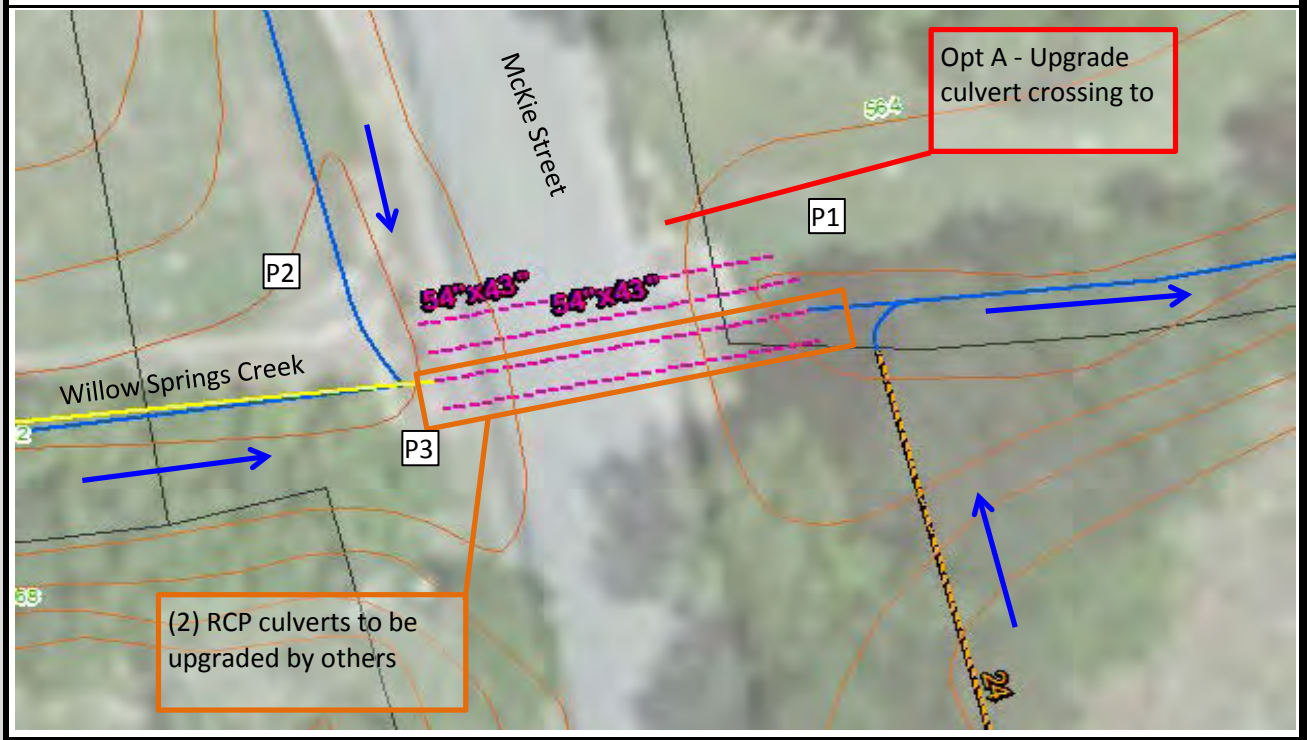
Notes:

Add'l Assessment Required:

ROW Required:

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*From NE of crossing; looking SW towards D/S face*
P2	*From W of crossing; looking E towards U/S face*
P3	*From W side of crossing; looking N toward storm drain outlet U/S of McKie*
P4	

Site No.:	1	Location:	700 Blk McKie St (Willow Springs Creek)	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	From NE of crossing; looking SW towards D/S face

Photo #	Caption
P2	From W of crossing; looking E towards U/S face

Site No.:	1	Location:	700 Blk McKie St (Willow Springs Creek)	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	From W side of crossing; looking N toward storm drain outlet U/S of McKie

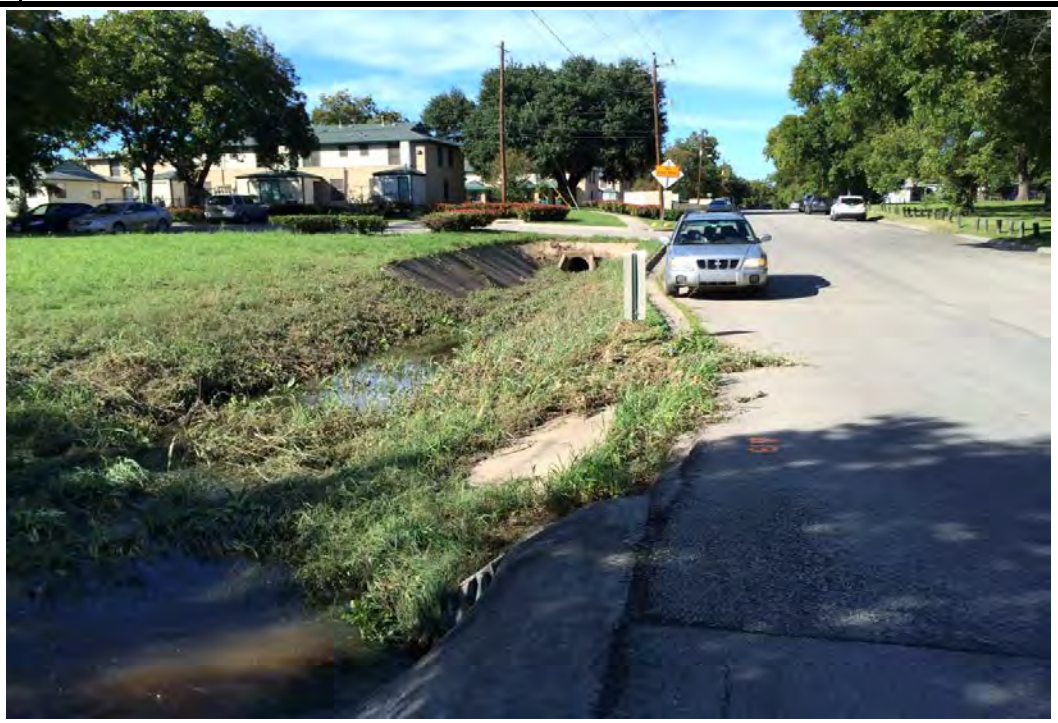


Photo #	Caption
P4	0

Site No.:	*1*	Location:	*700 Blk McKie St (Willow Springs Creek)*	BACK TO MAP

Engineers Opinion of Probable Construction Cost

700 Blk McKie St (Willow Springs Creek)

Improve conveyance capacity by upgrading structure.

Item	Description	Quantity	Unit	Unit Price	Amount
	Culvert upgraded as part of other project. Cost estimate not necessary.				
	Subtotal				$ -
	Construction Contingency	35%			$ -
	Total Project Cost				$ -

Site No.: *2* **Location:** *600 Blk Moore St* BACK TO MAP

Project covered by CIP #593 according to the new "2018-2027 CIP"

SITE SUMMARY

the existing 54" storm drain bend in Moore St. ***(CoSM IN HOUSE OPTION)***

OPT B	*Develop vegetation management program for 800LF of channel upstream to RR12 in order to reduce grate clogging caused by bamboo stalks and other flood debris.*	*2*
OPT C	*Repair/reinforce damaged channel walls upstream of the grate on 613 Moore.*	*1*
OPT D	*Extend existing 54-inch storm drain up Moore/Oscar Smith St to intercept channel near intersection of Oscar Smith and Blanco.*	*5*

Challenges

OPT A	*Grate will still clog; however, clogging frequency will be reduced. Wider spacing will allow more debris into the storm drain, potentially clogging downstream pipe.*
OPT B	*Existing channel is located on private property (owner approval and easement required). Bank stabilization may be required upon removal of vegetation. Bamboo is fast-growing, invasive and may be difficult to remove.*
OPT C	*Frequent flooding may make repairs difficult.*
OPT D	*Storm drain extension would be costly and disrupt local traffic. Piping stormwater/eliminating open channel reach may affect flooding downstream.*

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *2* **Location:** ***600 Blk Moore St*** BACK TO MAP

BACKGROUND INFO

Date: *12/20/13* Time: *16:00* Attendees: *SW, TW, CS, KCP*

Flood Complaint Summary: *Ditch enters 54" SD. Inlet clogs with most events*

Watershed: *Purgatory* Hydro Subbasin: *P7-11 & P7-12*

Est. Drainage Area (ac): *85* Est. Flood Freq. (yrs): *1* *(every rain)*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes:

Local Storm Drain System? Y / N Notes: *grate inlet exists at U/S end of Moore St*

GIS Data Available? Y / N *storm drain system*

Related Flood Complaint(s):

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other:

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None

Inches: *~5* Date: *10/31/13* Notes: *Inlet clogged and water in street*

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear

Notes:

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry

Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid

Notes:

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None

Notes: *Bamboo stalks/leaves/vegetation on and near grate from last rain; Some damage to channel stone walls noted on 613 Moore St*

Future Erosion / Debris Potential: Y / N Notes: *grate clogs nearly every rain event*

Affected Properties: *1* *613 Moore St*

Affected Buildings: *0*

Affected Roadways: *1* *Moore St*

Other:

City Staff Input: *Drainage channel is on private property with no City easement*

Citizen Input:

Notes: *Front yard of 613 Moore St floods frequently; roadway flooding/closure (Moore) is frequent and very inconvenience; Bamboo noted along majority of channel between oscar Smith and Moore St;*

Site No.: *2* **Location:** ***600 Blk Moore St*** BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Debris accumulation on the inlet grate clogs the inlet during every rain event*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements / Vegetation Mgmt / Curb & Gutter / Driveway Adjustments / Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Vegetation mgmt. recommended to reduce bamboo and other debris accumulation*
Repair of stone channel walls near 613 Moore is recommended
Extension of existing 54" SD to Blanco St may intercept stormwater U/S of channel

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

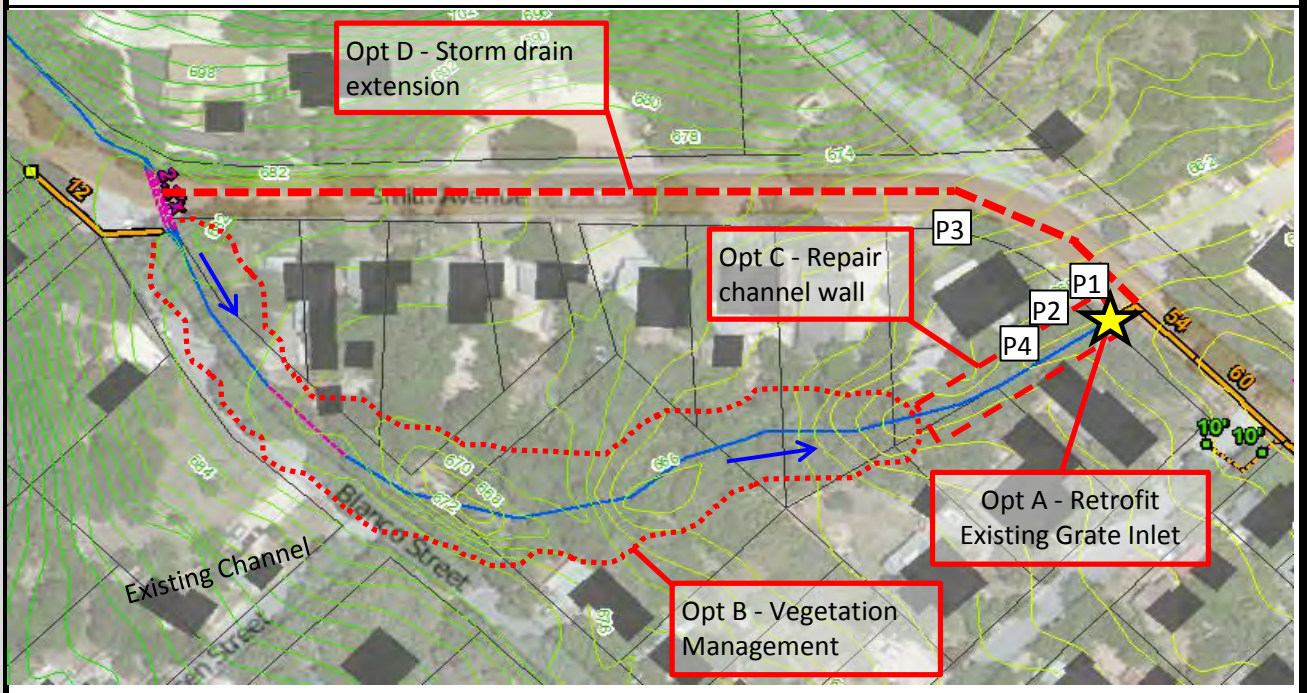
Notes:

Add'l Assessment Required:

ROW Required: *Easement required for improvements/maintenance to private drainage channel.*

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*Debris accumulation on grate inlet (12/20/13)*
P2	*Completely clogged grate inlet after Oct 31, 2013 storm event*
P3	*Vegetation & bamboo behind houses along channel; looking south from Oscar Smith St*
P4	*Stone channel wall in need of repair and vegetation U/S of inlet; looking SW from inlet*

Site No.: *2* **Location:** ***600 Blk Moore St*** BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	*Debris accumulation on grate inlet (12/20/13)*

Photo #	Caption
P2	*Completely clogged grate inlet after Oct 31, 2013 storm event*

Site No.: *2* **Location:** ***600 Blk Moore St*** BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	*Vegetation & bamboo behind houses along channel; looking south from Oscar Smith St*

Photo #	Caption
P4	*Stone channel wall in need of repair and vegetation U/S of inlet; looking SW from inlet*

Site No.:	2	Location:	*600 Blk Moore St*	BACK TO MAP

Engineers Opinion of Probable Construction Cost

600 Blk Moore St

Increase bar spacing on grate to improve conveyance and reduce clogging at the

City of San Marcos In-House Option (work designed and complete by City staff).

Item	Description	Quantity	Unit	Unit Price	Amount
1.01	Misc. Excavation and Grading		LS		$ -
1.02	Replace existing bar grate		LS		$ -
1.03	Concrete and pavement repair		LS		$ -
1.04	E&S and Traffic Controls and Misc.		LS		$ -
	Subtotal				$ -
	Construction Contingency	35%			$ -
	Total Project Cost				$ -

Site No.: *3* **Location:** *1800 Bld Uhland Rd (Blanco River)* BACK TO MAP

Project covered by CIP #622 according to the new "2018-2027 CIP"

SITE SUMMARY

OPT B

OPT C

OPT D

Challenges

OPT A *Since roadway is ~10 ft below 2yr floodplain, a significant upgrade (new bridge) is required to improve level of service. The potential improvement in level of service may not justify the cost. Bridge improvements will require coordination with Hays County (east of city limits).*

OPT B

OPT C

OPT D

***Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)**

Site No.: *3* **Location:** ***1800 Bld Uhland Rd (Blanco River)*** BACK TO MAP

BACKGROUND INFO

Date: *1/9/14* Time: *15:40* Attendees: *SW, TW, CS, KCP*

Flood Complaint Summary: *Road closed during significant events. City/County project to City Limits line.*

Watershed: *Blanco* Hydro Subbasin: *B2-7*

Est. Drainage Area (ac): *250,000* Est. Flood Freq. (yrs): *1*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes:

Local Storm Drain System? Y / N Notes: *Private 54" SD outlet located on west bank*

GIS Data Available? Y / N *D/S of crossing*

Related Flood Complaint(s):

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other:

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None

Inches: *~4* Date: *12/31/13* Notes: *Extreme flooding; roadway closed*

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear

Notes:

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry

Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid

Notes:

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None

Notes: *large cracks in bridge deck; significant erosion of parapet wall sections on D/S edge of roadway; sediment deposits on both sides of bridge*

Future Erosion / Debris Potential: Y / N Notes: *erosion potential typical of low water x-ing*

Affected Properties: *0* *Frequent flood events contained within banks of Blanco River*

Affected Buildings: *0*

Affected Roadways: *1* *W Uhland Rd*

Other:

City Staff Input:

Citizen Input:

Notes: *Structure is showing signs of age and frequent overtopping; large cracks in bridge deck and sections of concrete parapet wall missing*

Site No.: *3* **Location:** ***1800 Bld Uhland Rd (Blanco River)*** BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Limited bridge conveyance capacity, large drainage area (>400 sq mi)*
Roadway Elev ~567.3'; 2yr WSE = 577.7'; 10yr WSE = 588.4'; 25yr WSE = 594.1'

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements / Vegetation Mgmt / Curb & Gutter / Driveway Adjustments / Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Significant bridge upgrade required to reduce overtopping and closure frequency*

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

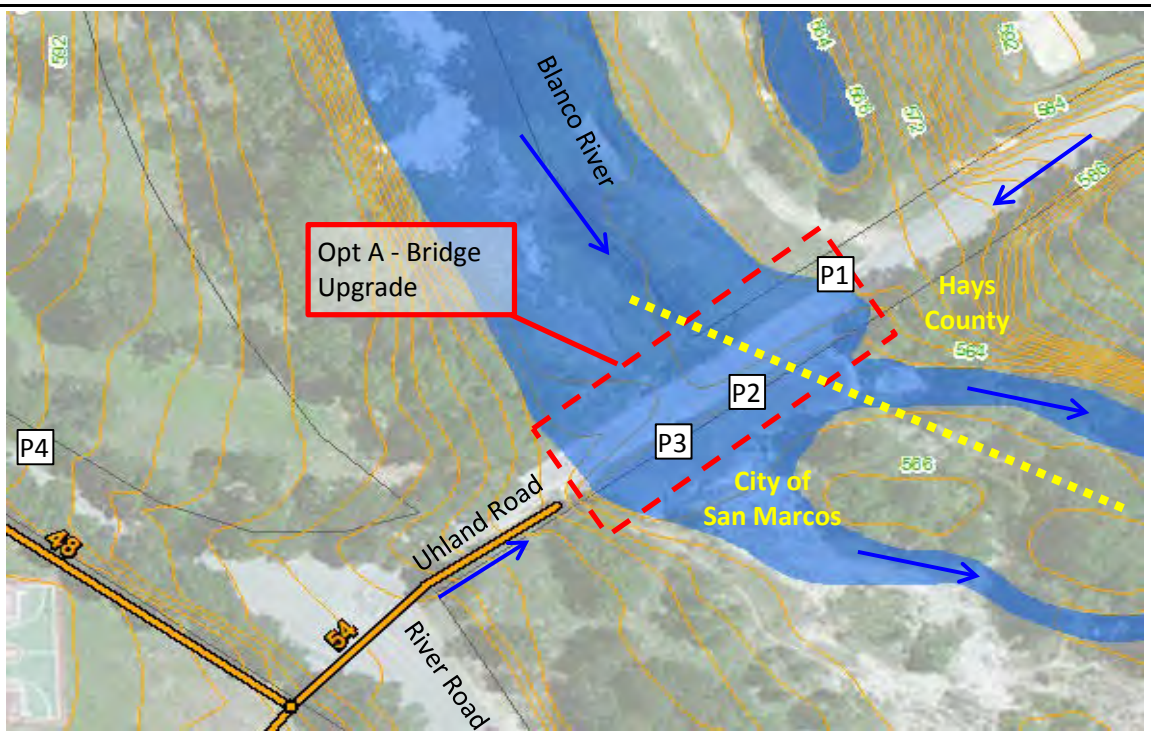
Notes:

Add'l Assessment Required:

ROW Required: *Coordination with Hays County for improvements east of City Limits*

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*Uhland Road and Blanco River*
P2	*Outlet of culvert under Uhland Road*
P3	*Inlet of culvert under Uhland Road*
P4	*Roadway closure during the 10/31/13 storm event*

	Site No.:	***3***	**Location:** ***1800 Bld Uhland Rd (Blanco River)***	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	*Uhland Road and Blanco River*

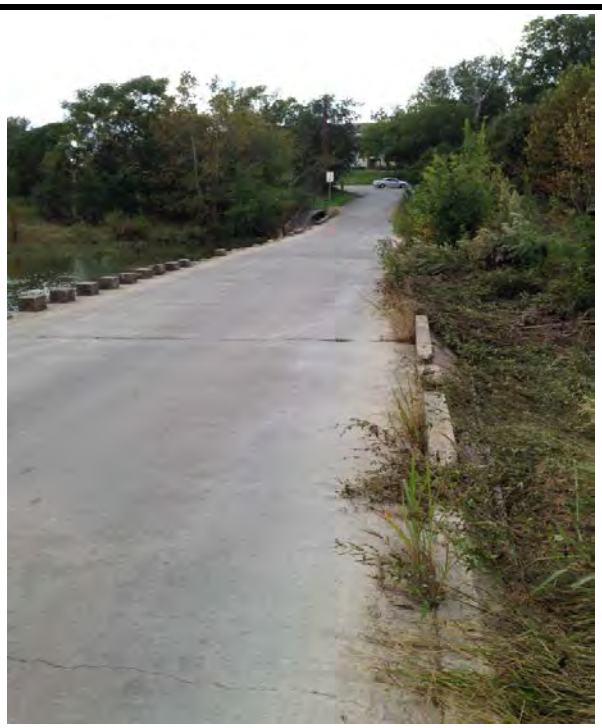


Photo #	Caption
P2	*Outlet of culvert under Uhland Road*

Site No.:	3	Location:	1800 Bld Uhland Rd (Blanco River)	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	Inlet of culvert under Uhland Road

Photo #	Caption
P4	Roadway closure during the 10/31/13 storm event

Site No.: *3* **Location:** *1800 Bld Uhland Rd (Blanco River)* BACK TO MAP

Engineers Opinion of Probable Construction Cost

1800 Bld Uhland Rd (Blanco River)

Improve conveyance capacity by upgrading structure.

Item	Description	Quantity	Unit	Unit Price	Amount
1.01	Misc. Excavation and Grading	1	LS	$ 40,000	$ 40,000
1.02	Install New Bridge (40 ft wide)	220	LF	$ 16,000	$ 3,520,000
1.03	Pavement Repair	1	LS	$ 5,000	$ 5,000
1.04	E&S and Traffic Controls and Misc.	1	LS	$ 25,000	$ 25,000
	Subtotal				$ 3,590,000
	Engineering, Survey and Permitting				$ 897,500
	Construction Contingency	35%			$ 1,257,000
	Total Project Cost				$ 5,740,000

Site No.: *4* **Location:** *600 Blk Allen St* BACK TO MAP

Project covered by CIP #618 according to the new "2018-2027 CIP"

SITE SUMMARY

clogging/flooding frequency (upon assessment of receiving 27" CMP system on
1000 Prospect, Wonder World Park).

OPT B *If flooding persists, install a storm drain pipe and additional curb inlets along the N side of Allen St to capture stormwater usplope of sag area.* *3*

OPT C

OPT D

Challenges

OPT A *Easement/coordination may be required for work on 1000 Prospect St (Wonder World petting zoo). Receiving storm drain pipe (~27" @ ~5%) appears to have ~10yr capacity; however, hydraulic analysis is required to evaluate potential downstream impacts and tailwater effects.*

OPT B *Steep longitudinal grades (5%) along Allen St reduce inlet capture efficiency.*

OPT C

OPT D

***Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)**

Site No.: *4* **Location:** ***600 Blk Allen St*** BACK TO MAP

BACKGROUND INFO

Date: *1/9/14* Time: *14:40* Attendees: *SW, TW, CS, KCP*

Flood Complaint Summary: *Flooding/debris/silting; road flooded when drain clogs*

Watershed: *Purgatory* Hydro Subbasin: *P4-4*

Est. Drainage Area (ac): *15* Est. Flood Freq. (yrs): *1* *(most events)*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes: *hydraulic analysis of receiving system req'd*

Local Storm Drain System? Y / N Notes: *inlet drains to private 27" CMP (1000 Prospect)*

GIS Data Available? Y / N

Related Flood Complaint(s): *Site 17 (Faris) is located at the far D/S end of the receiving channel*

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other: *Amusement Park/Zoo*

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None

Inches: *~4* Date: *10/31/13* Notes: *some standing water near grate*

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear

Notes: *trace amounts on 1/8 and 1/9 (<0.1")*

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry

Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid

Notes:

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None

Notes: *leaves/debris accumulate on and near grate; cracks in concrete inlet structure/curb (appears stable)*

Future Erosion / Debris Potential: Y / N Notes: *debris accumulates with each rainfall event*

Affected Properties: *2* *611 Allen St, 1000 Prospect (Wonder World Park)*

Affected Buildings: *0*

Affected Roadways: *1* *Allen St*

Other:

City Staff Input: *Frequent maint. required at this site; grate clogs during nearly every rainfall event; during large events, ponding reaches waist deep levels & requires wading to unclog grate*

Citizen Input: *611 Allen: Roadway floods during every storm event. Yard floods but house does not.*

Notes: *Owner of 1000 Prospect (behind/DS of grate inlet) has placed concrete slope paving/ wall along fenceline to prevent overtopping into their property. SD pipe (27" CMP) that drains grate inlet is located entirely within private property w/ no easement (condition unknown).*

Site No.: *4* **Location:** ***600 Blk Allen St*** BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Grate inlet clogs during every storm event. Inlet is located in local sag on Allen Street and runoff floods area when grate clogs during nearly every rainfall event.*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements
Vegetation Mgmt / Curb & Gutter / Driveway Adjustments
Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Replace grate inlet with multiple curb inlets to reduce cloggin/flooding frequency. If flooding persists and D/S private storm drain system has capacity, extend storm drain NW along Allen St and add curb inlets to capture flow upslope of sag area.*

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

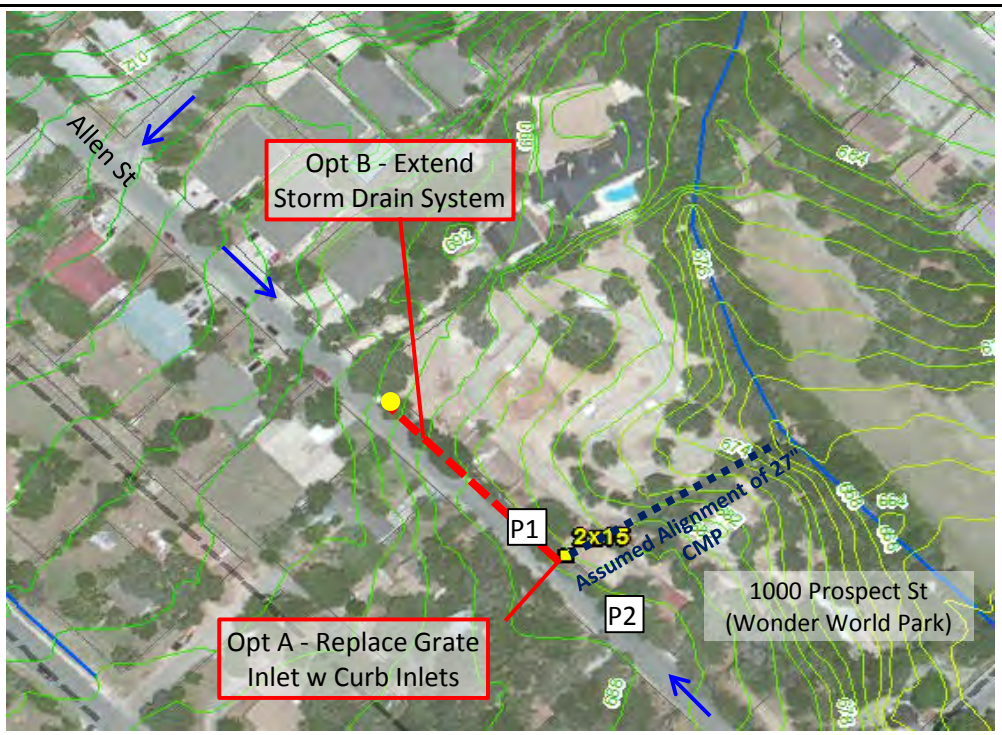
Notes: *video of 27" CMP through 1000 Prospect is req'd to assess condition/capacity*

Add'l Assessment Required: *hydraulic analysis of downstream system capacity*

ROW Required: *Easement required for work on 1000 Prospect (Wonder World Park).*

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*Looking NW along Allen St; debris, standing water, and cracking at grate inlet (10/31/13)*
P2	*Looking SE along Allen St; debris and concrete cracking at grate inlet (10/25/13)*
P3	
P4	

Site No.: *4* **Location:** ***600 Blk Allen St*** BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	*Looking NW along Allen St; debris, standing water, and cracking at grate inlet (10/31/13)*

Photo #	Caption
P2	*Looking SE along Allen St; debris and concrete cracking at grate inlet (10/25/13)*

Site No.: *4* **Location:** ***600 Blk Allen St*** BACK TO MAP

Engineers Opinion of Probable Construction Cost

600 Blk Allen St

Replace existing 2' x 15' grate inlet with three (3) 10-foot curb inlets to reduce

Item	Description	Quantity	Unit	Unit Price	Amount	
1.01	Misc. Excavation and Grading		LS		$	-
1.02	Install 10' curb inlet		EA		$	-
1.03	Concrete and Pavement Repair		LS		$	-
1.04	E&S and Traffic Controls and Misc.		LS		$	-
	Subtotal				$	-
	Construction Contingency	35%			$	-
	Total Project Cost				$	-

Site No.: *5* **Location:** *100 Blk E Sessom Dr (Sessom Creek)* BACK TO MAP

SITE SUMMARY

Project covered by CIP #521 according to the new "2018-2027 CIP"

*

OPT B

OPT C

OPT D

Challenges

OPT A

OPT B

OPT C

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *5* **Location:** ***100 Blk E Sessom Dr (Sessom Creek)*** BACK TO MAP

BACKGROUND INFO

Date: *11/13/13* Time: *13:00* Attendees: *SW, TW, CS, KCP*

Flood Complaint Summary: *Road floods during significant events (at LBJ)*

Watershed: *Sessom* Hydro Subbasin: *SM2-4, SM2-7*

Est. Drainage Area (ac): Est. Flood Freq. (yrs): *10*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes: *Sessom Crk culvert under LBJ is undersized*

Local Storm Drain System? Y / N Notes: *new SD system along N LBJ*

GIS Data Available? Y / N

Related Flood Complaint(s):

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other:

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None

Inches: *~2* Date: *10/31/13* Notes: *low flows in Sessom; roadway dry*

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear

Notes:

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry

Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid

Notes: *no sign of flooding in roadway; low flows in Sessom Creek*

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None

Notes:

Future Erosion / Debris Potential: Y / N Notes:

Affected Properties: *0*

Affected Buildings: *0*

Affected Roadways: *2* *N LBJ Drive, Sessom Drive*

Other:

City Staff Input:

Citizen Input:

Notes: *Drainage issues at this location should be improved during the N LBJ Drive Improv. project. The Sessom Creek Erosion Remediation Evaluation (RPS, 2013) states that the culvert under N LBJ Dr cannot convey the 25-year (4%) storm event.*

Site No.: *5* **Location:** ***100 Blk E Sessom Dr (Sessom Creek)*** BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Local drainage along N LBJ will be improved by ongoing road reconstruction project; overtopping of N LBJ from Sessom Crk will persist until the 8'x3' culvert is upgraded*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements / Vegetation Mgmt / Curb & Gutter / Driveway Adjustments / Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *N/A*

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

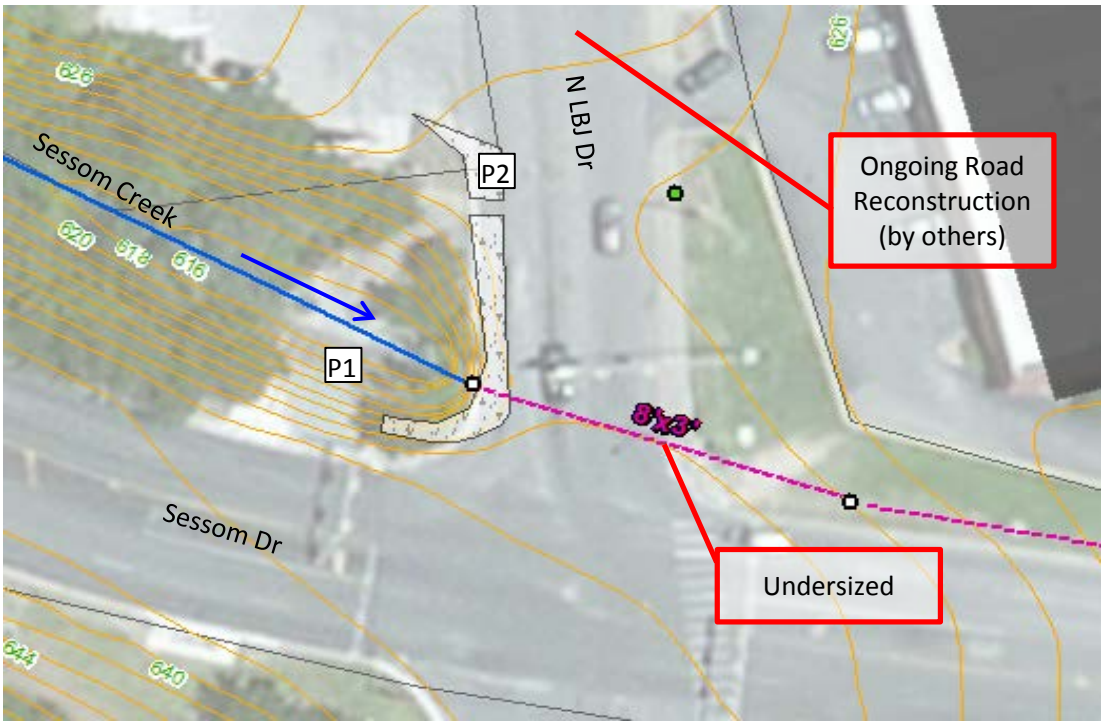
Notes:

Add'l Assessment Required:

ROW Required:

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*Upstream side of culvert running under MLK Drive*
P2	*Intersection of Sessom Drive and MLK Drive*
P3	
P4	

Site No.:	5	Location:	100 Blk E Sessom Dr (Sessom Creek)	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	Upstream side of culvert running under MLK Drive

Photo #	Caption
P2	Intersection of Sessom Drive and MLK Drive

Site No.:	5	Location:	*100 Blk E Sessom Dr (Sessom Creek)*	BACK TO MAP

Engineers Opinion of Probable Construction Cost

100 Blk E Sessom Dr (Sessom Creek)

Local drainage issues along LBJ will be improved by ongoing road reconstruction project

Item	Description	Quantity	Unit	Unit Price	Amount
1.01	Box Culvert (1 - 8'X6')	576	LF	$ 440	$ 253,440
1.02	Headwall/Wingwall	1	EA	$ 6,825	$ 6,825
1.03	Demo Existing Culvert	576	LF	$ 11	$ 6,538
1.04	Demo , Remove Pavement	485	SY	$ 7	$ 3,274
1.05	Demo, Remove Concrete	341	CY	$ 119	$ 40,579
1.06	Concrete, Base Mix	5	Ton	$ 42	$ 208
1.07	Excavation and Reuse	2731	CY	$ 20	$ 54,620
1.08	Asphaltic Concrete Pavement	485	SY	$ 10	$ 4,826
1.09	Traffic Lances and Markings	576	LF	$ 1	$ 622
	Mobilization/Demobilizaton-5%				$ 18,547
	Subtotal				$ 389,477
	Construction Contingency	35%			$ 136,000
	Total Project Cost				$ 530,000
	Engineering and Survey (20%)				$ 106,000
	CoSM Project Management (2%)				$ 10,600
	CoSM Construction Inspection (4%)				$ 21,200

Cost update required for inflation.

Site No.: *6* **Location:** *400 Bld Jackman (Purgatory Creek)* BACK TO MAP

Project covered by CIP #545 and CIP #679 according to the new "2018-2027 CIP"

SITE SUMMARY

OPT B
Review overtopping against HafH Model.
Bridge culvert to pass 25yr.
Less than 6in overtopping for 100yr.

Confirm Criteria for Collector

OPT C

OPT D

Challenges

OPT A *Existing WW line on D/S side of crossing must be protected with rock riprap/encasement or converted to inverted siphon (preferred) to prevent debris accumulation/damage.*

OPT B *Regrading of channel and adjustment of utilities/structures is required for adequate drainage, since there is only ~1.5 ft of fall between Jackman and LBJ (L=1,450ft, S=0.1%)*

OPT C *An existing fiber optic line located in the creek bed D/S of the culvert. This could pose problems while regrading and may need to be relocated.*

OPT D *Due to location in relation to the floodplain, solutions proposed may provide a minimal improvement to level of service.*

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *6* **Location:** ***400 Bld Jackman (Purgatory Creek)*** BACK TO MAP

BACKGROUND INFO

Date: *1/9/14* Time: *14:45* Attendees: *SW, TW, CS, KCP*

Flood Complaint Summary: *Low water crossing*

Watershed: *Purgatory* Hydro Subbasin: *P8-5*

Est. Drainage Area (ac): *23,200* Est. Flood Freq. (yrs): *2*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes: *ponding is caused by creek high spot @ RR*

Local Storm Drain System? Y / N Notes:

GIS Data Available? Y / N

Related Flood Complaint(s): *Site 15 - Mitchell (U/S), Site 14 - LBJ (D/S), Site 13 - Children's Park (D/S)*

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other: *Dunbar Park*

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None
Inches: *~4* Date: *10/31/13* Notes: *road overtopped/closed*

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear
Notes: *trace amounts on 1/8 and 1/9 (<0.1")*

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry
Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid
Notes: *Standing water in channel D/S of crossing*

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None
Notes: *heavy debris accumulation on grates and WW line during frequent rainfall events*

Future Erosion / Debris Potential: Y / N Notes: *debris accumulation during most events*

Affected Properties: *0* *(Limited access to properties on Gravel NE of Jackman intersection during flood events)*

Affected Buildings: *0*

Affected Roadways: *2* *Jackman St, Gravel St*

Other:

City Staff Input: *Mosquito problem is very bad during regular mowing/maintenance*

Citizen Input: *Mosquito problem and standing water in Dunbar Park are nuissance to surrounding neighborhoods*

Notes: *Grates may have been installed on U/S and D/S face of culverts to prevent debris buildup on WW line. Some algae noted in standing water D/S of WW line; inspection recommended.*

Site No.: *6* **Location:** ***400 Bld Jackman (Purgatory Creek)*** BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Low water x-ing along Purgatory Creek with frequent culvert grate clogging. Roadway Elev ~574'; 2yr WSE = 575.9'; 10yr WSE = 577.9'; 25yr WSE = 579'*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements / Vegetation Mgmt / Curb & Gutter / Driveway Adjustments / Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Remove culvert grates to improve conveyance/reduce overtopping & maintenance; avoid debris accumulation potential on WW crossing by converting to inverted siphon or encasing/protecting; Regrade channel to reduce D/S ponding in Dunbar Park*

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

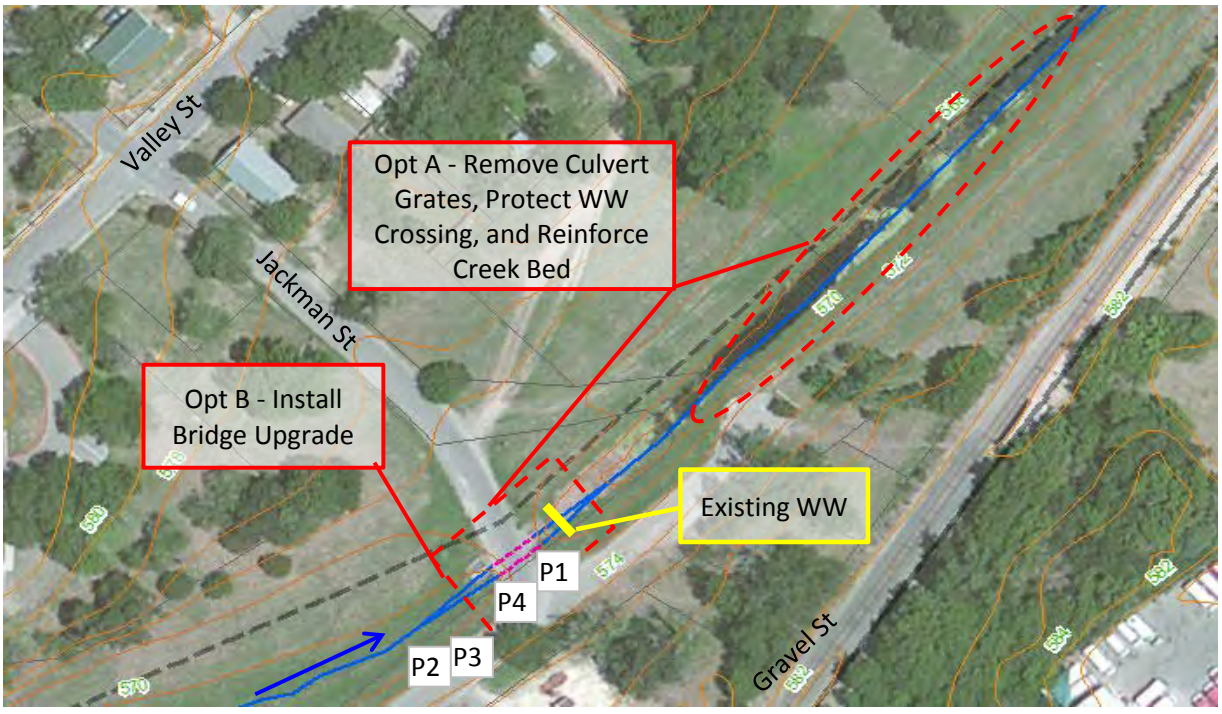
Notes:

Add'l Assessment Required: *Inspect WW line for leaks (algae growth noted in D/S ponding)*

ROW Required:

Potential Water Quality Feature: *opportunity identified in Water Quality Protection Plan, Nov. 16, 2015*

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*Looking E from crossing; debris on D/S grate and WW crossing, ponding D/S (10/25/13)*
P2	*Looking E from Gravel St; debris on U/S grate (10/25/13)*
P3	*Looking E from Gravel St; Jackman overtopped/closed, heavy debris/clogging (10/31/13)*
P4	*Looking E from crossing; debris removed from grates & WW x-ing, ponding D/S (1/9/13)*

Site No.:	6	Location:	400 Bld Jackman (Purgatory Creek)	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	Looking E from crossing; debris on D/S grate and WW crossing, ponding D/S (10/25/13)

Photo #	Caption
P2	Looking E from Gravel St; debris on U/S grate (10/25/13)

Site No.:	6	Location:	400 Bld Jackman (Purgatory Creek)	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	Looking E from Gravel St; Jackman overtopped/closed, heavy debris/clogging (10/31/13)

Photo #	Caption
P4	Looking E from crossing; debris removed from grates & WW x-ing, ponding D/S (1/9/13)

Site No.: *6* **Location:** ***400 Bld Jackman (Purgatory Creek)*** BACK TO MAP

Engineers Opinion of Probable Construction Cost

400 Bld Jackman (Purgatory Creek)

Remove grates on U/S and D/S side of culvert, reinforce WW line crossing D/S

Item	Description	Quantity	Unit	Unit Price	Amount
1.01	Misc. Excavation and Grading	1	LS	$ 2,000	$ 2,000
1.02	Remove Existing Culvert Grates	4	EA	$ 500	$ 2,000
1.03	Reinforce Wastewater Line	30	LF	$ 300	$ 9,000
1.04	Creek Regrading and Stabilization	1	LS	$ 50,000	$ 50,000
1.05	E&S and Traffic Controls and Misc.	1	LS	$ 8,000	$ 8,000
1.06	water quality opportunity (25%)	1	LS	$ 17,750	$ 17,750
	Subtotal				$ 88,750
	Engineering, Survey and Permitting				$ 50,000
	Construction Contingency	35%			$ 31,000
	Total Project Cost				

Site No.: *7* **Location:** *411 W San Antonio* BACK TO MAP

Project covered by CIP #593 according to the new "2018-2027 CIP"

SITE SUMMARY

OPT C

OPT D

Challenges

OPT A *Existing storm drain main is an old stone arch culvert; connections should be made with extreme care. Lateral adjustments will likely be required. D/S channel is located on private property; construction easements may be required.*

OPT B

OPT C

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *7* **Location:** ***411 W San Antonio*** BACK TO MAP

BACKGROUND INFO

Date: *1/9/14* Time: *13:45* Attendees: *SW, TW, CS, KCP*

Flood Complaint Summary: *Grates clogging; minor flooding*

Watershed: *Purgatory* Hydro Subbasin: *P7-5*

Est. Drainage Area (ac): *184* Est. Flood Freq. (yrs): *1* *(most events)*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes: *hydraulic analysis req'd for existing SD system*

Local Storm Drain System? Y / N Notes: *large stone arch culvert under San Antonio*

GIS Data Available? Y / N

Related Flood Complaint(s): *Site 16 -503 Harvey, Site 30 -400 Hopkins, Site 2 -614 Moore, Site 23 -Coers*

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other:

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None
Inches: *~4* Date: *10/31/13* Notes: *grates clogged, ponding on N side st*

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear
Notes: *trace amounts on 1/8 and 1/9 (<0.1")*

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry
Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid
Notes:

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None
Notes: *min. grate clogging; leaves/debris near grates and along curb/gutter*

Future Erosion / Debris Potential: Y / N Notes: *grates clog during every rainfall event*

Affected Properties: *2 421 W San Antonio (Pecan Creek Apts), 433 W San Antonio St (San Marcos Sols Retirement Community)*

Affected Buildings: *0*

Affected Roadways: *2 W San Antonio St, North St*

Other:

City Staff Input: *Grates clog during every storm event; regular maintenance required; flooding usually limited to ROW, though private parking lots flood occasionally*

Citizen Input:

Notes: *North grate inlet drains to stone arch culvert under San Antonio via 18" lateral; South grate inlets drains to channel D/S of stone arch culvert via 18" RCP lateral*

Site No.: *7* **Location:** ***411 W San Antonio*** BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Two small grate inlets in local sag area clog and flood roadway and adjacent properties nearly every rainfall event; Large drainage area*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements
Vegetation Mgmt / Curb & Gutter / Driveway Adjustments
Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Replace two grate inlets with one or more curb inlets to reduce clogging/flooding frequency*

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

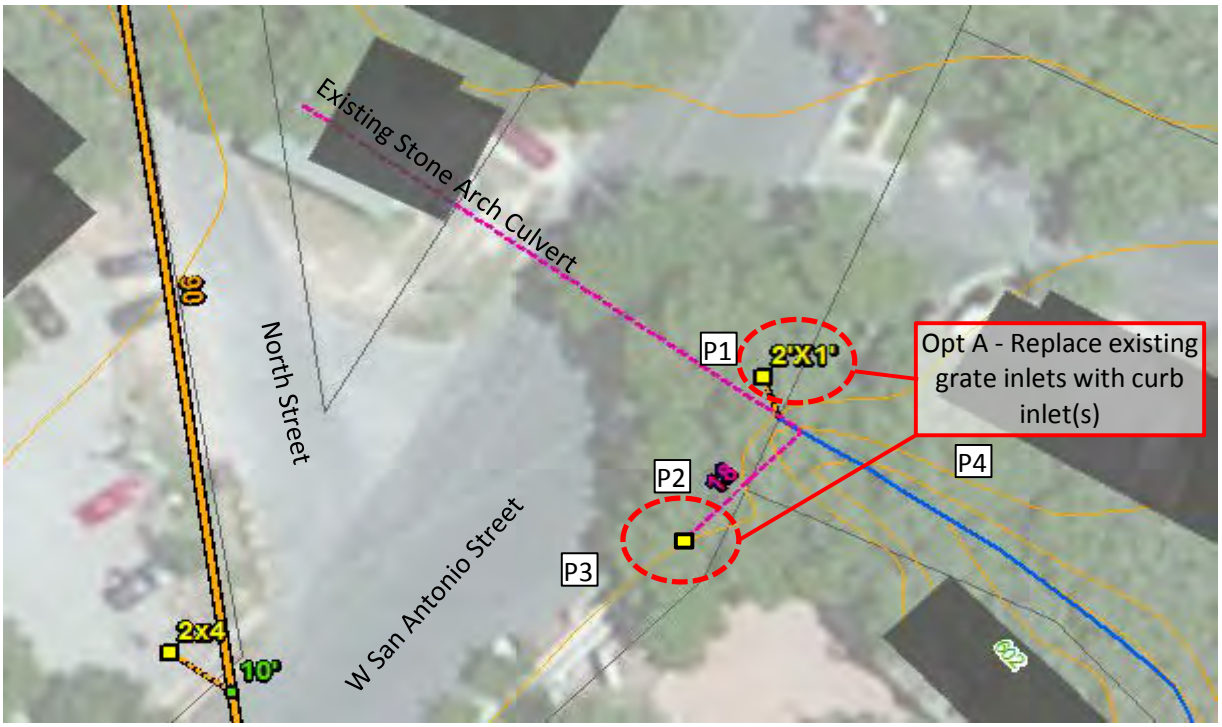
Notes:

Add'l Assessment Required: *Structural assessment of existing stone arch culvert may be req'd*

ROW Required: *Temporary construction easement on D/S private property*

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*Looking SE at north grate inlet that drains to stone arch culvert; leaves/debris (1/9/14)*
P2	*Looking SW at south grate inlet that drains to open channel (10/26/13)*
P3	*Looking N at both grate inlets after flooding; leaves/debris/standing water (10/31/13)*
P4	*Looking W at outfall of stone arch culvert and 18" lateral from south grate inlet*

Site No.: *7* **Location:** ***411 W San Antonio*** BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	

Photo #	Caption
P2	*Looking SW at south grate inlet that drains to open channel (10/26/13)*

Site No.:	7	Location:	411 W San Antonio	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	Looking N at both grate inlets after flooding; leaves/debris/standing water (10/31/13)

Photo #	Caption
P4	Looking W at outfall of stone arch culvert and 18" lateral from south grate inlet

Site No.:	7	Location:	*411 W San Antonio*	BACK TO MAP

Engineers Opinion of Probable Construction Cost

411 W San Antonio

Replace two grate inlets with curb inlet(s) to reduce clogging/flooding frequency.

City of San Marcos In-House Option (work designed and complete by City staff).

Item	Description	Quantity	Unit	Unit Price	Amount
1.01	Misc. Excavation and Grading		LS		$ -
1.02	Install 10' curb inlet		EA		$ -
1.03	Concrete and pavement repair		LS		$ -
1.04	E&S and Traffic Controls and Misc.		LS		$ -
	Subtotal				$ -
	Engineering, Survey and Permitting				
	Construction Contingency	35%			$ -
	Total Project Cost				$ -

Site No.: *8* **Location:** *835 W San Antonio* BACK TO MAP

Project covered by CIP #628 according to the new "2018-2027 CIP"

*

SITE SUMMARY

flooding. Recommend channel improvements to property owner.

OPT C *Obtain drainage easement to improve and maintain channel currently on private property.* *N/A*

OPT D

Remove project from database.

Completed by F&N Project

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *8* **Location:** ***835 W San Antonio*** BACK TO MAP

BACKGROUND INFO

Date: *12/13/13* Time: *15:00* Attendees: *SW, TW, TH, CS, KCP*

Flood Complaint Summary: *Water overtops curb and flows through yard; erosion problems*

Watershed: *Purgatory* Hydro Subbasin: *P6-3 & P6-2*

Est. Drainage Area (ac): *84* Est. Flood Freq. (yrs): *2*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes: *Purgatory Crk ~1,000ft downstream*

Local Storm Drain System? Y / N Notes: *Small system at intersection of Travis &*

GIS Data Available? Y / N *San Antonio; grate inlets clog frequently*

Related Flood Complaint(s): *Site 9 - Hopkins; no storm drain infrastructure within neighborhood*

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other:

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None
Inches: *~4* Date: *10/31/13* Notes:

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear
Notes:

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry
Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid
Notes:

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None
Notes: *10/31/13: grate inlets clogged with leaves/debris, erosion in yard, sediment/debris along southeast curb and in drainage channel*

Future Erosion / Debris Potential: Y / N Notes: *grates clog regularly; channel appears stable*

Affected Properties: *1* *835 W San Antonio*

Affected Buildings: *1* *Potential damage to house addition built directly adjacent to private drainage channel*

Affected Roadways: *2* *(local curb height is adequate)*

Other: *Some erosion and debris accumulation noted in private channel downstream of concrete apron; no apparent structural damage*

City Staff Input: *Drainage channel is on private property with no City easement*

Citizen Input:

Notes: *Frequent curb overtopping appears to be major concern; channel erosion/debris is secondary.*

Site No.: *8* **Location:** *835 W San Antonio* BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *The local storm drain system at San Antonio and Travis is undersized to convey stormwater from roadway to drainage channel resulting in curb overtopping and flow through residential property. Site is located at flow concentration point.*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements
Vegetation Mgmt / Curb & Gutter / Driveway Adjustments
Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Local storm drain system may be improved with added inlets/laterals along San Antonio St. Installation of storm drain system throughout neighborhood to reduce roadway flooding. Recommend channel improvements to property owner or obtain drainage easement.*

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

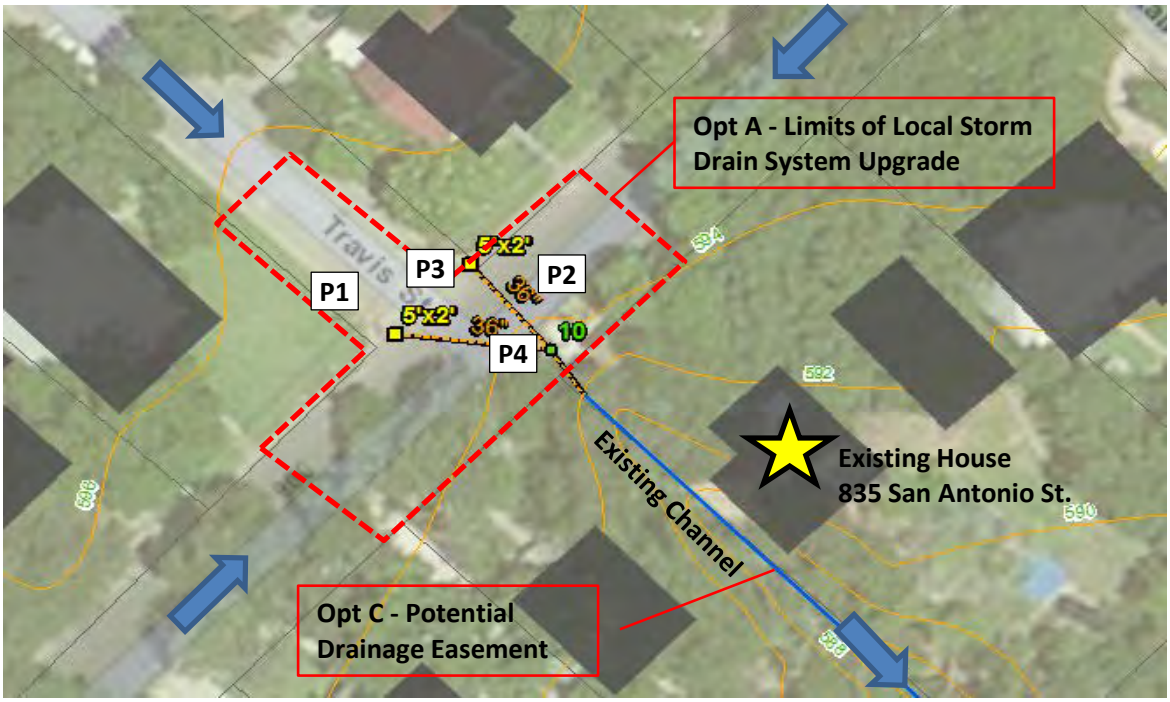
Notes:

Add'l Assessment Required:

ROW Required: *Easement required for improvements to private drainage channel*

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*From W corner of Travis / San Antonio intersection; looking E towards Site*
P2	*Site frontage looking NE; sediment deposits*
P3	*From Travis / San Antonio intersection; looking at N corner; clogged grate inlet*
P4	*From Travis / San Antonio intersection; looking SE at private drainage channel*

Site No.: *8* **Location:** ***835 W San Antonio*** BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	*From W corner of Travis / San Antonio intersection looking E towards Site*

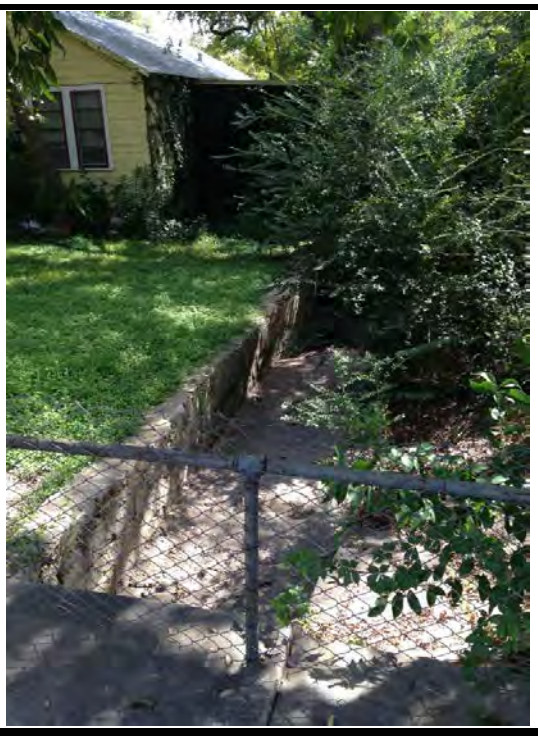
Photo #	Caption
P2	*Site frontage looking NE; sediment deposits*

Site No.:	8	Location:	835 W San Antonio	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	From Travis / San Antonio intersection; looking at N corner; clogged grate inlet

Photo #	Caption
P4	From Travis / San Antonio intersection; looking SE at private drainage channel



Site No.: *8* **Location:** ***835 W San Antonio*** BACK TO MAP

Engineers Opinion of Probable Construction Cost

835 W San Antonio

Local storm drain system may be improved with added inlets/laterals along San

Item	Description	Quantity	Unit	Unit Price	Amount
1.01			LS	$ -	$ -
1.02			EA	$ -	$ -
1.03			LS	$ -	$ -
1.04			LS	$ -	$ -
1.05			LS	$ -	$ -
	Subtotal				$ -
	Engineering, Survey and Permitting				$ -
	Construction Contingency	35%			$ -
	Total Project Cost				$ -

Site No.: *9* **Location:** *500-1200 W Hopkins St* BACK TO MAP

Project covered by CIP #90 according to the new "2018-2027 CIP"

*

SITE SUMMARY

Remove project from database.

Completed by F&N Project

Challenges

OPT A *Existing flow concentration along Travis St would not be improved. TxDOT coordination/participation is required.*

OPT B *Storm drain improvements would cause extended neighborhood disturbance and likely require significant utility relocation efforts. The benefits may not justify the cost.*

OPT C

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *9* **Location:** ***500-1200 W Hopkins St*** BACK TO MAP

BACKGROUND INFO

Date: *11/13/13* Time: *15:15* Attendees: *SW, TW, TH, CS, KCP*

Flood Complaint Summary: *Roadway flooding; no SD system; low point at Travis St*

Watershed: *Purgatory* Hydro Subbasin: *P5-4, P5-5, P6-4, P6-5*

Est. Drainage Area (ac): *63* Est. Flood Freq. (yrs): *1* *(most events)*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes:

Local Storm Drain System? Y / N Notes:

GIS Data Available? Y / N

Related Flood Complaint(s): *Site 8 - 835 San Antonio St; Site 26 - McAllister St*

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other:

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None
Inches: *~4* Date: *10/31/14* Notes:

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear
Notes:

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry
Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid
Notes:

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None
Notes:

Future Erosion / Debris Potential: Y / N Notes:

Affected Properties: *0*

Affected Buildings: *0*

Affected Roadways: *2* *Hopkins St - roadway flooding & poor drainage after storm events*
Travis St - roadway flooding (flow concentration area)

Other:

City Staff Input: *Street experiences flooding during storm event. No known affected structures.*
The 500-1200 blocks of Hopkins St are maintained by TxDOT.

Citizen Input:

Notes:

Site No.: *9* **Location:** ***500-1200 W Hopkins St*** BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Limited curb and gutter conveyance capacity; Large drainage area*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements
Vegetation Mgmt / Curb & Gutter / Driveway Adjustments
Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Improved curb & gutter capacity may reduce roadway flooding (TxDOT participation req'd)*
Installation of local storm drain system may not be justified since few propertied and no structures are known to be affected by flooding.

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

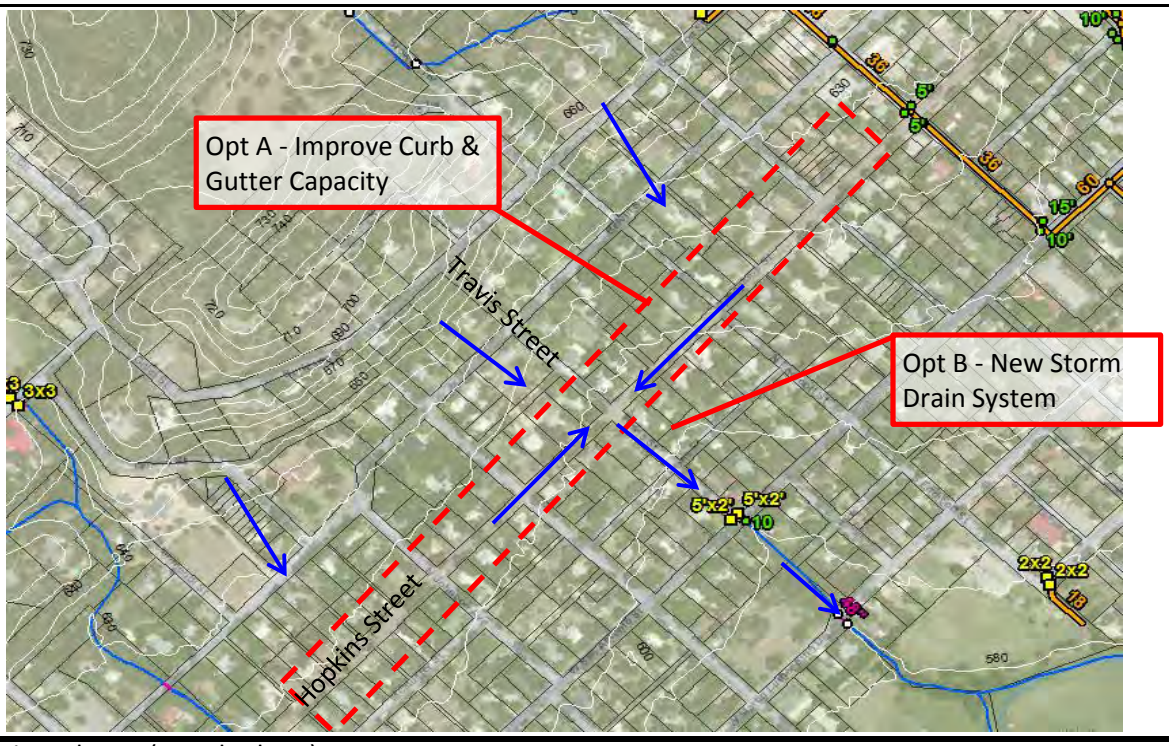
Notes:

Add'l Assessment Required:

ROW Required: *TxDOT maintains this portion of Hopkins St*

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

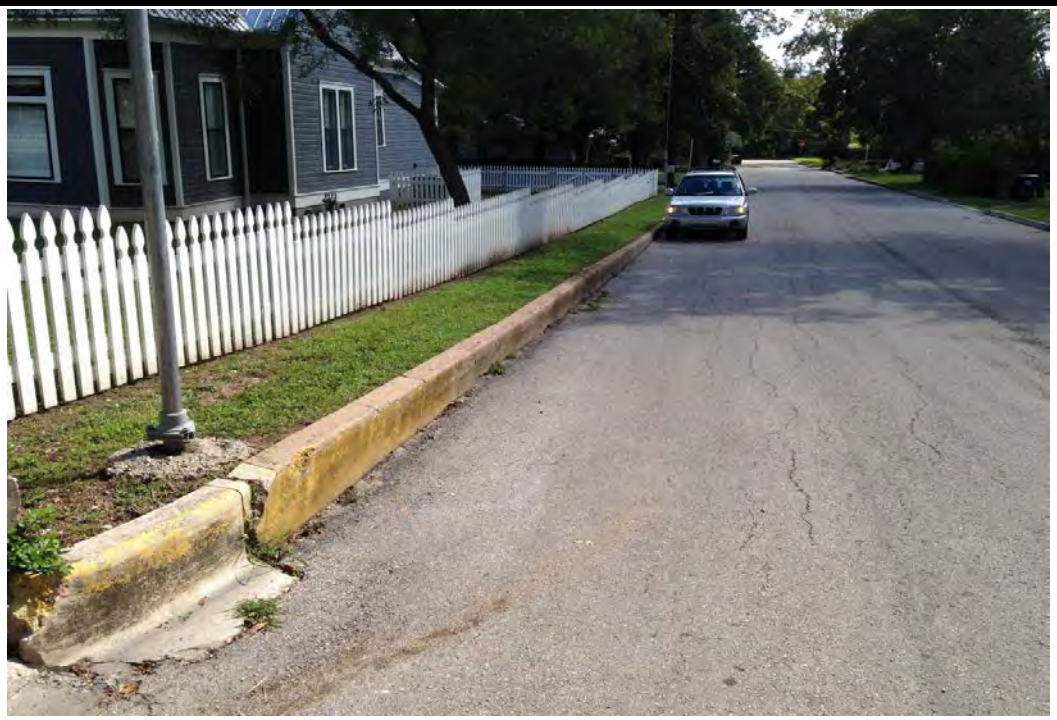
Photo #	Caption
P1	*From E corner of Hopkins/Travis; looking towards NE at sediment depsoit in local sag area*
P2	*From E corner of Hopkins/Travis; looking towards SE at flow concentration path in Travis*
P3	*From S corner of Hopkins/Johnson; looking SW at minimal (1-2") curb depth*
P4	*From south side of Hopkins 1100 Block; looking SW at roadway with no curb/gutter*

Site No.:	9	Location:	500-1200 W Hopkins St	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	From E corner of Hopkins/Travis; looking towards NE at sediment depsoit in local sag area

Photo #	Caption
P2	From E corner of Hopkins/Travis; looking towards SE at flow concentration path in Travis

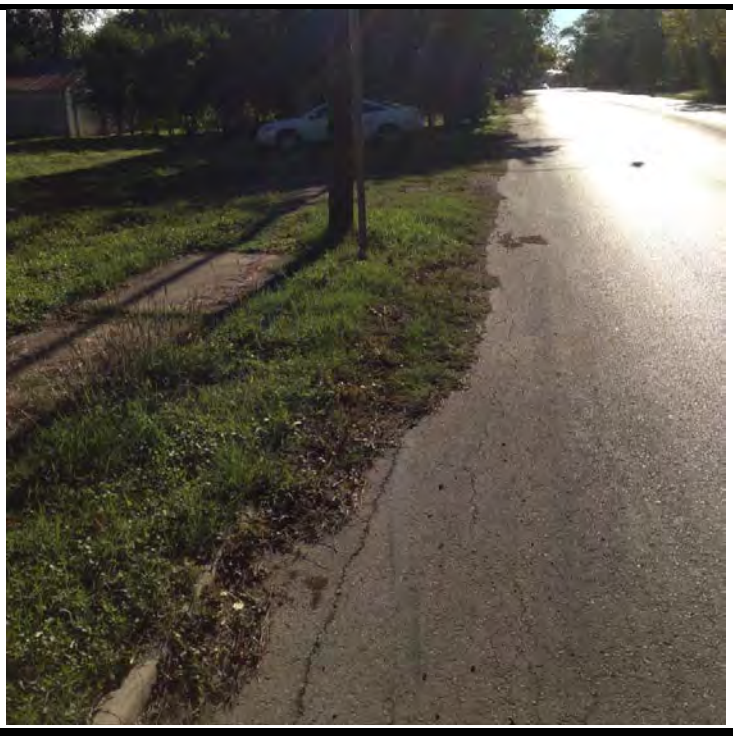


Site No.:	9	Location:	500-1200 W Hopkins St	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	From S corner of Hopkins/Johnson; looking SW at minimal (1-2") curb depth

Photo #	Caption
P4	From south side of Hopkins 1100 Block; looking SW at roadway with no curb/gutter



Site No.: *9* **Location:** ***500-1200 W Hopkins St*** BACK TO MAP

Engineers Opinion of Probable Construction Cost

500-1200 W Hopkins St

Mill and pave Hopkins to remove excessive pavement due to repeated TXDOT pavement

Item	Description	Quantity	Unit	Unit Price	Amount
1.01		0	SY	$ -	$ -
1.02		0	LS	$ -	$ -
	Subtotal				$ -
	Construction Contingency	35%			$ -
	Total Project Cost				$ -

*TxDOT

Site No.: *10F* **Location:** *1100 Uhland Rd* BACK TO MAP

Previously listed as CIP 36. CIP 36 was not included in the FINAL "2018-2027 CIP"

SITE SUMMARY

Potential Solutions		**Est. Construction Cost Level***
OPT A	*Infrastructure project to resolve local flooding in events up to 25-years in County/Uhland Rd. area including: reconstructing the roadways to depressed curb-and-gutter sections with adequate grading; and adding a new storm sewer system along the whole route with a new outfall to the Blanco River.*	*2*
OPT B		

Part of the CDBG-DR Infrastructure Feasibility Study- AECOM 2017

OPT B

OPT C

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *10F* **Location:** *1100 Uhland Rd* BACK TO MAP

BACKGROUND INFO

Date: *1/9/14* Time: *15:30* Attendees: *SW, TW, CS, KCP*

Flood Complaint Summary: *Roadway flooding; flat; no SD system*

Watershed: *Blanco* Hydro Subbasin: *B2-2*

Est. Drainage Area (ac): *30* Est. Flood Freq. (yrs): *1* *(most events)*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes: *no existing outfall or drainage infrastructure*

Local Storm Drain System? Y / N Notes: *private 48" SD located ~600' E on Uhland*

GIS Data Available? Y / N

Related Flood Complaint(s):

Included in Previous Study: CDBG-DR Infrastructure Feasibility- AECOM, 2017

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other: *Hays County Law Enforcement Cntr*

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None
Inches: *~4* Date: *10/31/13* Notes: *Roadway (open), property flooded*

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear
Notes: *trace amounts on 1/8 and 1/9 (<0.1")*

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry
Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid
Notes: *some standing water near curb cut N side Uhland*

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None
Notes: *cracked/damaged pavement due to frequent ponding*

Future Erosion / Debris Potential: Y / N Notes: *pavement wear to continue w/ freq. flooding*

Affected Properties: *1* *1307 E Uhland; Hays County Law Enforcement Center (HCLEC)*

Affected Buildings: *0*

Affected Roadways: *1* *E Uhland Rd*

Other:

City Staff Input: *Roadway and property flood every rainfall event. Storm drain E on Uhland is privately owned and maintained by apt complex (1610 N IH-35).*

Citizen Input:

Notes: *Frequent flooding occur along roadway & N side of road, E of HCLEC driveway; curb cuts on S side of the road may have been intended to provide drainage to grate inlet within apt complex property; however, flat grades and slight ridge along fenceline do not allow drainage*

Site No.: *10F* **Location:** *1100 Uhland Rd* BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: _____

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements
Vegetation Mgmt / Curb & Gutter / Driveway Adjustments
Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: _____

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

Notes: _____

Add'l Assessment Required: _____

ROW Required: _____

Potential Water Quality Feature: _____

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*

Overview Photos (Attached pgs):

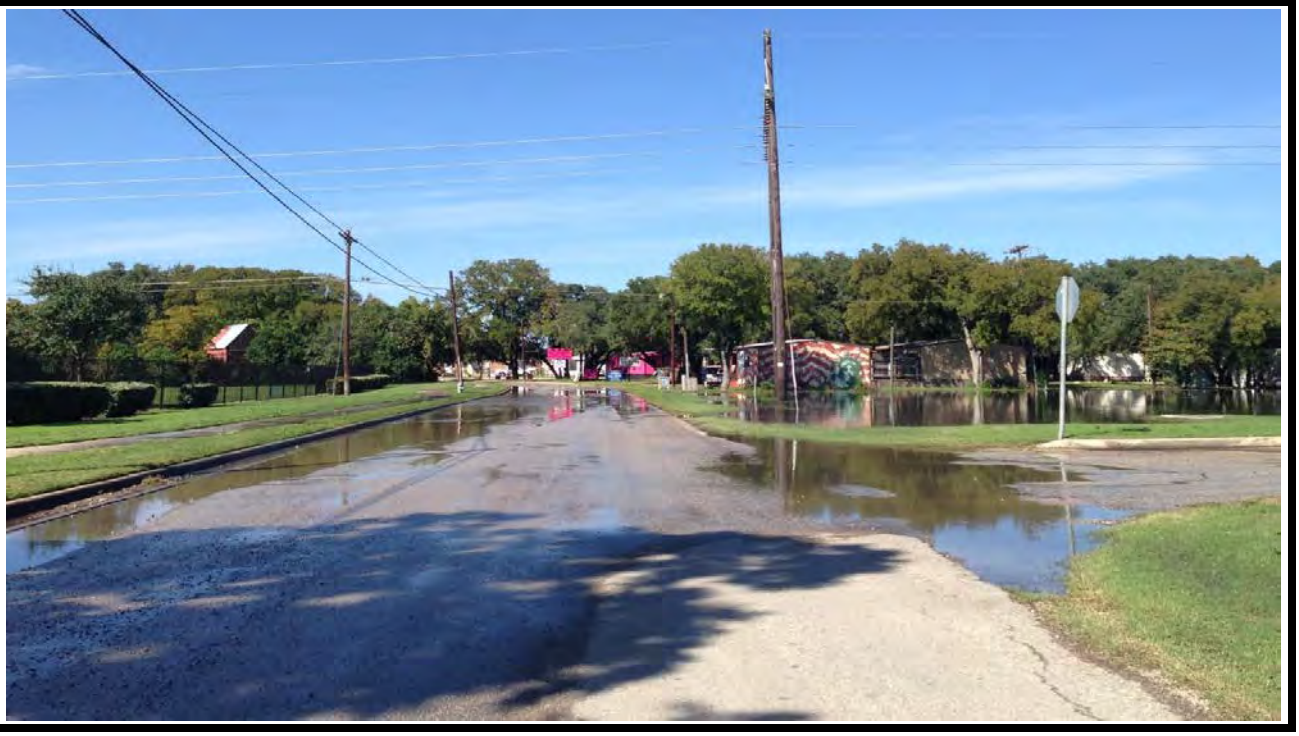
Photo #	Caption
P1	*Looking E along Uhland Rd; significant roadway and property flooding (10/31/13)*
P2	*Looking W along Uhland Rd; significant roadway and property flooding (10/31/13)*
P3	*Lkg S at curb cut & poorly defined channel; standing water, pavement damage (1/9/14)*
P4	*Looking S thru apt complex fence at grate inlet; detention pond in distance (1/9/14)*

Site No.: *10F* **Location:** *1100 Uhland Rd* BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	*Looking E along Uhland Rd; significant roadway and property flooding (10/31/13)*

Photo #	Caption
P2	*Looking W along Uhland Rd; significant roadway and property flooding (10/31/13)*



Site No.: *10F* **Location:** *1100 Uhland Rd* BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	*Lkg S at curb cut & poorly defined channel; standing water, pavement damage (1/9/14)*

Photo #	Caption
P4	*Looking S thru apt complex fence at grate inlet; detention pond in distance (1/9/14)*

Site No.: *10F* **Location:** *1100 Uhland Rd* BACK TO MAP

Engineers Opinion of Probable Construction Cost

1100 Uhland Rd

Infrastructure project to resolve local flooding in events up to 25-years in

Item	Description	Quantity	Unit	Unit Price	Amount
1.01			LS		$ -
1.02			LF		$ -
1.03			LS		$ -
	Subtotal				$ -
	Construction Contingency	35%			$ -
	Total Project Cost				$ 50,000 (city cost)

* Cost does not include study of existing drainage infrastructure or easement acquisition for proposed channel

Project Description
Infrastructure project to resolve local flooding in events up to 25-years in County/Uhland Rd. area including: reconstructing the roadways to depressed curb-and-gutter sections with adequate grading; and adding a new storm sewer system along the whole route with a new outfall to the Blanco River.

Cost	DR	City/Other
$4,200,000	$4,150,000	$50,000

2017	2018	2019	2020	2021	2022
$ 420,000		$ 3,780,000			

Project ID*
36***

Site No.: *11* **Location:** ***Lift Station at Post Rd*** BACK TO MAP

Project covered by CIP #210 according to the new "2018-2027 CIP"

SITE SUMMARY

OPT B	*Improve drainage by regrading the natural drainage path through the adjacent fields to the outflow area near IH-35.*	*5*
OPT C		
OPT D		

Challenges

OPT A	*The ditch outfall is 3,600 LF to the SE at the Blanco R. Regrading ditch to 0.5% (currently 0 to 0.3%) would require significant excavation, coordination w Hays Co., and driveway/ culvert adjustments. Local regrading (<1,000 LF) won't significantly reduce ponding frequ.*
OPT B	*Option does not affect local ponding frequency (site access) and mosquito problem; cost may outweigh the benefits.*
OPT C	
OPT D	

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *11* **Location:** ***Lift Station at Post Rd*** BACK TO MAP

BACKGROUND INFO

Date: *1/9/14* Time: *16:00* Attendees: *SW, TW, CS, KCP*

Flood Complaint Summary: *Ditch from Yarrington Rd southwest to city limits doesn't drain; Lift Station floods*

Watershed: *Blanco* Hydro Subbasin: *n/a*

Est. Drainage Area (ac): *130* Est. Flood Freq. (yrs): *1* *(most events)*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes: *extremely flat, poorly graded ditch, no outfall*

Local Storm Drain System? Y / N Notes:

GIS Data Available? Y / N

Related Flood Complaint(s):

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other: *Lift Station*

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None

Inches: *~8* Date: *10/31/13* Notes: *High debris line, but road open*

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear

Notes: *trace amounts on 1/8 and 1/9 (<0.1")*

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry

Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid

Notes: *Standing water in ditch (>100LF), mosquitos noted during visit*

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None

Notes: *Heavy veg/trash/debris along roadside ditch, around lift station perimeter chain link fence, and along ditch running SW of lift sta.*

Future Erosion / Debris Potential: Y / N Notes: *no outfall; debris accumulates in this area*

Affected Properties: *1* *Lift Station*

Affected Buildings: *0*

Affected Roadways: *1* *Post Rd*

Other:

City Staff Input: *Standing water in the ditch year-round. The roadside ditch leaves the City Limits and enters Hays County jurisdiction ~2,500' to the SE.*

Citizen Input:

Notes: *The existing ditch is extremely flat (<0.3%) with an apparent local sag near the lift station access driveway. The ~130-acre area E/NE of site between IH35 and Post Rd drains to ditches that converge at the W corner of the site. Seven driveway culverts between the lift station and Blanco R.*

Site No.: *11* **Location:** ***Lift Station at Post Rd*** BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Large drainage area; extremely flat slopes / local sag area; no viable outfall*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements / Vegetation Mgmt / Curb & Gutter / Driveway Adjustments / Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Regrade channel (≥0.5%) to convey standing water towards the Blanco River; elevate lift station (and access driveway) by fill to reduce flooding frequency*

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

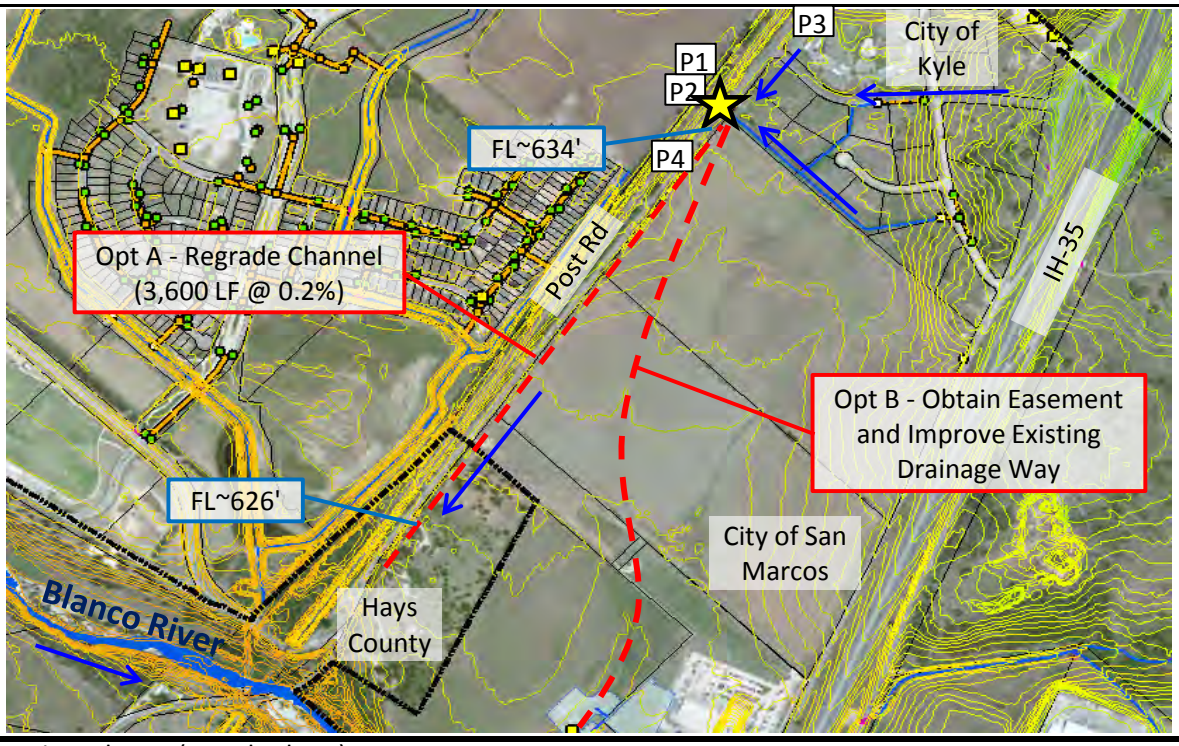
Notes:

Add'l Assessment Required:

ROW Required: *Easement/coordination with Hays County is required for ditch regrading*

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*Looking E at lift station chain link fence/gate; debris line 2-3ft high (10/31/13)*
P2	*Looking SW from lift station driveway along roadside ditch; standing water (10/31/13)*
P3	*Looking SW along Post Rd from Yarrington Rd bridge; standing water (10/31/13)*
P4	*Looking SE at driveway/culvert S of lift station; clogged pipes, heavy debris (10/25/13)*

Site No.: *11* **Location:** ***Lift Station at Post Rd*** BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	*Looking E at lift station chain link fence/gate; debris line 2-3ft high (10/31/13)*

Photo #	Caption
P2	*Looking SW from lift station driveway along roadside ditch; standing water (10/31/13)*

Site No.:	11	Location:	*Lift Station at Post Rd*	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	*Looking SW along Post Rd from Yarrington Rd bridge; standing water (10/31/13)*

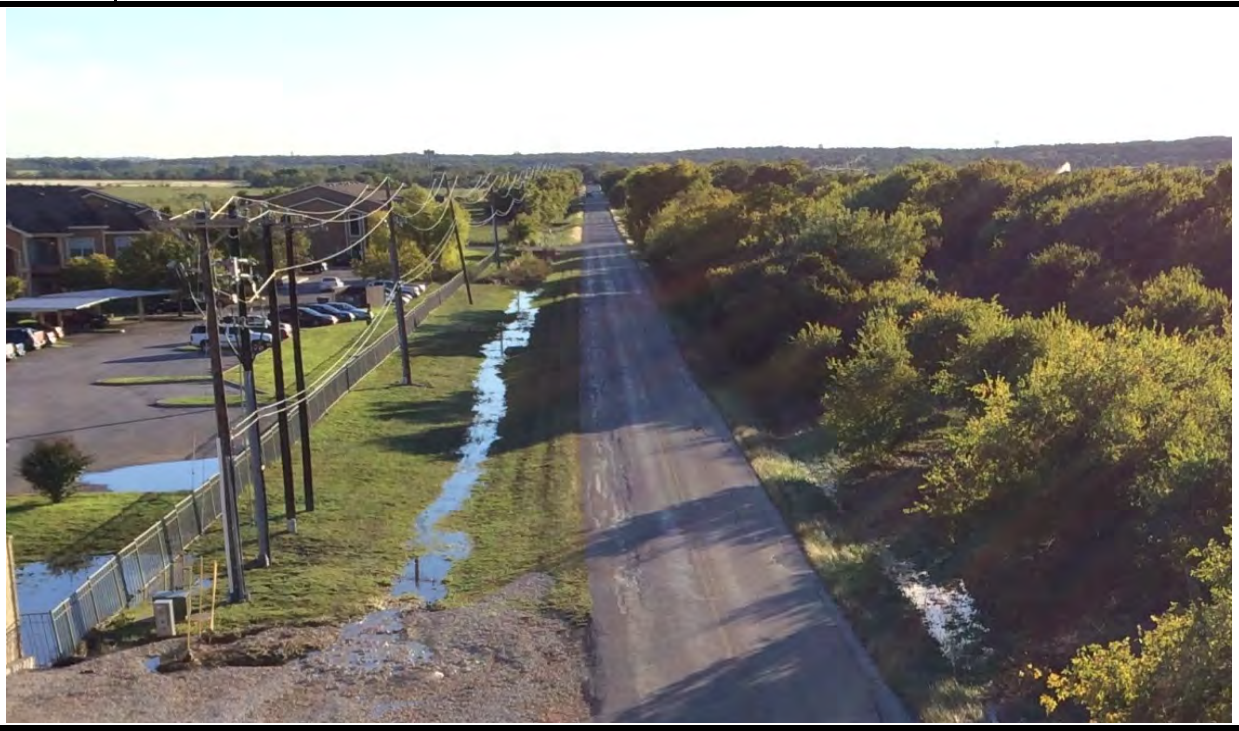


Photo #	Caption
P4	*Looking SE at driveway/culvert S of lift station; clogged pipes, heavy debris (10/25/13)*

Site No.: *11* **Location:** ***Lift Station at Post Rd*** BACK TO MAP

Engineers Opinion of Probable Construction Cost

Lift Station at Post Rd

Improve drainage by regrading roadside channel along SE side of Post Road. Local

Item	Description	Quantity	Unit	Unit Price	Amount
1.01	Regrade ditch	3600	LF	$ 50	$ 180,000
1.02	Reinstall Culverts and Driveways	10	EA	$ 10,000	$ 100,000
1.03	E&S and Traffic Controls and Misc.	1	LS	$ 15,000	$ 15,000
	Subtotal				$ 295,000
	Engineering, Survey and Permitting				$ 73,750
	Construction Contingency	35%			$ 103,000
	Total Project Cost				$ 471,750

Site No.: *12* **Location:** *Downtown* BACK TO MAP

Project covered by CIP #45 according to the new "2018-2027 CIP"

SITE SUMMARY

OPT B

OPT C

OPT D

Challenges

OPT A

OPT B

OPT C

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *12* **Location:** ***Downtown*** BACK TO MAP

BACKGROUND INFO

Date: *11/13/13* Time: *13:00* Attendees: *SW, TW, CS, KCP*

Flood Complaint Summary: *All of downtown*

Watershed: *Purgatory* Hydro Subbasin: *P7-6*

Est. Drainage Area (ac): *0* Est. Flood Freq. (yrs): *2*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes:

Local Storm Drain System? Y / N Notes:

GIS Data Available? Y / N

Related Flood Complaint(s):

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other:

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None
Inches: *~5* Date: Notes:

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear
Notes:

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry
Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid
Notes:

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None
Notes:

Future Erosion / Debris Potential: Y / N Notes:

Affected Properties: *N/A*

Affected Buildings: *N/A*

Affected Roadways: *N/A*

Other:

City Staff Input:

Citizen Input:

Notes:

Site No.: *12* **Location:** ***Downtown*** BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: _____

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements
Vegetation Mgmt / Curb & Gutter / Driveway Adjustments
Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *LBJ LID & Reconstruction will improve drainage issues downtown*

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

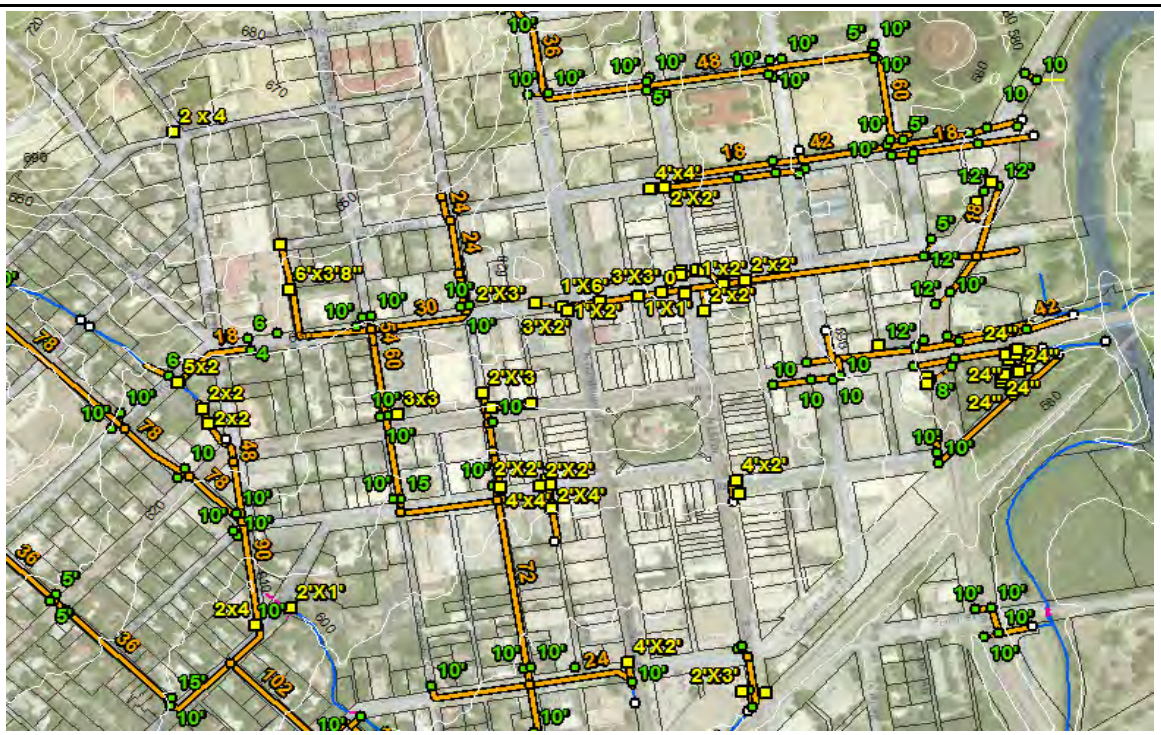
Notes: _____

Add'l Assessment Required: _____

ROW Required: _____

Potential Water Quality Feature: _____

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	
P2	
P3	
P4	

	Site No.: *12* **Location:** *Downtown*	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption

Photo #	Caption
P2	*0*

Site No.:	*12*	Location:	*Downtown*	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	*0*

Photo #	Caption
P4	*0*

Site No.: *13* **Location:** ***Children's Park Rd (Purgatory Creek)*** BACK TO MAP

Project covered by CIP #679 according to the new "2018-2027 CIP"

SITE SUMMARY

	reduce erosion D/S of crossing that is currently exacerbated by overtopping	
OPT B	*Stabilize large scour hole and undermining of structure D/S of crossing using large rock riprap and/or gabions*	*2*
OPT C	*Implement pest control plan to reduce insect (e.g., mosquito) complaints*	*1*
OPT D		

Challenges

OPT A	*Park access/use will be disrupted throughout construction. Reconstruction of the crossing will be costly. May produce little benefit due to area topography.*
OPT B	*Insect and overtopping/closure issues will continue.*
OPT C	*Overtopping/closure issue will continue.*
OPT D	

***Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)**

Site No.: *13* **Location:** ***Children's Park Rd (Purgatory Creek)*** BACK TO MAP

BACKGROUND INFO

Date: *12/20/13* Time: *14:30* Attendees: *SW, TW, CS, KCP*

Flood Complaint Summary: *Low water crossing*

Watershed: *Purgatory* Hydro Subbasin: *P8-1*

Est. Drainage Area (ac): *23,700* Est. Flood Freq. (yrs): *1* *(most events)*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes: *San Marcos River; 2yr ~565.1', 10yr ~569'*

Local Storm Drain System? Y / N Notes:

GIS Data Available? Y / N

Related Flood Complaint(s):

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other:

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None
Inches: *~4* Date: *10/31/13* Notes: *Road overtopped and closed*

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear
Notes:

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry
Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid
Notes: *Ponding U/S of crossing does not drain*

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None
Notes: *Significant erosion on D/S side of structure: large scour hole and undermining of structure, wood formwork exposed at footing*

Future Erosion / Debris Potential: Y / N Notes: *frequent overtopping will increase erosion*

Affected Properties: *1* *Children's Park and undeveloped area downstream*

Affected Buildings: *0*

Affected Roadways: *1* *Childrens Park Drive*

Other:

City Staff Input: *Standing water U/S of crossing causes problems with mosquitoes throughout the year.*

Citizen Input:

Notes: *Standing water U/S of crossing is caused by high culvert flowline at crossing. Large scour hole and structure undermining on D/S side of x-ing. Road provides access to park; no thru traffic. 30" storm drain outfall on west bank, U/S side of crossing (no significant cause of flooding/erosion).*

Site No.: *13* **Location:** ***Children's Park Rd (Purgatory Creek)*** BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Limited conveyance capacity; Large drainage area*
Road El ~566.5'; 2yr WSE = 568.9'; 10yr WSE = 571.6'; 25yr WSE = 572.8' (Purgatory)
Ponding upstream caused by high culvert flowline at crossing

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements / Vegetation Mgmt / Curb & Gutter / Driveway Adjustments / Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Reconstruction of crossing would eliminate standing water upstream, provide additional conveyance capacity/reduce overtopping frequency, stabilize erosion downstream, and reduce potential for future erosion problems*

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

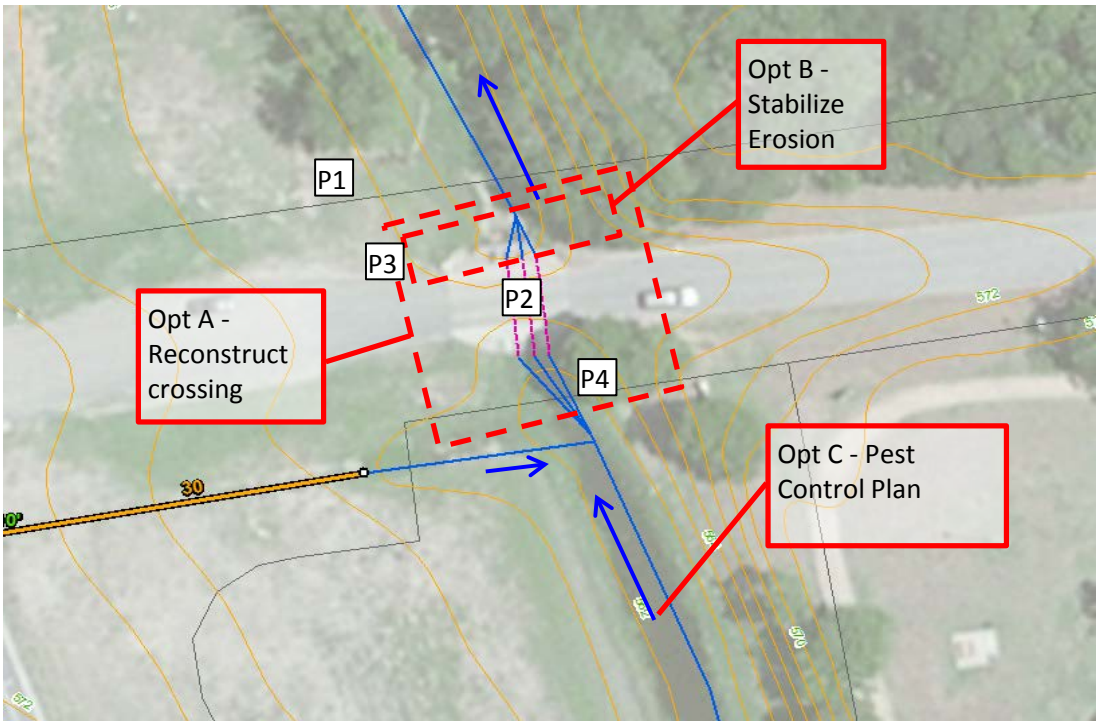
Notes:

Add'l Assessment Required: *Hydraulic analysis to size new structure; survey for design*

ROW Required:

Potential Water Quality Feature: *opportunity identified in Water Quality Protection Plan, Nov. 16, 2015*

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*Looking SE toward D/S side of crossing; Flooded crossing during October 31, 2013 storm*
P2	*Looking S from crossing; standing water in low spot U/S of crossing*
P3	*Looking E at D/S face of crossing; significant erosion and structure undermining*
P4	*Looking W at U/S face of crossing; 30"storm drain outfall*

Site No.:	13	Location:	Children's Park Rd (Purgatory Creek)	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	Looking SE toward D/S side of crossing; Flooded crossing during October 31, 2013 storm

Photo #	Caption
P2	Looking S from crossing; standing water in low spot U/S of crossing

Site No.:	13	Location:	Children's Park Rd (Purgatory Creek)	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	Looking E at D/S face of crossing; significant erosion and structure undermining

Photo #	Caption
P4	Looking W at U/S face of crossing; 30"storm drain outfall

Site No.: *13* **Location:** ***Children's Park Rd (Purgatory Creek)*** BACK TO MAP

Engineers Opinion of Probable Construction Cost

Children's Park Rd (Purgatory Creek)

Reconstruct crossing to improve conveyance/reduce overtopping frequency,

Item	Description	Quantity	Unit	Unit Price	Amount
1.01	Misc. Excavation and Grading	1	LS	$ 10,000	$ 10,000
1.02	Remove Existing Culverts	120	LF	$ 115	$ 13,800
1.03	Upgrade Culverts	50	LF	$ 4,000	$ 200,000
1.04	Roadway Embankment	1500	CY	$ 100	$ 150,000
1.04	Pavement Repair	1200	SY	$ 50	$ 60,000
1.05	E&S and Traffic Controls and Misc.	10	mo	$ 5,500	$ 55,000
1.06	water quality opportunity (10%)	1	LS	$ 48,880	$ 48,880
	Subtotal				$ 537,680
	Engineering, Survey and Permitting (25%)				$ 134,420
	Construction Contingency	35%			$ 188,000
	Total Project Cost				$ 860,000

Site No.: *14* **Location:** *300 Blk S LBJ Dr (Purgatory Creek)* BACK TO MAP

SITE SUMMARY

Project covered by CIP #679 according to the new "2018-2027 CIP"

OPT C

OPT D

Challenges

OPT A *Traffic disturbance on LBJ Dr (high volume; may become two-way in the near future)*

OPT B

OPT C

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *14* **Location:** ***300 Blk S LBJ Dr (Purgatory Creek)*** BACK TO MAP

BACKGROUND INFO

Date: *12/20/13* Time: *14:15* Attendees: *SW, TW, CS, KCP*

Flood Complaint Summary: *Possible bridge upgrade*

Watershed: *Purgatory* Hydro Subbasin: *n/a*

Est. Drainage Area (ac): *23,500* Est. Flood Freq. (yrs): *5* *(RAS: < 2yr)*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes:

Local Storm Drain System? Y / N Notes:

GIS Data Available? Y / N

Related Flood Complaint(s): *Outfall for Site 25 may be in this area*

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other: *Undeveloped floodplain*

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None

Inches: *~4* Date: *10/31/13* Notes: *Road overtopped but not closed*

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear

Notes:

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry

Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid

Notes: *Standing water in scour hole D/S of crossing*

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None

Notes: *Large scour hole D/S of culvert, retaining wall failure next to wingwall on U/S face, cracks in concrete slope paving on D/S face.*

Future Erosion / Debris Potential: Y / N Notes: *Scour hole not stabilized*

Affected Properties: *0*

Affected Buildings: *0*

Affected Roadways: *1* *S LBJ Drive (one-way; per SW, there are plans to convert to 2-way)*

Other:

City Staff Input: *LBJ is a main thoroughfare. There are plans to convert LBJ and Guadalupe to two-way streets (SW), crossing floods every 7 to 8 years*

Citizen Input:

Notes: *Retaining wall movement on S side of U/S face appears to be stable, but needs repair; Surficial cracks noted in embankment slope paving; no apparent structural issues*

Site No.: *14* **Location:** ***300 Blk S LBJ Dr (Purgatory Creek)*** BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Large drainage area, limited bridge conveyance capacity*
Roadway Elev ~572.8'; 2yr WSE = 574.1'; 10yr WSE = 575.6'; 25yr WSE = 576.1'

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements / Vegetation Mgmt / Curb & Gutter / Driveway Adjustments / Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Channel improvements to stabilize scour hole. Structural repair for U/S face of retaining wall, bridge upgrade to reduce overtopping frequency.*

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

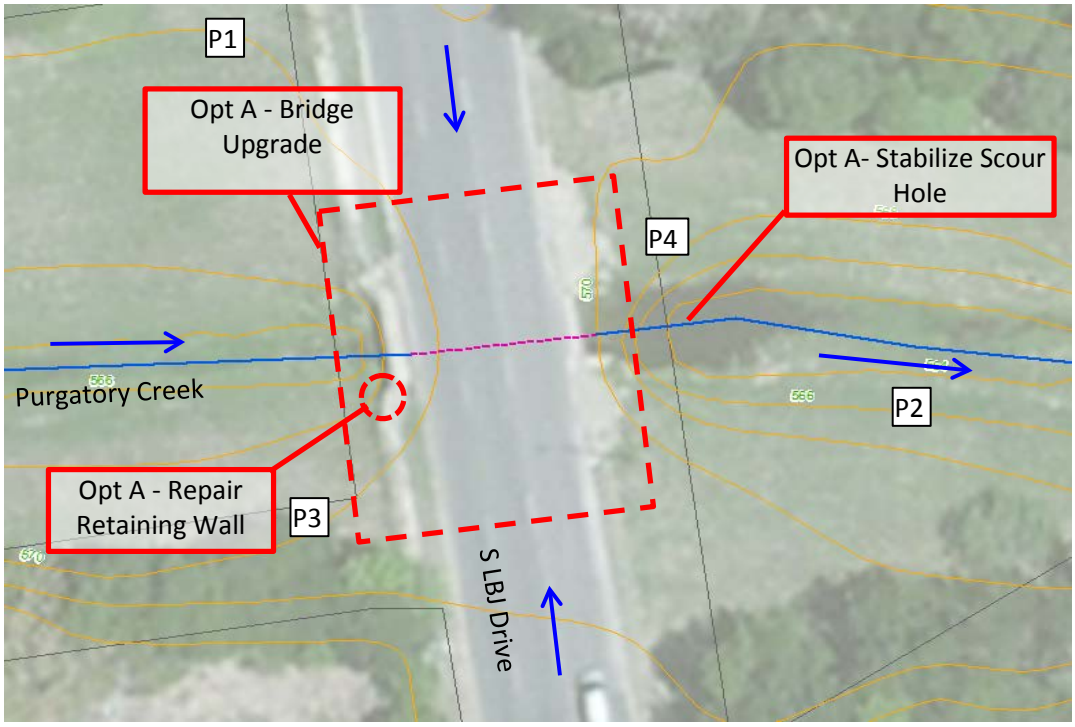
Notes:

Add'l Assessment Required:

ROW Required:

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*Looking S at U/S side of crossing during Oct 31, 2013 flood event*
P2	*Looking W towards large scour hole on D/S side of crossing*
P3	*Looking NE at retaining wall failure on U/S face of crossing*
P4	*Looking SW at cracking on D/S embankment slope paving*

Site No.:	14	Location:	300 Blk S LBJ Dr (Purgatory Creek)	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	Looking S at U/S side of crossing during Oct 31, 2013 flood event

Photo #	Caption
P2	Looking W towards large scour hole on D/S side of crossing

Site No.:	14	Location:	300 Blk S LBJ Dr (Purgatory Creek)	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	Looking NE at retaining wall failure on U/S face of crossing

Photo #	Caption
P4	Looking SW at cracking on D/S embankment slope paving

Site No.: *14* **Location:** *300 Blk S LBJ Dr (Purgatory Creek)* BACK TO MAP

Engineers Opinion of Probable Construction Cost

300 Blk S LBJ Dr (Purgatory Creek)

Improve conveyance by upgrading bridge. Replace/stabilize retaining wall

Item	Description	Quantity	Unit	Unit Price	Amount
1.01	Misc. Excavation and Grading	1	LS	$ 20,000	$ 20,000
1.02	Remove Existing Bridge	1	LS	$ 15,000	$ 15,000
1.03	Install New Bridge (50 ft wide)	1	LS	$ 500,000	$ 500,000
1.04	Roadway Embankment	1400	CY	$ 100	$ 140,000
1.05	Pavement Repair	1500	SY	$ 50	$ 75,000
1.06	Scour Hole Stabilization	1520	SF	$ 25	$ 38,000
1.07	E&S and Traffic Controls and Misc.	10	MO	$ 5,500	$ 55,000
	Subtotal				$ 843,000
	Engineering, Survey and Permitting				$ 210,750
	Construction Contingency	35%			$ 295,000
	Total Project Cost				

Site No.: *15* **Location:** *500 Blk Mitchell (Purgatory Creek)* BACK TO MAP

Project covered by CIP #679 according to the new "2018-2027 CIP"

*

SITE SUMMARY

OPT B *and drainage channels through 919 W MLK Dr and 505 & 511 S Mitchell Ave (Dunbar Park)*

OPT C

OPT D

Challenges

OPT A *Obtaining drainage easement*

OPT B

OPT C

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *15* **Location:** ***500 Blk Mitchell (Purgatory Creek)*** BACK TO MAP

BACKGROUND INFO

Date: *1/9/14* Time: *14:35* Attendees: *SW, TW, CS, KCP*

Flood Complaint Summary: *Low water crossing; lots of flow along Mitchell to crk; erosion problems*

Watershed: *Purgatory* Hydro Subbasin: *P5-4, P8-5, P8-6*

Est. Drainage Area (ac): *47* *(23,00 crk)* Est. Flood Freq. (yrs): *25*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes:

Local Storm Drain System? Y / N Notes:

GIS Data Available? Y / N

Related Flood Complaint(s):

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other: *Dunbar Park along creek*

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None
Inches: *~4* Date: *10/31/13* Notes:

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear
Notes: *trace amounts on 1/8 and 1/9 (<0.1")*

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry
Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid
Notes: *Standing water in scour hole D/S of crossing*

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None
Notes: *Scour hole and potential undermining D/S of crossing; sediment deposits in road NW of crossing; erosion near curb cut NW of x-ing*

Future Erosion / Debris Potential: Y / N Notes: *Large scour hole & undermining potential*

Affected Properties: *1* *511 S Mitchell Ave (undeveloped)*

Affected Buildings: *0*

Affected Roadways: *1* *S Mitchell Ave*

Other:

City Staff Input: *Crossing has not been overtopped by Purgatory Creek recently (if ever; RAS shows near 25-yr capacity)*

Citizen Input:

Notes: *Mitchell is the primary stormwater conduit for a ~47-acre area w/in the Dunbar/Heritage neighborhood. Sediment deposits and erosion along NE side of Mitchell (NW of x-ing) indicate high frequent flows. This section of Mitchell is very flat (<0.4%).*

Site No.: *15* **Location:** ***500 Blk Mitchell (Purgatory Creek)*** BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Very flat portion of Mitchell Ave floods due to large drainage area & no storm drain infrastructure; erosion issues along NE side of Mitchell and D/S of x-ing Roadway Elev ~580.2'; 2yr WSE = 579'; 10yr WSE = 580'; 25yr WSE = 580.4'*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements
Vegetation Mgmt / Curb & Gutter / Driveway Adjustments
Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Add curb cut inlets & drainage channels along NE side of Mitchell to reduce road flooding; stabilize scour hole/undermining of D/S side of crossing with rock riprap and/or gabions*

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

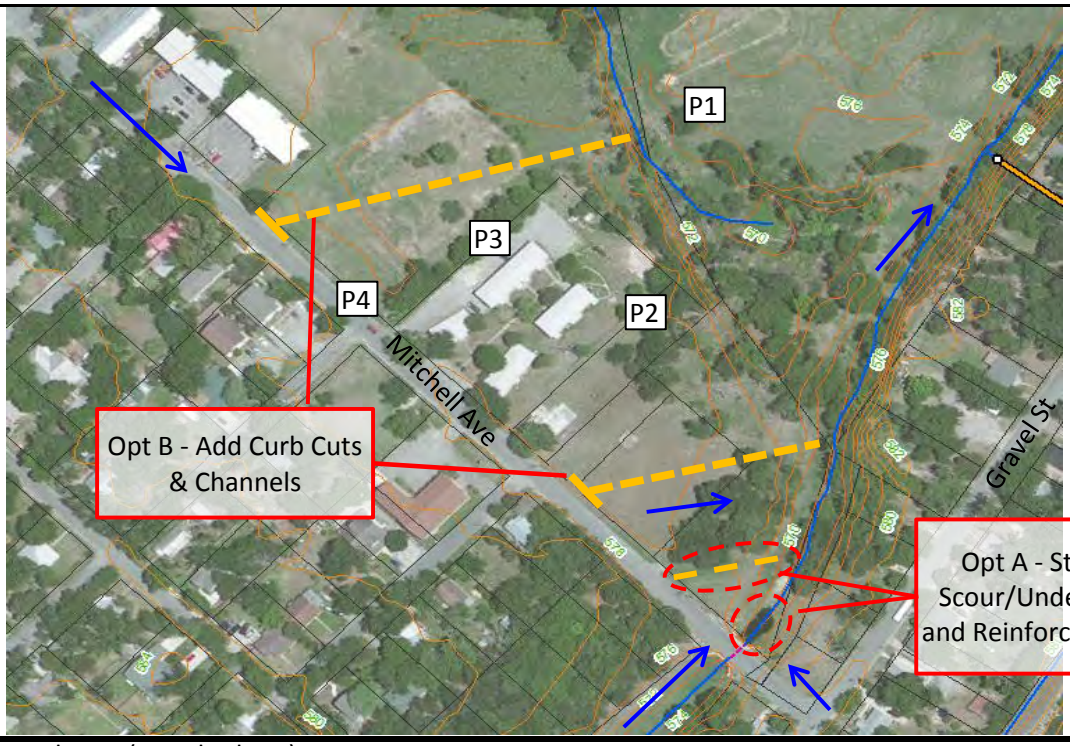
Notes:

Add'l Assessment Required:

ROW Required: *drainage channels could be located within Dunbar Park*

Potential Water Quality Feature: *opportunity identified in Water Quality Protection Plan, Nov. 16, 2015*

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*Looking SE along Mitchell toward crossing; standing water/mud in road (10/31/13)*
P2	*Looking E at curb cut along NE side of Mitchell; erosion and debris accumulation*
P3	*Looking SW at D/S side of crossing; large scour hole and stading water*
P4	*Looking W at D/S side of crossing; potential undermining of concrete culvert bottom*

Site No.:	15	Location:	500 Blk Mitchell (Purgatory Creek)	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	Looking SE along Mitchell toward crossing; standing water/mud in road (10/31/13)

Photo #	Caption
P2	Looking E at curb cut along NE side of Mitchell; erosion and debris accumulation

Site No.:	15	Location:	500 Blk Mitchell (Purgatory Creek)	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	Looking SW at D/S side of crossing; large scour hole and stading water

Photo #	Caption
P4	Looking W at D/S side of crossing; potential undermining of concrete culvert bottom

Site No.: *15* **Location:** *500 Blk Mitchell (Purgatory Creek)* BACK TO MAP

Engineers Opinion of Probable Construction Cost

500 Blk Mitchell (Purgatory Creek)

Stabilize scour hole & undermining D/S of crossing & reinforce drainage channel

Item	Description	Quantity	Unit	Unit Price	Amount	
1.01	Misc. Excavation and Grading		LS		$	-
1.02	Reinforce Scour Hole		SF		$	-
1.03	Reinforce Channel		SF		$	-
1.04	E&S and Traffic Controls and Misc.		LS		$	-
1.05	water quality opportunity (25%)		LS		$	-
	Subtotal				$	-
	Engineering, Survey and Permitting					
	Construction Contingency	35%			$	-
	Total Project Cost				$	-

Site No.: *16* **Location:** *503 Harvey St* BACK TO MAP

Project covered by CIP #593 according to the new "2018-2027 CIP"

SITE SUMMARY

OPT B	*Reduce runoff to site by installing additional curb inlets upslope along Moore and/or North St.*	5
OPT C	*Recommend regrading of 503 Harvey (private property) side yard to prevent ponding along fenceline during frequent events.*	1
OPT D		

Challenges

OPT A	*Hydraulic assessment of storm drain system is required. Site flooding may continue if existing storm drain system induces tailwater effects.*
OPT B	*Hydraulic assessment of storm drain system is required. New inlets along North St may be sufficient to intercept runoff upslope of site.*
OPT C	*On-site improvements would not reduce flood frequency, but would improve site drainage during flood events.*
OPT D	

***Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)**

Site No.: *16* **Location:** ***503 Harvey St*** BACK TO MAP

BACKGROUND INFO

Date: *1/9/14* Time: *13:35* Attendees: *SW, TW, CS, KCP*

Flood Complaint Summary: *Flood complaint*

Watershed: *Purgatory* Hydro Subbasin: *P7-5*

Est. Drainage Area (ac): *180* Est. Flood Freq. (yrs): *10*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes: *local sag; need to assess SD system capacity*

Local Storm Drain System? Y / N Notes: *(2) 10' inlets drain to 90" main via 24" lateral*

GIS Data Available? Y / N

Related Flood Complaint(s): *Site 7 - 411 W San Antonio (D/S)*

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other:

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None

Inches: *~4* Date: *10/31/13* Notes: *no flooding; HWM ~4" along curb*

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear

Notes: *trace amounts on 1/8 and 1/9 (<0.1")*

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry

Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid

Notes:

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None

Notes: *leaves/debris along gutter on Harvey St and North St & in side yard along North St; erosion of driveway rocks/gravel noted*

Future Erosion / Debris Potential: Y / N Notes: *debris & erosion expected nearly every rain*

Affected Properties: *2* *503 Harvey St, 513 Harvey St*

Affected Buildings: *0* *503 Harvey: stormwater only inches from FFE during 2009 event, but no structure flooding to date*

Affected Roadways: *1* *Harvey St*

Other:

City Staff Input: *2 curb inlets are being installed on the W side of North St to intercept flow U/S flow in this area. Curb improv. in last 5 yrs have reduced overtopping.*

Citizen Input: *Runoff primarily comes from Moore St. Noticable increase in flows after recent development on TxSt. Inlet on NW side of Moore doesn't collect runoff. Runoff overtops curb.*

Notes: *High curbs in area (>6"), driveway relocated to North St ~10 yrs ago due to flooding. Existing inlets (Harvey) appear to be located at low point of local sag. Inlets/laterals may not have adequate capacity (analysis req'd). Property has flooded (yards); no structural flooding*

Site No.: *16* **Location:** *503 Harvey St* BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Large drainage area; local sag area; inadequate storm drain infrastr. upslope of site; potentially inadequate local storm drain system (assessment req'd)*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements / Vegetation Mgmt / Curb & Gutter / Driveway Adjustments / Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Add inlet/lateral in sag area at 503 Harvey; add inlets/laterals upslope of site along Moore and/or North St; recommend on-site regrading to reduce ponding during flood events.*

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

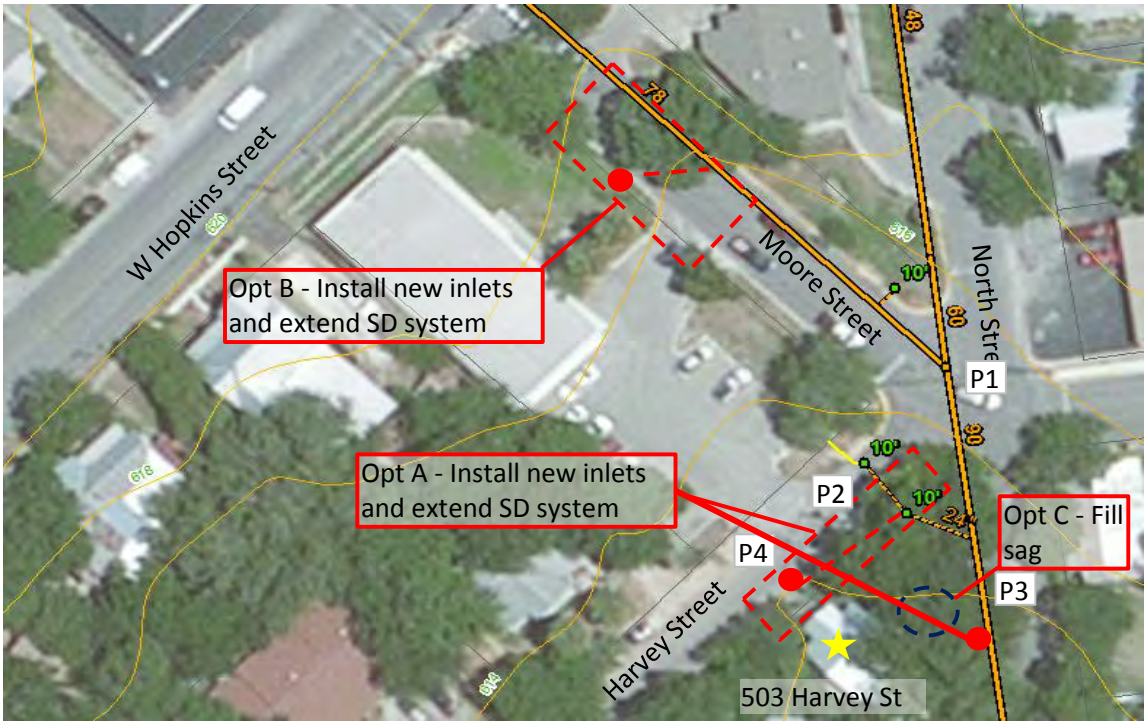
Notes:

Add'l Assessment Required: *H/H analysis of storm drain system capacity required*

ROW Required: *Easement may be required for improvements along 503 Harvey frontage*

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*Inlet on SE side of Harvey Street, looking SE towards 503 Harvey Street*
P2	*Inlet on NW side of Harvey Street, looking NE towards North Street*
P3	*Sag location at 503 Harvey Street, looking W from North Street, S of Harvey Street*
P4	*Tall curb on SE side of Harvey Street*

Site No.:	*16*	Location:	*503 Harvey St*	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	*Inlet on SE side of Harvey Street, looking SE towards 503 Harvey Street*

Photo #	Caption
P2	*Inlet on NW side of Harvey Street, looking NE towards North Street*

Site No.: *16* **Location:** ***503 Harvey St*** BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	*Sag location at 503 Harvey Street, looking W from North Street, S of Harvey Street*

Photo #	Caption
P4	*Tall curb on SE side of Harvey Street*

Site No.: *16* **Location:** *503 Harvey St* BACK TO MAP

Engineers Opinion of Probable Construction Cost

503 Harvey St

Improve roadway drainage by installing a curb inlet and storm drain lateral in sag

Item	Description	Quantity	Unit	Unit Price	Amount
1.01	Misc. Excavation and Grading		LS		$ -
1.02	Install New 10 ft Curb Inlets		EA		$ -
1.03	Install New SD Pipe		LF		$ -
1.04	Pavement Repair		SY		$ -
1.05	E&S and Traffic Controls and Misc.		MO		$ -
	Subtotal				$ -
	Engineering, Survey and Permitting				
	Construction Contingency	35%			$ -
	Total Project Cost				$ -

Site No.: *17* **Location:** *400 Blk Faris* BACK TO MAP

SITE SUMMARY

Project covered by CIP #558 according to the new "2018-2027 CIP"

OPT C *Install headwall and storm drain pipe to contain flows entering roadway at MLK* *5*

OPT D

Challenges

OPT A *Site constraints: subsurface utilities, maintain cross slopes suitable for traffic/driveways, maintain positive drainage to outfall channel at 313 Faris, curb/gutter adjust. may be required; Limited conveyance capacity/LOS improvement since freq. flow rates are high*

OPT B *Easement required*

OPT C *Storm drain pipe would disrupt neighboorhood traffic and be costly. A large pipe/box culvert is required to offer significant LOS improvement. Easement required.*

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *17* **Location:** ***400 Blk Faris*** BACK TO MAP

BACKGROUND INFO

Date: *11/13/13* Time: *15:00* Attendees: *SW, TW, TH, CS, KCP*

Flood Complaint Summary: *Inverted crown (conveys water and debris from creek)*

Watershed: *Purgatory* Hydro Subbasin: *P4-8*

Est. Drainage Area (ac): *140* Est. Flood Freq. (yrs): *1* *(most events)*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes: *private channel on 313 Faris may create TW*

Local Storm Drain System? Y / N Notes:

GIS Data Available? Y / N

Related Flood Complaint(s):

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:
2017-2026 Recommended CIP

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other:

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None
Inches: *~4* Date: *10/31/13* Notes: *see photographs below*

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear
Notes:

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry
Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid
Notes:

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None
Notes: *leaves/debris & high water marks still present from previous event*

Future Erosion / Debris Potential: Y / N Notes: *debris washed into street nearly every rain*

Affected Properties: *11* *400 Block of Farris (flooding 2-3 times per year)*

Affected Buildings: *3* *313 Faris, 401 Faris, 404 Faris (flooding every 4-5 years)*

Affected Roadways: *1* *Faris St (flooding during every rainfall event)*

Other:

City Staff Input: *City plans to repave Faris St in Winter 2014. Existing road invert is approx. 6" below curb line. SW provided recent history & flood frequency estimates for houses and properties.*

Citizen Input: *Stormwater overtops curb during most storm events. Houses don't flood that often.*

Notes: *RPS provided recommendations to City for repaving (see email, CS to SW on 11/22/13): Lower pavement to extent possible to maximize roadway capacity; constraints include subsurface utilities, maintain grades suitable for traffic & driveway entry, positive drainage at D/S end of Faris*

Site No.: *17* **Location:** *400 Blk Faris* BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Frequent high flows from large drainage area; open channel discharges onto road via private channel/drive (1235 MLK); no storm drain system; flat (1% long. slope); poorly defined channel at outfall (313 Faris) creates tailwater*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements
Vegetation Mgmt / Curb & Gutter / Driveway Adjustments
Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Repaving/lowering roadway may provide add'l conveyance capacity; improve poorly graded outfall channel (313 Faris) for positive drainage / prevent tailwater; install SD pipe*
**See email from CS (RPS) to SW (CoSM) on 11/22/13 for repaving recommendations*

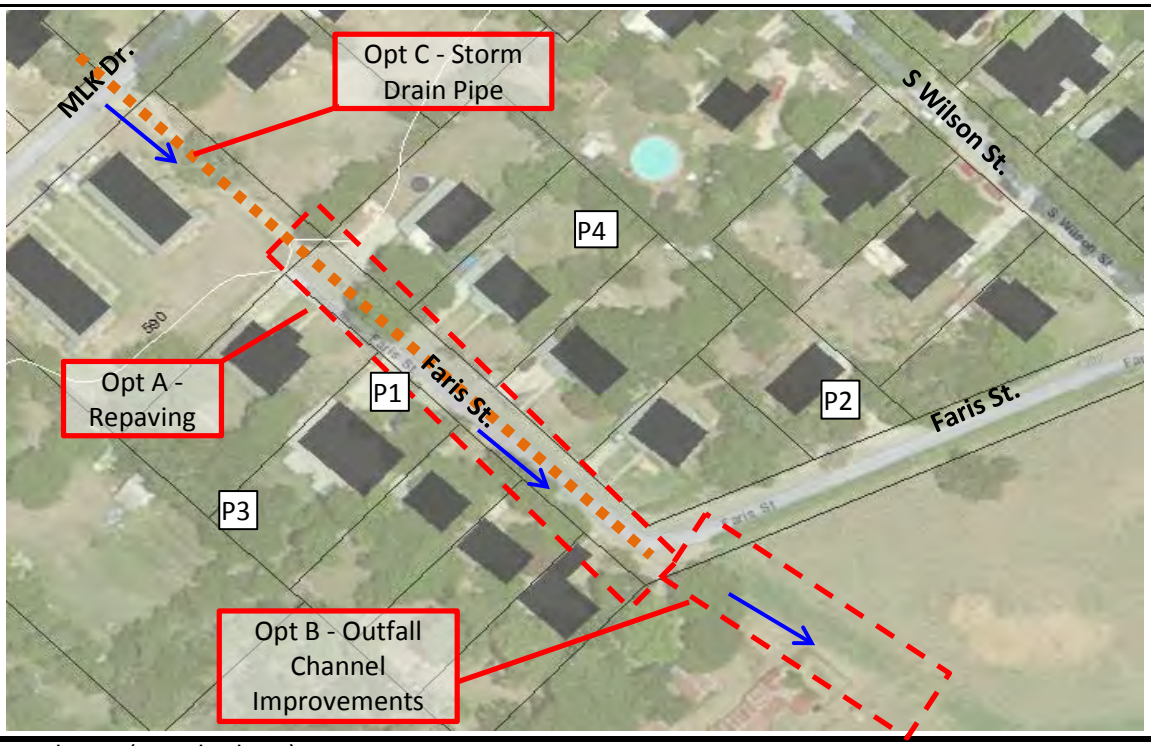
Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility
Notes:

Add'l Assessment Required: *H/H analysis to size roadway and/or SD pipe*

ROW Required: *Easement for outfall channel improvements at 313 Faris may be required*

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*Looking SE from 413 Faris; road/channel flow and debris/high water mark (10/31/13)*
P2	*Looking SE from 401 Faris; flow and standing water in flat area near outfall (10/31/13)*
P3	*Lkg E from 313 Faris; poorly defined outfall channel and debris accumulation (10/31/13)*
P4	*Looking SE down Faris from private channel/drive at 1235 MLK (10/25/13)*

Site No.:	17	Location:	400 Blk Faris	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	Looking SE from 413 Faris; road/channel flow and debris/high water mark (10/31/13)

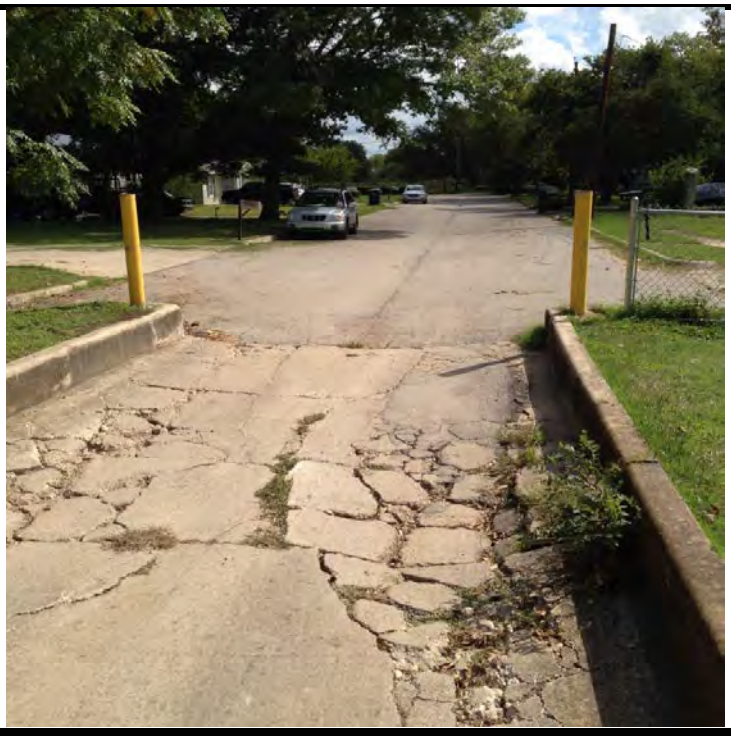
Photo #	Caption
P2	Looking SE from 401 Faris; flow and standing water in flat area near outfall (10/31/13)

Site No.: *17* **Location:** ***400 Blk Faris*** BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	*Lkg E from 313 Faris; poorly defined outfall channel and debris accumulation (10/31/13)*

Photo #	Caption
P4	*Looking SE down Faris from private channel/drive at 1235 MLK (10/25/13)*



Site No.:	*17*	Location:	*400 Blk Faris*	BACK TO MAP

Engineers Opinion of Probable Construction Cost

400 Blk Faris

Repaving/lowering the road will provide additional conveyance capacity and

Item	Description	Quantity	Unit	Unit Price	Amount

Total Project Cost

Site No.: *18a* **Location:** *100 Blk Alta Vista Dr* BACK TO MAP

SITE SUMMARY

Project covered by CIP #547 according to the new "2018-2027 CIP"

and a larger box culvert to significantly reduce clogging and improve conveyance capacity

OPT C

OPT D

Challenges

OPT A *Four-sided area inlet will still require routine maintenance, although not as frequently as required by existing grate inlet*

OPT B *Construction w/in Spring Lake will require coordination with San Marcos River Foundation (SMRF); sediment transport analysis may be required*

OPT C

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *18a* **Location:** *100 Blk Alta Vista Dr* BACK TO MAP

BACKGROUND INFO

Date: *12/20/13* Time: *14:50* Attendees: *SW, TW, CS, KCP*

Flood Complaint Summary: *Canyon area inlet clogs*

Watershed: *Sink* Hydro Subbasin: *SM1-3*

Est. Drainage Area (ac): *40* Est. Flood Freq. (yrs): *1* *(every event)*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes:

Local Storm Drain System? Y / N Notes: *inlet drains to 2'x2' box culvert to Spring Lake*

GIS Data Available? Y / N

Related Flood Complaint(s): *Site 18b - Ed J L Green Dr*

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other: *undeveloped canyon*

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None
Inches: *~5* Date: *10/31/13* Notes: *evidence of roadway flooding*

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear
Notes:

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry
Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid
Notes:

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None
Notes: *flood debris (leaves, veg.) greater than 12" deep covering grate inlet and surrounding area, ~100% grate clogging*

Future Erosion / Debris Potential: Y / N Notes: *add'l debris & flooding during every rainfall*

Affected Properties: *1* *flooding in undeveloped canyon (every rainfall event)*

Affected Buildings: *0*

Affected Roadways: *1* *Alta Vista Dr*

Other:

City Staff Input: *Canyon area and roadway flood during every rainfall event*

Citizen Input:

Notes:

Site No.: *18a* **Location:** *100 Blk Alta Vista Dr* BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Grate inlet in sag clogs & floods roadway & property during every rainfall event*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements / Vegetation Mgmt / Curb & Gutter / Driveway Adjustments / Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Replace grate with four-sided area inlet or upgrade system to include headwall and larger culvert*

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

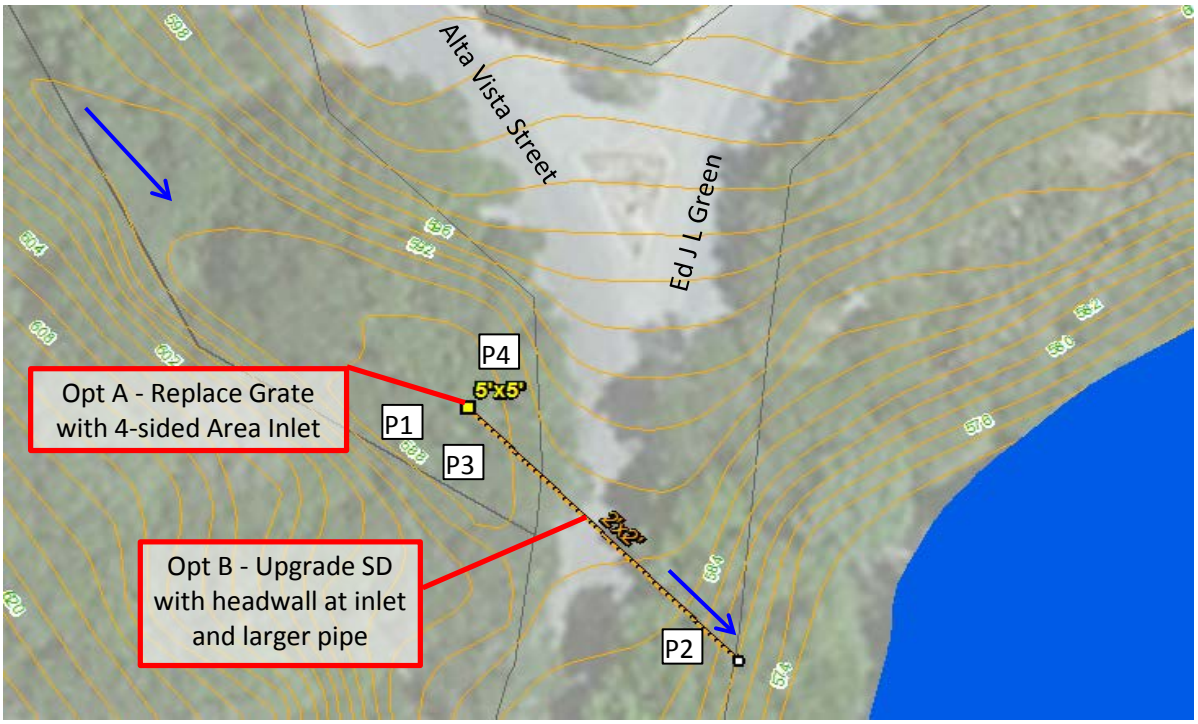
Notes:

Add'l Assessment Required:

ROW Required:

Potential Water Quality Feature: *Flow concentration point would be a good location for a WQ treatment device; opportunity identified in Water Quality Protection Plan, Nov. 16, 2015*

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*Looking E towards grate inlet covered in leaves and debris; rebar marks grate location*
P2	*Looking SE from Alta Vista Dr; existing storm drain outfall location at Spring Lake*
P3	*Looking S from grate inlet; low point along curb where storm water overtops onto road*
P4	*Looking N from grate inlet; outfall of 4" PVC french drain that runs along Ed Green*

Site No.: *18a* **Location:** *100 Blk Alta Vista Dr* BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	*Looking E towards grate inlet covered in leaves and debris; rebar marks grate location*

Photo #	Caption
P2	*Looking SE from Alta Vista Dr; existing storm drain outfall location at Spring Lake*

Site No.: *18a* **Location:** *100 Blk Alta Vista Dr* BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	*Looking S from grate inlet; low point along curb where storm water overtops onto road*

Photo #	Caption
P4	*Looking N from grate inlet; outfall of 4" PVC french drain that runs along Ed Green*

Site No.:	*18a*	Location:	*100 Blk Alta Vista Dr*	BACK TO MAP

Engineers Opinion of Probable Construction Cost

100 Blk Alta Vista Dr

Replace existing grate inlet with a four-sided area inlet to reduce clogging frequency

City of San Marcos In-House Option (work designed and complete by City staff).

Item	Description	Quantity	Unit	Unit Price	Amount
1.01	Misc. Excavation and Grading		LS		$ -
1.02	Install 4-Sided Area Inlet		EA		$ -
1.03	Storm Sewer Upgrade		LS		$ -
1.04	E&S and Traffic Controls and Misc.		LS		$ -
1.05	water quality opportunity (25%)		LS		$ -
	Subtotal				$ -
	Engineering, Survey and Permitting				$ -
	Construction Contingency	35%			$ -
	Total Project Cost				$ -

Site No.: *18b* **Location:** *Ed J L Green Drive* BACK TO MAP

Project covered by CIP #547 according to the new "2018-2027 CIP"

SITE SUMMARY

City Mill & Overlay Complete

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *18b* **Location:** *Ed J L Green Drive* BACK TO MAP

BACKGROUND INFO

Date: *12/20/13* Time: *14:55* Attendees: *SW, TW, CS, KCP*

Flood Complaint Summary: *Spring wtr near 200 blk affects rd*

Watershed: *Sink* Hydro Subbasin: *SM1-3*

Est. Drainage Area (ac): *7* Est. Flood Freq. (yrs): *1* *(continuous)*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes:

Local Storm Drain System? Y / N Notes:

GIS Data Available? Y / N

Related Flood Complaint(s): *Site 18a - Alta Vista Dr*

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other: *undeveloped slopes*

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None
Inches: *~5* Date: *10/31/13* Notes:

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear
Notes:

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry
Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid
Notes: *shallow concentrated flow on W side of street from groundwater*

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None
Notes:

Future Erosion / Debris Potential: Y / N Notes:

Affected Properties: *0*

Affected Buildings: *0*

Affected Roadways: *1* *Ed J L Green Drive (algae growth along W side is a traffic hazard)*

Other:

City Staff Input: *Groundwater seepage is constant, even long after rainfall events. A French drain has recently been installed to drain W side of road upslope of the Alta Vista/Ed Green intersec.*

Citizen Input:

Notes: *Groundwater flows down W side of Ed J L Green & through the intersection of Alta Vista Dr. 4" PVC French drain outfalls to Site 18a; no discharge was noted at outfall during site visits; however, shallow concentrated flow was observed along full length of Ed J L Green.*

Site No.: *18b* **Location:** *Ed J L Green Drive* BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Flooding is not primary concern. Driver safety along Ed J L Green is endangered by algae growth (very slick pavement) along W side of roadway. Algae growth is promoted by constant groundwater along slope W of Ed J L Green Dr.*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements / Vegetation Mgmt / Curb & Gutter / Driveway Adjustments / Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Installation of a gutter or small drainage channel lined with rock riprap would contain groundwater seepage and eliminate flow on the pavement*

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

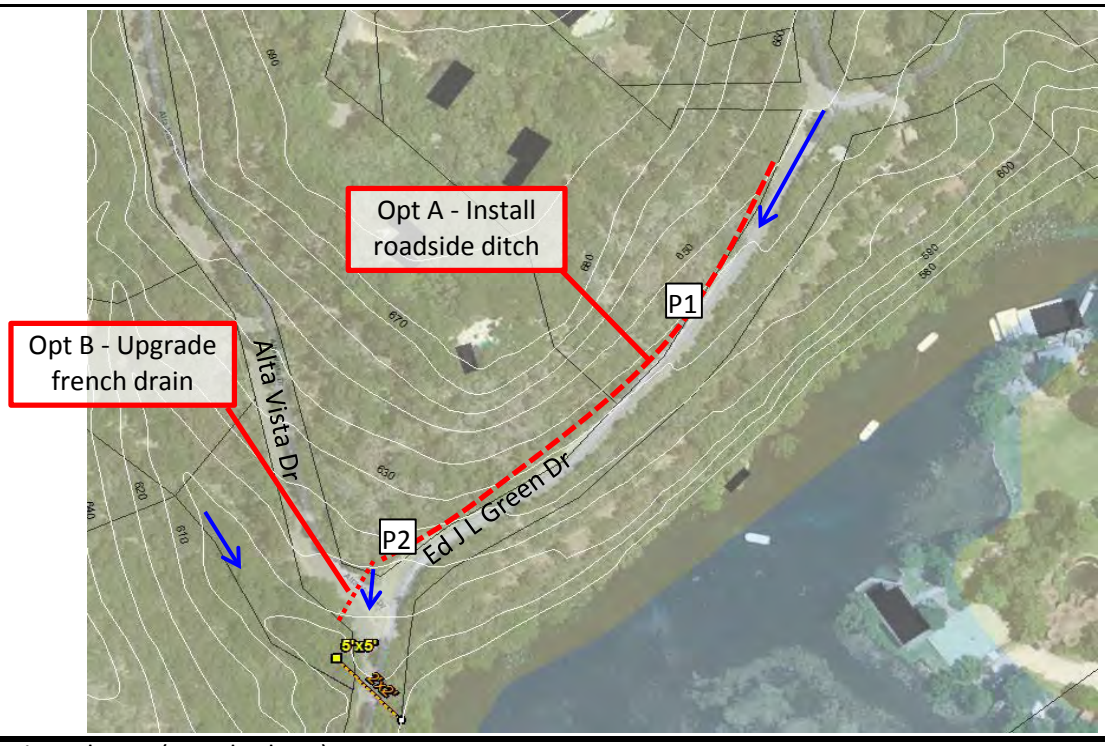
Notes:

Add'l Assessment Required: *D/S storm sewer system may need to be assessed for capacity.*

ROW Required: *Depending on ROW width, easements may be required for roadside improv.*

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*Looking SW along right side of Ed J L Green; shallow concentrated flow and algae growth*
P2	*Looking S at Ed Green/Alta Vista; flow/slick pavement thru intersection*
P3	
P4	

Site No.: *18b* **Location:** *Ed J L Green Drive* BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	*Looking SW along right side of Ed J L Green; shallow concentrated flow and algae growth*

Photo #	Caption
P2	*Looking S at Ed Green/Alta Vista; flow/slick pavement thru intersection*

Site No.: ***18b*** **Location:** ***Ed J L Green Drive*** BACK TO MAP

Engineers Opinion of Probable Construction Cost

Ed J L Green Drive

Install a roadside ditch lined with rock riprap or stone to contain groundwater

Item	Description	Quantity	Unit	Unit Price	Amount
1.01		0	LF	$ -	$ -
1.02		0	LS	$ -	$ -
1.03		0	LS	$ -	$ -
	Subtotal				$ -
	Engineering, Survey and Permitting				$ -
	Construction Contingency	35%			$ -
	Total Project Cost				$ -

Site No.: *19* **Location:** *100 Blk Edward Gary* BACK TO MAP

SITE SUMMARY

Project covered by CIP #477 according to the new "2018-2027 CIP"

OPT C	*Install ~120 LF curb/gutter along W side of Ed Gary near 116 Edward Gary to reduce erosion and sediment transport*	*3*
OPT D		

Challenges

OPT A	*The existing system (receiving) may need to be upgraded (pipe sizes unknown). Storm drain improvements will disrupt traffic along S LBJ and Edward Gary.*
OPT B	*Without adding a storm drain system, flooding will not be significantly improved in the local sag area along Edward Gary near 201 S LBJ.*
OPT C	
OPT D	

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *19* **Location:** ***100 Blk Edward Gary*** BACK TO MAP

BACKGROUND INFO

Date: *11/13/13* Time: *16:45* Attendees: *SW, TW, CS, KCP*

Flood Complaint Summary: *Flooding in street to LBJ; no SD system*

Watershed: *Purgatory* Hydro Subbasin: *SM3-1*

Est. Drainage Area (ac): *7* Est. Flood Freq. (yrs): *1* *(1-2 times/yr)*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes: *existing D/S SD system may be undersized*

Local Storm Drain System? Y / N Notes: *only at intersection of LBJ and Edward Gary*

GIS Data Available? Y / N

Related Flood Complaint(s): *Site 21 - 100 E MLK (receiving system/channel)*

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other:

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None
Inches: *~4* Date: *10/31/13* Notes:

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear
Notes:

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry
Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid
Notes: *standing water/sediment near 201 LBJ during subsequent site visits*

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None
Notes: *Leaves/flood debris in low area in Ed Gary along 201 LBJ frontage; pavement wear visible; Scour along edge of pavement (116 Ed Gary)*

Future Erosion / Debris Potential: Y / N Notes:

Affected Properties: *1* *201 S LBJ (Donut shop) floods regularly*

Affected Buildings: *1* *201 S LBJ (Donut shop) floods regularly*

Affected Roadways: *2* *S Edward Gary St and S LBJ Dr*

Other: *Driveway access along N side of Ed Gary (169 and 179 S LBJ) is limited during flooding*

City Staff Input: *Gutter flow concentrates near 116 Ed Gary (no curb/gutter; erosion problem noted); Stormwater floods Ed Gary east of LBJ intersection & 201 S LBJ property & building*

Citizen Input:

Notes: *CoSM is currently adding inlets on the SW corner of Ed Gary/LBJ; inlets exist along LBJ south Ed Gary intersection; new and existing inlets tie to SD main in LBJ and discharge to drainage channel E of LBJ between railroad and building (Site 21).*

Site No.: *19* **Location:** *100 Blk Edward Gary* BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Local runoff drains to flat/sag area on Edward Gary east of LBJ. Since there is no storm drain infrastructure in this area, runoff floods roadway and nearby properties during frequent rainfall events*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements
Vegetation Mgmt / Curb & Gutter / Driveway Adjustments
Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Improve drainage by adding inlets and extending storm drain up Ed Gary; recommend private channel improvements to reduce flooding on 201 LBJ; add curb/gutter to reduce erosion along W side of Ed Gary at 116 Ed Gary*

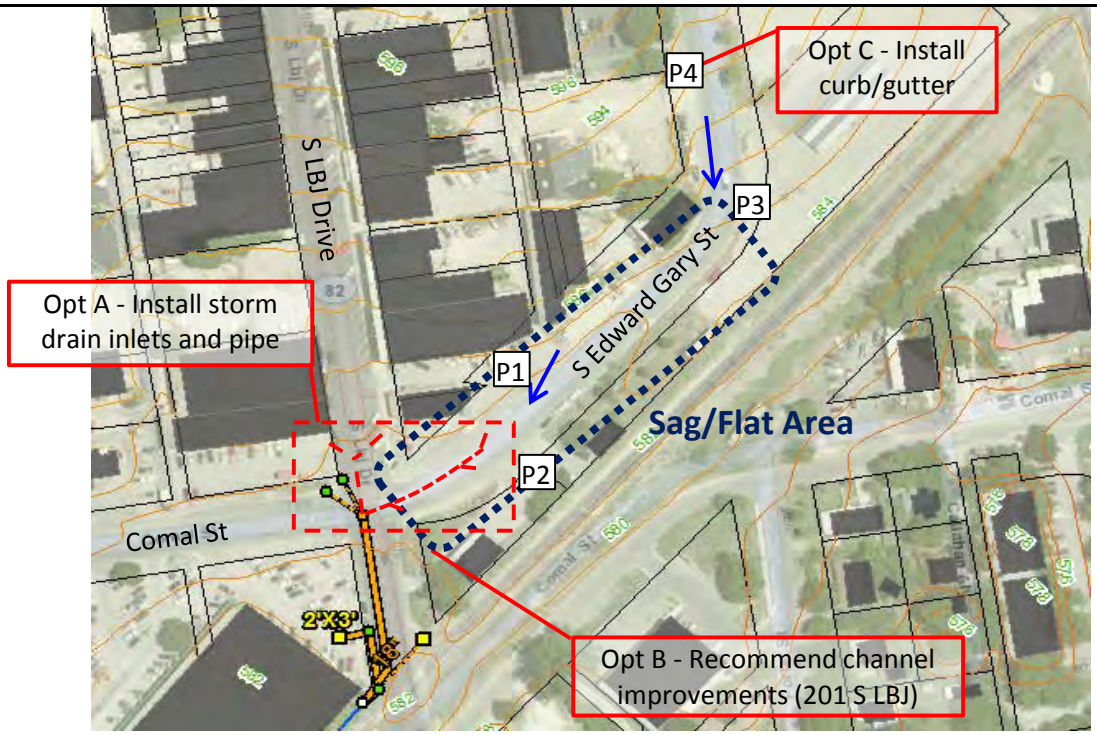
Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility
Notes:

Add'l Assessment Required:

ROW Required:

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*Looking SW towards LBJ from NW side of Ed Gary; standing water in roadway*
P2	*Looking W towards intersection of Ed Gary / LBJ; sediment in road from previous flooding*
P3	*Looking W towards intersection of Ed Gary / LBJ; sheet flow across road/standing water*
P4	*Looking S on Ed Gary on W edge of pavement; erosion*

Site No.:	19	Location:	100 Blk Edward Gary	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	Looking SW towards LBJ from NW side of Ed Gary; standing water in roadway

Photo #	Caption
P2	Looking W towards intersection of Ed Gary / LBJ; sediment in road from previous flooding

Site No.: *19* **Location:** ***100 Blk Edward Gary*** BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	*Looking W towards intersection of Ed Gary / LBJ; sheet flow across road/standing water*

Photo #	
P4	*Looking S on Ed Gary on W edge of pavement; erosion*

Site No.: *19* **Location:** *100 Blk Edward Gary* BACK TO MAP

Engineers Opinion of Probable Construction Cost

100 Blk Edward Gary

Reduce surface flow along Edward Gary and allow drainage of local sag area near

Item	Description	Quantity	Unit	Unit Price	Amount	
1.01	Misc. Excavation and Grading		LS		$	-
1.02	Install New 10 ft Curb Inlets		EA		$	-
1.03	Expand Existing Storm Sewer		LF		$	-
1.04	Pavement Repair		LS		$	-
1.05	E&S and Traffic Controls and Misc.		LS		$	-
	Subtotal				$	-
	Engineering, Survey and Permitting					
	Construction Contingency	35%			$	-
	Total Project Cost					

Site No.: *20* **Location:** *435 N Comanche* BACK TO MAP

Project covered by CIP #372 according to the new "2018-2027 CIP"

SITE SUMMARY

OPT B	*Recommend driveway adjustments (e.g., speed bump, valley gutter) to reduce frequency of flow into private property from Comanche St.*	*1*
OPT C	*Recommend stabilization of channel behind apartment complex (S of bldg) to reduce erosion potential.*	*1*
OPT D		

Challenges

OPT A	*Private property*
OPT B	*Private property*
OPT C	*Private property; limited access*
OPT D	

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *20* **Location:** *435 N Comanche* BACK TO MAP

BACKGROUND INFO

Date: *11/13/13* Time: *16:30* Attendees: *SW, TW, CS, KCP*

Flood Complaint Summary: *Lindsey flow floods Apts 101-103; Parking lot floods, incrsd by Texas State detention*

Watershed: *Purgatory* Hydro Subbasin: *P7-6*

Est. Drainage Area (ac): *1.5* Est. Flood Freq. (yrs): *5*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes:

Local Storm Drain System? Y / N Notes:

GIS Data Available? Y / N

Related Flood Complaint(s): *Site 27 - Comanche/Lindsey (west end of these apartments)*

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other: *Apartment Complex; TxSt nearby*

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None
Inches: *~5* Date: *10/31/13* Notes: *no sign of flooding on 10/31/13*

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear
Notes:

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry
Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid
Notes:

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None
Notes: *Damaged concrete & pavement in parking area near building slab*
Heavy erosion in channel along back (S) of apartment complex

Future Erosion / Debris Potential: Y / N Notes:

Affected Properties: *1* *435 N Comanche (Apts. 101-103, Parking area, Channel S of bldg)*

Affected Buildings: *1* *435 N Comanche (Apts. 101-103)*

Affected Roadways: *0*

Other:

City Staff Input: *In the last 10-15 years, two flood complaints have been filed related to this issue*

Citizen Input:

Notes: *Runoff from Lindsey/Comanche flows into local sag area at far E end of apt complex in parking area. Property owner has attempted for form interceptor channel along edge of building. FFE of apartments appears to be below grade near sag area. All issues within private property.*

Site No.: *20* **Location:** *435 N Comanche* BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Runoff from adjacent intersection enters property at driveway/curb cut & ponds in local sag area along E side of building, eventually overtopping sag area and draining along S side of building (erosion problem)*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements / Vegetation Mgmt / Curb & Gutter / Driveway Adjustments / Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Since issues are limited to private property, recommend regrading and installation of subgrade interceptor channel along E side of building to direct runoff to the N and/or S and prevent ponding. Driveway adjustments may also be recommended to reduce runoff conveyed to site.*

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

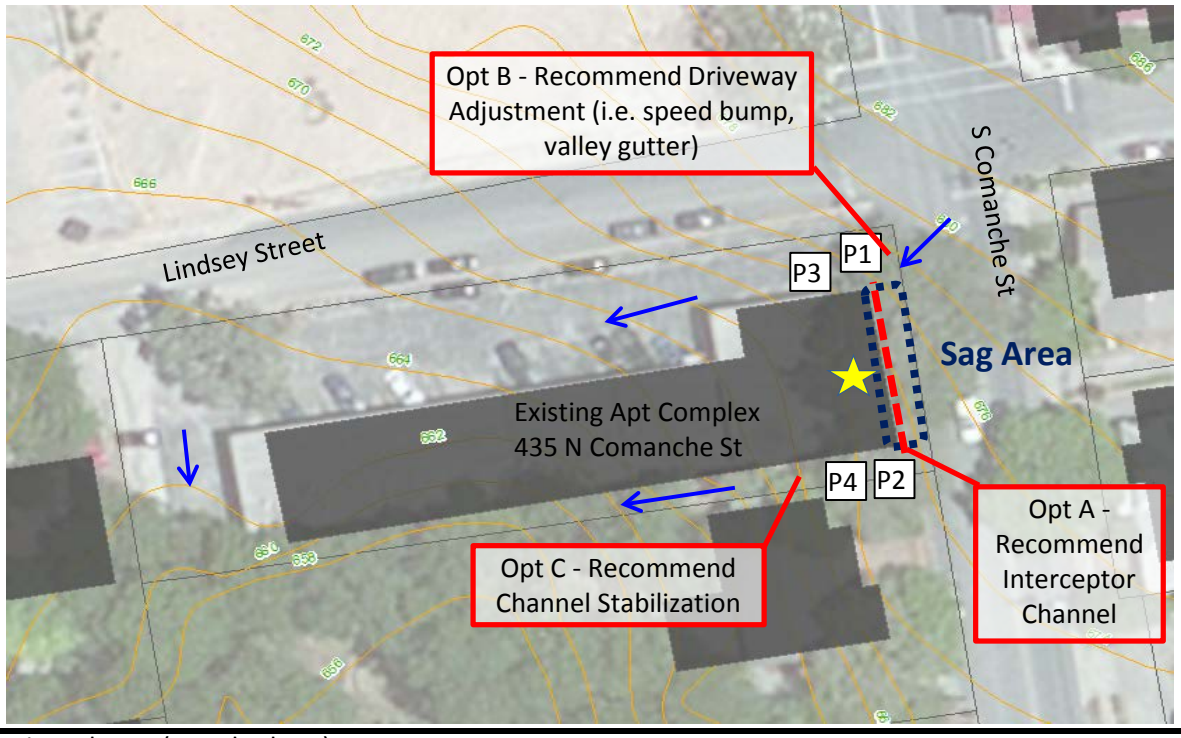
Notes:

Add'l Assessment Required:

ROW Required:

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*Looking S at local sag area along E side of apartment complex*
P2	*Looking N along E edge of bldg; concrete/pavement damage and erosion; debris accumulation*
P3	*Looking E at driveway along Comanche St; no curb/speed bump to prevent runoff entry*
P4	*Looking W along S side of building; erosion in private drainage channel*

Site No.: *20* **Location:** *435 N Comanche* BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	*Looking S at local sag area along E side of apartment complex*

Photo #	Caption
P2	*Looking N along E edge of bldg; concrete/pavement damage and erosion; debris accumulation*

Site No.:	*20*	Location:	*435 N Comanche*	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	*Looking E at driveway along Comanche St; no curb/speed bump to prevent runoff entry*

Photo #	Caption
P4	*Looking W along S side of building; erosion in private drainage channel*

Site No.:	*20*	Location:	*435 N Comanche*	BACK TO MAP

Engineers Opinion of Probable Construction Cost

435 N Comanche

Recommend driveway adjustments (e.g., speed bump, valley gutter) to reduce

City of San Marcos In-House Option (work designed and complete by City staff).

Item	Description	Quantity	Unit	Unit Price	Amount
1.01	Misc. Excavation and Grading		LS		$ -
1.02	Concrete Driveway		EA		$ -
1.03	E&S and Traffic Controls and Misc.		LS		$ -
1.04	water quality opportunity (25%)		LS	$ -	$ -
	Subtotal				$ -
	Engineering, Survey and Permitting				$ -
	Construction Contingency	35%			$ -
	Total Project Cost				$ -

Site No.: *21* **Location:** *100 E MLK Dr* BACK TO MAP

SITE SUMMARY

Project covered by CIP #477 according to the new "2018-2027 CIP"

runoff in this area.

OPT C

OPT D

Challenges

OPT A *Widening limited by building footprint on NW and railroad ROW on SE side; therefore, limited benefit to relocating the fiber optic line. No historical structure or roadway flooding; therefore, the potential improvement in level of service may not justify the cost.*

OPT B *Conveyance improvement is limited.*

OPT C

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *21* **Location:** ***100 E MLK Dr*** BACK TO MAP

BACKGROUND INFO

Date: *11/13/13* Time: *16:50* Attendees: *SW, TW, CS, KCP*

Flood Complaint Summary: *Ditch behind Justice Center inadequate; Fiber optic would need to be relocated for regrading; storm drain culverts need to be upgraded*

Watershed: *Purgatory* Hydro Subbasin:

Est. Drainage Area (ac): *20* Est. Flood Freq. (yrs): *25*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes:

Local Storm Drain System? Y / N Notes:

GIS Data Available? Y / N

Related Flood Complaint(s): *Site 19 (U/S)*

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other:

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None
Inches: *~4* Date: *10/31/13* Notes:

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear
Notes:

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry
Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid
Notes:

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None
Notes: *CMP culvert at W side Guadalupe damaged & accumulating debris*

Future Erosion / Debris Potential: Y / N Notes:

Affected Properties: *1* *Old Justice Center Parking Lot*

Affected Buildings: *0* *n/a*

Affected Roadways: *0* *n/a*

Other:

City Staff Input: *Channel maintenance (i.e., mowing) is difficult due to limited easement and steep side slopes.*

Citizen Input:

Notes: *CMP pipe inlet at culvert is damaged; fiber optic line encroaches several feet into SE side of channel ~200 ft east of S Guadalupe Street. No record of flooding on S Guadalupe Street due to channel.*

Site No.: *21* **Location:** *100 E MLK Dr* BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Undersized channel; damaged culvert; flooding not frequent*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements / Vegetation Mgmt / Curb & Gutter / Driveway Adjustments / Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Repair damaged CMP pipe at culvert inlet; relocate fiber optic cable and expand and regrade the existing channel (Note: replacing channel with pipe/box culvert would significantly reduce conveyance capacity and is not recommended)*

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

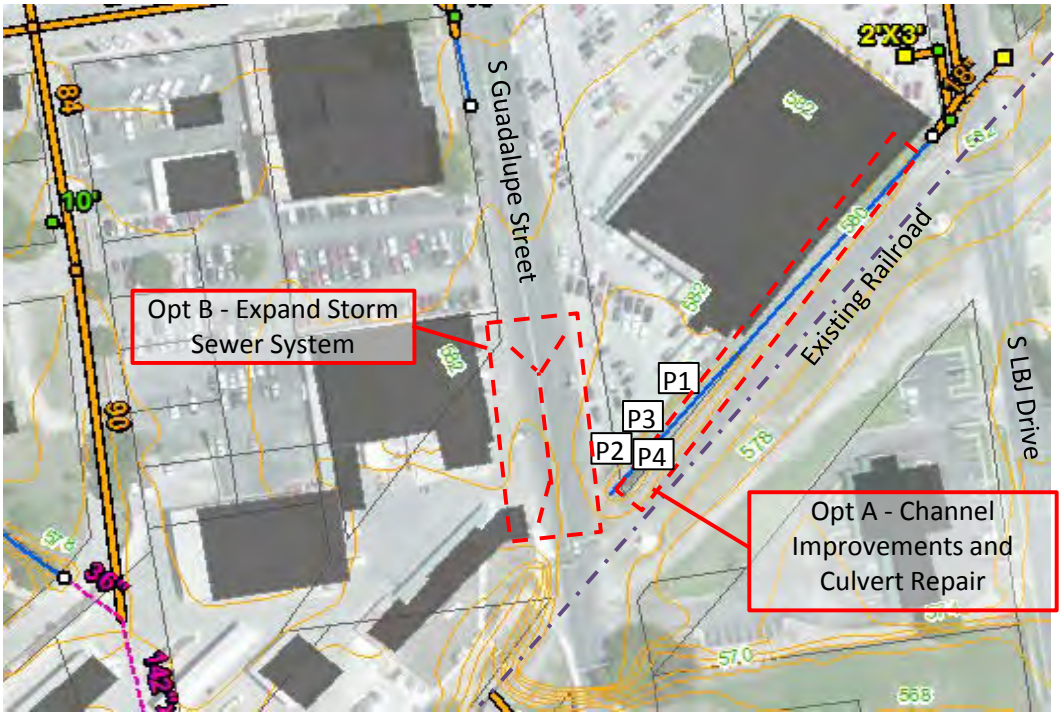
Notes:

Add'l Assessment Required:

ROW Required:

Potential Water Quality Feature: *opportunity identified in Downtown Smartcode project*

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*Looking W toward S Guadalupe Street; light flow in channel; sediment in parking lot*
P2	*Looking W at damaged CMP culvert inlet at S Guadalupe Street*
P3	*Looking E near S Guadalupe Street; private utility conflict/encroachment in channel*
P4	*Looking NE from near S Guadalupe Street; vegetation in channel*

Site No.: *21* **Location:** *100 E MLK Dr* BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	*Looking W toward S Guadalupe Street; light flow in channel; sediment in parking lot*

Photo #	Caption
P2	*Looking W at damaged CMP culvert inlet at S Guadalupe Street*

Site No.: *21* **Location:** *100 E MLK Dr* BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	*Looking E near S Guadalupe Street; private utility conflict/encroachment in channel*

Photo #	Caption
P4	*Looking NE from near S Guadalupe Street; vegetation in channel*

Site No.: *21* **Location:** *100 E MLK Dr* BACK TO MAP

Engineers Opinion of Probable Construction Cost

100 E MLK Dr

Improve existing channel and repair damaged D/S culvert to improve conveyance

Item	Description	Quantity	Unit	Unit Price	Amount	
1.01	Regrade Drainage Channel		LF		$	-
1.02	Replace Existing Culvert		LF		$	-
1.03	Pavement Repair		LS		$	-
1.04	E&S and Traffic Controls and Misc.		LS		$	-
1.05	water quality opportunity (25%)		LS		$	-
	Subtotal				$	-
	Engineering, Survey and Permitting					
	Construction Contingency	35%			$	-
	Total Project Cost				$	-

Site No.: *22* **Location:** *700 Blk S LBJ (Willow Springs Creek)* BACK TO MAP

Project covered by CIP #618 according to the new "2018-2027 CIP"

(See also CIP #190)

SITE SUMMARY

OPT B	*Reduce roadway overtopping by upgrading bridge.*	5
OPT C		
OPT D		

Challenges

OPT A	*Traffic disturbance*
OPT B	*Adding/upgrading culverts to exist. structure will not result in significant change to LOS. Significant reconstruction (new bridge) is required to realize any reduction in overtopping frequency. The potential improvement in LOS may not justify the cost.*
OPT C	
OPT D	

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *22* **Location:** ***700 Blk S LBJ (Willow Springs Creek)*** BACK TO MAP

BACKGROUND INFO

Date: *12/20/13* Time: *13:40* Attendees: *SW, TW, CS, KCP*

Flood Complaint Summary: *Spauling on bridge (TxDOT); concrete missing/rebar exposed; struct damage?*

Watershed: *Willow* Hydro Subbasin: *W5-3*

Est. Drainage Area (ac): *2,500* Est. Flood Freq. (yrs): *2*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes:

Local Storm Drain System? Y / N Notes:

GIS Data Available? Y / N

Related Flood Complaint(s): *Site 1 is located 400 ft downstream*

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other:

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None

Inches: *~4* Date: *10/31/13* Notes: *channel flow 1-2 ft deep*

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear

Notes:

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry

Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid

Notes: *Base flow conditions*

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None

Notes: *See diagram for damage locations*

Future Erosion / Debris Potential: Y / N Notes: *exposed rebar and concrete spauling*

Affected Properties: *0*

Affected Buildings: *0*

Affected Roadways: *1 S LBJ Drive*

Other: *Concrete spauling & exposed rebar at south wingwall/culvert connection on U/S face, midspan top of center culvert, and top of center culvert at D/S face*

City Staff Input: *Crossing is part of proposed channel improvement project from Ellis Dr to McKie St; no known improvements proposed for this structure*

Citizen Input:

Notes:

Site No.: *22* **Location:** *700 Blk S LBJ (Willow Springs Creek)* BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *No flooding complaint at this site; however, bridge is likely overtopped every few years. Several areas of the culvert that are damaged, as noted. Roadway Elev ~571.3'; 2yr WSE = 572.2'; 10yr WSE = 573.5'; 25yr WSE = 574.4'*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements / Vegetation Mgmt / Curb & Gutter / Driveway Adjustments / Bridge/Culvert Upgrade / Structural Repair / Grading

Notes:

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

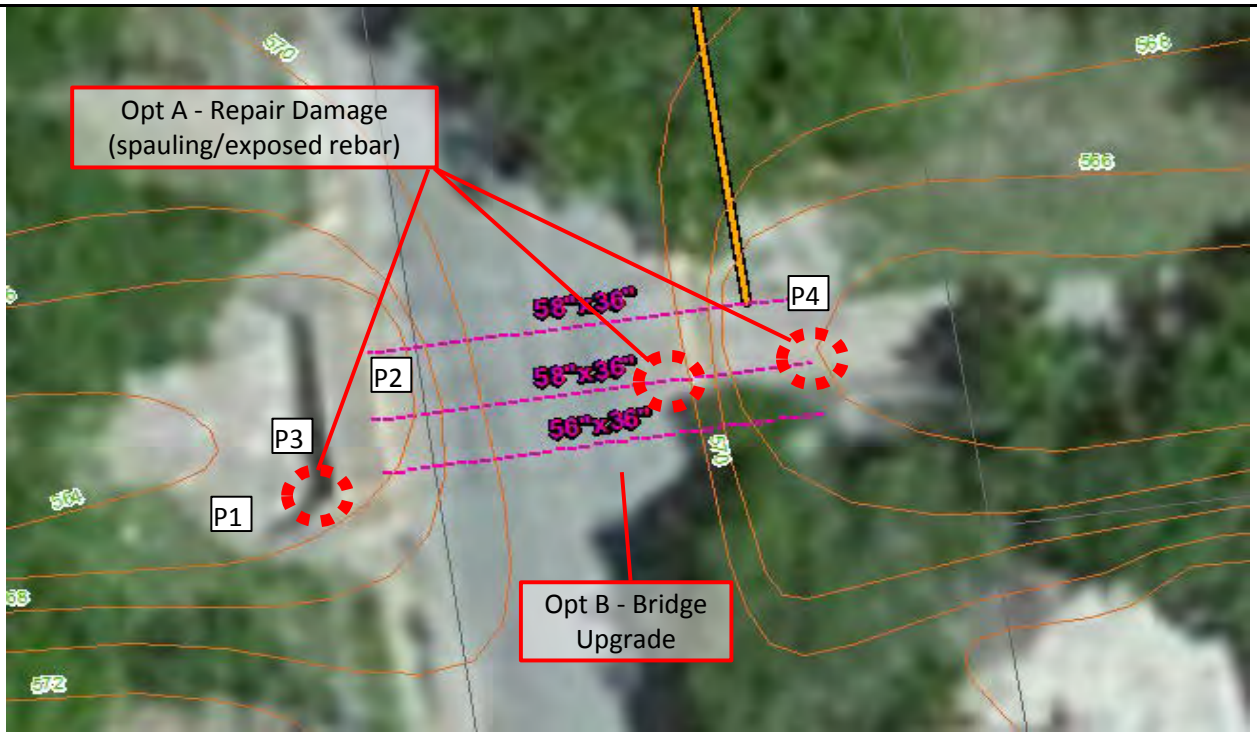
Notes:

Add'l Assessment Required: *Need structural evaluation & repair recommendations.*

ROW Required:

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*Looking SE at concrete spauling and exposed rebar on U/S wingwall/culvert (w/ detail)*
P2	*Looking SE at concrete spauling and exposed rebar at midspan top of center culvert*
P3	*Looking W at concrete spauling and exposed rebar at top of center culvert at D/S face*
P4	*Looking W at concrete spauling and exposed rebar at top of center culvert at D/S face*

Site No.:	22	Location:	700 Blk S LBJ (Willow Springs Creek)	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	Looking SE at concrete spauling and exposed rebar on U/S wingwall/culvert (w/ detail)

Photo #	Caption
P2	Looking SE at concrete spauling and exposed rebar at midspan top of center culvert

Site No.:	22	Location:	700 Blk S LBJ (Willow Springs Creek)	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	Looking W at concrete spauling and exposed rebar at top of center culvert at D/S face

Photo #	Caption
P4	Looking W at concrete spauling and exposed rebar at top of center culvert at D/S face

Site No.:	22	Location:	700 Blk S LBJ (Willow Springs Creek)	BACK TO MAP

Engineers Opinion of Probable Construction Cost

700 Blk S LBJ (Willow Springs Creek)

Repair damaged bridge features: U/S wingwall/culvert connection, midspan top

Item	Description	Quantity	Unit	Unit Price	Amount	
1.01	Misc. Excavation and Grading		LS		$	-
1.02	Pavement Repair		LS		$	-
1.03	Repair Exposed Rebar		LS		$	-
1.04	E&S and Traffic Controls and Misc.		LS		$	-
	Subtotal				$	-
	Construction Contingency	35%			$	-
	Total Project Cost				$	-

Site No.: *23* **Location:** *Coers Circle* BACK TO MAP

Project covered by CIP #597 according to the new "2018-2027 CIP"

SITE SUMMARY

OPT B *Improve roadway drainage by installing roadside ditches and driveway culverts along Coers Circle* *4*

OPT C

Remove project from database.

To be completed in 2018

Site No.: *23* **Location:** *Coers Circle* BACK TO MAP

BACKGROUND INFO

Date: *12/20/13* Time: *15:35* Attendees: *SW, TW, CS, KCP*

Flood Complaint Summary: *Constant flood complaints; undersized pipes, ditches clogged, etc*

Watershed: *Purgatory/Sessom* Hydro Subbasin: *S2-8, S2-9, S2-10, P7-16, P7-17*

Est. Drainage Area (ac): *9 (Sarah St)* Est. Flood Freq. (yrs): *1 (most events)*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes:

Local Storm Drain System? Y / N Notes: *closest SD system located at W Holland/RR12*

GIS Data Available? Y / N

Related Flood Complaint(s):

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other: *See Att 23*

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other:

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None
Inches: *~5* Date: *10/31/13* Notes: *Localized ponding issues*

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear
Notes: *prelim field visit on 10/16/13 after ~0.2" rain (see photos)*

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry
Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid
Notes:

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None
Notes:

Future Erosion / Debris Potential: Y / N Notes:

Affected Properties: *2* *411 Sarah St, 425 Sarah St (more possible along Coers Circle)*

Affected Buildings: *0*

Affected Roadways: *2* *Sarah Street, Coers Circle*

Other:

City Staff Input: *Connecting to existing storm drain pipe was proposed in previous study (see Attachment 23)*

Citizen Input:

Notes: *Local sag point at 411 Sarah Street. Existing storm drain pipe on private property east of sag point. Limited roadside gutter and driveway culverts.*

Site No.: *23* **Location:** *Coers Circle* BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *There is a sag point on Sarah Street and a lack of drainage in this area.*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements
Vegetation Mgmt / Curb & Gutter / Driveway Adjustments
Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Extend and upgrade the existing stormdrain pipe. Alternatively, install gutters along roadside and culverts under driveways as needed.*

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

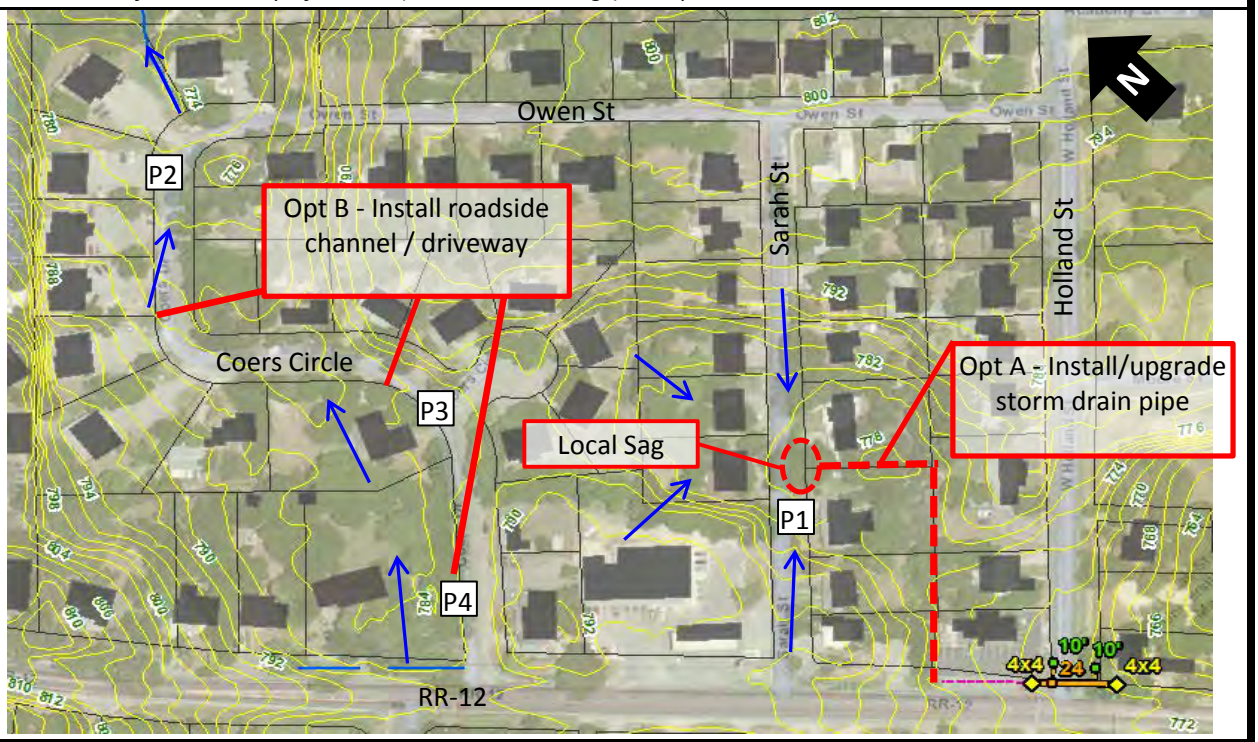
Notes:

Add'l Assessment Required:

ROW Required: *Easement needed for extending/upgrading storm drain to Sarah St*

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*Looking NE at ponding in front of 425 Sarah Street (10/16/13)*
P2	*Looking NE (left) and SW (right) on Coers Circle; ponding in roadway (10/16/13)*
P3	*Looking W along Coers Circle; ponding in driveway (10/16/13)*
P4	*Looking SW along Coers Circle; ponding in roadway near RR-12 (10/16/13)*

Site No.: *23* **Location:** *Coers Circle* BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	*Looking NE at ponding in front of 425 Sarah Street (10/16/13)*

Photo #	Caption
P2	*Looking NE (left) and SW (right) on Coers Circle; ponding in roadway (10/16/13)*

Site No.:	23	Location:	Coers Circle	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	Looking W along Coers Circle; ponding in driveway (10/16/13)

Photo #	Caption
P4	Looking SW along Coers Circle; ponding in roadway near RR-12 (10/16/13)

Site No.: *23* **Location:** *Coers Circle* BACK TO MAP

Engineers Opinion of Probable Construction Cost

Coers Circle

Improve conveyance in Sarah St by upgrading & extending the exist. storm drain

Item	Description	Quantity	Unit	Unit Price	Amount
1.01		0	LS	$ -	$ -
1.02		0	LF	$ -	$ -
1.03		0	LF	$ -	$ -
1.04		0	LS	$ -	$ -
1.05		0	LS	$ -	$ -
	Subtotal				$ -
	Engineering, Survey and Permitting				$ -
	Construction Contingency	35%			$ -
	Total Project Cost				$ -

Site No.: *24* **Location:** *Victory Gardens South* BACK TO MAP

Project covered by CIP #234 according to the new "2018-2027 CIP"

SITE SUMMARY

OPT B	*Install new storm drain inlets and laterals near Marshall/Hines and Knox/Marshall to drain local sag areas.*	*6*
OPT C	*Install new storm drain pipes along Reyes, Jones, and Knox connecting to existing outfalls NW of Knox to improve drainage at local sag areas.*	*6*
OPT D		

Challenges

OPT A	*Expansive soils in this area may continue to move curb line and create local sag areas. Several driveways will need to be adjusted.*
OPT B	*The potential improvement in level of service may not justify the cost.*
OPT C	*The potential improvement in level of service may not justify the cost.*
OPT D	

***Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)**

Site No.: *24* **Location:** ***Victory Gardens South*** BACK TO MAP

BACKGROUND INFO

Date: *12/20/13* Time: *13:30* Attendees: *SW, TW, CS, KCP*

Flood Complaint Summary: *Local streets flood and drain poorly during frequent rainfall events due to flat terrain and local sag areas likely worsened by expansive soils*

Watershed: *Willow* Hydro Subbasin: *W4-1, W4-2, W5-1*

Est. Drainage Area (ac): *25* Est. Flood Freq. (yrs): *1* *(most events)*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes:

Local Storm Drain System? Y / N Notes: *Inlets along Knox; 30" SD in Marshall*

GIS Data Available? Y / N

Related Flood Complaint(s):

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other:

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None

Inches: *~4* Date: *10/31/13* Notes:

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear

Notes: *prelim field visit on 10/16/13 after ~0.2" rain (see photos)*

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry

Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid

Notes: *prelim field visit on 10/16/13 after ~0.2" rain (see photos)*

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None

Notes: *pavement damage noted near local ponding areas*

Future Erosion / Debris Potential: Y / N Notes: *freq. flooding will exacerbate pavement wear*

Affected Properties: *0*

Affected Buildings: *0*

Affected Roadways: *5* *Knox, Hines, Reyes, Marshall, Jones*

Other:

City Staff Input: *Neighborhood was repaved in the last 5 years, but expansive soils have created local sag areas within the local streets.*

Citizen Input:

Notes: *Flooding appears to be limited to roadway and a few undeveloped lots.*

Site No.: *24* **Location:** ***Victory Gardens South*** BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Local streets flood and drain poorly during frequent rainfall events due to flat terrain and local sag areas likely worsened by expansive soils*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements
Vegetation Mgmt / Curb & Gutter / Driveway Adjustments
Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *New inlets and storm drain laterals may be added to existing storm drain systems along Marshall and Knox; New storm drain mains would be required to serve Reyes and Jones*

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

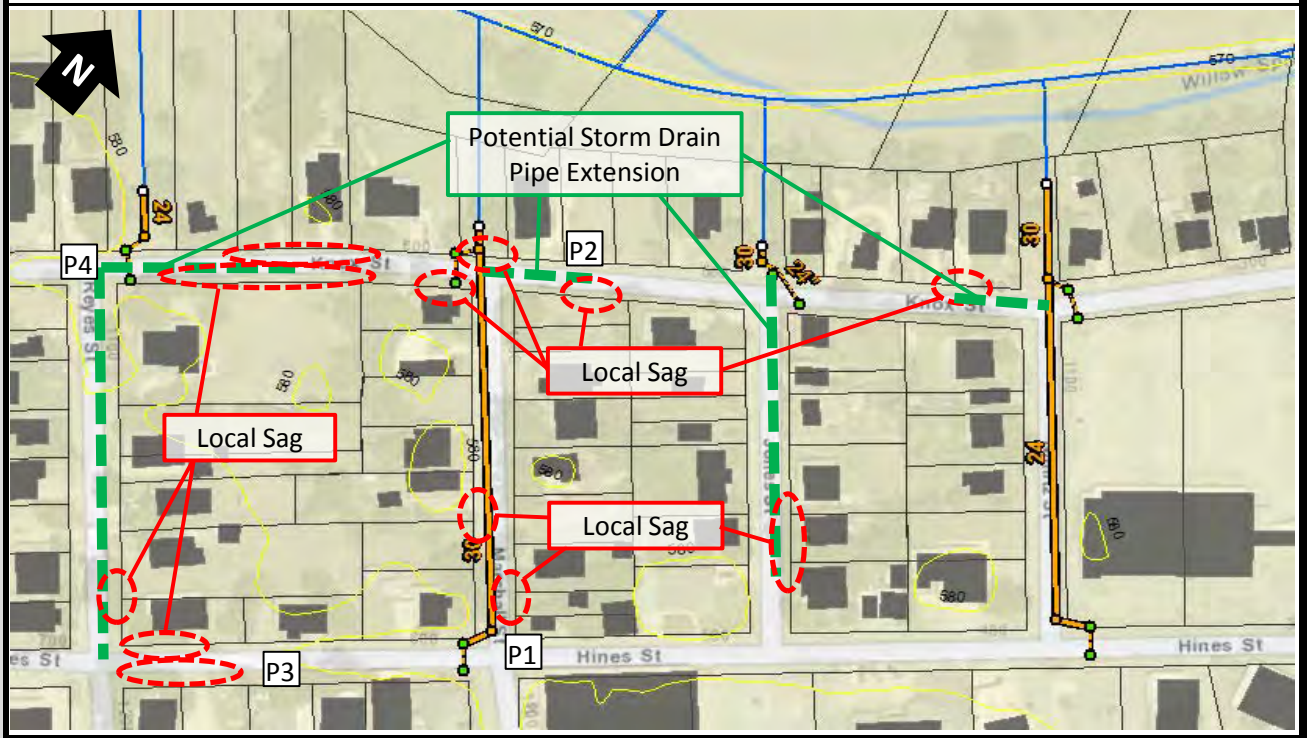
Notes:

Add'l Assessment Required:

ROW Required:

Potential Water Quality Feature: *SD outlets at Reyes, Marshall, Jones, & Nimitz have drainage areas < 5 acres and discharge directly to creek; site identified in WQPP, Nov. 16, 2015*

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*Looking NW along Marshall from Hines; ponding and pavement wear (10/16/13)*
P2	*Looking SW along Knox at Marshall; ponding and pavement wear (10/16/13)*
P3	*Looking SW along Hines at Reyes; ponding and pavement wear (10/16/13)*
P4	*Looking NE along Knox between Reyes/Marshall; ponding and pavement wear (10/16/13)*

Site No.:	24	Location:	Victory Gardens South	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	Looking NW along Marshall from Hines; ponding and pavement wear (10/16/13)

Photo #	Caption
P2	Looking SW along Knox at Marshall; ponding and pavement wear (10/16/13)

Site No.:	24	Location:	Victory Gardens South	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	Looking SW along Hines at Reyes; ponding and pavement wear (10/16/13)

Photo #	Caption
P4	Looking NE along Knox between Reyes/Marshall; ponding and pavement wear (10/16/13)

Site No.: *24* **Location:** ***Victory Gardens South*** BACK TO MAP

Engineers Opinion of Probable Construction Cost

Victory Gardens South

Reset the curb line and perform pavement repairs at problem areas to improve

Item	Description	Quantity	Unit	Unit Price	Amount
1.01		0	LS	$ -	$ -
1.02		0	LF	$ -	$ -
1.03		0	LF	$ -	$ -
1.04		0	LS	$ -	$ -
1.05		0	LS	$ -	$ -
1.06		0	LS	$ -	$ -
	Subtotal				$ -
	Engineering, Survey and Permitting				$ -
	Construction Contingency	35%			$ -
	Total Project Cost				$ -

Site No.: *25* **Location:** *300 Blk S LBJ Dr/ Cheatham* BACK TO MAP

Project covered by CIP 679 according to the new "2018-2027 CIP"

SITE SUMMARY

OPT B	*events, install a culvert under the RR to drain to Purgatory Creek.*	
OPT C	*Extend existing storm drain system under RR to provide drainage directly to Purgatory Creek.*	4
OPT D		

Challenges

OPT A *Since the low-lying open area has no outlet, it would serve as an infiltration basin to receive runoff from the problem areas; however, RR coordination and easement would likely be required. If infiltration is insufficient, standing water may be a nuisance to nearby residents and businesses.*

OPT B *Installation of a culvert under the RR would require extensive coordination with RR.*

OPT C *Extension of the storm drain system under the RR would require extensive coordination with RR. The RR crossing width and the distance to Purgatory Creek at this location are much greater than to the northeast.*

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

San Marcos Comprehensive Watershed Master Plan
Field Assessment Form - Local Flood Complaints
SITE #25

Site No.: *25* **Location:** ***300 Blk S LBJ Dr/ Cheatham*** BACK TO MAP

BACKGROUND INFO

Date: *12/20/13* Time: *14:10* Attendees: *SW, TW, CS, KCP*

Flood Complaint Summary: *Old curb and area inlets with no outfall; pipe ends at RR*

Watershed: *Purgatory* Hydro Subbasin: *P8-3*

Est. Drainage Area (ac): *1* Est. Flood Freq. (yrs): *1* *(every event)*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes:

Local Storm Drain System? Y / N Notes: *storm drain system is not effective since outfall*

GIS Data Available? Y / N *is blocked by railroad*

Related Flood Complaint(s): *Site 14 (located at potential outfall alternative)*

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other: *Railroad*

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None
Inches: *~4* Date: *10/31/13* Notes:

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear
Notes:

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry
Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid
Notes:

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None
Notes:

Future Erosion / Debris Potential: Y / N Notes:

Affected Properties: 3 *369 S LBJ Dr (Sunbusters Glass Tinting), 390 S LBJ Dr, Railroad ROW*

Affected Buildings: *1* *369 S LBJ Dr (Sunbusters Glass Tinting)*

Affected Roadways: *2* *S. LBJ Drive, Cheatham St*

Other:

City Staff Input: *A video inspection of the existing storm drain system revealed that the outfall pipe ends near the railroad tracks. It is unclear whether or not RR activities may have blocked the pipe.*

Citizen Input:

Notes: *Flat terrain will not allow connection to the existing storm drain system located at Cheatham/ McKie or Cheatham/Guadalupe*

Site No.: *25* **Location:** ***300 Blk S LBJ Dr/ Cheatham*** BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *The existing storm drain system is not effective since the outfall is blocked. Therefore, the area floods in nearly every rainfall event and standing water remains for several days.*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements
Vegetation Mgmt / Curb & Gutter / Driveway Adjustments
Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Runoff may be diverted to the low-lying open area to the NE along the S side of the RR; however, this area has no outfall and infiltration may not be sufficient to prevent standing water. A culvert or storm drain extension under the RR may be required to provide a viable outfall for this area.*

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

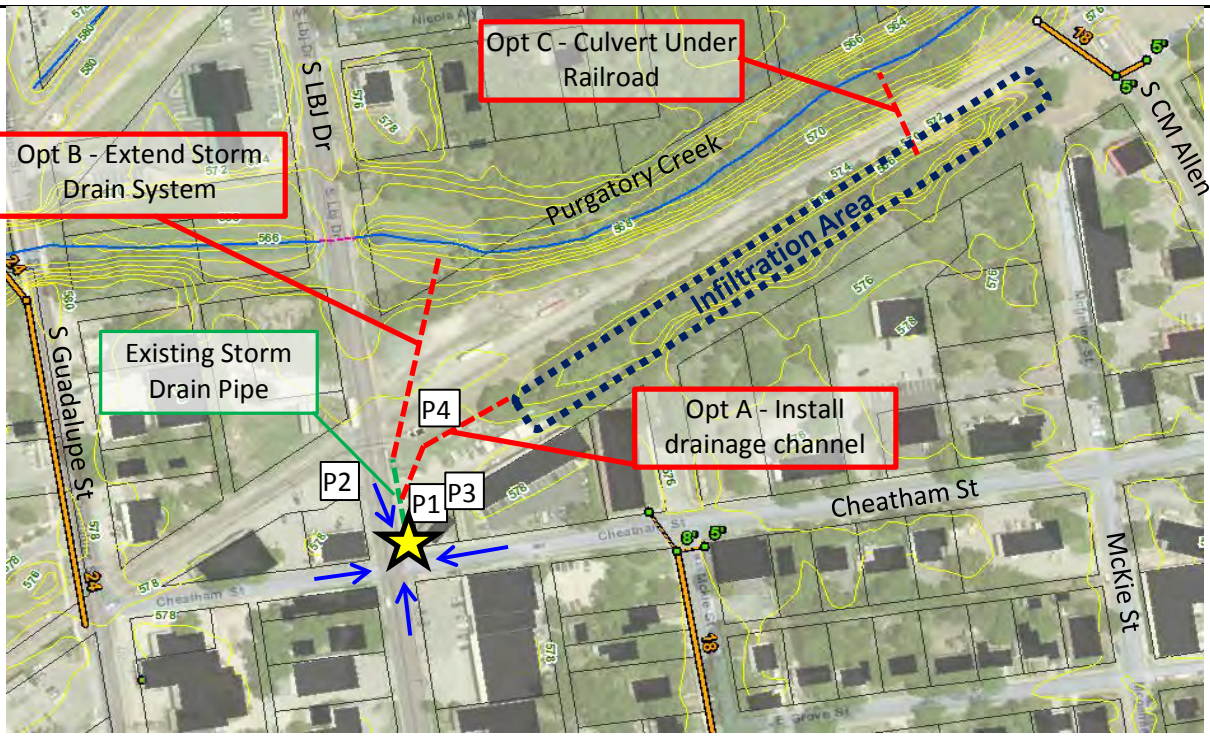
Notes:

Add'l Assessment Required:

ROW Required: *RR coordination and easement will likely be required for each alternative*

Potential Water Quality Feature: *The low-lying open area may be used as a rain garden / sedimentation basin site identified in WQPP, Nov. 16, 2015*

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*Looking N along E side of LBJ; flooding in roadway, private property & RR ROW (10/31/13)*
P2	*Looking SE along W side of LBJ; flooding in roadway & private property (10/16/13)*
P3	*Looking NW on E side of LBJ; grate inlet with no outfall, sediment & vegetation w/in inlet*
P4	*Looking E along S side of RR; low-lying open area ahead*

Site No.:	25	Location:	300 Blk S LBJ Dr/ Cheatham	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	Looking N along E side of LBJ; flooding in roadway, private property & RR ROW (10/31/13)

Photo #	Caption
P2	Looking SE along W side of LBJ; flooding in roadway & private property (10/16/13)

Site No.:	25	Location:	300 Blk S LBJ Dr/ Cheatham	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	Looking NW on E side of LBJ; grate inlet with no outfall, sediment & vegetation w/in inlet

Photo #	Caption
P4	Looking E along S side of RR; low-lying open area ahead

Site No.: *25* **Location:** *300 Blk S LBJ Dr/ Cheatham* BACK TO MAP

Engineers Opinion of Probable Construction Cost

300 Blk S LBJ Dr/ Cheatham

Install an open channel or storm storm pipe towards the northeast to provide drainage

Item	Description	Quantity	Unit	Unit Price	Amount
1.01	Misc. Excavation and Grading		LS		$ -
1.02	Install Drainage Channel to Area		LF		$ -
1.03	Pavement Repair		LS		$ -
1.04	E&S and Traffic Controls and Misc.		LS		$ -
1.05	water quality opportunity (25%)		LS		$ -
	Subtotal				$ -
	Engineering, Survey and Permitting				
	Construction Contingency	35%			$ -
	Total Project Cost				$ -

* Cost estimate does not include easement acquisition.

Site No.: *26* **Location:** *McAllister St* BACK TO MAP

Project covered by CIP #90 according to the new "2018-2027 CIP"

SITE SUMMARY

OPT B

OPT C

OPT D

Challenges

OPT A *Pavement repairs/repaving needed throughout Hopkins. Repairs in this area could create increase flooding at nearby local sag areas. TxDOT coordination/participation is required.*

OPT B

OPT C

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *26* **Location:** *McAllister St* BACK TO MAP

BACKGROUND INFO

Date: *11/13/13* Time: *15:15* Attendees: *SW, TW, TH, CS, KCP*

Flood Complaint Summary: *See phone conversation notes - Rey Garcia on June 25*

Watershed: *Purgatory* Hydro Subbasin: *P5-3*

Est. Drainage Area (ac): *9* Est. Flood Freq. (yrs): *1*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes:

Local Storm Drain System? Y / N Notes:

GIS Data Available? Y / N

Related Flood Complaint(s): *Site 9 - Hopkins*

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other:

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None

Inches: *~4* Date: *10/31/13* Notes: *standing water in McAllister; no flow*

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear

Notes:

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry

Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid

Notes:

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None

Notes: *sediment and debris washed into McAllister from 1117 Hopkins*

Future Erosion / Debris Potential: Y / N Notes: *freq. flows will continue to erode private prop*

Affected Properties: *1 1117 Hopkins*

Affected Buildings: *0*

Affected Roadways: *2 McAllister Street; Hopkins Street*

Other:

City Staff Input: *Road repaving has caused curb height to decrease. No known flooding of structure at this location.*

Citizen Input:

Notes: *This complaint relates spefically to 1117 Hopkins; however, curb overtopping likely occurs at many locations along Hopkins due to limited curb/gutter capacity and curb cuts at driveways. See Site 9.*

Site No.: *26* **Location:** *McAllister St* BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Low curb in this area. Flow from Hopkins St overtops curb and flows through lot at 1117 Hopkins Street and onto McAllister Street.*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements / Vegetation Mgmt / Curb & Gutter / Driveway Adjustments / Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Improve curb/gutter capacity along Hopkins; regrade to remove local sag in curb line*

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

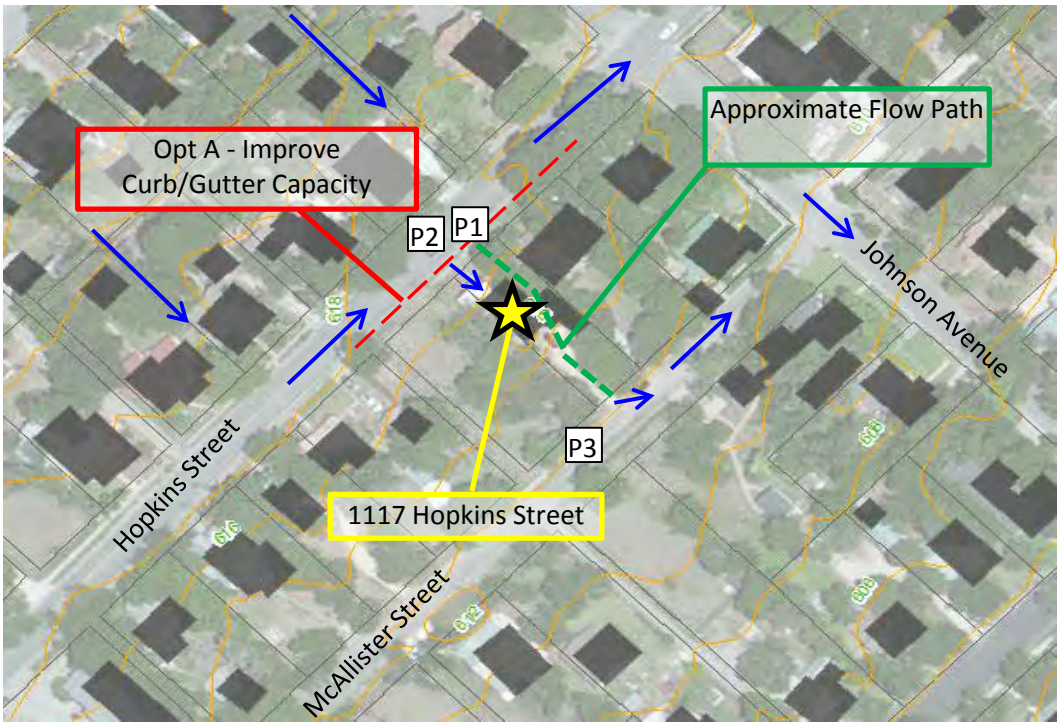
Notes:

Add'l Assessment Required:

ROW Required:

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

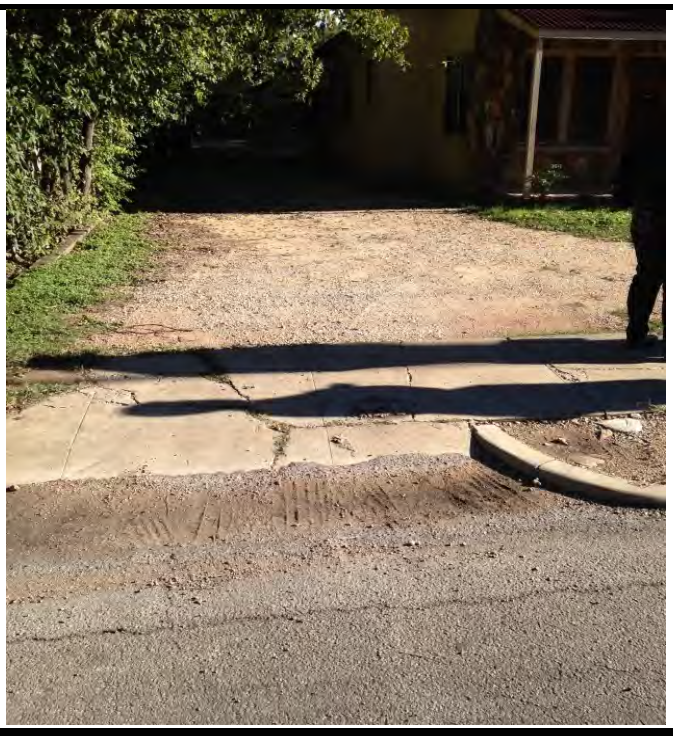
Photo #	Caption
P1	*Looking SW along Hopkins at 1117 Hopkins; extremely low curb profile at driveway*
P2	*Looking SE at D1117 Hopkins driveway; local sag, sediment accumulation, erosion*
P3	*Lkg NE along McAllister at rear of 1117 Hopkins; pavement wear & sediment from runoff*

Site No.: *26* **Location:** *McAllister St* BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	*Looking SW along Hopkins at 1117 Hopkins; extremely low curb profile at driveway*

Photo #	Caption
P2	*Looking SE at D1117 Hopkins driveway; local sag, sediment accumulation, erosion*



Site No.:	*26*	Location:	*McAllister St*	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	*Lkg NE along McAllister at rear of 1117 Hopkins; pavement wear & sediment from runoff*

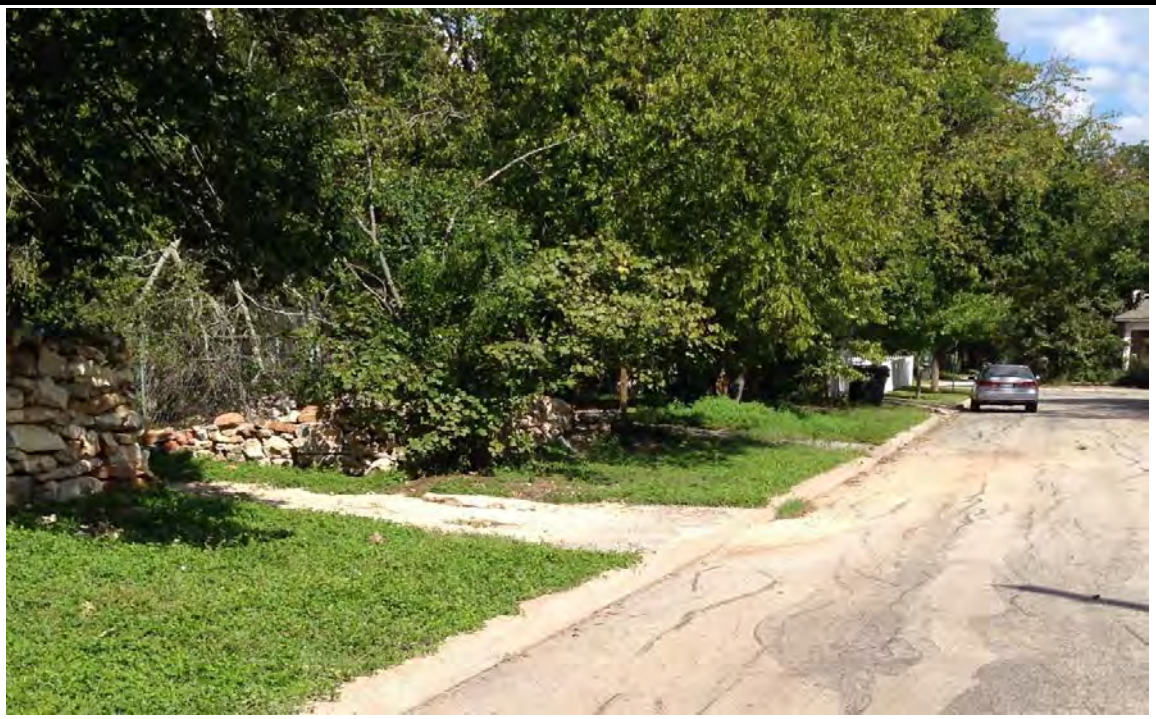


Photo #	Caption

Site No.: *26* **Location:** *McAllister St* BACK TO MAP

Engineers Opinion of Probable Construction Cost

McAllister St

Mill and pave in area, remove excess pavement, reset Hopkins curb, and remove

Item	Description	Quantity	Unit	Unit Price	Amount
1.01		0	LS	$ -	$ -
1.02		0	SY	$ -	$ -
1.03		0	LF	$ -	$ -
1.04		0	LS	$ -	$ -
	Subtotal				$ -
	Engineering, Survey and Permitting				$ -
	Construction Contingency	35%			$ -
	Total Project Cost				$ -

Site No.: *27* **Location:** *Comanche/Lindsey* BACK TO MAP

Project covered by CIP #372 according to the new "2018-2027 CIP"

SITE SUMMARY

	reduce apartment complex parking lot flooding.	
OPT B	*Intercept discharge from TxSt storm drain system w/ drop structure; add a storm drain pipe extending across ROW and through apartment complex parking lot.*	*4*
OPT C	*Obtain easement along W property line of 435, 425, 417 Comance and 310 Pat Garrison (possibly more) to connect TxSt outfall with downstream 48" RCP storm drain main to channelize flows throughout this block.*	*6*
OPT D		

Challenges

OPT A	*Construction will require coord. w/ TxSt and private property owner. Since TxSt outfall structure is directed at parking lot, redirecting discharge to west will be difficult (esp. high flows). Parking lot flooding may continue to flood during less frequent events.*
OPT B	*Construction will require coordination with TxSt and private property owner. Utility coord. will be required for storm drain pipe installation. Channelizing runoff may create adverse impacts to downstream property owners.*
OPT C	*Construction will require extensive coordination with TxSt and private property owners. Utility coordination and easements required. Downstream storm drain system may not have capacity to accept additional runoff flows.*
OPT D	

***Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)**

Site No.: *27* **Location:** ***Comanche/Lindsey*** BACK TO MAP

BACKGROUND INFO

Date: *11/13/13* Time: *15:40* Attendees: *SW, TW, CS, KCP*

Flood Complaint Summary: *Downstream of TX State per meeting with Rey and Laurie on July 16*

Watershed: *Purgatory* Hydro Subbasin: *P7-6 & P7-10*

Est. Drainage Area (ac): *18* Est. Flood Freq. (yrs): *1*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes:

Local Storm Drain System? Y / N Notes: *no SD in immediate vicinity*

GIS Data Available? Y / N *48" SD located 500' to the south*

Related Flood Complaint(s): *Site 20 is located on the E side of this apartment complex*

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other: *See Attachments*

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other: *TxSt*

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None

Inches: *~5* Date: *10/31/13* Notes: *no significant discharge from TxSt*

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear

Notes:

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry

Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid

Notes: *some standing water in parking lot from local runoff*

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None

Notes: *pavement wear in parking lot; erosion noted in undeveloped private property channel (streambed) downstream*

Future Erosion / Debris Potential: Y / N Notes: *freq. flows will erode parking lot & D/S channel*

Affected Properties: *1* *435 N Comanche (apartment complex)*

Affected Buildings: *0*

Affected Roadways: *1* *Lindsey Street*

Other:

City Staff Input: *Flow patterns have been altered by TxSt construction and flood frequency/severity has purportedly increased*

Citizen Input:

Notes: *City only owns Lindsey ROW. Coordination with TxSt and property owner is required to develop solution. As-built plans and drainage report available for TxSt drainage system (see Attachment).*

Site No.: *27* **Location:** ***Comanche/Lindsey*** BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Apartment complex parking lot is located in historical flow path; however, recently constructed TxSt outfall has altered flow (i.e., frequency, flow rates). No drainage infrastructure exists in Lindsey ROW or parking lot to channelize runoff.*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements
Vegetation Mgmt / Curb & Gutter / Driveway Adjustments
Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Channelize discharge from TxSt outfall & Lindsey St runoff through parking lot to reduce flooding. Combinations of inlets, valley gutters, storm drain pipes, open channels may be used & may extend to existing SD system at Pat Garrison St. Easement & utility coordination required.*

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

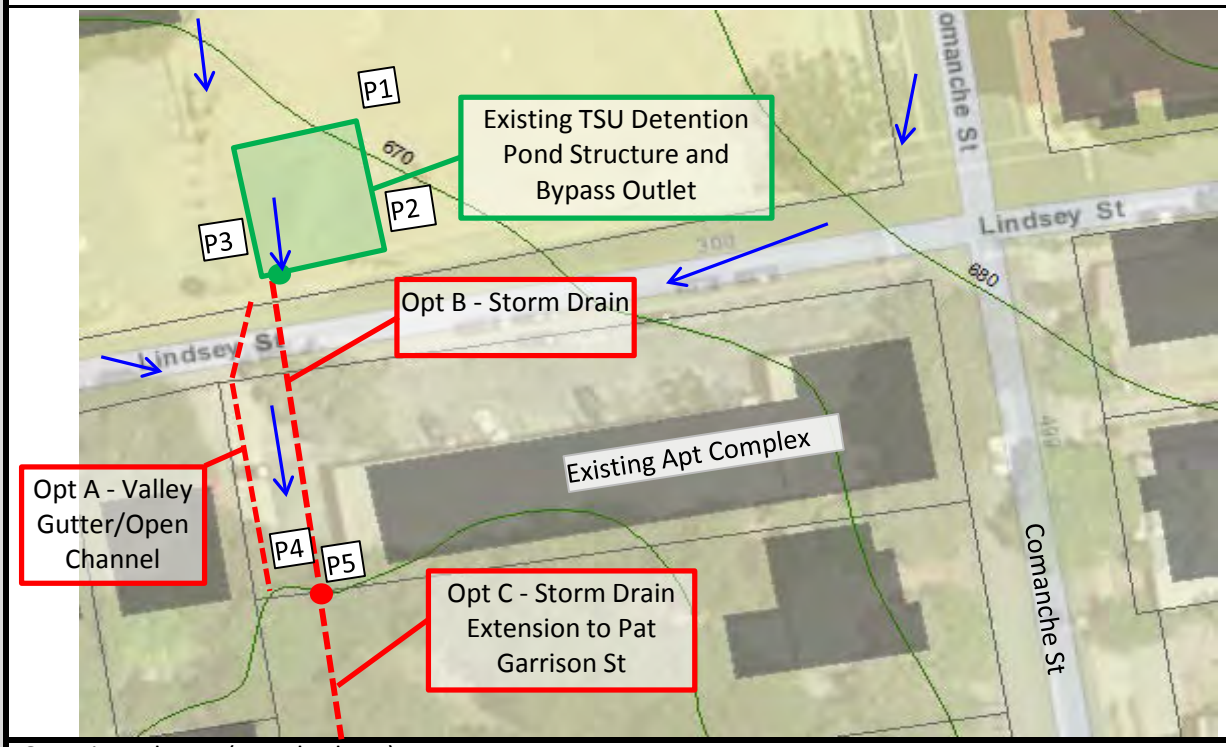
Notes:

Add'l Assessment Required:

ROW Required: *Possibly TxSt, 435 Comanche; downstream property owners (Opt C only)*

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*Outlet for detention basin looking northwest*
P2	*Stormwater Pipe outlet and structure looking north towards TxSt*
P3	*Apartment parking lot looking north towards TxSt*
P4	*Downstream channel immediately downstream of Apt parking lot*

Site No.: *27* **Location:** ***Comanche/Lindsey*** BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	*Outlet for detention basin looking northwest*

Photo #	Caption
P2	*Stormwater Pipe outlet and structure looking north towards TxSt*

Site No.: *27* **Location:** ***Comanche/Lindsey*** BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	*Apartment parking lot looking north towards TxSt*

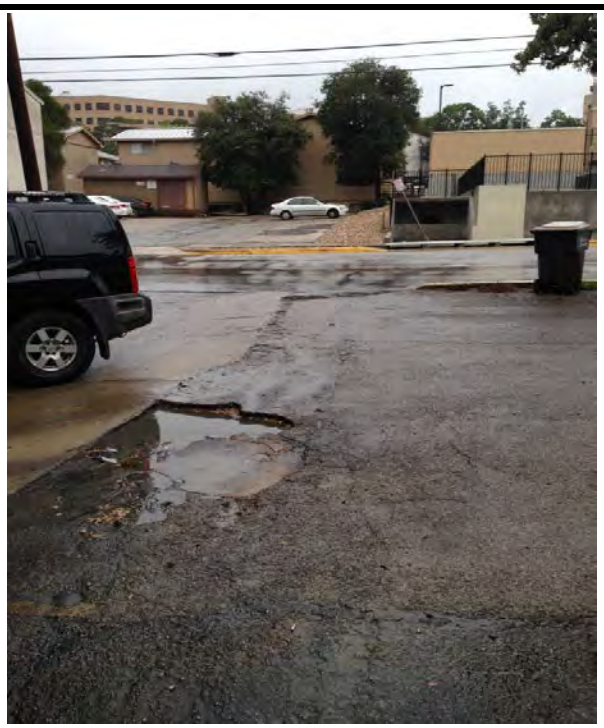


Photo #	Caption
P4	*Downstream channel immediately downstream of Apt parking lot*

Site No.:	27	Location:	*Comanche/Lindsey*	BACK TO MAP

Engineers Opinion of Probable Construction Cost

Comanche/Lindsey

Install a valley gutter in Lindsey ROW & open channel along W side of parking area

UPDATED COST EST.

Construction Contingency	35%	
Total Project Cost		$ -

Site No.: *28* **Location:** *Hwy 21/Bogie Dr (Bypass Creek)* BACK TO MAP

Project covered by CIP #622 according to the new "2018-2027 CIP"

SITE SUMMARY

OPT B *Reduce flooding by buying the land located in the floodplain and restoring it to natural conditions.* *6*

OPT C

OPT D

Challenges

OPT A *This area will remain within Bypass Creek floodplain and flooding will persist during less frequent events. This site is not within the City Limits.*

OPT B *This site is not within the City Limits.*

OPT C

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *28* **Location:** ***Hwy 21/Bogie Dr (Bypass Creek)*** BACK TO MAP

BACKGROUND INFO

Date: *11/13/13* Time: *13:30* Attendees: *SW, TW, CS, KCP*

Flood Complaint Summary: *Four lots on NW corner get flooded*

Watershed: *SMR After Blanco* Hydro Subbasin: *Bypass Creek Trib-2*

Est. Drainage Area (ac): *350* Est. Flood Freq. (yrs): *1* *(most events)*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes:

Local Storm Drain System? Y / N Notes:

GIS Data Available? Y / N

Related Flood Complaint(s):

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other:

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None

Inches: *~4* Date: *10/31/13* Notes:

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear

Notes:

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry

Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid

Notes:

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None

Notes: *Houses flood during events*

Future Erosion / Debris Potential: Y / N Notes:

Affected Properties: *4* *Four lots on the NW corner of the block*

Affected Buildings: *4* *Houses on these lots*

Affected Roadways: *1* *Bogie Drive*

Other:

City Staff Input: *Not within City Limits.*

Citizen Input:

Notes: *This area was included in the 2007 Espey FPP. Very expensive, extensive project. Not much grade here. Might be less expensive for the city to buy the houses out. Also, since this area isn't within city limits, need to know how/if the city would like to proceed here.*

Site No.: *28* **Location:** ***Hwy 21/Bogie Dr (Bypass Creek)*** BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *This area is located in the floodplain.*
Bogie Dr low point ~570'; 2yr WSE = 571.5', 10yr WSE = 572.8', 25yr WSE = 573.1'

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements / Vegetation Mgmt / Curb & Gutter / Driveway Adjustments / Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Best solution here, extend the 564 elevation to the South side of the intersection, through the culvert and along the SW side of Bogie street. It would also be necessary to upgrade the culvert under Hwy 21. Upgrades to driveways along street necessary.*

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

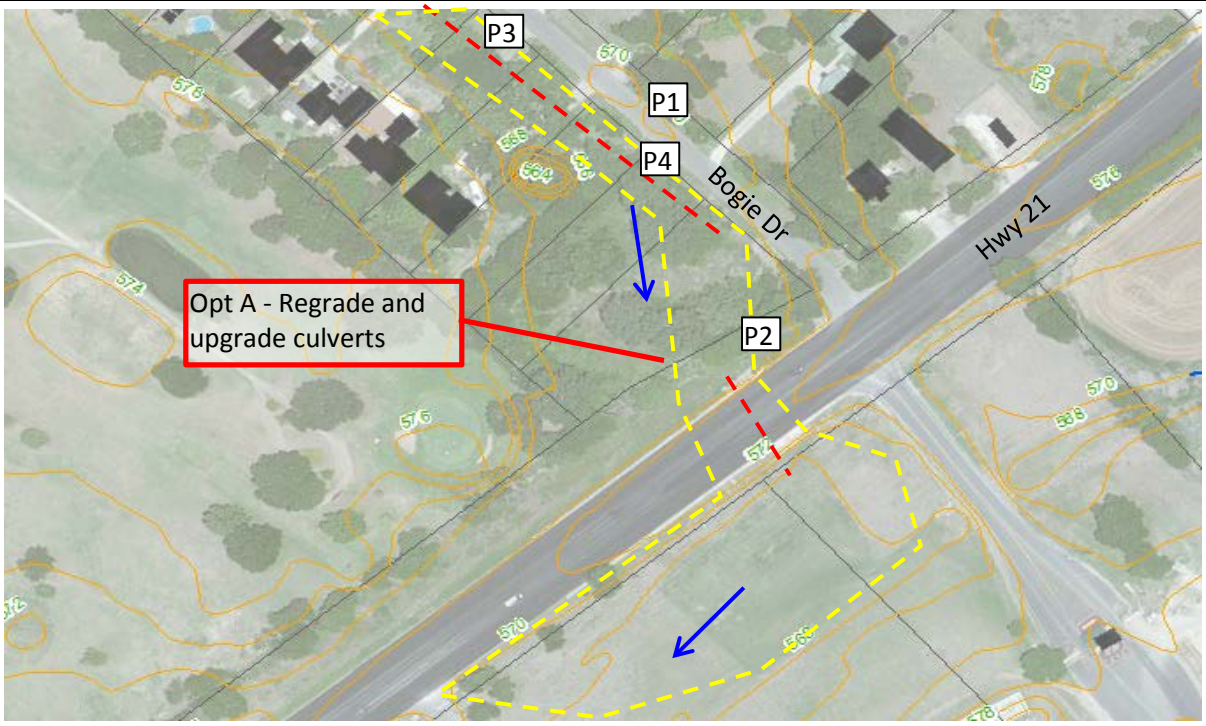
Notes:

Add'l Assessment Required: *Look at models to get volume of water during storm events*

ROW Required: *Easement for drainage ditch along Bogie Drive; may need for Hwy 21*

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*Bogie Drive looking north after the Oct 31, 2013 storm event*
P2	*Inlet of culverts under Hwy 21 looking south*
P3	*Driveway culvert at 115 Bogie Drive, looking south towards Hwy 21*
P4	*Channel along Bogie Drive after the Oct 31, 2013 storm event looking north*

Site No.:	28	Location:	Hwy 21/Bogie Dr (Bypass Creek)	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	Bogie Drive looking north after the Oct 31, 2013 storm event

Photo #	Caption
P2	Inlet of culverts under Hwy 21 looking south

Site No.:	28	Location:	Hwy 21/Bogie Dr (Bypass Creek)	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	Driveway culvert at 115 Bogie Drive, looking south towards Hwy 21

Photo #	Caption
P4	Channel along Bogie Drive after the Oct 31, 2013 storm event looking north

Site No.: *28* **Location:** ***Hwy 21/Bogie Dr (Bypass Creek)*** BACK TO MAP

Engineers Opinion of Probable Construction Cost

Hwy 21/Bogie Dr (Bypass Creek)

Provide drainage relief by regrading Bypass Creek and lowering culverts under

Item	Description	Quantity	Unit	Unit Price	Amount
1.01	Misc. Excavation and Grading	1	LS	$ 25,000	$ 25,000
1.02	Replace Driveway Culverts	5	EA	$ 10,000	$ 50,000
1.03	Install New Bridge (70 ft wide)	60	LF	$ 28,000	$ 1,680,000
1.04	Pavement Repair	1	LS	$ 10,000	$ 10,000
1.05	E&S and Traffic Controls and Misc.	1	LS	$ 12,000	$ 12,000
	Subtotal				$ 1,777,000
	Engineering, Survey and Permitting				$ 444,250
	Construction Contingency	35%			$ 622,000
	Total Project Cost				$ 2,840,000

Site No.: *29* **Location:** *UP Railroad & River Rd* BACK TO MAP

Project covered by CIP #623 according to the new "2018-2027 CIP"

SITE SUMMARY

improve the channel upstream of River Road.

OPT B

OPT C

OPT D

Challenges

OPT A

OPT B

OPT C

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *29* **Location:** ***UP Railroad & River Rd*** BACK TO MAP

BACKGROUND INFO

Date: *11/13/13* Time: *14:00* Attendees: *SW, TW, TH, CS, KCP*

Flood Complaint Summary: *East of IH-35 behind WalMart; channel drains over roadway*

Watershed: *Blanco River* Hydro Subbasin: *Blanco River*

Est. Drainage Area (ac): *23* Est. Flood Freq. (yrs): *1* *(1-2 times/yr)*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes:

Local Storm Drain System? Y / N Notes:

GIS Data Available? Y / N

Related Flood Complaint(s):

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:
2017-2026 Recommended CIP

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other:

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None
Inches: *~4* Date: *10/31/13* Notes: *Roadway closed*

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear
Notes:

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry
Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid
Notes:

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None
Notes:

Future Erosion / Debris Potential: Y / N Notes: *Major scour hole undermining the road*

Affected Properties: *0*

Affected Buildings: *0*

Affected Roadways: *1* *River Road*

Other:

City Staff Input: *Road has washed out a few times; Has to close this road 4-5 times/year water coming from upstream watershed and runoff from I-35; water on road every storm event*

Citizen Input:

Notes: *Borders railroad track and has gas line on the south side and fiber optic cable on the north side of the channel.*

Site No.: *29* **Location:** ***UP Railroad & River Rd*** BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *This site is a tributary to the Blanco River and is in the floodway.*
River Road ~ Sta 19121'; 2yr WSE = 569.7', 10yr WSE = 581.1', 25yr WSE = 586.6'

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements
Vegetation Mgmt / Curb & Gutter / Driveway Adjustments
Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Start w/ the eastern scour hole. Use large rock boulders to stabilize the area and stabilize or replace concrete apron. Then, install culvert under the road or reinforce road to convey flow by installing dip in culvert. Last, improve channel upstream.*

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

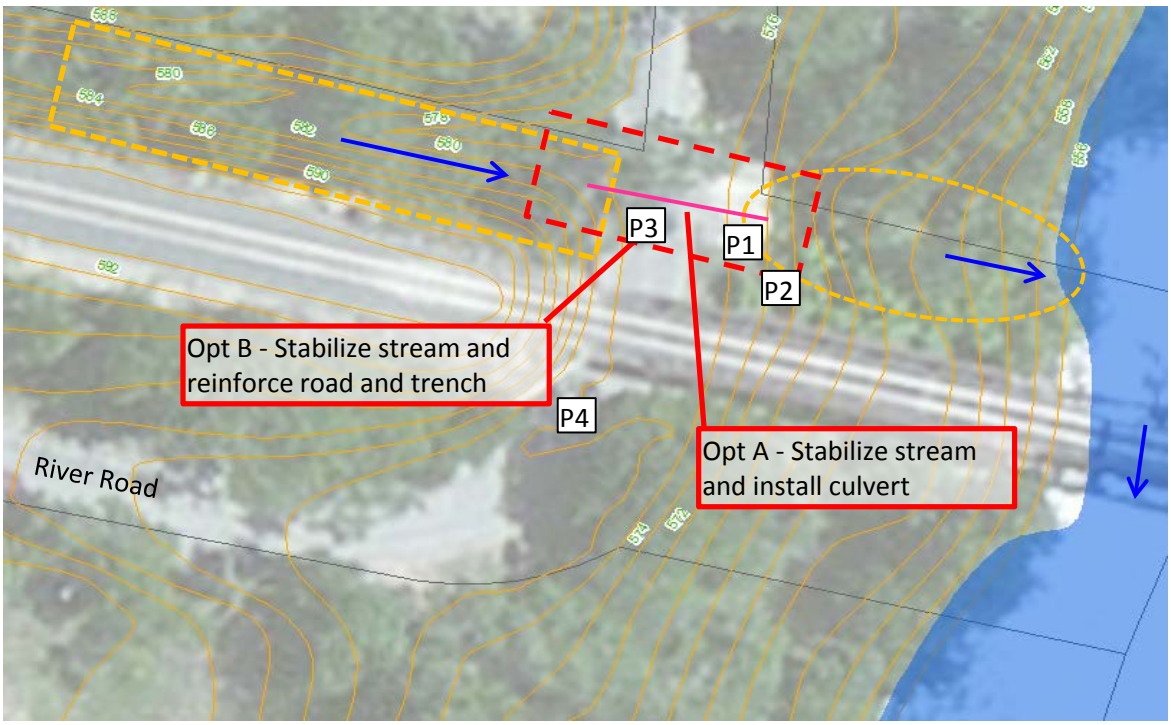
Notes:

Add'l Assessment Required: *Flow in this area*

ROW Required: *Railroad channel and eastern scour hole*

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*Eastern scour hole looking east towards Blanco River*
P2	*Concrete apron with roadway debris at eastern scour hole looking northwest*
P3	*Creek upstream of River Road looking west*
P4	*Water level shown on bridge from Oct 31, 2013 storm event*

Site No.:	29	Location:	UP Railroad & River Rd	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	Eastern scour hole looking east towards Blanco River

Photo #	Caption
P2	Concrete apron with roadway debris at eastern scour hole looking northwest

Site No.:	29	Location:	UP Railroad & River Rd	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	Creek upstream of River Road looking west

Photo #	Caption
P4	Water level shown on bridge from Oct 31, 2013 storm event

Site No.:	*29*	Location:	*UP Railroad & River Rd*	BACK TO MAP

Engineers Opinion of Probable Construction Cost

UP Railroad & River Rd

Stabilize erosion by installing large rock boulders in the eastern scour hole,

Item	Description	Quantity	Unit	Unit Price	Amount
1.01		0	LS	$ -	$ -
1.02		0	LF	$ -	$ -
1.03		0	SF	$ -	$ -
1.04		0	LS	$ -	$ -
1.05		0	LS	$ -	$ -
	Subtotal				$ -
	Engineering, Survey and Permitting				$ -
	Construction Contingency	35%			$ -
	Total Project Cost				

Site No.: *30* **Location:** *400 W Hopkins* BACK TO MAP

SITE SUMMARY

Project covered by CIP #593 according to the new "2018-2027 CIP"

*

OPT C

OPT D

Challenges

OPT A *The capacity of the 78" storm drain is unknown. Changing flow patterns may result in adverse hydraulic effects w/in the system. Additionally, existing system could be backing up at this location. Both systems will need to be studied for capacity as part of planning.*

OPT B

OPT C

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *30* **Location:** ***400 W Hopkins*** BACK TO MAP

BACKGROUND INFO

Date: *1/2/14* Time: *13:00* Attendees: *SW, TW, CS, TH, KCP*

Flood Complaint Summary: *Commercial structure and parking lot flood every few years due to surcharging of local storm drain network*

Watershed: *Purgatory* Hydro Subbasin: *P7-5*

Est. Drainage Area (ac): *50* Est. Flood Freq. (yrs): *99*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes: *capacity of local storm drain is unknown*

Local Storm Drain System? Y / N Notes:

GIS Data Available? Y / N

Related Flood Complaint(s):

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other:

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None
Inches: *~4* Date: *10/31/13* Notes:

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear
Notes:

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry
Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid
Notes:

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None
Notes: *Debris accumulation in channel and on culvert inlets.*

Future Erosion / Debris Potential: Y / N Notes:

Affected Properties: *1* *400 W Hopkins*

Affected Buildings: *1* *400 W Hopkins*

Affected Roadways: *0* *n/a*

Other:

City Staff Input:

Citizen Input:

Notes: *The existing storm sewer system could be backing up at this location and causing the flooding. Channel filled with branches and leaves.*

Site No.: *30* **Location:** *400 W Hopkins* BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Flooding caused by stormwater being blocked from entering the existing system due to either debris or undersize pipes with backflow issues. Water overtops inlet and flows into building.*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements / Vegetation Mgmt / Curb & Gutter / Driveway Adjustments / Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Install storm drain lateral to intercept flow from existing line, down Hutchison St, and outfall to the 78" main on Moore Street. Channel maintenance is needed for existing channel.*

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

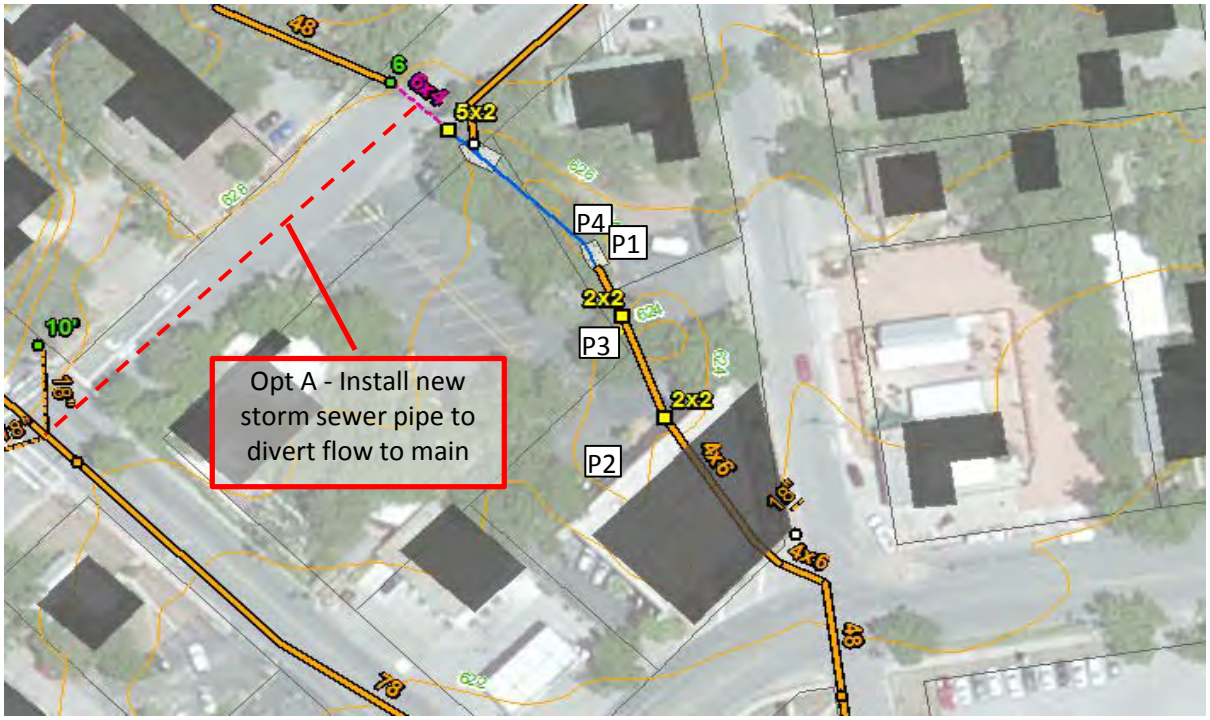
Notes: *Survey elevations of storm sewer lines under Hutchison and at Moore St*

Add'l Assessment Required: *Storm sewer here and Moore St needs to be analyzed for capacity*

ROW Required:

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

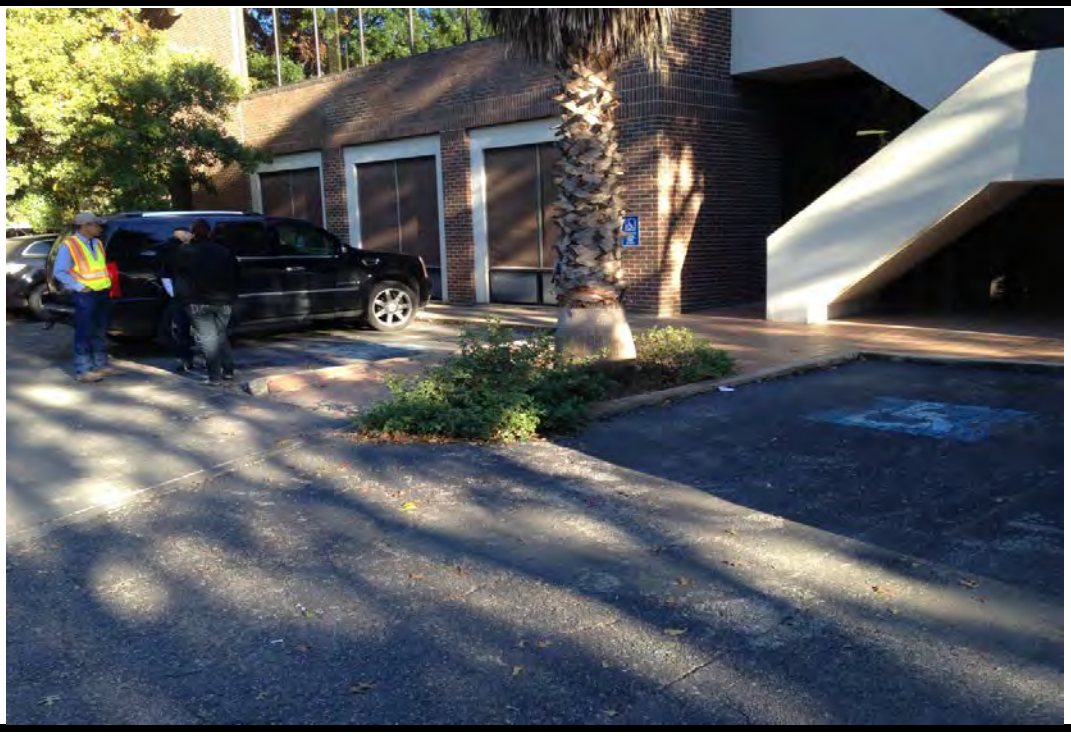
Photo #	Caption
P1	*Looking SE from U/S end of channel towards inlet and 400 W Hopkins St*
P2	*Looking NE at the entrance to 400 W Hopkins St*
P3	*Looking at inlet before 400 W Hopkins St*
P4	*Looking SE at the storm sewer inlet U/S of inlet in P3*

Site No.: *30* **Location:** *400 W Hopkins* BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	*Looking SE from U/S end of channel towards inlet and 400 W Hopkins St*

Photo #	Caption
P2	*Looking NE at the entrance to 400 W Hopkins St*



Site No.: *30* **Location:** *400 W Hopkins* BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	*Looking at inlet before 400 W Hopkins St*

Photo #	Caption
P4	*Looking SE at the storm sewer inlet U/S of inlet in P3*

Site No.: *30* **Location:** *400 W Hopkins* BACK TO MAP

Engineers Opinion of Probable Construction Cost

400 W Hopkins

Intercept runoff upstream of site by installing a storm drain lateral along W

Item	Description	Quantity	Unit	Unit Price	Amount	
1.01	Misc. Excavation and Grading		LS		$	-
1.02	Install New Stormdrain Pipe		LF		$	-
1.03	Pavement Repair		LS		$	-
1.04	E&S and Traffic Controls and Misc.		LS		$	-
	Subtotal				$	-
	Engineering, Survey and Permitting					
	Construction Contingency	35%			$	-
	Total Project Cost				$	-

Site No.: *31* **Location:** *1100 Block Academy St* BACK TO MAP

Project covered by CIP #419 according to the new "2018-2027 CIP"

SITE SUMMARY

Comanche to abandon a storm drain through private property will be included.
Improvements and cost participation will be coordinated with development and
Tx State and with all Drainage Master Plan projects.

Challenges

OPT A

OPT B

OPT C

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *31* **Location:** ***1100 Block Academy St*** BACK TO MAP

BACKGROUND INFO

Date: *12/20/13* Time: *15:30* Attendees: *SW, TW, CS, KCP*

Flood Complaint Summary: *City / TXST improvement cause flooding, clogged drains, potential structural flooding*

Watershed: *Sessom* Hydro Subbasin: *SM2-17*

Est. Drainage Area (ac): *18* Est. Flood Freq. (yrs): *1* *(every event)*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes: *receiving storm drain is 12" pipe (private)*

Local Storm Drain System? Y / N Notes: *Texas State storm drain systems U/S and D/S of the private 12" pipe*

GIS Data Available? Y / N

Related Flood Complaint(s):

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other: *See Attachments* 2017-2026 Recommended CIP

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other: *TxState S of Academy*

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None
Inches: *~5* Date: *10/31/13* Notes: *flooding in 1100 blk Academy yards*

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear
Notes:

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry
Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid
Notes:

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None
Notes: *leaves/flood debris near grate inlets; Orchard pavement shows wear; some erosion in roadside ditch on N side of Orchard (1102 Academy)*

Future Erosion / Debris Potential: Y / N Notes: *grates clog during every rainfall event*

Affected Properties: *3* *1102 Academy, 1104 Academy, 1106 Academy*

Affected Buildings: *3* *1102 Academy, 1104 Academy, 1106 Academy*

Affected Roadways: *2* *Academy St, Orchard St*

Other:

City Staff Input: *Flood frequ has increased since TxSt made storm drain improvements on SW side of Academy (upslope) and tied into the local storm drain system, which is clearly undersized.*

Citizen Input:

Notes: *1102, 1004, and 1106 Academy are located in local sag area; Orchard St acts as a weir*

Site No.: *31* **Location:** *1100 Block Academy St* BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Grate inlets in local sag area clog during every rainfall event. Received storm drain system (privately maintained) is undersized. TxSt has exacerbated flooding by tying in drainage from a curb inlet along Academy (and potentially more).*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements
Vegetation Mgmt / Curb & Gutter / Driveway Adjustments
Bridge/Culvert Upgrade / Structural Repair / Grading

Notes:

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

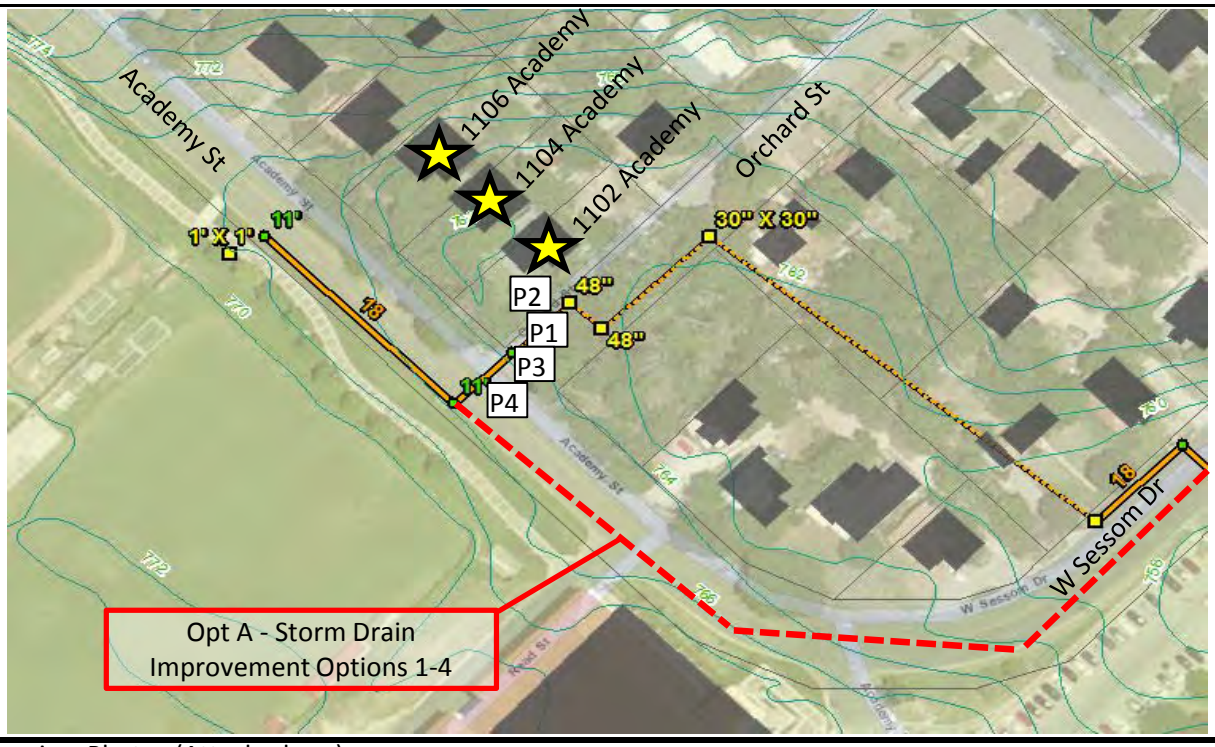
Notes:

Add'l Assessment Required:

ROW Required:

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*Lkg NW from Orchard at property flooding at 1102, 1104, and 1106 Academy St (10/31/13)*
P2	*Looking SE at grate inlet on N side of Orchard; leaves and debris from previous event*
P3	*Looking W at curb inlet on N corner of Academy/Orchard*
P4	*Lkg N at curb inlet on N corner of Academy/Orchard; curb inlet is undersized/inefficient*

Site No.: *31* **Location:** ***1100 Block Academy St*** BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	*Lkg NW from Orchard at property flooding at 1102, 1104, and 1106 Academy St (10/31/13)*

Photo #	Caption
P2	*Looking SE at grate inlet on N side of Orchard; leaves and debris from previous event*

Site No.:	31	Location:	1100 Block Academy St	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	Looking W at curb inlet on N corner of Academy/Orchard

Photo #	Caption
P4	Lkg N at curb inlet on N corner of Academy/Orchard; curb inlet is undersized/inefficient

Site No.: *31* **Location:** *1100 Block Academy St* BACK TO MAP

Engineers Opinion of Probable Construction Cost

1100 Block Academy St

The intersection improvements at Sessom and Academy will include physical

Item	Description	Quantity	Unit	Unit Price	Amount
	Subtotal				
	Engineering, Survey and Permitting				
	Construction Contingency	35%			
	Total Project Cost				

Site No.: *32* **Location:** ***Holland Hills Neighborhood*** BACK TO MAP

Project covered by CIP #599 according to the new "2018-2027 CIP"

SITE SUMMARY

OPT B

OPT C

OPT D

Challenges

OPT A *Manor Park Road has a steep slope and flows down to Hughson Drive. Velocity may be an issue here during larger storms.*

OPT B

OPT C

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *32* **Location:** ***Holland Hills Neighborhood*** BACK TO MAP

BACKGROUND INFO

Date: *11/22/15* Time: *13:50* Attendees: *CS, KCP*

Flood Complaint Summary: *Water over road on 300 to 400 block of Hughson Drive*
SD needed

Watershed: *Sink* Hydro Subbasin: *S1-20*

Est. Drainage Area (ac): *26* Est. Flood Freq. (yrs): *10*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes:

Local Storm Drain System? Y / N Notes: *Storm drain system nearby at Craddock*

GIS Data Available? Y / N *Ave and Hughson Drive*

Related Flood Complaint(s):

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other:

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None
Inches: *~3* Date: *1/22/15* Notes: *Steady rain/drizzle for 2 days*

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear
Notes:

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry
Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid
Notes:

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None
Notes: *Light leave accumulation along the road*

Future Erosion / Debris Potential: Y / N Notes:

Affected Properties: *0*

Affected Buildings: *0*

Affected Roadways: *2* *Hughson Drive and Manor Park Road*

Other:

City Staff Input:

Citizen Input:

Notes:

Site No.: *32* **Location:** ***Holland Hills Neighborhood*** BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Lack of storm drain system in area and steep slope on Manor Park Road.*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements
Vegetation Mgmt / Curb & Gutter / Driveway Adjustments
Bridge/Culvert Upgrade / Structural Repair / Grading

Notes:

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

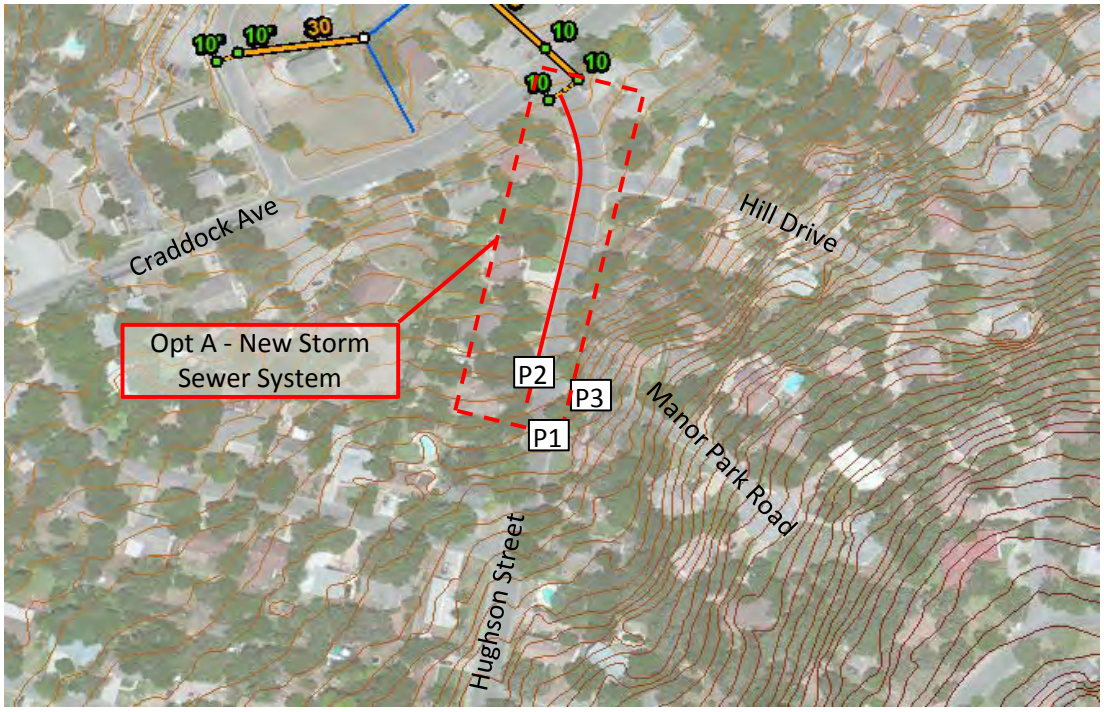
Notes: *Survey tie-in location downstream*

Add'l Assessment Required:

ROW Required:

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*Looking N at water flowing at intersection of Hughson Drive and Manor Park Road*
P2	*Looking NW towards 402 Hughson Drive and the flow coming from Manor Park Road*
P3	*Looking E up Manor Park Road*
P4	

Site No.:	32	Location:	Holland Hills Neighborhood	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	Looking N at water flowing at intersection of Hughson Drive and Manor Park Road

Photo #	Caption
P2	Looking NW towards 402 Hughson Drive and the flow coming from Manor Park Road

Site No.: *32* **Location:** ***Holland Hills Neighborhood*** BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	*Looking E up Manor Park Road*

Photo #	Caption
P4	

Site No.:	*32*	Location:	*Holland Hills Neighborhood*	BACK TO MAP

Engineers Opinion of Probable Construction Cost

Holland Hills Neighborhood

Install a storm sewer system along the 300 to 400 blocks of Hughson Drive

Item	Description	Quantity	Unit	Unit Price	Amount	
1.01	Install New Storm Sewer System	1	LS		$	-
	Subtotal				$	-
	Engineering, Survey and Permitting					
	Construction Contingency	35%			$	-
	Total Project Cost				$	-

* Costs are taken from the 1994 CDM Drainage Master Plan from City of San Marcos

Site No.: *33* **Location:** ***Tanglewood Addition*** BACK TO MAP

Project covered by CIP #348 according to the new "2018-2027 CIP"

SITE SUMMARY

OPT B

OPT C

OPT D

Challenges

OPT A *Local street traffic disturbances could be a public nuisance.*

OPT B

OPT C

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *33* **Location:** ***Tanglewood Addition*** BACK TO MAP

BACKGROUND INFO

Date: *1/23/15* Time: *13:40* Attendees: *CS, KCP*

Flood Complaint Summary: *Flooding on road*

Watershed: *Sink* Hydro Subbasin: *S3-1, S3-2, S3-3, S3-4*

Est. Drainage Area (ac): Est. Flood Freq. (yrs): *10*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes:

Local Storm Drain System? Y / N Notes: *Culverts and channel, but no drainage pipes*

GIS Data Available? Y / N

Related Flood Complaint(s):

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other:

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None

Inches: *~3* Date: *1/22/15* Notes: *Steady rain/drizzle for 2 days*

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear

Notes:

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry

Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid

Notes: *Base flow conditions*

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None

Notes: *There was debris on the SW culvert that was clogging inlets & some structural undermining at NW culvert D/S, but rock based/stable*

Future Erosion / Debris Potential: Y / N Notes: *Leaf and branch debris in culvert*

Affected Properties: *0*

Affected Buildings: *0*

Affected Roadways: *1* *Oakridge St*

Other:

City Staff Input:

Citizen Input:

Notes:

Site No.: *33* **Location:** ***Tanglewood Addition*** BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Per CDM 1993 Study, 3 problem areas were identified, 2 which fail to convey a 10-year storm event and 1 fails to convey a 100-yr storm event, all of which failed due to insufficient culverts.*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements / Vegetation Mgmt / Curb & Gutter / Driveway Adjustments / Bridge/Culvert Upgrade / Structural Repair / Grading

Notes:

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

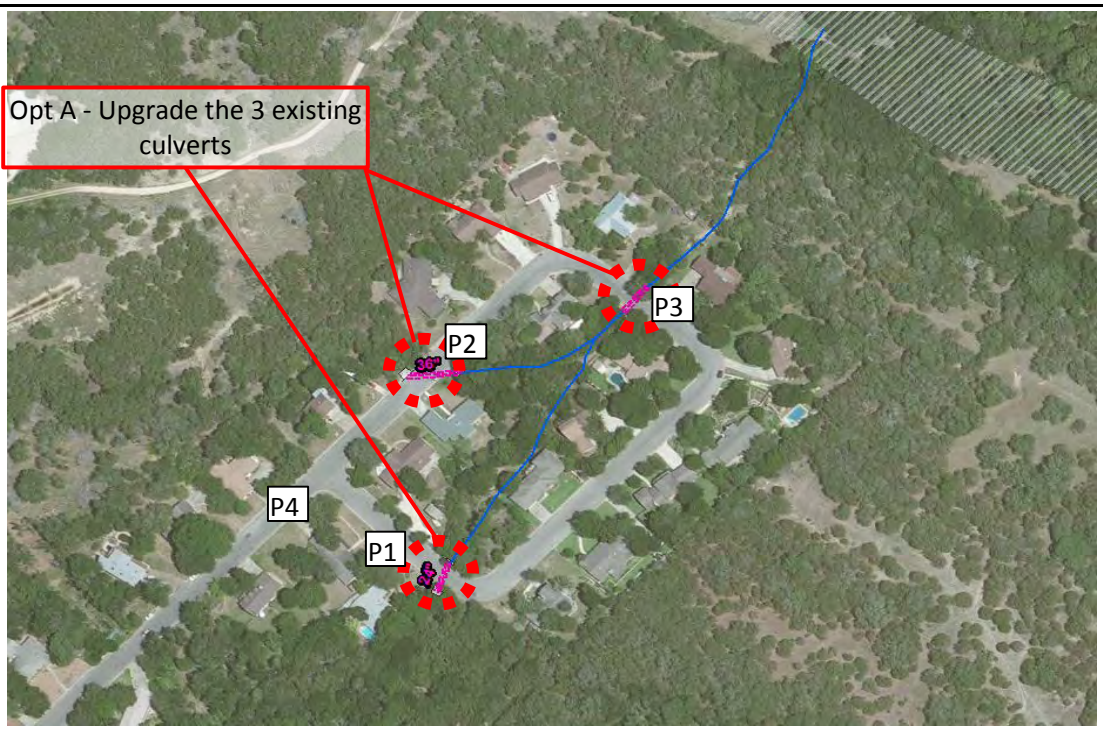
Notes:

Add'l Assessment Required:

ROW Required:

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*Looking at U/S side of culvert on SW loop of Oakridge St clogged with debris*
P2	*Looking at undermining of D/S side of culvert on NW loop of Oakridge St*
P3	*Looking at D/S side of culvert on NE loop of Oakridge St*
P4	*Looking W at debris line on Oakridge St loop intersection*

Site No.: *33* **Location:** ***Tanglewood Addition*** BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	*Looking at U/S side of culvert on SW loop of Oakridge St clogged with debris*

Photo #	Caption
P2	*Looking at undermining of D/S side of culvert on NW loop of Oakridge St*

Site No.:	33	Location:	Tanglewood Addition	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	Looking at D/S side of culvert on NE loop of Oakridge St

Photo #	Caption
P4	Looking W at debris line on Oakridge St loop intersection

Site No.: *33* **Location:** ***Tanglewood Addition*** BACK TO MAP

Engineers Opinion of Probable Construction Cost

Tanglewood Addition

Upgrade 3 existing culverts of Oakridge Street.

Item	Description	Quantity	Unit	Unit Price	Amount	
1.01	Culvert Upgrades	1	LS		$	-
	Subtotal				$	-
	Engineering, Survey and Permitting					
	Construction Contingency	35%			$	-
	Total Project Cost					

* Costs are taken from the 1994 CDM Drainage Master Plan from City of San Marcos

Site No.: *34* **Location:** *Culverts under Ridgeway & Hillcrest Drive* BACK TO MAP

SITE SUMMARY

Project covered by CIP #199 according to the new "2018-2027 CIP"

OPT B

OPT C

OPT D

Challenges

OPT A *Local street traffic disturbances could be a public nuisance.*

OPT B

OPT C

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *34* **Location:** ***Culverts under Ridgeway & Hillcrest Drive*** BACK TO MAP

BACKGROUND INFO

Date: *1/22/15* Time: *14:10* Attendees: *CS, KCP*

Flood Complaint Summary: *Undersized culverts on Hillcrest Dr and Ridgeway*

Watershed: *Sessom* Hydro Subbasin: *SM2-19,2-21, 2-22, 2-24, 2-26*

Est. Drainage Area (ac): Est. Flood Freq. (yrs): *2*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes:

Local Storm Drain System? Y / N Notes:

GIS Data Available? Y / N

Related Flood Complaint(s):

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other:

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None
Inches: *~3* Date: *1/22/15* Notes: *Steady rain/drizzle for 2 days*

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear
Notes:

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry
Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid
Notes:

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None
Notes:

Future Erosion / Debris Potential: Y / N Notes:

Affected Properties: *0* *n/a*

Affected Buildings: *0* *n/a*

Affected Roadways: *2* *Ridgeway Drive, Hillcrest Drive*

Other:

City Staff Input:

Citizen Input:

Notes:

Site No.: *34* **Location:** ***Culverts under Ridgeway & Hillcrest Drive*** BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Several of these areas fail to convey the 10-year storm event and some fail to convey the 2-year storm event.*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements / Vegetation Mgmt / Curb & Gutter / Driveway Adjustments / Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Remove and upgrade the existing culverts.*

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

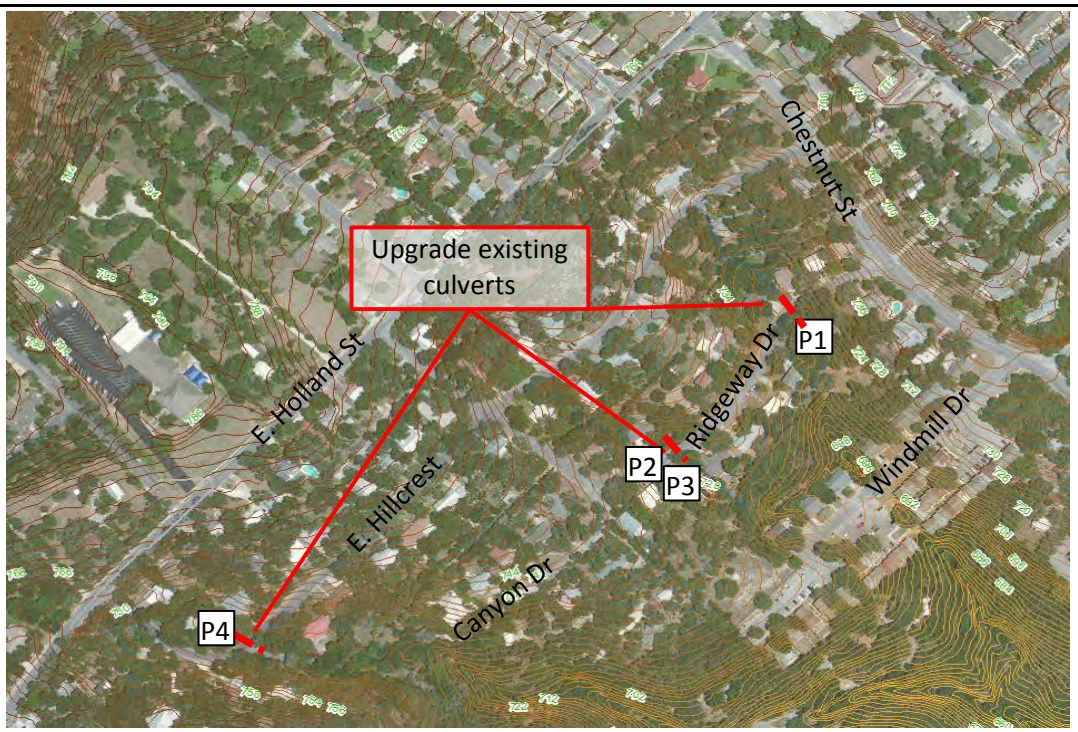
Notes:

Add'l Assessment Required:

ROW Required:

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

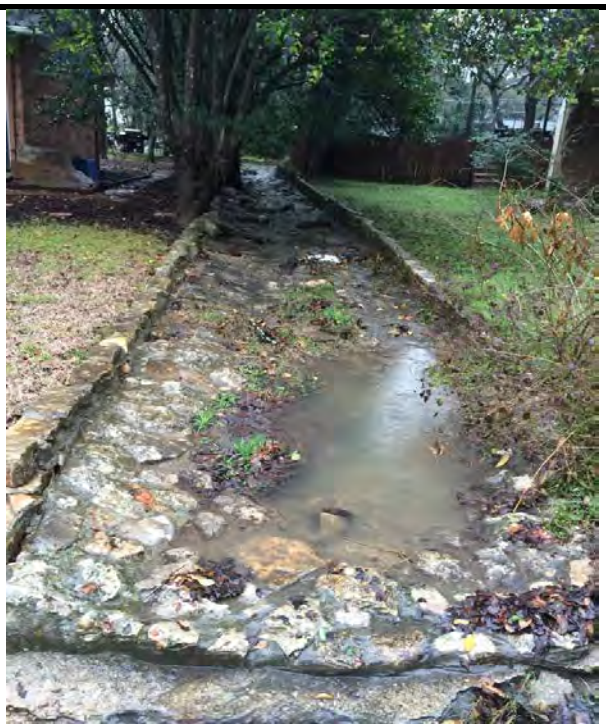
Photo #	Caption
P1	*Looking N at the D/S side of the culvert on Ridgeway Dr closest to Chestnut St*
P2	*Looking NW at the U/S channel of the culvert on Ridgeway Dr closest to Canyon Dr*
P3	*Looking NW at the D/S culvert on Ridgeway Dr closest to Canyon Dr*
P4	*Looking SW at the U/S culvert on E. Hillcrest Dr*

Site No.:	34	Location:	Culverts under Ridgeway & Hillcrest Drive	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	Looking N at the D/S side of the culvert on Ridgeway Dr closest to Chestnut St

Photo #	Caption
P2	Looking NW at the U/S channel of the culvert on Ridgeway Dr closest to Canyon Dr



Site No.:	34	Location:	Culverts under Ridgeway & Hillcrest Drive	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	Looking NW at the D/S culvert on Ridgeway Dr closest to Canyon Dr

Photo #	Caption
P4	Looking SW at the U/S culvert on E. Hillcrest Dr

Site No.:	*34*	Location:	*Culverts under Ridgeway & Hillcrest Drive*	BACK TO MAP

Engineers Opinion of Probable Construction Cost

Culverts under Ridgeway & Hillcrest Drive

Replace the culverts in Hillcrest Drive and Ridgeway Drive with larger culverts

Item	Description	Quantity	Unit	Unit Price	Amount	
1.01	Culvert Upgrades	1	LS		$	-
	Subtotal				$	-
	Engineering, Survey and Permitting					
	Construction Contingency	35%			$	-
	Total Project Cost				$	-

* Costs are taken from the 1994 CDM Drainage Master Plan from City of San Marcos

Site No.: *35* **Location:** ***Bishop Street South*** BACK TO MAP

SITE SUMMARY

Project covered by CIP #183 according to the new "2018-2027 CIP"

construction in 2021.

Challenges

OPT A

OPT B

OPT C

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

San Marcos Comprehensive Watershed Master Plan
Field Assessment Form - Local Flood Complaints
SITE #35

Site No.: *35* **Location:** ***Bishop Street South*** BACK TO MAP

BACKGROUND INFO

Date: *12/20/13* Time: *13:30* Attendees: *SW, TW, CS, KCP*

Flood Complaint Summary: *Roadway flooding due to lack of storm sewer system*

Watershed: *Purgatory* Hydro Subbasin: *P3-2, P3-3, P5-4*

Est. Drainage Area (ac): Est. Flood Freq. (yrs): *2*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes:

Local Storm Drain System? Y / N Notes:

GIS Data Available? Y / N

Related Flood Complaint(s): *#9 - 500-1200 Hopkins St*

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:
2017-2026 Recommended CIP

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other:

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None
Inches: *~3* Date: *1/22/15* Notes: *Steady rain/drizzle for 2 days*

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear
Notes:

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry
Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid
Notes:

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None
Notes: *Some debris accumulation is present at inlets at Mitchell St and San Antonio St*

Future Erosion / Debris Potential: Y / N Notes:

Affected Properties: *0* *n/a*

Affected Buildings: *0* *n/a*

Affected Roadways: *6* *Bishop St, W. San Antonio St, Belvin St, Mitchell St, Endicott St, Travis, St*

Other:

City Staff Input:

Citizen Input:

Notes: *Lack of storm sewer system in this area.*

Site No.: *35* **Location:** ***Bishop Street South*** BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Water over road during 2-year storm event and culverts fail to convey the 10-year and the 2-year storm event.*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements
Vegetation Mgmt / Curb & Gutter / Driveway Adjustments
Bridge/Culvert Upgrade / Structural Repair / Grading

Notes:

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

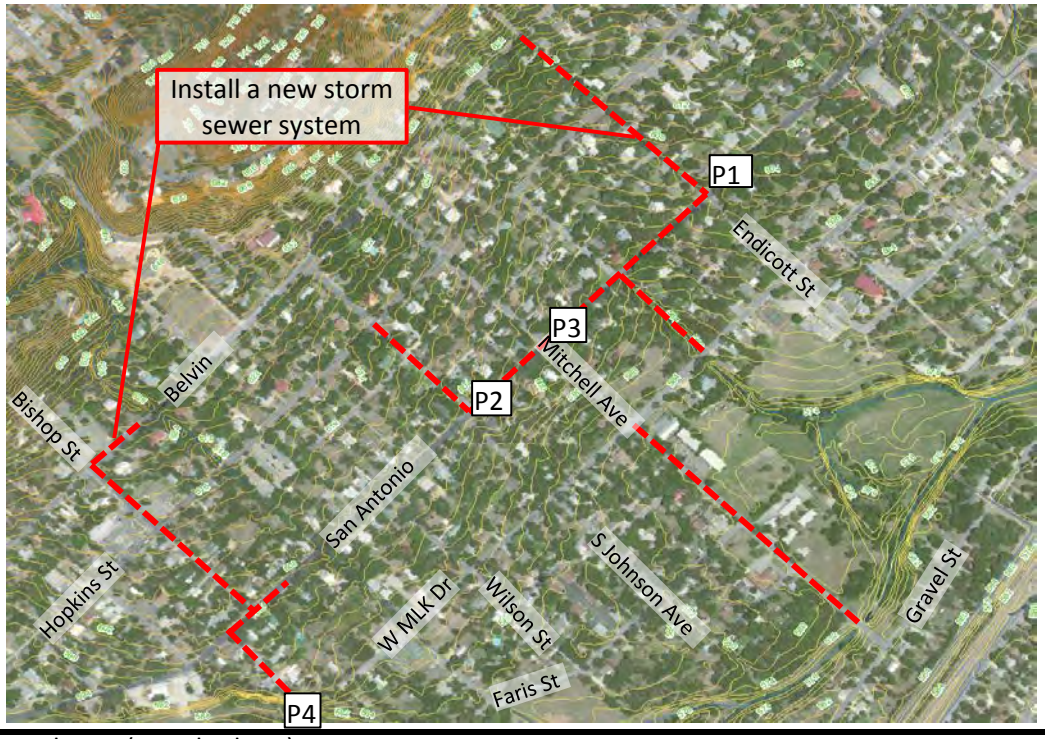
Notes:

Add'l Assessment Required:

ROW Required:

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*Looking SW up Endicott St from San Antonio St*
P2	*Looking SW at standing water in intersection of Johnson St and San Antonio St*
P3	*Inlets at San Antonio St and Mitchell Ave, looking SW and NE at the leaf debris*
P4	*Outlet channel for neighborhood runoff into Purgatory Creek from Bishop St*

Site No.:	35	Location:	Bishop Street South	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	Looking SW up Endicott St from San Antonio St

Photo #	Caption
P2	Looking SW at standing water in intersection of Johnson St and San Antonio St

Site No.: *35* **Location:** ***Bishop Street South*** BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	*Inlets at San Antonio St and Mitchell Ave, looking SW and NE at the leaf debris*

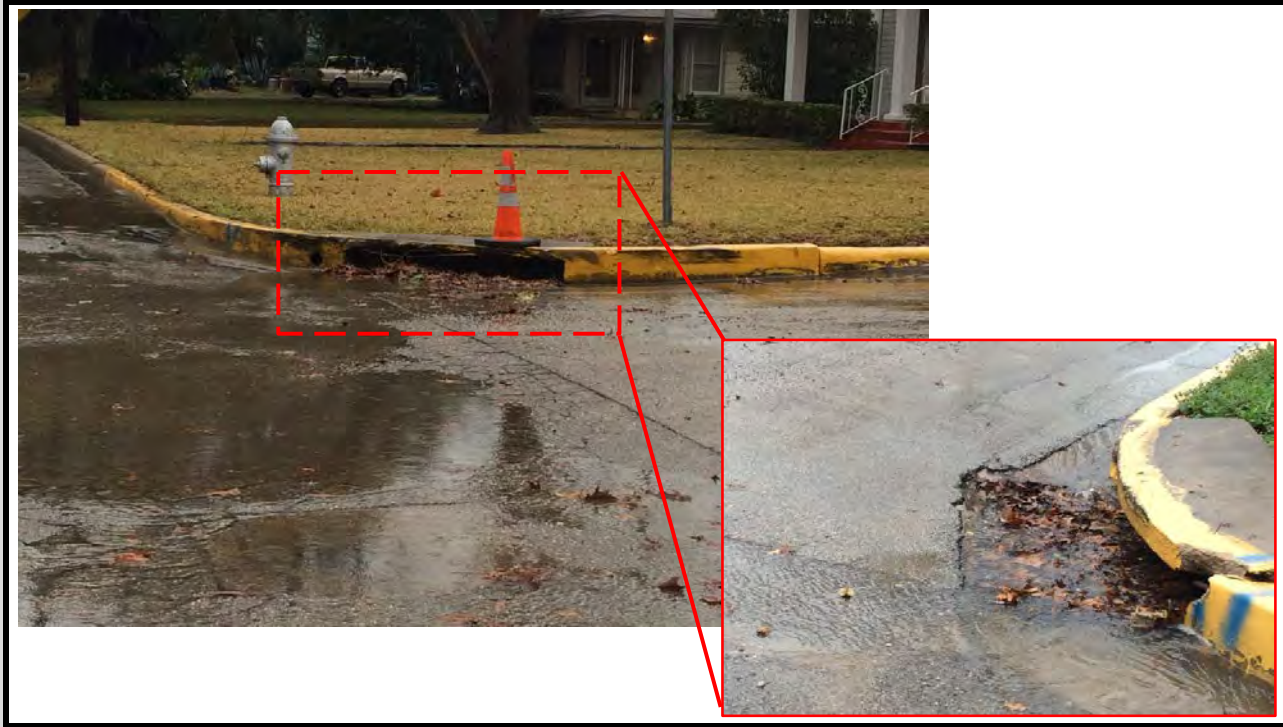


Photo #	Caption
P4	*Outlet channel for neighborhood runoff into Purgatory Creek from Bishop St*

Site No.:	*35*	Location:	*Bishop Street South*	BACK TO MAP

Engineers Opinion of Probable Construction Cost

Bishop Street South

Drainage, Water (per master plan) and Wastewater improvements along Belvin &

Item	Description	Quantity	Unit	Unit Price	Amount
	Subtotal				
	Engineering, Survey and Permitting				
	Construction Contingency	35%			
	Total Project Cost				

* Costs are taken from the 1994 CDM Drainage Master Plan from City of San Marcos

Site No.: *36* **Location:** *Barnes & Thermon Drive* BACK TO MAP

Project covered by CIP #33 according to the new "2018-2027 CIP"

SITE SUMMARY

and inlets

OPT B

OPT C

OPT D

Challenges

OPT A *Installation of a storm sewer system in this area could be a nuisance to local businesses during construction.*

OPT B *Lack of grading in channels along IH-35 could make conveyance difficult.*

OPT C *Easement coordination with UP Railroad will likely be required.*

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

San Marcos Comprehensive Watershed Master Plan
Field Assessment Form - Local Flood Complaints
SITE #36

Site No.: *36* **Location:** ***Barnes & Thermon Drive*** BACK TO MAP

BACKGROUND INFO

Date: *1/22/15* Time: *12:45* Attendees: *CS, KCP*

Flood Complaint Summary: *Water over the road on the 300 block of Barnes Drive during 2-yr storm event.*

Watershed: *Willow* Hydro Subbasin: *W2-2, W2-5, W2-6, W2-7*

Est. Drainage Area (ac): Est. Flood Freq. (yrs): *2*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes:

Local Storm Drain System? Y / N Notes:

GIS Data Available? Y / N

Related Flood Complaint(s):

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other:

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None
Inches: *~3* Date: *1/22/15* Notes: *Steady rain/drizzle for 2 days*

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear
Notes: *Water on road at intersection of Thermon and Barnes*

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry
Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid
Notes:

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None
Notes:

Future Erosion / Debris Potential: Y / N Notes:

Affected Properties: *0* *n/a*

Affected Buildings: *0* *n/a*

Affected Roadways: *4* *Thermon Dr, Barnes Dr, Larry Spear Dr, IH-35 S Access Rd*

Other:

City Staff Input:

Citizen Input:

Notes:

Site No.: *36* **Location:** ***Barnes & Thermon Drive*** BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Lack of storm sewer system in the area, flooding during the 2-yr event.*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements
Vegetation Mgmt / Curb & Gutter / Driveway Adjustments
Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Install new storm sewer system along Barnes Dr and Thermon Dr. Upgrade the existing storm sewer system and culverts along frontage road and under intersection.*

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

Notes:

Add'l Assessment Required:

ROW Required: *RR coordination and easement will likely be required for each alternative*

Potential Water Quality Feature: *The low-lying open area may be used as a rain garden / sedimentation basin opportunity identified in Water Quality Protection Plan, Nov. 16, 2015*

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*

Overview Photos (Attached pgs):

Photo #	Caption
P1	*Looking W towards the intersection of Barnes Dr from Thermon Dr*
P2	*Looking NW on Thermon Dr from intersection of Thermon Dr and Barnes Dr*
P3	*U/S and D/S side of culvert at Thermon Dr and IH 35 frontage road*
P4	*Looking NE from Thermon Dr up the IH 35 frontage road*

Site No.: *36* **Location:** ***Barnes & Thermon Drive*** BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	*Looking W towards the intersection of Barnes Dr from Thermon Dr*

Photo #	Caption
P2	*Looking NW on Thermon Dr from intersection of Thermon Dr and Barnes Dr*

Site No.: *36* **Location:** ***Barnes & Thermon Drive*** BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	*U/S and D/S side of culvert at Thermon Dr and IH 35 frontage road*

Photo #	Caption
P4	*Looking NE from Thermon Dr up the IH 35 frontage road*

Site No.: *36* **Location:** ***Barnes & Thermon Drive*** BACK TO MAP

Engineers Opinion of Probable Construction Cost

Barnes & Thermon Drive

Install a storm sewer system from the 300 block of Barnes Drive to the intersection

Item	Description	Quantity	Unit	Unit Price	Amount
1.01	Install Storm Sewer & Upgrade Culverts	1	LS	$ 654,000	$ 654,000
1.02	water quality opportunity (25%)	1	LS	$ 163,500	$ 163,500
	Subtotal				$ 817,500
	Engineering, Survey and Permitting				$ 204,375
	Construction Contingency	35%			$ 286,000
	Total Project Cost				$ 1,310,000

* Costs are taken from the 1994 CDM Drainage Master Plan from City of San Marcos

CONFIRM INFLATION RATE FROM 1994

Site No.: *37* **Location:** *Wallace Addition & Culverts along Hwy 621* BACK TO MAP

Project covered by CIP #525 according to the new "2018-2027 CIP"

SITE SUMMARY

OPT B

OPT C

OPT D

Challenges

OPT A *A portion of the project is within TxDOT ROW. Local street traffic disturbances could be a public nuisance. Lack of grading in this area could make conveyance difficult.*

OPT B

OPT C

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *37* **Location:** ***Wallace Addition & Culverts along Hwy 621*** BACK TO MAP

BACKGROUND INFO

Date: *1/22/15* Time: *13:15* Attendees: *CS, KCP*

Flood Complaint Summary: *Flooding along streets and in neighborhood due to undersized and lack of instrastructure.*

Watershed: *Willow* Hydro Subbasin: *SM13-3,13-5,13-6,13-7, P13-9*

Est. Drainage Area (ac): Est. Flood Freq. (yrs): *2*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes:

Local Storm Drain System? Y / N Notes:

GIS Data Available? Y / N

Related Flood Complaint(s):

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other: *Fish Hatchery*

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None

Inches: *~3* Date: *1/22/15* Notes: *Steady rain/drizzle for 2 days*

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear

Notes:

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry

Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid

Notes:

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None

Notes:

Future Erosion / Debris Potential: Y / N Notes:

Affected Properties: *0 n/a*

Affected Buildings: *0 n/a*

Affected Roadways: *6 Cape St, Luciano Flores St, Tampico St, Laredo St, Durango St, FM 621*

Other:

City Staff Input:

Citizen Input:

Notes:

Site No.: *37* **Location:** ***Wallace Addition & Culverts along Hwy 621*** BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Several of these areas fail to convey the 10-year storm event and some fail to convey the 2-year storm event.*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements
Vegetation Mgmt / Curb & Gutter / Driveway Adjustments
Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Upgrade and install storm sewer system in the Wallace Addition. Upgrade culverts along FM 621.*

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

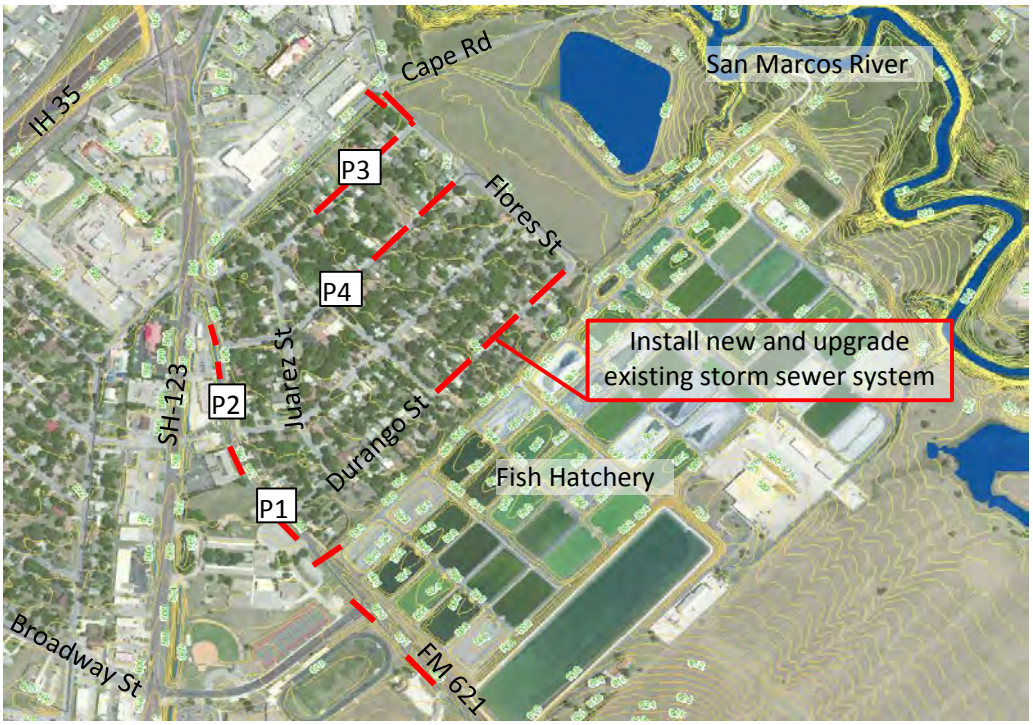
Notes:

Add'l Assessment Required:

ROW Required:

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*Looking S at the culverts on the W side of Staples Rd*
P2	*Looking S at the culverts on the W side of Staples Rd*
P3	*Water on Tampico Street looking NW towards Flores Blvd*
P4	*Looking NE on Laredo Street towards Flores Blvd*

Site No.: *37* **Location:** ***Wallace Addition & Culverts along Hwy 621*** BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	*Looking S at the culverts on the W side of Staples Rd*

Photo #	Caption
P2	*Looking S at the culverts on the W side of Staples Rd*

Site No.: *37* **Location:** ***Wallace Addition & Culverts along Hwy 621*** BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	*Water on Tampico Street looking NW towards Flores Blvd*

Photo #	Caption
P4	*Looking NE on Laredo Street towards Flores Blvd*

Site No.:	37	Location:	*Wallace Addition & Culverts along Hwy 621*	BACK TO MAP

Engineers Opinion of Probable Construction Cost

Wallace Addition & Culverts along Hwy 621

Replace eight (8) undersized culverts, upgrade existing storm sewer system,

Item	Description	Quantity	Unit	Unit Price	Amount
1.01	Install New & Upgrade Existing Storm Sewer	1	LS	$ 494,000	$ 494,000
	Cost Inflation Increase (1994 to 2016 avgerage 2.1%/yr)				$ 286,357
	Subtotal				$ 780,357
	Engineering, Survey and Permitting (25%)				$ 195,089
	Construction Contingency	35%			$ 273,000
	Total Project Cost				

* Costs and quantities below are taken from the 1994 CDM Drainage Master Plan for the City of San Marcos and updated to Dec 2016 Construction Cost Index. Per ENR CCI, inflation avereaged 2.1% per year from 1994 to 2016

LF	Flow Area (sf2)	Equiv. Pipe Dia (ft)	Equiv. Box Culvert (ft)	Inlets (each)
250	4.9	2.5	n/a	6
976	7	3	n/a	5
750	12.5	4	n/a	6

Seven Box Culverts along HWY 621 ranging in size from 2.5X6 to 2X12 and one 2X15 culvert at Cape and Hays.

Site No.: *38* **Location:** *Culverts along Hwy 123S of IH35* BACK TO MAP

SITE SUMMARY

Project covered by CIP #96 according to the new "2018-2027 CIP"

OPT B

OPT C

OPT D

Challenges

OPT A *Local street traffic disturbances could be a public nuisance.*

OPT B *Lack of grading in this area could make conveyance difficult.*

OPT C

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *38* **Location:** ***Culverts along Hwy 123S of IH35*** BACK TO MAP

BACKGROUND INFO

Date: *1/22/15* Time: *13:10* Attendees: *CS, KCP*

Flood Complaint Summary: *Roadway flooding due to undersized culverts.*

Watershed: *Willow* Hydro Subbasin: *SM11-4, -5, -6, -7*

Est. Drainage Area (ac): Est. Flood Freq. (yrs): *2*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes:

Local Storm Drain System? Y / N Notes:

GIS Data Available? Y / N

Related Flood Complaint(s):

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other: *Middle School, ACC*

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None

Inches: *~3* Date: *1/22/15* Notes: *Steady rain/drizzle for 2 days*

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear

Notes:

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry

Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid

Notes:

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None

Notes:

Future Erosion / Debris Potential: Y / N Notes:

Affected Properties: *0* *n/a*

Affected Buildings: *0* *n/a*

Affected Roadways: *1* *SH 123*

Other:

City Staff Input:

Citizen Input:

Notes:

Site No.: *38* **Location:** ***Culverts along Hwy 123S of IH35*** BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Culverts fail to convey a 10-year storm event and one fails to convey a 2-year storm event.*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements / Vegetation Mgmt / Curb & Gutter / Driveway Adjustments / Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Upgrade the existing culverts along SH-123 and manage vegetation along channel.*

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

Notes:

Add'l Assessment Required:

ROW Required:

Potential

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*

Overview Photos (Attached pgs):

Photo #	Caption
P1	*Culverts on the W side of SH-123 looking S from Ebony St*
P2	*Culverts on the W side of SH-123 looking S from Staples Rd*
P3	*Culvert on E side of SH-123 at De Zavala Dr looking SW*
P4	*Vegetation in culvert on E side of SH-123 looking N towards IH-35*

Site No.:	*38*	Location:	*Culverts along Hwy 123S of IH35*	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	*Culverts on the W side of SH-123 looking S from Ebony St*

Photo #	Caption
P2	*Culverts on the W side of SH-123 looking S from Staples Rd*

Site No.:	*38*	Location:	*Culverts along Hwy 123S of IH35*	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	*Culvert on E side of SH-123 at De Zavala Dr looking SW*

Photo #	Caption
P4	*Vegetation in culvert on E side of SH-123 looking N towards IH-35*

Site No.: *38* **Location:** ***Culverts along Hwy 123S of IH35*** BACK TO MAP

Engineers Opinion of Probable Construction Cost

Culverts along Hwy 123S of IH35

Increase and replace culverts along the East and West side of SH 123

Item	Description	Quantity	Unit	Unit Price	Amount
1.01	Upgrade Existing Culverts	1	LS	$ 162,000	
	Subtotal				
	Engineering, Survey and Permitting				
	Construction Contingency	35%			
	Total Project Cost				

* Costs are taken from the 1994 CDM Drainage Master Plan from City of San Marcos

Site No.: *39* **Location:** *Sunset Acres* BACK TO MAP

SITE SUMMARY

Project covered by CIP #644 according to the new "2018-2027 CIP"

OPT C

OPT D

Challenges

OPT A *A portion of the project is within TxDOT ROW. Local street traffic disturbances could be a public nuisance. Lack of grading in this area could make conveyance difficult.*

OPT B

OPT C

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *39* **Location:** ***Sunset Acres*** BACK TO MAP

BACKGROUND INFO

Date: *11/13/13* Time: *12:55* Attendees: *SW, TW, CS, KCP*

Flood Complaint Summary: *Neighborhood floods and does not convey stormwater efficiently.*

Watershed: *Willow* Hydro Subbasin: *P9-1, 9-2, 9-3, 9-4, 9-5, 9-7, 9-8, 9-9*

Est. Drainage Area (ac): Est. Flood Freq. (yrs): *10*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes:

Local Storm Drain System? Y / N Notes:

GIS Data Available? Y / N

Related Flood Complaint(s):

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other:

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None

Inches: *~3* Date: *1/22/15* Notes: *Steady rain/drizzle for 2 days*

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear

Notes: *Standing water in the neighborhood*

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry

Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid

Notes:

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None

Notes:

Future Erosion / Debris Potential: Y / N Notes:

Affected Properties: *0 n/a*

Affected Buildings: *0 n/a*

Affected Roadways: *5 Broadway Dr, Patricia Dr, Ebony St, Parker Dr, IH-35 N Frontage Rd*

Other:

City Staff Input:

Citizen Input:

Notes:

Site No.: *39* **Location:** ***Sunset Acres*** BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Areas fail to convey the 10-year storm event.*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements / Vegetation Mgmt / Curb & Gutter / Driveway Adjustments / Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Upgrade the existing storm sewer system along Broadway Dr, IH-35 access road, Patricia Dr, Parker Dr, and Ebony St.*

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

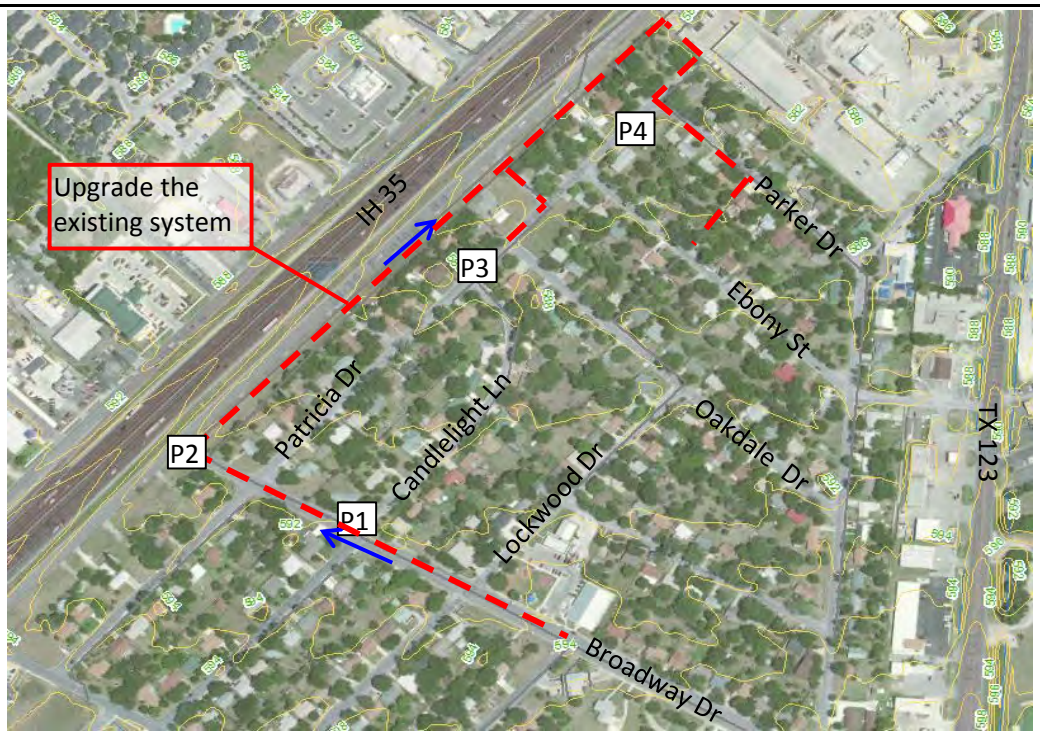
Notes:

Add'l Assessment Required:

ROW Required:

Potential Water Quality Feature: *opportunity identified in Water Quality Protection Plan, Nov. 16, 2015*

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*Looking NE towards Candlelight Ln from Broadway Dr at standing water in street*
P2	*Drainage ditch along IH-35 Frontage Road looking NE and SW form Broadway Dr*
P3	*Looking NE on Patricia Dr towards Ebony St*
P4	*Existing inlet on Patricia Dr near intersection of Parker Dr*

Site No.: *39* **Location:** ***Sunset Acres*** BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	*Looking NE towards Candlelight Ln from Broadway Dr at standing water in street*

Photo #	Caption
P2	*Drainage ditch along IH-35 Frontage Road looking NE and SW form Broadway Dr*

Site No.: *39* **Location:** ***Sunset Acres*** BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	*Looking NE on Patricia Dr towards Ebony St*

Photo #	Caption
P4	*Existing inlet on Patricia Dr near intersection of Parker Dr*

Site No.: *39* **Location:** ***Sunset Acres*** BACK TO MAP

Engineers Opinion of Probable Construction Cost

Sunset Acres

Upgrade existing storm sewer system and add inlets in the Sunset Acres

Item	Description	Quantity	Unit	Unit Price	Amount
1.01	Upgrade Existing Storm Sewer System*	1	LS	$ 2,820,000	$ 2,820,000
	Cost Inflation Increase (1994 to 2016 avgerage 2.1%/yr)				$ 1,634,669
1.02	water quality opportunity (10%)	1	LS	$ 163,467	$ 163,466.89
	Subtotal				$ 4,618,136
	Engineering, Survey and Permitting (25%)				$ 1,154,534
	Construction Contingency	35%			$ 1,616,000
	Total Project Cost				

* Costs and quantities below are taken from the 1994 CDM Drainage Master Plan for the City of San Marcos and updated to Dec 2016 Construction Cost Index. Per ENR CCI, inflation avereaged 2.1% per year from 1994 to 2016

LF	Flow Area (sf2)	Equiv. Pipe Dia (ft)	Equiv. Box Culvert (ft)	Inlets (each)
2550	77	10	10X8	0
720	66	10	10X7	0
1200	50	8	10X5	0
1470	54	10	10X6	25
350	40	8	7X6	4
640	25	6	5X5	10
300	10	3.5	3X4	6
380	6	3	2.5X2.5	5

Site No.: *40* **Location:** *Culverts along Old RR 12 from Thorpe Lane* BACK TO MAP

SITE SUMMARY

Project covered by CIP #542 according to the new "2018-2027 CIP"

OPT B

OPT C

OPT D

Challenges

OPT A *Installation of a storm sewer system in this area could be a nuisance to local businesses during construction.*

OPT B *Lack of grading in this area could make conveyance difficult.*

OPT C

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *40* **Location:** ***Culverts along Old RR 12 from Thorpe Lane*** BACK TO MAP

BACKGROUND INFO

Date: *1/22/15* Time: *14:30* Attendees: *SW, TW, TH, CS, KCP*

Flood Complaint Summary: *Roadway flooding due to undersized culverts.*

Watershed: *Sewell to Hopkins* Hydro Subbasin: *SM6-2, SM6-5*

Est. Drainage Area (ac): Est. Flood Freq. (yrs): *10*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes:

Local Storm Drain System? Y / N Notes:

GIS Data Available? Y / N

Related Flood Complaint(s):

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other: *Church, City Hall*

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None

Inches: *~3* Date: *1/22/15* Notes: *Steady rain/drizzle for 2 days*

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear

Notes:

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry

Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid

Notes: *Water flowing in ditch, some standing*

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None

Notes: *Some scour holes around the existing culverts, though couldn't determine the extent of the scour*

Future Erosion / Debris Potential: Y / N Notes:

Affected Properties: *0* *n/a*

Affected Buildings: *0* *n/a*

Affected Roadways: *2* *Riverside Dr, RR-12*

Other:

City Staff Input:

Citizen Input:

Notes:

Site No.: *40* **Location:** ***Culverts along Old RR 12 from Thorpe Lane*** BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *All culverts fail to convey the 10-year storm event.*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements / Vegetation Mgmt / Curb & Gutter / Driveway Adjustments / Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Upgrade the existing culverts to improve conveyance in this area. Reinforce scour hole around existing culverts.*

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

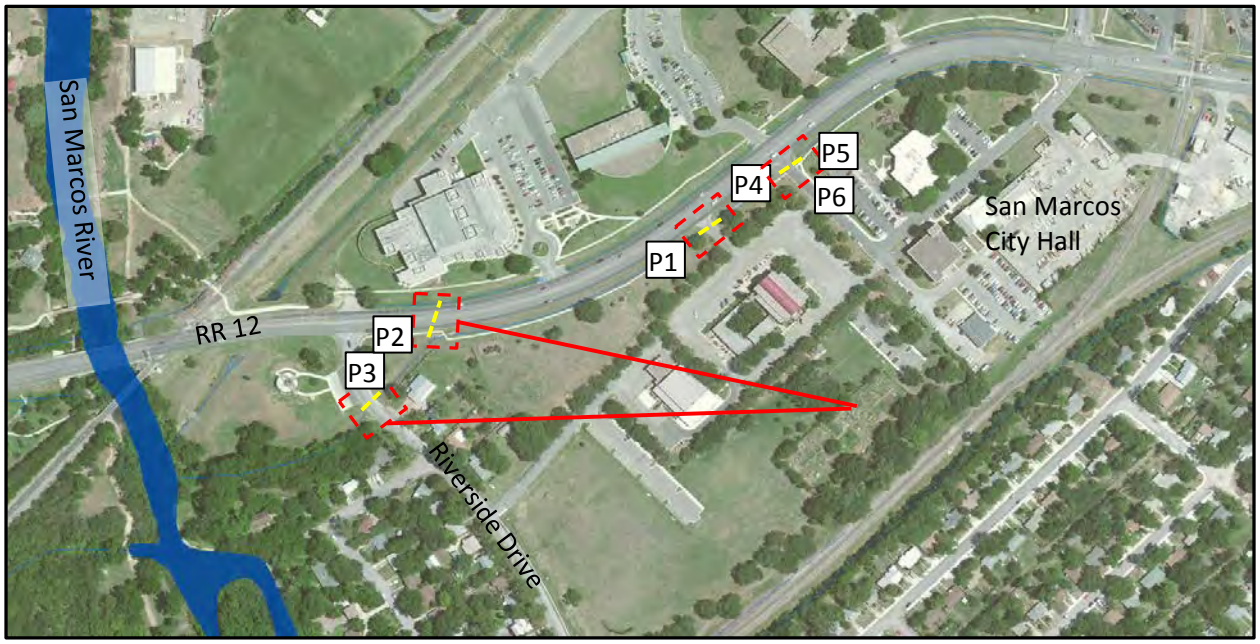
Notes:

Add'l Assessment Required:

ROW Required:

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*Looking NE towards D/S side of culvert at the entrance to St. Johns Catholic Church*
P2	*Looking N towards the D/S side of the culvert going under RR 12*
P3	*Looking N towards the U/S side of the culvert at pipe that crosses the channel*
P4	*Looking NE towards the D/S side of the culvert at the W entrance to City Hall*
P5	*Looking W at U/S side of culvert at the W entrance to City Hall and the scour hole here*
P6	*Looking W at the standing water in the side entrance to St. Johns Catholic Church*

Site No.: *40* **Location:** ***Culverts along Old RR 12 from Thorpe Lane*** BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	*Looking NE towards D/S side of culvert at the entrance to St. Johns Catholic Church*

Photo #	Caption
P2	*Looking N towards the D/S side of the culvert going under RR 12*

Site No.:	40	Location:	Culverts along Old RR 12 from Thorpe Lane	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	Looking N towards the U/S side of the culvert at pipe that crosses the channel

Photo #	Caption
P4	Looking NE towards the D/S side of the culvert at the W entrance to City Hall

Site No.:	40	Location:	Culverts along Old RR 12 from Thorpe Lane	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P5	Looking W at U/S side of culvert at the W entrance to City Hall and the scour hole here

Photo #	Caption
P6	Looking W at the standing water in the side entrance to St. Johns Catholic Church

Site No.:	*40*	Location:	*Culverts along Old RR 12 from Thorpe Lane*	BACK TO MAP

Engineers Opinion of Probable Construction Cost

Replace and increase culvert sizes in this area.

Replace and increase culvert sizes in this area.

Item	Description	Quantity	Unit	Unit Price	Amount	
1.01	Culvert Upgrades		LS		$	-
	Subtotal				$	-
	Engineering, Survey and Permitting					
	Construction Contingency	35%			$	-
	Total Project Cost				$	-

* Costs are taken from the 1994 CDM Drainage Master Plan from City of San Marcos

Site No.: *41* **Location:** *Drainage Lot at Hackberry St and Pecan St* BACK TO MAP

Project covered by CIP #676 according to the new "2018-2027 CIP"

SITE SUMMARY

OPT B

OPT C

OPT D

Challenges

OPT A *This site is on private property. It is located within the 100-yr floodplain of the Blanco River, and borders the floodway, therefore improvements will not mitigate heavier storm events.*

OPT B

OPT C

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *41* **Location:** ***Drainage Lot at Hackberry St and Pecan St*** BACK TO MAP

BACKGROUND INFO

Date: *1/22/15* Time: *14:50* Attendees: *CS, KCP*

Flood Complaint Summary: *Area floods regularly due to poorly maintained drainage channel and proximity to the Blanco River*

Watershed: *Blanco* Hydro Subbasin: *B1-1, B1-2*

Est. Drainage Area (ac): Est. Flood Freq. (yrs): *5*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes:

Local Storm Drain System? Y / N Notes:

GIS Data Available? Y / N

Related Flood Complaint(s):

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other: *Empty lot*

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None

Inches: *~3* Date: *1/22/15* Notes: *Steady rain/drizzle for 2 days*

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear

Notes:

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry

Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid

Notes:

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None

Notes:

Future Erosion / Debris Potential: Y / N Notes:

Affected Properties: *1* *Lot on Pecan Street*

Affected Buildings: *0* *n/a*

Affected Roadways: *2* *Pecan Street, Hackberry Street*

Other:

City Staff Input: *Local resident purchased this lot with the intent of improving drainage in this area.*

Citizen Input:

Notes:

Site No.: *41* **Location:** ***Drainage Lot at Hackberry St and Pecan St*** BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *This area is in the 100-year flood plain and very near the floodway of the Blanco River.*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements / Vegetation Mgmt / Curb & Gutter / Driveway Adjustments / Bridge/Culvert Upgrade / Structural Repair / Grading

Notes:

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

Notes:

Add'l Assessment Required:

ROW Required: *This lot is on private property.*

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*

Overview Photos (Attached pgs):

Photo #	Caption
P1	*Drainage channel on N and E side of property, facing SE*
P2	*Drainage channel on N and E side of property, facing NW*
P3	*Drainage ditch along Pecan Street, facing S*
P4	*Grading on property, facing W towards Pecan St*

Site No.:	41	Location:	Drainage Lot at Hackberry St and Pecan St	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	Drainage channel on N and E side of property, facing SE

Photo #	Caption
P2	Drainage channel on N and E side of property, facing NW

Site No.:	41	Location:	Drainage Lot at Hackberry St and Pecan St	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	Drainage ditch along Pecan Street, facing S

Photo #	Caption
P4	Grading on property, facing W towards Pecan St

Site No.: *42* **Location:** *Crook Park Parking Lot* BACK TO MAP

Project covered by CIP #358 according to the new "2018-2027 CIP"

*

SITE SUMMARY

OPT B

OPT C

OPT D

Challenges

OPT A *There are archeological areas between the parking lot and the river, which could pose a problem during construction. Coordination with the Texas Historical Commission (THC) required.*

OPT B *Installation of a storm sewer system in this area could be a nuisance to local businesses during construction.*

OPT C *Added flow onto Cheatam Street could be a nuisance.*

OPT D

***Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)**

Site No.: *42* **Location:** ***Crook Park Parking Lot*** BACK TO MAP

BACKGROUND INFO

Date: *1/22/15* Time: *12:10* Attendees: *CS, KCP*

Flood Complaint Summary: *Flooding in the parking lot of Crook Park.*

Watershed: *Sewell to Hopkins* Hydro Subbasin: *SM8-1*

Est. Drainage Area (ac): Est. Flood Freq. (yrs): *99*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes:

Local Storm Drain System? Y / N Notes:

GIS Data Available? Y / N

Related Flood Complaint(s):

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other:

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None

Inches: *~3* Date: *1/22/15* Notes: *Steady rain/drizzle for 2 days*

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear

Notes:

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry

Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid

Notes: *No standing water in parking lot; water flowing to existing 4" inlet*

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None

Notes: *The existing 4" inlet is at ground level and could be very suseptible to debris accumulation.*

Future Erosion / Debris Potential: Y / N Notes: *grates clog during every rainfall event*

Affected Properties: *1* *Crook Park*

Affected Buildings: *0* *n/a*

Affected Roadways: *2* *Cheatham Street, Riverside Drive*

Other:

City Staff Input:

Citizen Input: *Parking lot floods regularly.*

Notes:

Site No.: *42* **Location:** ***Crook Park Parking Lot*** BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Parking lot floods during most storm events. 4" drainage pipe responsible for draining entire parking lot.*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements
Vegetation Mgmt / Curb & Gutter / Driveway Adjustments
Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Install an additional drainage pipe.*

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

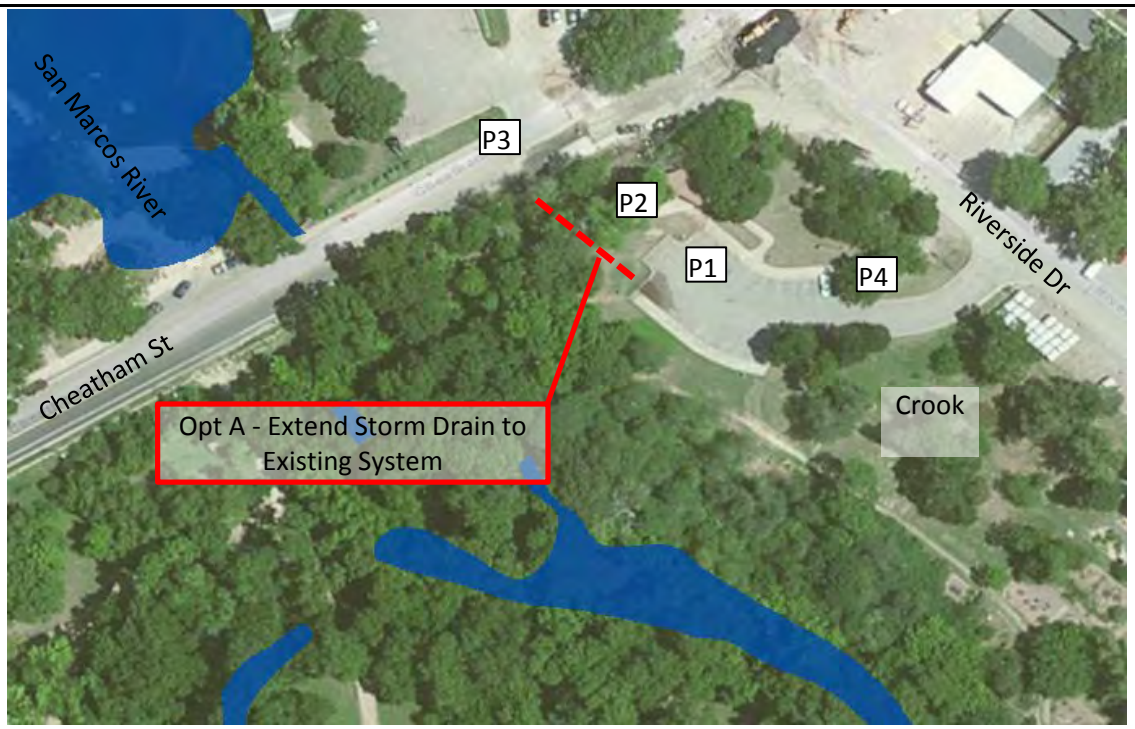
Notes:

Add'l Assessment Required:

ROW Required:

Potential Water Quality Feature: *opportunity identified in Water Quality Protection Plan, Nov. 16, 2017*

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*Looking NW at drainage pipe for parking lot and zoomed in view of pipe*
P2	*Looking S at the parking lot from grassy area between lot and Cheatam Street*
P3	*Looking S at grassy area and possible outlet locations from Cheatam Street*
P4	*Looking W at parking lot while flooded*

Site No.: *42* **Location:** ***Crook Park Parking Lot*** BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	*Looking NW at drainage pipe for parking lot and zoomed in view of pipe*

Photo #	Caption
P2	*Looking S at the parking lot from grassy area between lot and Cheatam Street*

Site No.: *42* **Location:** ***Crook Park Parking Lot*** BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	*Looking S at grassy area and possible outlet locations from Cheatam Street*

Photo #	Caption
P4	*Looking W at parking lot while flooded*

Site No.: *42* **Location:** ***Crook Park Parking Lot*** BACK TO MAP

Engineers Opinion of Probable Construction Cost

Crook Park Parking Lot

Install additional storm sewer pipe and inlet from parking lot at Crook Park to

Item	Description	Quantity	Unit	Unit Price	Amount
1.01	Misc. Excavation and Grading	1	LS	$ 15,000	$ 15,000
1.02	Install New Stormdrain Pipe	120	LF	$ 100	$ 12,000
1.03	Pavement Repair	1	LS	$ 10,000	$ 10,000
1.04	D/S Bank Stabilization	1	LS	$ 15,000	$ 15,000
1.05	E&S and Traffic Controls and Misc.	1	LS	$ 10,000	$ 10,000
1.06	Coordination with THC	1	LS	$ 350,000	$ 350,000
1.07	water quality opportunity (25%)	1	LS	$ 103,000	$ 103,000
	Subtotal				$ 515,000
	Construction Contingency	35%			$ 180,000
	Total Project Cost				$ 700,000

Site No.: *43* **Location:** *Mill Street - Uhland to I-35 Access Rd* BACK TO MAP

SITE SUMMARY

Project covered by CIP #682 according to the new "2018-2027 CIP"

OPT C

OPT D

Challenges

OPT A *This site is on private property. There appears to be a site NE of Avalon Apartments where a channel could be installed. This may also involve pond regrading and relocation of outfall structures.*

OPT B *There is limited infrastructure and grading in this area. There appears to be a stormdrain inlet on the access road of I-35, as well as culverts under I-35 access road.*

OPT C

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *43* **Location:** ***Mill Street - Uhland to I-35 Access Rd*** BACK TO MAP

BACKGROUND INFO

Date: *1/26/16* Time: *9:15* Attendees: *SW, CS, KCP*

Flood Complaint Summary: *Detention pond of newer apartments discharges directly onto adjacent apartment complex*

Watershed: *Blanco* Hydro Subbasin: *B5-5, B5-6*

Est. Drainage Area (ac): *30* Est. Flood Freq. (yrs): *1* *(most events)*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes:

Local Storm Drain System? Y / N Notes: *Detention pond drains to adjacent property*

GIS Data Available? Y / N

Related Flood Complaint(s):

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other:

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None
Inches: ___ Date: _____ Notes:

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear
Notes:

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry
Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid
Notes:

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None
Notes: *Fence downstream of outlet structure had roughly 1 foot of erosion around posts and utility stubouts*

Future Erosion / Debris Potential: Y / N Notes:

Affected Properties: *1* *Downstream apartment complex - Avalon Apartments*

Affected Buildings: *2* *Apartment buildings within Avalon that flood*

Affected Roadways: *0* *N/A*

Other:

City Staff Input: *Meeting has occurred between apartment complex owners; may result in lawsuit*

Citizen Input:

Notes: *This site is located on private property. Sandbags located at base of apartment building at Avalon Apartments at 1st outlet structure. Erosion of fence posts present at 2nd outlet structure.*

Site No.: *43* **Location:** ***Mill Street - Uhland to I-35 Access Rd*** BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Detention pond outfall is discharging directly onto adjacent property.*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements
Vegetation Mgmt / Curb & Gutter / Driveway Adjustments
Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Install channel for discharge of detention pond; Additional downstream infrastructure to account for pond discharge may be needed; Private property - owner issue.*

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

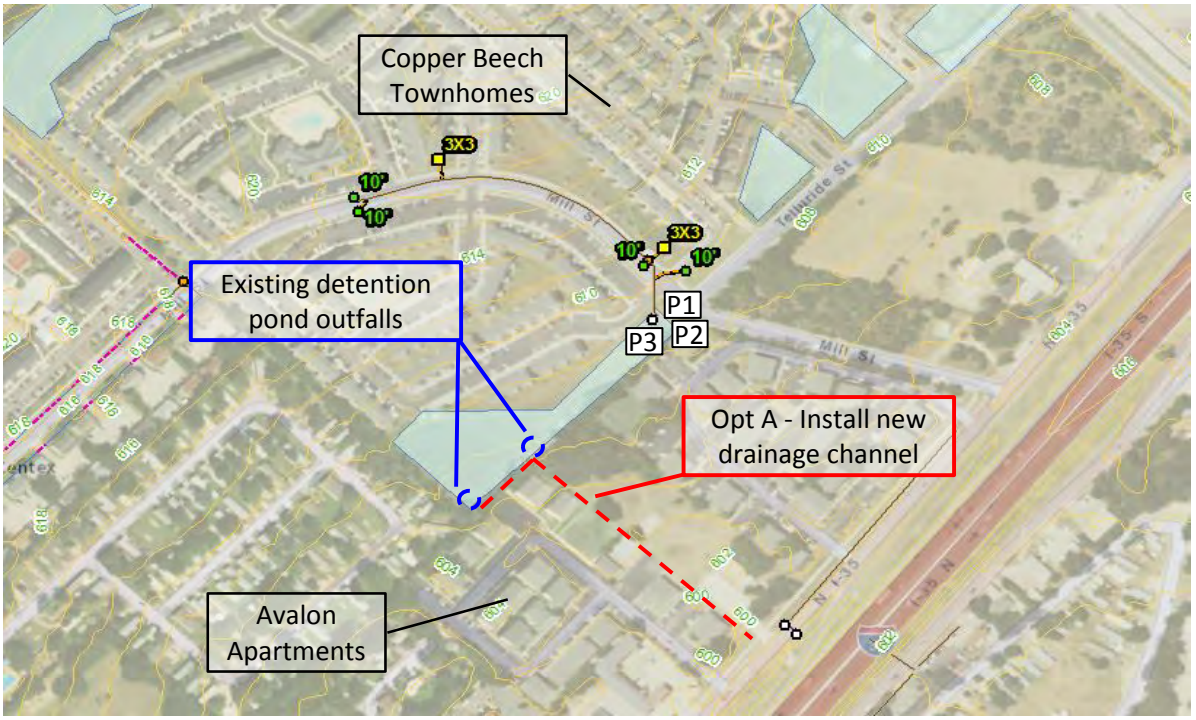
Notes:

Add'l Assessment Required:

ROW Required: *Easement will be needed for new channel*

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*New apartment complex detention pond from Mill St looking east*
P2	*Outlet on the northeast side of the detention pond*
P3	*Photo from detention pond looking northeast towards Telluride Street and Mill Street*
P4	

Site No.:	43	Location:	Mill Street - Uhland to I-35 Access Rd	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	New apartment complex detention pond from Mill St looking east

Photo #	Caption
P2	Outlet on the northeast side of the detention pond

Site No.:	43	Location:	Mill Street - Uhland to I-35 Access Rd	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	Photo from detention pond looking northeast towards Telluride Street and Mill Street

Photo #	Caption
P4	0

Site No.: *44* **Location:** *Briarwood Court* BACK TO MAP

Project covered by CIP #621 according to the new "2018-2027 CIP"

*

SITE SUMMARY

Challenges

OPT A

OPT B

OPT C

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *44* **Location:** ***Briarwood Court*** BACK TO MAP

BACKGROUND INFO

Date: *1/26/16* Time: *9:25* Attendees: *SW, CS, KCP*

Flood Complaint Summary: *Area floods and drains poorly after most rainfall events. Area is within the 100-yr floodplain and backwater area of the Blanco R.*

Watershed: *Blanco* Hydro Subbasin: *B1-4*

Est. Drainage Area (ac): *18* Est. Flood Freq. (yrs): *1* *(every event)*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes: *Within backwater of Blanco River*

Local Storm Drain System? Y / N Notes:

GIS Data Available? Y / N

Related Flood Complaint(s): *Site 41*

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other: 2017-2026 Recommended CIP

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other:

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None
Inches: ___ Date: _____ Notes:

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear
Notes:

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry
Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid
Notes:

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None
Notes: *There is a large eroded hole under the stone wall between the detention pond outlet and Briarwood Court.*

Future Erosion / Debris Potential: Y / N Notes:

Affected Properties: *18* *All houses on Briarwood flood*

Affected Buildings: *18* *All houses on Briarwood flood*

Affected Roadways: *1* *Briarwood Court*

Other:

City Staff Input: *Briarwood Ct flooding has become worse since the Village on Telluride;*

Citizen Input: *House at 217 Briarwood Ct stated they had several feet of water after Memorial Day flood. Resident states that flooding has increased after U/S townhomes were constructed.*

Notes: *This project was looked at before; systematic approach will be required.*

Site No.: *44* **Location:** ***Briarwood Court*** BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *This area is located in the 100-yr floodplain of the Blanco R. & floods frequently. There is a lack of grading and infrastructure here. In addition, the railroad tracks to the NW and I-35 to the SE act as dams with limited infrastructure to pass stormwater.*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements / Vegetation Mgmt / Curb & Gutter / Driveway Adjustments / Bridge/Culvert Upgrade / Structural Repair / Grading

Notes:

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

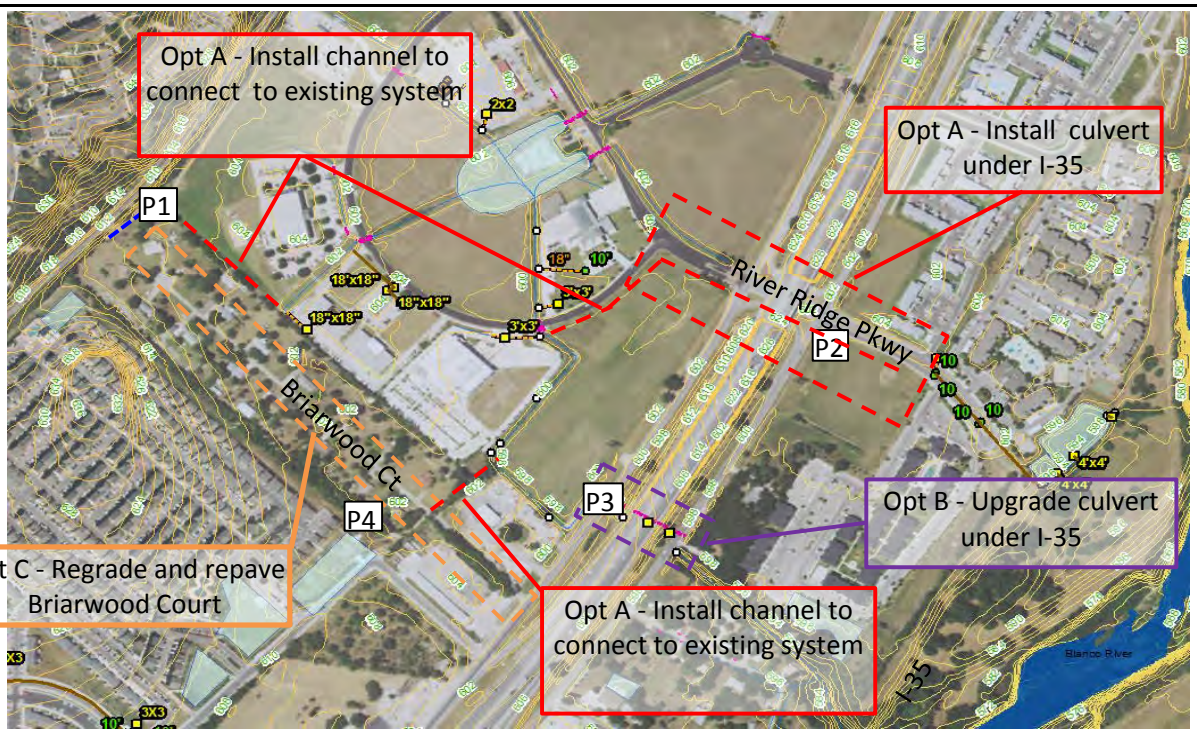
Notes:

Add'l Assessment Required:

ROW Required:

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*End of existing channel and adjacent property where channel extension would go*
P2	*Looking NW up River Ridge Dr at IH-35 intersection*
P3	*Looking SE at existing culvert under IH-35 intersection, S of River Ridge Pkwy*
P4	*Existing inlet from Copper Beech Townhomes detention pond and erosion by inlet*

Site No.: *44* **Location:** ***Briarwood Court*** BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	*End of existing channel and adjacent property where channel extension would go*

Photo #	Caption
P2	*Looking NW up River Ridge Dr at IH-35 intersection*

Site No.: *44* **Location:** ***Briarwood Court*** BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	*Looking SE at existing culvert under IH-35 intersection, S of River Ridge Pkwy*

Photo #	Caption
P4	*Existing inlet from Copper Beech Townhomes detention pond and erosion by inlet*

Site No.:	*44*	Location:	*Briarwood Court*	BACK TO MAP

Engineers Opinion of Probable Construction Cost

Briarwood Court

Install drainage improvements through River Ridge Subdivision, underneath IH-35

Item	Description	Quantity	Unit	Unit Price	Amount
	Subtotal				
	Engineering, Survey and Permitting				
	Construction Contingency	35%			
	Total Project Cost				

* Cost estimates do not include easement acquisition

Site No.: *45* **Location:** *Thorpe Lane* BACK TO MAP

Project covered by CIP #210 according to the new "2018-2027 CIP"

SITE SUMMARY

OPT B *Install a rain garden or biofiltration pond at downstream side of channel* *3*

OPT C

OPT D

Challenges

OPT A

OPT B

OPT C

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *45* **Location:** ***Thorpe Lane*** BACK TO MAP

BACKGROUND INFO

Date: *1/26/16* Time: *12:45* Attendees: *CS, KCP*

Flood Complaint Summary: *Water doesn't flow in channel. Water ponds and causes insect problem.*

Watershed: *Sewell to Hopkins* Hydro Subbasin: *SM5-3*

Est. Drainage Area (ac): *20* Est. Flood Freq. (yrs): *99*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes:

Local Storm Drain System? Y / N Notes:

GIS Data Available? Y / N

Related Flood Complaint(s):

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other: *Texas State University*

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None

Inches: *<1* Date: *1/26/16* Notes: *Rain started at 11:30 am*

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear

Notes: *Rain started at 11:30 am*

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry

Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid

Notes:

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None

Notes:

Future Erosion / Debris Potential: Y / N Notes:

Affected Properties: *0* *n/a*

Affected Buildings: *0* *n/a*

Affected Roadways: *0* *n/a*

Other: *Surrounding businesses complain about mosquito problem due to standing water*

City Staff Input:

Citizen Input:

Notes:

Site No.: *45* **Location:** *Thorpe Lane* BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Water doesn't flow in channel. Water ponds and causes insect problem.*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements / Vegetation Mgmt / Curb & Gutter / Driveway Adjustments / Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Regrade channel to improve flow*

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

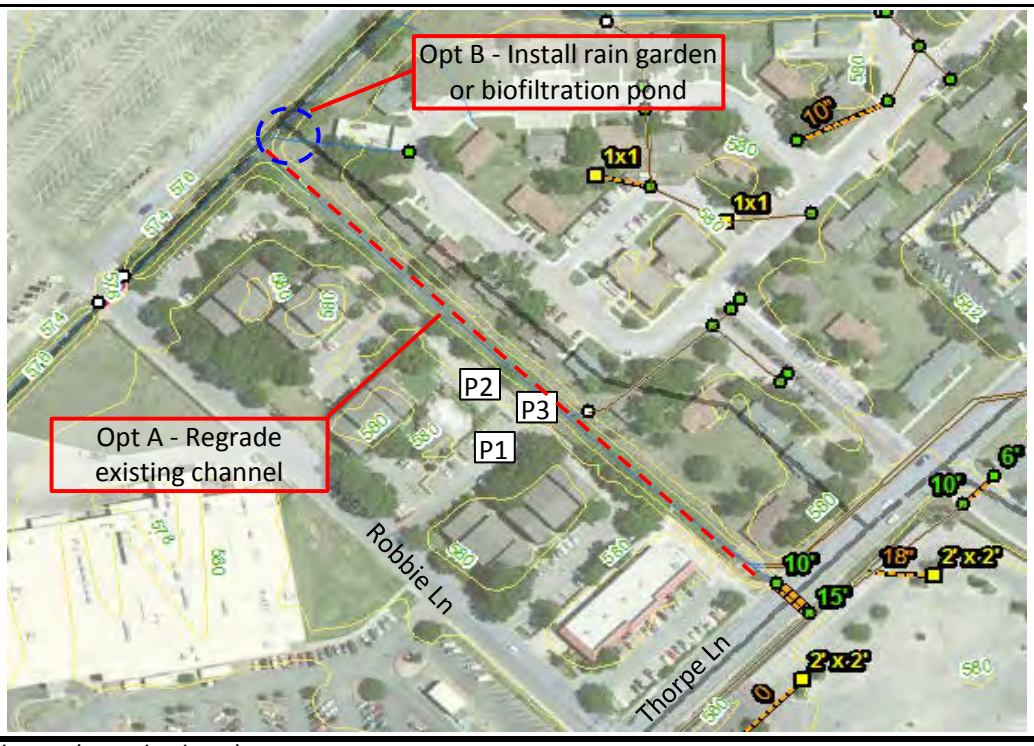
Notes:

Add'l Assessment Required:

ROW Required:

Potential Water Quality Feature: *Opportunity for rain garden/biofiltration at outfall of channel to main channel.* *opportunity identified in Water Quality Protection Plan, Nov. 16, 2017*

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*Looking N at water flowing at intersection of Hughson Drive and Manor Park Road*
P2	*Looking NW towards 402 Hughson Drive and the flow coming from Manor Park Road*
P3	*Looking E up Manor Park Road*
P4	

Site No.:	*45*	Location:	*Thorpe Lane*	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	*Looking N at water flowing at intersection of Hughson Drive and Manor Park Road*

Photo #	Caption
P2	*Looking NW towards 402 Hughson Drive and the flow coming from Manor Park Road*

Site No.: *45* **Location:** ***Thorpe Lane*** BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	*Looking E up Manor Park Road*

Photo #	Caption
P4	

Site No.: *45* **Location:** ***Thorpe Lane*** BACK TO MAP

Engineers Opinion of Probable Construction Cost

Thorpe Lane

Regrade existing channel to flow downstream

Item	Description	Quantity	Unit	Unit Price	Amount
1.01	Misc. Excavation and Grading	1	LS	$ 25,500	$ 25,500
1.02	E&S and Traffic Controls and Misc.	1	LS	$ 10,000	$ 10,000
1.03	water quality opportunity (25%)	1	LS	$ 8,875	$ 8,875
	Subtotal				$ 44,375
	Engineering, Survey and Permitting				$ 50,000
	Construction Contingency	35%			$ 16,000
	Total Project Cost				$ 110,000

Site No.: *46* **Location:** *UP Railroad Corridor* BACK TO MAP

SITE SUMMARY

Project covered by CIP #686 according to the new "2018-2027 CIP"

OPT B

OPT C

OPT D

Challenges

OPT A *Ditches along railroad tracks are within railroad ROW. Permission to access these would need to be granted by the RR.*

OPT B *Many utility lines are located within the ditches.*

OPT C *The railroad corridor throughout San Marcos is extensive.*

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *46* **Location:** ***UP Railroad Corridor*** BACK TO MAP

BACKGROUND INFO

Date: *1/26/16* Time: *8:45* Attendees: *SW, CS, KCP*

Flood Complaint Summary: *Ditches along railroad track are poorly maintained and impeed flow*

Watershed: *Purgatory, Sewell to Hopkins* Hydro Subbasin: *P8-7, 8-4, 8-3, 8-5, SM7-2, 7-4, 5-1*

Est. Drainage Area (ac): Est. Flood Freq. (yrs): *10*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes:

Local Storm Drain System? Y / N Notes:

GIS Data Available? Y / N

Related Flood Complaint(s):

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other:

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None
Inches: Date: Notes:

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear
Notes:

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry
Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid
Notes:

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None
Notes:

Future Erosion / Debris Potential: Y / N Notes: *Leaf and branch debris in culvert*

Affected Properties: *0* *n/a*

Affected Buildings: *0* *n/a*

Affected Roadways: *0* *n/a*

Other:

City Staff Input: *Ditches along railroad tracks are unmaintained and impedes flow*

Citizen Input:

Notes:

Site No.: *46* **Location:** ***UP Railroad Corridor*** BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Ditches along railroad track are poorly maintained and impeed flow. Tracks act as a dam with limited culverts along the corridor.*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements / Vegetation Mgmt / Curb & Gutter / Driveway Adjustments / Bridge/Culvert Upgrade / Structural Repair / Grading

Notes:

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

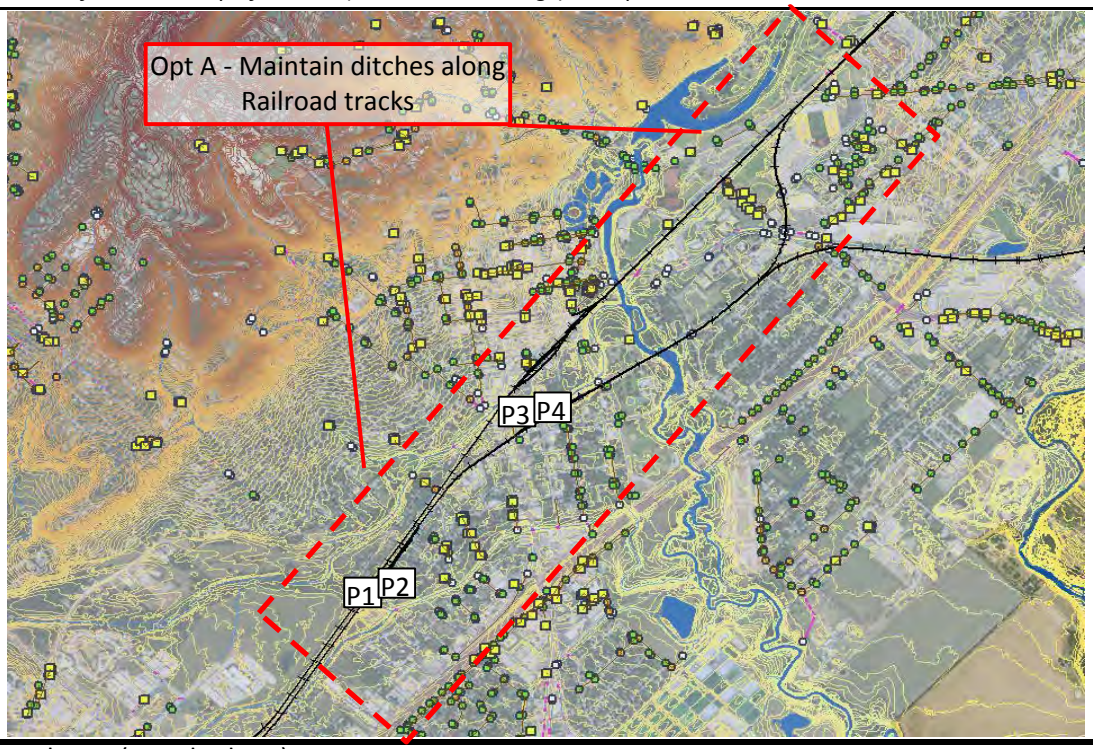
Notes:

Add'l Assessment Required:

ROW Required: *ROW belongs to the railroad*

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*Overgrown ditches along RR tracks*
P2	*Culvert blocked with vegetation in ditch adjacent to RR tracks*
P3	*Ditch along RR tracks with blocked culvert inlet*
P4	*Blocked culvert outlet in ditch along RR tracks*

Site No.:	46	Location:	UP Railroad Corridor	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	Overgrown ditches along RR tracks

Photo #	Caption
P2	Culvert blocked with vegetation in ditch adjacent to RR tracks

Site No.: *46* **Location:** ***UP Railroad Corridor*** BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	*Ditch along RR tracks with blocked culvert inlet*

Photo #	Caption
P4	*Blocked culvert outlet in ditch along RR tracks*

Site No.:	*46*	Location:	*UP Railroad Corridor*	BACK TO MAP

Engineers Opinion of Probable Construction Cost

UP Railroad Corridor

Clean out existing ditches

Item	Description	Quantity	Unit	Unit Price	Amount	
1.01	Misc. Excavation and Grading both sides of tracks		LF		$	-
1.02	E&S and Traffic Controls and Misc.		LS		$	-
	Subtotal				$	-
	Engineering, Survey and Permitting					
	Construction Contingency	35%			$	-
	Total Project Cost				$	-

Site No.: *47* **Location:** ***Spring Road at Post Road*** BACK TO MAP

Project covered by CIP #210 according to the new "2018-2027 CIP"

SITE SUMMARY

OPT B

OPT C

OPT D

Challenges

OPT A *Road is still the low point. Increasing the culverts may not improve the flooding in this area if there are downstream constraints.*

OPT B

OPT C

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *47* **Location:** ***Spring Road at Post Road*** BACK TO MAP

BACKGROUND INFO

Date: *1/26/16* Time: *9:55* Attendees: *SW, CS, KCP*

Flood Complaint Summary: *Low water crossing, undersized culverts under Spring Road*

Watershed: *Sink* Hydro Subbasin: *S6-3*

Est. Drainage Area (ac): *27* Est. Flood Freq. (yrs): *10*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes:

Local Storm Drain System? Y / N Notes:

GIS Data Available? Y / N

Related Flood Complaint(s):

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other:

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None
Inches: Date: Notes:

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear
Notes:

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry
Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid
Notes: *Some water in detention pond*

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None
Notes:

Future Erosion / Debris Potential: Y / N Notes:

Affected Properties: *0* *n/a*

Affected Buildings: *0* *n/a*

Affected Roadways: *1* *Spring Road*

Other:

City Staff Input: *Road overtops during heavy rain events.*

Citizen Input:

Notes:

Site No.: *47* **Location:** ***Spring Road at Post Road*** BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Low water crossing and undersized culvert*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements / Vegetation Mgmt / Curb & Gutter / Driveway Adjustments / Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Remove and upgrade the existing culverts.*

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

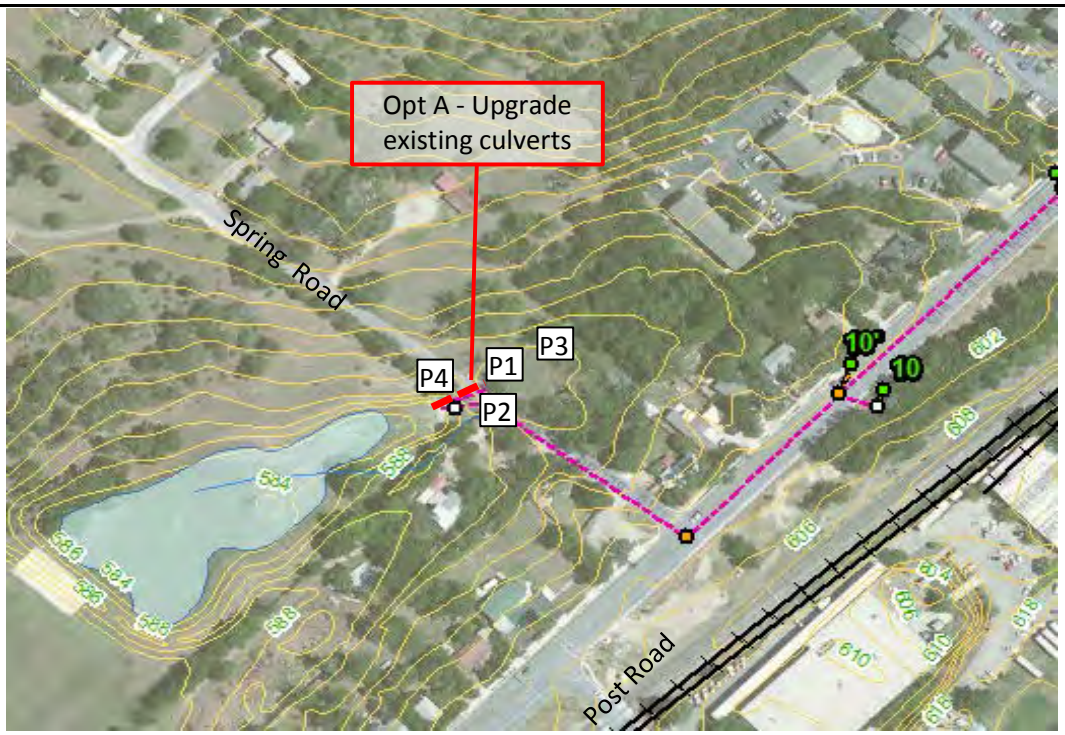
Notes:

Add'l Assessment Required:

ROW Required:

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

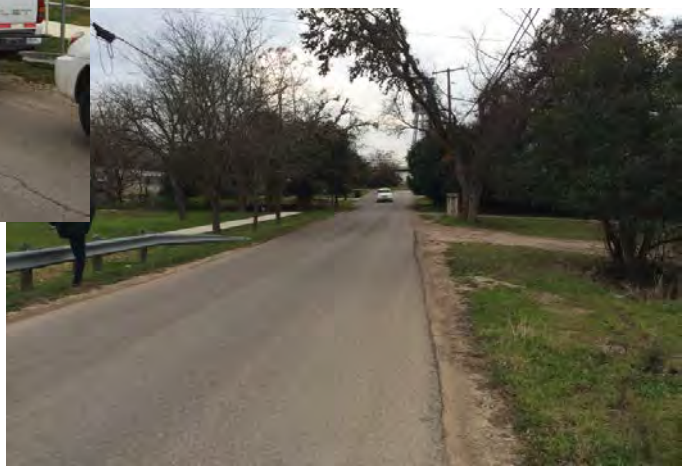
Photo #	Caption
P1	*Looking SW towards culvert inlet with rock gabions surrounding it*
P2	*Looking NW and SE from low point on Spring Road*
P3	*Looking NW at the sorority house w/ bioremediation pond on right and Spring Rd on left*
P4	*Looking SW towards outfall structure and detention pond*

Site No.:	47	Location:	Spring Road at Post Road	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	Looking SW towards culvert inlet with rock gabions surrounding it

Photo #	Caption
P2	Looking NW and SE from low point on Spring Road



Site No.: *47* **Location:** ***Spring Road at Post Road*** BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	*Looking NW at the sorority house w/ bioremediation pond on right and Spring Rd on left*

Photo #	Caption
P4	*Looking SW towards outfall structure and detention pond*

Site No.: *47* **Location:** ***Spring Road at Post Road*** BACK TO MAP

Engineers Opinion of Probable Construction Cost

Spring Road at Post Road

Upgrade existing culverts under Spring Road

Item	Description	Quantity	Unit	Unit Price	Amount
1.01	Misc. Excavation and Grading	1	LS	$ 5,000	$ 5,000
1.02	Remove Existing Culverts	80	LF	$ 50	$ 4,000
1.03	Install culverts	80	LF	$ 500	$ 40,000
1.04	Pavement Repair	1	LS	$ 15,000	$ 15,000
1.05	E&S and Traffic Controls and Misc.	1	LS	$ 8,000	$ 8,000
	Subtotal				$ 72,000
	Engineering, Survey and Permitting				$ 30,000
	Construction Contingency	35%			$ 25,000
	Total Project Cost				$ 130,000

Site No.: *48* **Location:** *Harper Drive and River Road* BACK TO MAP

Project covered by CIP #618 according to the new "2018-2027 CIP"

*

SITE SUMMARY

would be owners responsibility.

OPT C

OPT D

Challenges

OPT A *There is a lack of grading and storm drain system in the area.*

OPT B

OPT C

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *48* **Location:** ***Harper Drive and River Road*** BACK TO MAP

BACKGROUND INFO

Date: *1/26/16* Time: *14:25* Attendees: *CS, KCP*

Flood Complaint Summary: *Water ponding in property*

Watershed: *Blanco* Hydro Subbasin: *Outside*

Est. Drainage Area (ac): *5.5* Est. Flood Freq. (yrs): *25*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes:

Local Storm Drain System? Y / N Notes:

GIS Data Available? Y / N

Related Flood Complaint(s):

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other:

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None

Inches: *<1* Date: *1/26/16* Notes: *Rain started at 11:30 am*

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear

Notes: *Rain started at 11:30 am*

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry

Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid

Notes: *Water ponding in street along curb*

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None

Notes: *There is some erosion behind the curb.*

Future Erosion / Debris Potential: Y / N Notes:

Affected Properties: *2* *1441 and 1443 Harper Drive*

Affected Buildings: *0* *n/a*

Affected Roadways: *1* *Harper Drive*

Other:

City Staff Input: *During heavy rain events, water jumps the driveway and water ponds in the residents lots. Property is lower than the surrounding properties.*

Citizen Input:

Notes:

Site No.: *48* **Location:** ***Harper Drive and River Road*** BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Water ponding on propoerty; property is low point in neighborhood; driveways are level with the ground and do not have a 6" rise at the curb.*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements / Vegetation Mgmt / Curb & Gutter / Driveway Adjustments / Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Repair existing curb and raise driveways in ROW to curb height; owners should consider raising their homes and/or regrading their lots to encourage flow to drain off their lots.*

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

Notes:

Add'l Assessment Required:

ROW Required:

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*

Overview Photos (Attached pgs):

Photo #	Caption
P1	*Looking NW at lots from River Road*
P2	*Curb and berm in driveway at 1441 Harper Drive*
P3	*Looking NE at grading on lot from intersection of Harper Drive and River Road*
P4	*Looking SW at grading on lot at 1443 Harper Drive from River Road*

Site No.: *48* **Location:** ***Harper Drive and River Road*** BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	*Looking NW at lots from River Road*

Photo #	Caption
P2	*Curb and berm in driveway at 1441 Harper Drive*

Site No.: *48* **Location:** ***Harper Drive and River Road*** BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	*Looking NE at grading on lot from intersection of Harper Drive and River Road*

Photo #	Caption
P4	*Looking SW at grading on lot at 1443 Harper Drive from River Road*

	Site No.:	***48***	**Location:** ***Harper Drive and River Road***	BACK TO MAP

Engineers Opinion of Probable Construction Cost

Harper Drive and River Road

Replace curb & gutter and replace driveway. (CoSM IN HOUSE OPTION)

Site No.: *49* **Location:** *520 Linda Drive* BACK TO MAP

SITE SUMMARY

Project covered by CIP #563 according to the new "2018-2027 CIP"

Coordinate with Blanco Gardens Drainage

OPT A **Part of the CDBG-DR Infrastructure Feasibility Study- AECOM 2017**

OPT B

OPT C

OPT D

Challenges

OPT A *Site is located in the 100-yr floodplain of the Blanco River.*

OPT B

OPT C

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *49* **Location:** ***520 Linda Drive*** BACK TO MAP

BACKGROUND INFO

Date: *1/26/16* Time: *2:15* Attendees: *CS, KCP*

Flood Complaint Summary: *Apartment complex has experienced flooding.*

Watershed *Sewell to Hopkins, Blanco, Willow Springs* Hydro Subbasin: *SM9-2*

Est. Drainage Area (ac): *16* Est. Flood Freq. (yrs): *2*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes: *Located in the 100-yr floodplain of the Blanco*

Local Storm Drain System? Y / N Notes:

GIS Data Available? Y / N

Related Flood Complaint(s):

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other:

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None

Inches: *<1* Date: *1/26/16* Notes: *Rain started at 11:30 am*

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear

Notes: *Rain started at 11:30 am*

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry

Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid

Notes: *Water ponding in parking lot*

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None

Notes:

Future Erosion / Debris Potential: Y / N Notes:

Affected Properties: *1* *Townwood Apartments*

Affected Buildings: *0* *n/a*

Affected Roadways: *0* *n/a*

Other:

City Staff Input: *Apartment complex is part of Blanco Gardens area and has had flooding issues during the last 2 floods (Memorial Day and Halloween)*

Citizen Input:

Notes:

Site No.: *49* **Location:** *520 Linda Drive* BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Apartment complex has experienced flooding. Complex is located within the 100-yr floodplain of the Blanco River.*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements / Vegetation Mgmt / Curb & Gutter / Driveway Adjustments / Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Needs to be addressed as part of a comprehensive solution to the Blanco River floodplain issue.*

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

Notes:

Add'l Assessment Required:

ROW Required:

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*

Overview Photos (Attached pgs):

Photo #	Caption
P1	*Looking NW from S corner of apartment complex towards Linda Drive*
P2	*Looking NE from S corner of apartment complex towards E corner of apartment complex*
P3	*Looking NW from E corner of apartment complex towards Linda Drive*
P4	

Site No.: *49* **Location:** *520 Linda Drive* BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	*Looking NW from S corner of apartment complex towards Linda Drive*

Photo #	Caption
P2	*Looking NE from S corner of apartment complex towards E corner of apartment complex*

Site No.: *49* **Location:** ***520 Linda Drive*** BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	*Looking NW from E corner of apartment complex towards Linda Drive*

Photo #	Caption
P4	*0*

Site No.: *50* **Location:** *123 Kingswood Street* BACK TO MAP

SITE SUMMARY

Project covered by CIP #600 according to the new "2018-2027 CIP"

Challenges

OPT A

OPT B

OPT C

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *50* **Location:** *123 Kingswood Street* BACK TO MAP

BACKGROUND INFO

Date: *1/26/16* Time: *10:20* Attendees: *SW, CS, KCP*

Flood Complaint Summary: *Water frequently ponds at end of Kingswood Street; there is no outfall for runoff.*

Watershed: *Willow Springs Creek* Hydro Subbasin: *W3-1*

Est. Drainage Area (ac): *3.5* Est. Flood Freq. (yrs): *99*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes:

Local Storm Drain System? Y / N Notes:

GIS Data Available? Y / N

Related Flood Complaint(s):

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:
2017-2026 Recommended CIP

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other:

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None
Inches: Date: Notes:

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear
Notes:

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry
Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid
Notes:

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None
Notes:

Future Erosion / Debris Potential: Y / N Notes:

Affected Properties: *6 Properties on the west end of Kingswood Street*

Affected Buildings: *0 n/a*

Affected Roadways: *1 Kingswood Street*

Other:

City Staff Input: *No drainage infrastructure on street; water flows to dead end and ponds. City x outfall believes runoff is meant to drain towards I-35.*

Citizen Input:

Notes: *Willow Spring Creek crosses to E side of railroad tracks S of Kingswood St.*

Site No.: *50* **Location:** *123 Kingswood Street* BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Water frequently ponds at end of Kingswood Street; there is no outfall for runoff.*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements / Vegetation Mgmt / Curb & Gutter / Driveway Adjustments / Bridge/Culvert Upgrade / Structural Repair / Grading

Notes:

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

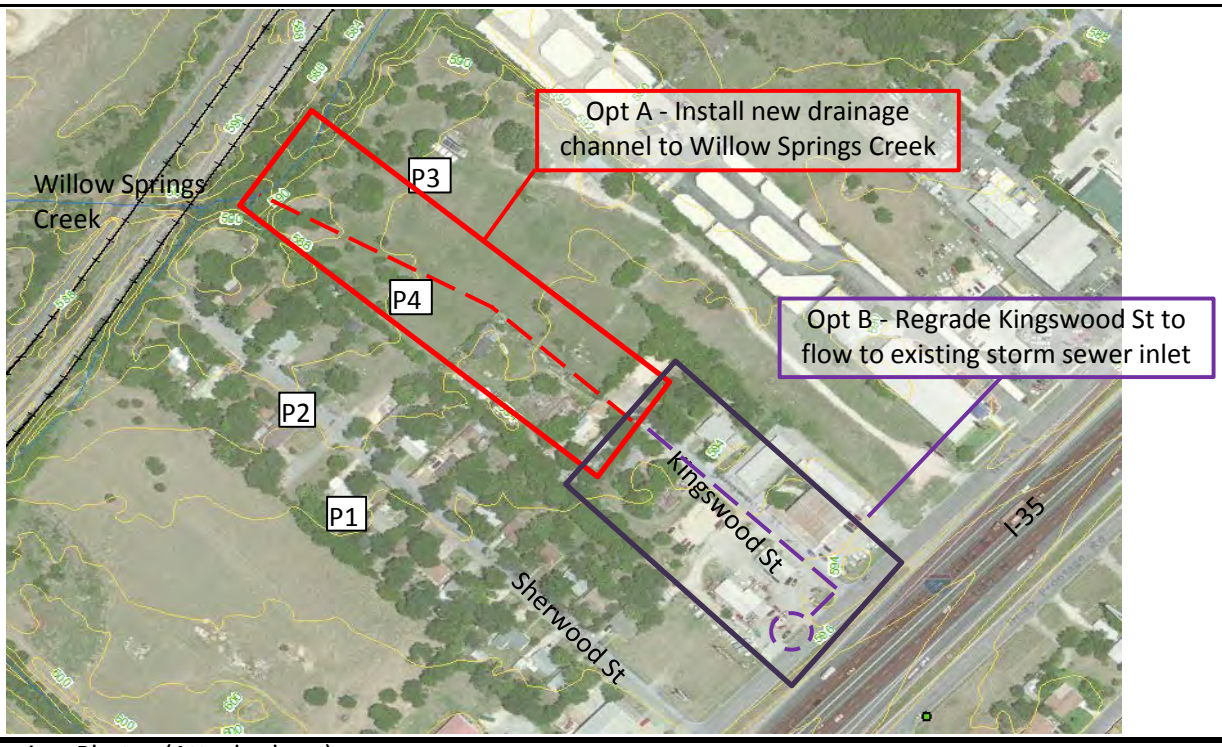
Notes:

Add'l Assessment Required:

ROW Required:

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*Looking NW on Kingswoods St at edge of pavement and grading of properties*
P2	*Looking NW at end of Kingswood St*
P3	*Looking SE from end of Kingswood St towards I-35*
P4	*Looking SW at I-35 and Kingswood St towards shallow stormwater inlet*

Site No.: *50* **Location:** *123 Kingswood Street* BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	*Looking NW on Kingswoods St at edge of pavement and grading of properties*

Photo #	Caption
P2	*Looking NW at end of Kingswood St*

Site No.:	*50*	Location:	*123 Kingswood Street*	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	*Looking SE from end of Kingswood St towards I-35*

Photo #	Caption
P4	*Looking SW at I-35 and Kingswood St towards shallow stormwater inlet*

Site No.: *50* **Location:** *123 Kingswood Street* BACK TO MAP

Engineers Opinion of Probable Construction Cost

123 Kingswood Street

Use trenchless technology to rehabilitate existing wastewater lines along

Item	Description	Quantity	Unit	Unit Price	Amount	
	Subtotal				$	-
	Engineering, Survey and Permitting					
	Construction Contingency	35%			$	-
	Total Project Cost					

Site No.: *51* **Location:** *2029 Castle Gate Circle* BACK TO MAP

Project covered by CIP #680 according to the new "2018-2027 CIP"

SITE SUMMARY

OPT B *Extend existing storm sewer system down Castle Gate Circle* *5*

OPT C

OPT D

Challenges

OPT A *This problem may be more widespread than the driveway at 2027 Castle Gate Circle and may require additional driveway replacements.*

OPT B *Existing storm drain system needs to be analyzed for capactiy for both options.*

OPT C

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *51* **Location:** ***2029 Castle Gate Circle*** BACK TO MAP

BACKGROUND INFO

Date: *1/26/16* Time: *13:15* Attendees: *CS, KCP*

Flood Complaint Summary: *Stormwater enters property from Castle Gate Circle and flows around houses.*

Watershed: *Purgatory* Hydro Subbasin: *P1-7*

Est. Drainage Area (ac): *4* Est. Flood Freq. (yrs): *99*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes:

Local Storm Drain System? Y / N Notes:

GIS Data Available? Y / N

Related Flood Complaint(s):

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other:

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None

Inches: *<1* Date: *1/26/16* Notes: *Rain started at 11:30 am*

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear

Notes: *Rain started at 11:30 am*

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry

Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid

Notes: *Water flowing in street along curb, w/ ponding at 2027 Castle Gate Cir*

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None

Notes: *Large crack between driveway and road at 2027 Castle Gate Circle.*

Future Erosion / Debris Potential: Y / N Notes:

Affected Properties: *2* *2027 and 2029 Castle Gate Circle*

Affected Buildings: *0* *n/a*

Affected Roadways: *1* *Castle Gate Circle*

Other:

City Staff Input:

Citizen Input: *Large amount of water crossed property during Oct 2015 flood & ran along foundation but did not enter home. This happens with several inches of rain. Video provided.*

Notes: *Storm drain inlet located on curb downstream of 2027 Castle Gate Circle.*

Site No.: *51* **Location:** *2029 Castle Gate Circle* BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Water flows onto lots from Castle Gate Circle.*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements / Vegetation Mgmt / Curb & Gutter / Driveway Adjustments / Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Repair and adjust driveway at 2027 Castle Gate Circle to redirect flow to stormdrain inlet.*

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

Notes:

Add'l Assessment Required: *Storm sewer system needs to be analyzed for capacity*

ROW Required:

Potential

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*

Overview Photos (Attached pgs):

Photo #	Caption
P1	*Looking NW from 2027 Castle Gate Cir towards Nevada St and 2029 Castle Gate Cir*
P2	*Looking NW at driveway damage at 2027 Castle Gate Cir and lot at 2029 Castle Gate Cir*
P3	*Looking SE from 2027 Castle Gate Cir at grading of street*
P4	

Site No.:	51	Location:	2029 Castle Gate Circle	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	Looking NW from 2027 Castle Gate Cir towards Nevada St and 2029 Castle Gate Cir

Photo #	Caption
P2	Looking NW at driveway damage at 2027 Castle Gate Cir and lot at 2029 Castle Gate Cir

Site No.:	51	Location:	2029 Castle Gate Circle	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	Looking SE from 2027 Castle Gate Cir at grading of street

Photo #	Caption
P4	0

Site No.: *51* **Location:** *2029 Castle Gate Circle* BACK TO MAP

Engineers Opinion of Probable Construction Cost

2029 Castle Gate Circle

Repair driveway at 2027 Castle Gate Circle (CoSM IN HOUSE OPTION)

Item	Description	Quantity	Unit	Unit Price	Amount
City of San Marcos In-House Option (work designed and complete by City staff).					
1.01	Remove and haul away asphalt	1	LS	$ 8,000	$ 8,000
1.02	E&S and Traffic Controls and Misc.	1	LS	$ 2,000	$ 2,000
	Subtotal				$ 10,000
	Engineering, Survey and Permitting				
	Construction Contingency	35%			$ 4,000
	Total Project Cost				$ 10,000

Site No.: *52* **Location:** *129 Chaparral Street* BACK TO MAP

SITE SUMMARY

Project covered by CIP #210 according to the new "2018-2027 CIP"

OPT B

OPT C

OPT D

Challenges

OPT A *Drainage issue is located on private property.*

OPT B

OPT C

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *52* **Location:** ***129 Chaparral Street*** BACK TO MAP

BACKGROUND INFO

Date: *1/26/16* Time: *13:20* Attendees: *CS, KCP*

Flood Complaint Summary: *Resident states property floods.*

Watershed: *Sink* Hydro Subbasin: *S1-23*

Est. Drainage Area (ac): *4.5* Est. Flood Freq. (yrs): *99*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes:

Local Storm Drain System? Y / N Notes:

GIS Data Available? Y / N

Related Flood Complaint(s):

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other:

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None

Inches: *<1* Date: *1/26/16* Notes: *Rain started at 11:30 am*

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear

Notes: *Rain started at 11:30 am*

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry

Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid

Notes: *Water flowing in street along curb & through curb cut as expected*

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None

Notes:

Future Erosion / Debris Potential: Y / N Notes:

Affected Properties: *1 129 Chaparral Street*

Affected Buildings: *0 n/a*

Affected Roadways: *0 n/a*

Other:

City Staff Input:

Citizen Input: *Resident complained of flooding but no indication of where flooding is coming from or if it is entering home.*

Notes: *Issue appears to be a localized flooding issue contained on the private property.*

Site No.: *52* **Location:** *129 Chaparral Street* BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Resident stated their property flooded.*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements
Vegetation Mgmt / Curb & Gutter / Driveway Adjustments
Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Flooding is localized issue on private property*

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

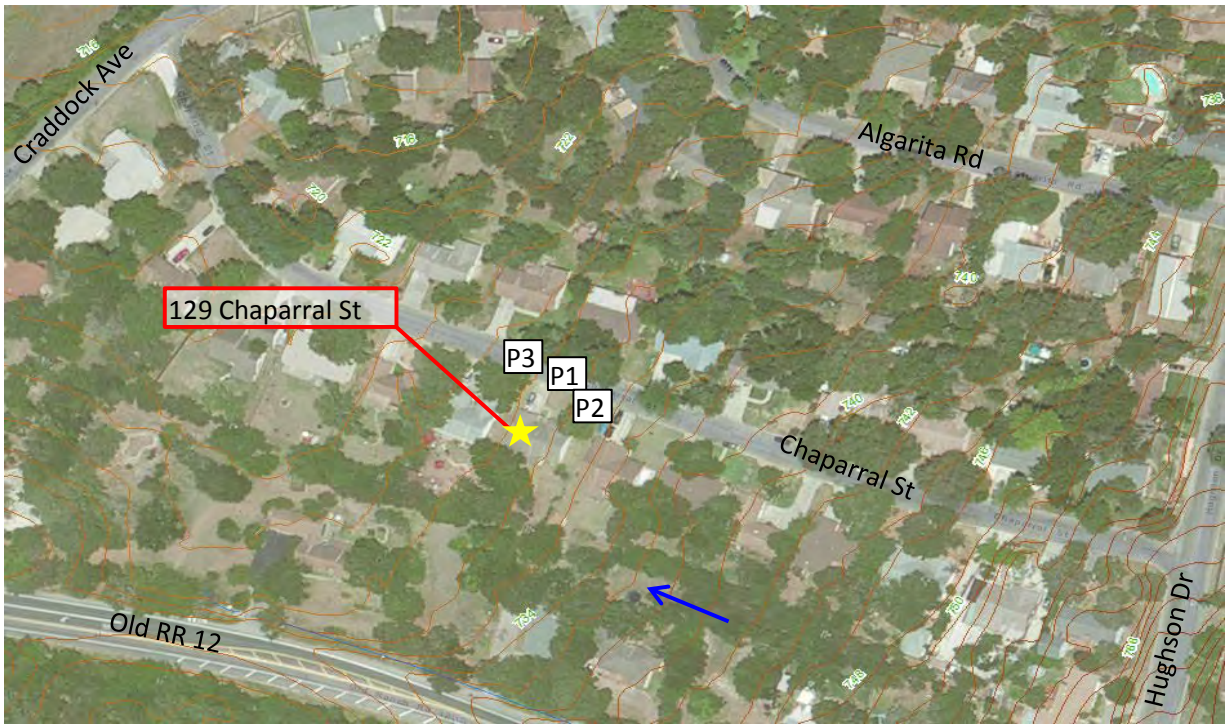
Notes:

Add'l Assessment Required:

ROW Required:

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*Looking S ta 129 Chaparral Street*
P2	*Looking S at E side of property at 129 Chaparral Street*
P3	*Looking S at W side of property at 129 Chaparral Street*
P4	

Site No.:	52	Location:	129 Chaparral Street	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	Looking S ta 129 Chaparral Street

Photo #	Caption
P2	Looking S at E side of property at 129 Chaparral Street

Site No.:	*52*	Location:	*129 Chaparral Street*	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	*Looking S at W side of property at 129 Chaparral Street*

Photo #	Caption
P4	*0*

Site No.: *53* **Location:** *Rogers Street at Maury Street* BACK TO MAP

SITE SUMMARY

Project covered by CIP #618 according to the new "2018-2027 CIP"

OPT B

OPT C

OPT D

Challenges

OPT A

OPT B

OPT C

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *53* **Location:** ***Rogers Street at Maury Street*** BACK TO MAP

BACKGROUND INFO

Date: *1/26/16* Time: *13:05* Attendees: *CS, KCP*

Flood Complaint Summary: *Water overtopped curb on Rogers Street at Maury St and flowed onto property at 612 Lindsey Street.*

Watershed: *Purgatory* Hydro Subbasin: *P7-8*

Est. Drainage Area (ac): *3* Est. Flood Freq. (yrs): *99*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes:

Local Storm Drain System? Y / N Notes:

GIS Data Available? Y / N

Related Flood Complaint(s):

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other:

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None

Inches: *<1* Date: *1/26/16* Notes: *Rain started at 11:30 am*

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear

Notes: *Rain started at 11:30 am*

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry

Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid

Notes: *Water flowing in street along curb & through curb cut as expected*

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None

Notes:

Future Erosion / Debris Potential: Y / N Notes:

Affected Properties: *1* *612 Lindsey Street*

Affected Buildings: *0* *n/a*

Affected Roadways: *0* *n/a*

Other:

City Staff Input:

Citizen Input: *During Halloween 2013 flood, flow down Maury St went over the Rogers St curb where the 2 intersect & entered 612 Lindsey Street from the back of the property. 1st time occurance.*

Notes:

Site No.: *53* **Location:** ***Rogers Street at Maury Street*** BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Water overtopped curb on Rogers Street at Maury St and flowed onto property at 612 Lindsey Street.*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements
Vegetation Mgmt / Curb & Gutter / Driveway Adjustments
Bridge/Culvert Upgrade / Structural Repair / Grading

Notes:

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

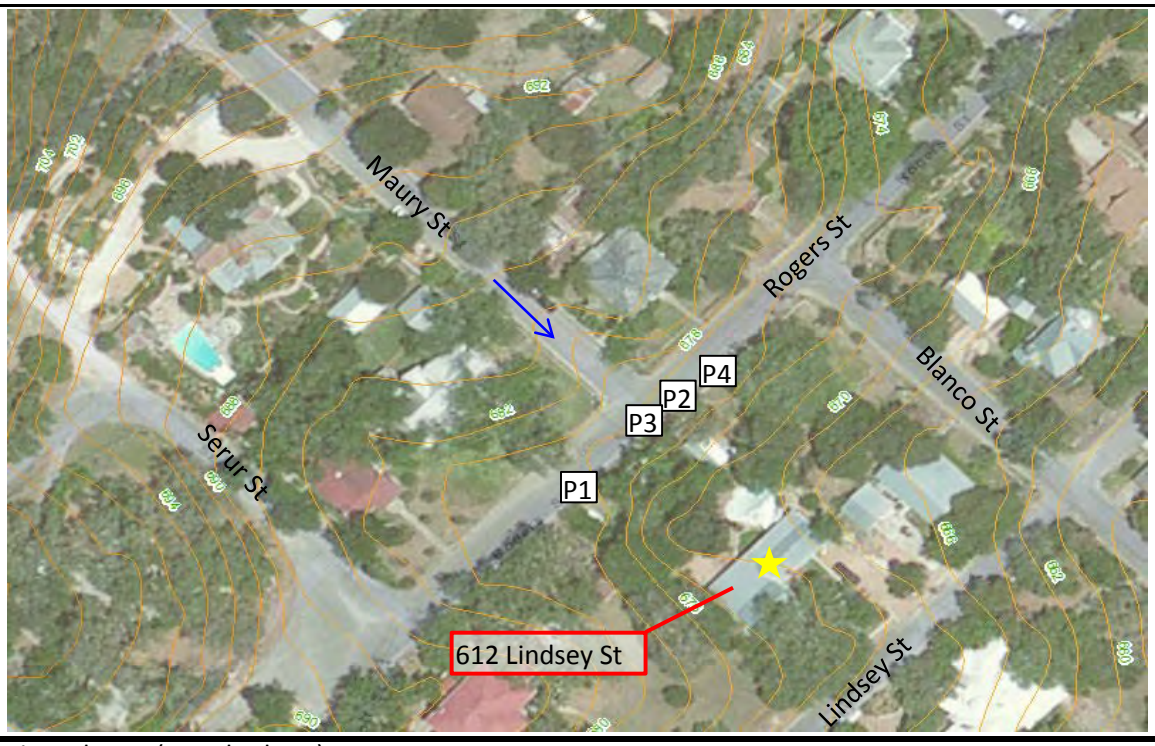
Notes:

Add'l Assessment Required:

ROW Required:

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*Looking NE on Rogers St towards intersection at Rogers St and Maury St*
P2	*Looking SE at back of lot at 612 Lindsey St*
P3	*Looking NW at Maury St from Rogers St at back of 612 Lindsey St*
P4	*Looking SW on Rogers St towards Serur St*

Site No.: *53* **Location:** ***Rogers Street at Maury Street*** BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	*Looking NE on Rogers St towards intersection at Rogers St and Maury St*

Photo #	Caption
P2	*Looking SE at back of lot at 612 Lindsey St*

Site No.:	53	Location:	Rogers Street at Maury Street	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	Looking NW at Maury St from Rogers St at back of 612 Lindsey St

Photo #	Caption
P4	Looking SW on Rogers St towards Serur St

Site No.:	*53*	Location:	*Rogers Street at Maury Street*	BACK TO MAP

Engineers Opinion of Probable Construction Cost

Rogers Street at Maury Street

0

Item	Description	Quantity	Unit	Unit Price	Amount	
1.01	Misc. Excavation and Grading		LS		$	-
1.02	Remove Existing Culverts		LF		$	-
1.03	Install New Bridge (40 ft wide)		LF		$	-
1.04	Pavement Repair		LS		$	-
1.05	E&S and Traffic Controls and Misc.		LS		$	-
	Subtotal				$	-
	Engineering, Survey and Permitting					
	Construction Contingency	35%			$	-
	Total Project Cost				$	-

Site No.: *54* **Location:** *720 Clearview Circle* BACK TO MAP

Project covered by CIP #681 according to the new "2018-2027 CIP"

SITE SUMMARY

OPT B

OPT C

OPT D

Challenges

OPT A

OPT B

OPT C

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *54* **Location:** *720 Clearview Circle* BACK TO MAP

BACKGROUND INFO

Date: *1/26/16* Time: *13:50* Attendees: *CS, KCP*

Flood Complaint Summary: *Water overtops driveway and enters property.*

Watershed: *SMR after Willow* Hydro Subbasin: *SM12-6*

Est. Drainage Area (ac): *1* Est. Flood Freq. (yrs): *99*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes:

Local Storm Drain System? Y / N Notes:

GIS Data Available? Y / N

Related Flood Complaint(s):

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other:

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None

Inches: *<1* Date: *1/26/16* Notes: *Rain started at 11:30 am*

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear

Notes: *Rain started at 11:30 am*

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry

Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid

Notes: *Water flowing in street along curb & through curb cut as expected*

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None

Notes:

Future Erosion / Debris Potential: Y / N Notes:

Affected Properties: *1* *720 Clearview Circle*

Affected Buildings: *1* *720 Clearview Circle*

Affected Roadways: *0* *n/a*

Other:

City Staff Input:

Citizen Input: *Stormwater overtops driveway and sometimes enters garage.*

Notes:

Site No.: *54* **Location:** *720 Clearview Circle* BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Water overtops driveway and enters property; drainage channel adjacent to property.*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements / Vegetation Mgmt / Curb & Gutter / Driveway Adjustments / Bridge/Culvert Upgrade / Structural Repair / Grading

Notes:

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

Notes:

Add'l Assessment Required: *Evaluate capacity of existing street drainage system.*

ROW Required:

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*

Overview Photos (Attached pgs):

Photo #	Caption
P1	*Looking E at property at 720 Clearview Circle and adjacent stormwater flow path*
P2	*Looking NE at stormwater flow along driveway at 720 Clearview Circle*
P3	*Looking W on Clearview Circle from 720 Clearview Circle*
P4	*Looking SW at driveway at 720 Clearview Circle*

Site No.: *54* **Location:** *720 Clearview Circle* BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	*Looking E at property at 720 Clearview Circle and adjacent stormwater flow path*

Photo #	Caption
P2	*Looking NE at stormwater flow along driveway at 720 Clearview Circle*

Site No.: *54* **Location:** *720 Clearview Circle* BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	*Looking W on Clearview Circle from 720 Clearview Circle*

Photo #	Caption
P4	*Looking SW at driveway at 720 Clearview Circle*

Site No.:	*54*	Location:	*720 Clearview Circle*	BACK TO MAP

Engineers Opinion of Probable Construction Cost

720 Clearview Circle

Replace driveway approach, grade gutter to drainage swale

Item	Description	Quantity	Unit	Unit Price	Amount
	Reconcile with CIP list				
1.01	Mobilization and Grading	1	LS	$ 2,000	$ 2,000
1.02	Remove Existing Culverts	80	LF	$ 50	$ 4,000
1.03	Install New Bridge (40 ft wide)	30	LF	$ 3,000	$ 90,000
1.04	Pavement Repair	1	LS	$ 3,000	$ 3,000
1.05	E&S and Traffic Controls and Misc.	1	LS	$ 12,000	$ 12,000
	Subtotal				$ 111,000
	Engineering, Survey and Permitting				$ 75,000
	Construction Contingency	35%			$ 39,000
	Total Project Cost				$ 230,000

Site No.: *55* **Location:** *1029 San Antonio Street* BACK TO MAP

Project covered by CIP #90 according to the new "2018-2027 CIP"

SITE SUMMARY

OPT B

OPT C

OPT D

Challenges

OPT A *The pavement raise is a common issue in this area. Knowing where to limit this project could present a challenge.*

OPT B

OPT C

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *55* **Location:** ***1029 San Antonio Street*** BACK TO MAP

BACKGROUND INFO

Date: *1/22/15* Time: *13:10* Attendees: *CS, KCP*

Flood Complaint Summary: *Water overtops curb during large storm events and flows onto property.*

Watershed: *Purgatory* Hydro Subbasin: *P5-2, P5-3*

Est. Drainage Area (ac): *11* Est. Flood Freq. (yrs): *99*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes:

Local Storm Drain System? Y / N Notes:

GIS Data Available? Y / N

Related Flood Complaint(s):

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other:

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None

Inches: *<1* Date: *1/26/16* Notes: *Rain started at 11:30 am*

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear

Notes: *Rain started at 11:30 am*

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry

Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid

Notes: *Water flowing in street along curb and through curb cut as expected*

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None

Notes:

Future Erosion / Debris Potential: Y / N Notes:

Affected Properties: *1* *1029 San Antonio St*

Affected Buildings: *0* *n/a*

Affected Roadways: *1* *San Antonio St*

Other:

City Staff Input:

Citizen Input: *Stormwater coming down Johnson St overtops curb in front of house and goes around both sides of home during last two floods. More frequent storm events stay in street.*

Notes: *Stormwater flow getting to this site may be significantly reduced based on drainage improvements proposed on Hopkins St reconstruction (Site #30).*

Site No.: *55* **Location:** *1029 San Antonio Street* BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *During heavy rain events, stormwater overtops curb and goes onto property. There is no storm drain system in this neighborhood. It also appears that the road was raised due to repaving.*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements
Vegetation Mgmt / Curb & Gutter / Driveway Adjustments
Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Remove previous paving and repave road to original road profile elevation.*

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

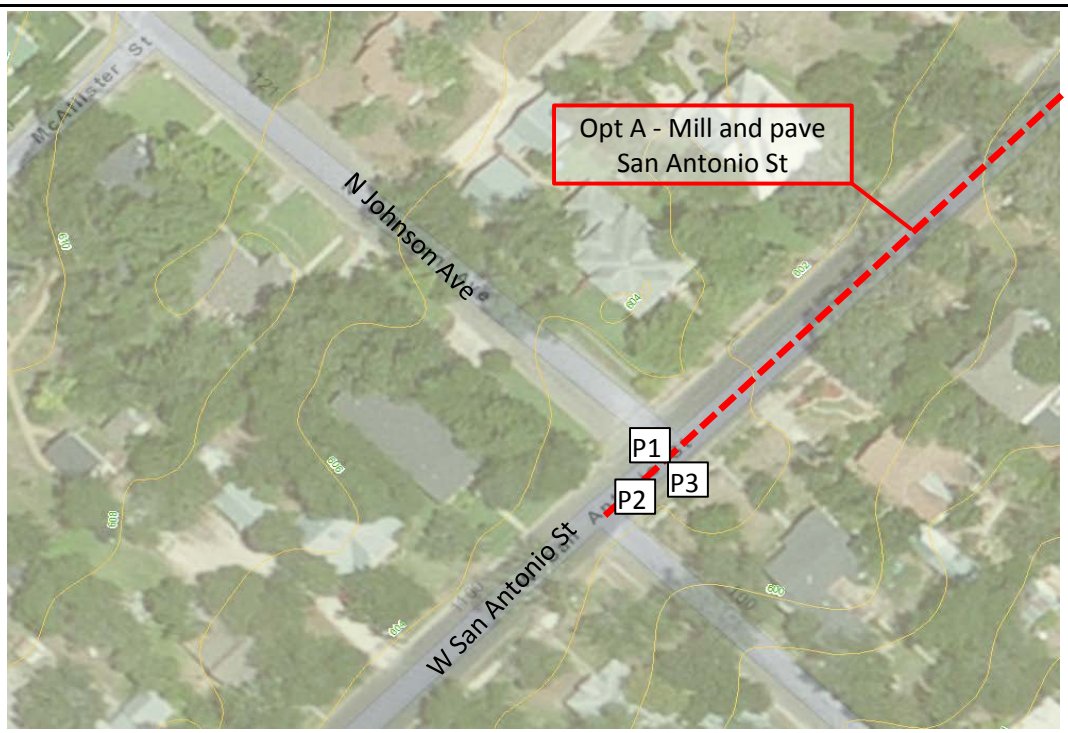
Notes:

Add'l Assessment Required:

ROW Required:

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*Looking S at 1029 San Antonio St from Johnson Ave*
P2	*Looking NE at paving and curb adjacent to 1029 San Antonio St*
P3	*Looking NW at Johnson Ave from 1029 San Antonio St*
P4	

Site No.:	55	Location:	1029 San Antonio Street	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	Looking S at 1029 San Antonio St from Johnson Ave

Photo #	Caption
P2	Looking NE at paving and curb adjacent to 1029 San Antonio St

Site No.:	55	Location:	1029 San Antonio Street	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	Looking NW at Johnson Ave from 1029 San Antonio St

Photo #	Caption
P4	0

Site No.: *55* **Location:** *1029 San Antonio Street* BACK TO MAP

Engineers Opinion of Probable Construction Cost

1029 San Antonio Street

Mill and pave San Antonio Street to correct raising road in previous paving.

Item	Description	Quantity	Unit	Unit Price	Amount
1.01		0	LS	$ -	$ -
1.02		0	LS	$ -	$ -
1.03		0	LS	$ -	$ -
				$ -	
	Subtotal				$ -
	Engineering, Survey and Permitting				$ -
	Construction Contingency	35%			$ -
	Total Project Cost				$ -

Site No.: *56* **Location:** *2319 Summit Ridge Drive* BACK TO MAP

SITE SUMMARY

Project covered by CIP #210 according to the new "2018-2027 CIP"

OPT B

OPT C

OPT D

Challenges

OPT A

OPT B

OPT C

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *56* **Location:** ***2319 Summit Ridge Drive*** BACK TO MAP

BACKGROUND INFO

Date: *1/26/16* Time: *13:30* Attendees: *CS, KCP*

Flood Complaint Summary: *Stormwater overtops curb and flows into residential lot during heavy rain events.*

Watershed: *Purgatory* Hydro Subbasin: *P02*

Est. Drainage Area (ac): *7.5* Est. Flood Freq. (yrs): *99*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes:

Local Storm Drain System? Y / N Notes: *Inlet to creek*

GIS Data Available? Y / N

Related Flood Complaint(s):

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other:

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None

Inches: *<1* Date: *1/26/16* Notes: *Rain started at 11:30 am*

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear

Notes: *Rain started at 11:30 am*

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry

Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid

Notes: *Water flowing in street along curb & through curb cut as expected*

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None

Notes:

Future Erosion / Debris Potential: Y / N Notes:

Affected Properties: *1* *2319 Summit Ridge*

Affected Buildings: *0* *n/a*

Affected Roadways: *0* *n/a*

Other:

City Staff Input:

Citizen Input: *Stormwater overtops curb & flows across lawn into adjacent creek during large storm events causing damage to landscaping. Flow into creek is much wider than existing curb cut.*

Notes:

Site No.: *56* **Location:** ***2319 Summit Ridge Drive*** BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Stormwater overtops curb @ flows into residential lot during heavy rain events.*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements
Vegetation Mgmt / Curb & Gutter / Driveway Adjustments
Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Increase curb cut size along Summit Ridge Drive; will need to verify capacity in creek.*

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

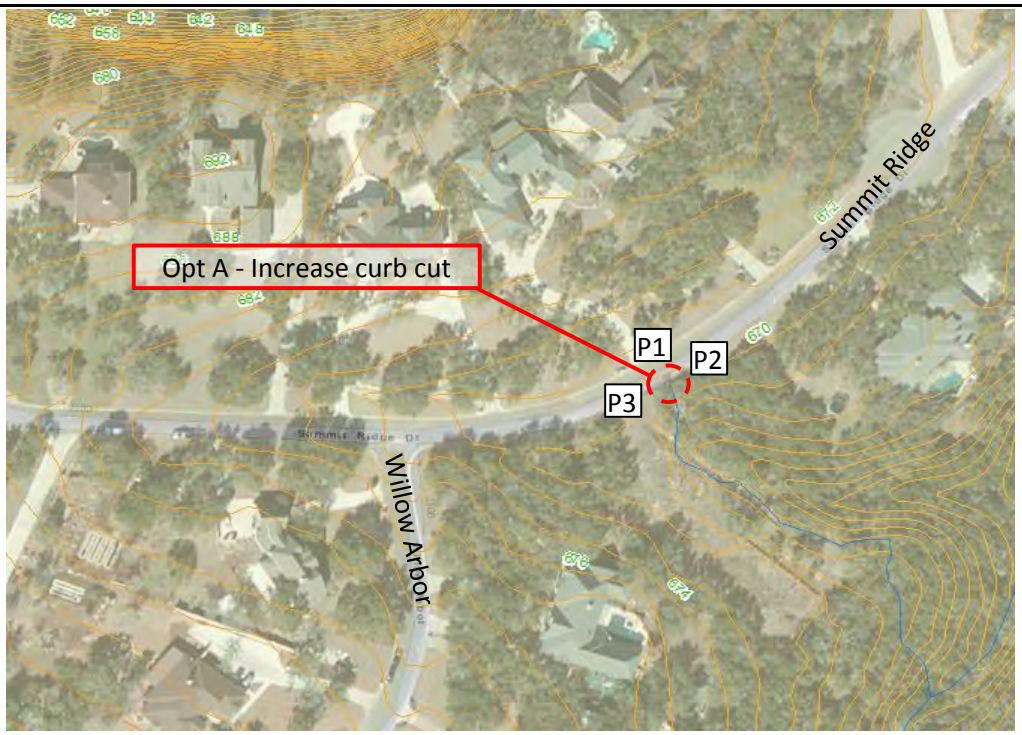
Notes:

Add'l Assessment Required:

ROW Required:

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	*Looking S at the existing curb cut on Summit Ridge Drive*
P2	*Looking SW from curb cut at water flowing on Summit Ridge Drive to curb cut*
P3	*Looking S at 2319 Summit Ridge Drive towards the creek*
P4	

Site No.:	56	Location:	2319 Summit Ridge Drive	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	Looking S at the existing curb cut on Summit Ridge Drive

Photo #	Caption
P2	Looking SW from curb cut at water flowing on Summit Ridge Drive to curb cut

Site No.: *56* **Location:** ***2319 Summit Ridge Drive*** BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	*Looking S at 2319 Summit Ridge Drive towards the creek*

Photo #	Caption
P4	*0*

Site No.: *56* **Location:** *2319 Summit Ridge Drive* BACK TO MAP

Engineers Opinion of Probable Construction Cost

2319 Summit Ridge Drive

Increase curb cut along Summit Ridge Drive to increase flow to creek and decrease

Item	Description	Quantity	Unit	Unit Price	Amount
1.01	Curb Cut/milling	1	LS	$ 5,000	$ 5,000
1.02	Pavement Repair	1	LS	$ 2,000	$ 2,000
1.03	E&S and Traffic Controls and Misc.	1	LS	$ 5,000	$ 5,000
	Subtotal				$ 12,000
	Engineering, Survey and Permitting				$ 30,000
	Construction Contingency	35%			$ 4,000
	Total Project Cost				$ 50,000

Site No.: *57* **Location:** *Cottonwood Creek at I-35* BACK TO MAP

Project covered by CIP #33 according to the new "2018-2027 CIP"

SITE SUMMARY

OPT C	*Upgrade culverts under I-35 at Tributary 1, 2, & 3.*	*7*
OPT D		

Challenges

OPT A

OPT B

OPT C

OPT D

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *57* **Location:** ***Cottonwood Creek at I-35*** BACK TO MAP

BACKGROUND INFO

Date: *4/22/14* Time: *13:00* Attendees: *TH, KCP*

Flood Complaint Summary: *Conveyance issues exist at the I-35 crossing, resulting in stormwater backing up W of I-35 and overflowing to other tributaries.*

Watershed: *Cottonwood* Hydro Subbasin: *C02*

Est. Drainage Area (ac): Est. Flood Freq. (yrs): *99*

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes: *Cottonwood Creek*

Local Storm Drain System? Y / N Notes:

GIS Data Available? Y / N

Related Flood Complaint(s):

Included in Previous Study: 1994 CDM Report / 2007 Espey FPP / Other:

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other:

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None
Inches: Date: Notes:

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear
Notes:

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry
Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid
Notes:

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None
Notes:

Future Erosion / Debris Potential: Y / N Notes:

Affected Properties:

Affected Buildings:

Affected Roadways: *4* *I-35, I-35 S bound Access Rd, I-35 N bound Access Rd, McCarty Ln,*

Other:

City Staff Input:

Citizen Input:

Notes: *This project was evaluated by Halff. Refer to the Cottonwood Alt. Technical Memo in the San Marcos Drainage Master Plan Hydrology and Hydraulics Final Report by Halff.*

Site No.: *57* **Location:** ***Cottonwood Creek at I-35*** BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: *Conveyance issues exist at the I-35 crossing, resulting in stormwater backing up on W side of I-35 and overflowing from Tributary 3 to Tributary 2 and Tributary 2 to Tributary 1.*

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements / Vegetation Mgmt / Curb & Gutter / Driveway Adjustments / Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: *Installing a detention pond(s) at Trib 3 and possibly 2 could help divert some of the overflow to Trib 1. Other options are to upgrade an exist. detention pond, install channel between Tributary 2 and 1, and/or upgrade the culverts under I-35.*

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

Notes:

Add'l Assessment Required: *Downstream system limitations need to be evaluated.*

ROW Required: *ROW will be required for ponds, channel, and culvert upgrades.*

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*

Figure 1. Overview of Cottonwood Creek and Tributaries at I-35

Overview Photos (Attached pgs):

Photo #	Caption
P1	*Option 1 Alternative Conceptual Layout*
P2	*Option 2 Alternative Conceptual Layout*
P3	
P4	

Site No.: *57* **Location:** ***Cottonwood Creek at I-35*** BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	*Option 1 Alternative Conceptual Layout*

Figure 2. Option 1 Alternative Conceptual Layout

Photo #	Caption
P2	*Option 2 Alternative Conceptual Layout*

Figure 3. Option 2 Alternative Conceptual Layout

Site No.:	*57*	Location:	*Cottonwood Creek at I-35*	BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P3	*0*

Photo #	Caption
P4	*0*

Site No.: *57* **Location:** ***Cottonwood Creek at I-35*** BACK TO MAP

Engineers Opinion of Probable Construction Cost

Cottonwood Creek at I-35

Install detention ponds along Tributary 2 & 3.

Item	Description	Quantity	Unit	Unit Price	Amount
1.01	Misc. Excavation and Grading		LS		$ -
1.02	Install New Ponds		CY		$ -
1.03	Land Acquisition		LS		$ -
1.04	Pavement Repair		LS		$ -
1.05	E&S and Traffic Controls and Misc.		LS		$ -
	Subtotal				$ -
	Engineering, Survey and Permitting				
	Construction Contingency	35%			$ -
	Total Project Cost				$ -

Site No.: *58F* **Location:** *Blanco Gardens (FEAS)* BACK TO MAP

SITE SUMMARY

Project covered by CIP #617 according to the new "2018-2027 CIP"

Potential Solutions **Est. Construction Cost Level***

OPT A *Infrastructure project to resolve local flooding in events up to 25-years in Blanco Gardens area including: addition of a new central storm drain system to Conway & Drives connected to the existing storm drain system, with a new outfall to the San Marcos River. Includes new storm sewer outlets across River Road into the Woods Apartment Ditch and road regrading on River Road from Linda to Cape Rd. to revise the roadway cross-section to a crowned section. Also considers inlet and lead systems for alleys/easements between Barbara & Conway.*

Part of the CDBG-DR Infrastructure Feasibility Study- AECOM 2017

***Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)**

Site No.: *58F* **Location:** *Blanco Gardens (FEAS)* BACK TO MAP

BACKGROUND INFO

Date: _____ Time: _____ Attendees: _____

Flood Complaint Summary: _____

Watershed: _____ Hydro Subbasin: _____

Est. Drainage Area (ac): _____ Est. Flood Freq. (yrs): _____

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes: _____

Local Storm Drain System? Y / N Notes: _____

GIS Data Available? Y / N

Related Flood Complaint(s): _____

Included in Previous Study: CDBG-DR Infrastructure Feasibility- AECOM, 2017

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other: _____

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None
Inches: ____ Date: _____ Notes: _____

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear
Notes: _____

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry
Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid
Notes: _____

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None
Notes: _____

Future Erosion / Debris Potential: Y / N Notes: _____

Affected Properties: _____

Affected Buildings: _____

Affected Roadways: _____

Other: _____

City Staff Input: _____

Citizen Input: _____

Notes: _____

Site No.: *58F* **Location:** *Blanco Gardens (FEAS)* BACK TO MAP

SITE ASSESSMENT

Cause of Flooding:

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements
Vegetation Mgmt / Curb & Gutter / Driveway Adjustments
Bridge/Culvert Upgrade / Structural Repair / Grading

Notes:

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

Notes:

Add'l Assessment Required:

ROW Required:

Potential Water Quality Feature:

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*

Overview Photos (Attached pgs):

Photo #	Caption
P1	
P2	
P3	
P4	

Site No.: *58F* **Location:** *Blanco Gardens (FEAS)* BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	

Photo #	Caption

Site No.: *58F* **Location:** *Blanco Gardens (FEAS)* BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption

Photo #	Caption

Site No.: *58F* **Location:** *Blanco Gardens (FEAS)* BACK TO MAP

Engineers Opinion of Probable Construction Cost

0

Infrastructure project to resolve local flooding in events up to 25-years in Blanco

Item	Description	Quantity	Unit	Unit Price	Amount
1.01	Misc. Excavation and Grading		LS		
1.02	Install New Ponds		CY		
1.03	Land Acquisition		LS		
1.04	Pavement Repair		LS		
1.05	E&S and Traffic Controls and Misc.		LS		
	Subtotal				$ -
	Engineering, Survey and Permitting				
	Construction Contingency	35%			$ -
	Total Project Cost				

Site No.: *58F* **Location:** *Blanco Gardens (FEAS)* BACK TO MAP

Project Description
Infrastructure project to resolve local flooding in events up to 25-years in Blanco Gardens area including: addition of a new central storm drain system to Conway & Barbara Drives connected to the existing storm drain system, with a new outfall to the San Marcos River. Includes new storm sewer outlets across River Road into the Woods Apartment Ditch and road regrading on River Road from Linda to Cape Rd. to revise the roadway cross-section to a crowned section. Also considers inlet and lead systems for alleys/easements between Barbara & Conway.

	PROJECT TOTAL	
Cost	DR	City/Other
$5,000,000	$5,000,000	$500,000

Project ID*
617**

2017	2018	2019	2020	2021	2022
	$ 966,200	$ 4,033,800			

Site No.: *59F* **Location:** *Midtown/Aquarena Springs (FEAS)* BACK TO MAP

Project covered by CIP #623 according to the new "2018-2027 CIP"

SITE SUMMARY

Potential Solutions		**Est. Construction Cost Level***
OPT A	*Infrastructure project to resolve local flooding in events up to 25-years in Midtown/Aquarena Springs Area including: Intersection improvements east of intersection of IH-35 and Aquarena Springs Rd. (curb cuts and inlet improvements) to address significant roadway ponding in a low lying area; TxDOT outfall ditch improvments to address overgrown & unmaintained vegetation to increase drainage capacity; and addition of dual 8'x4' culverts to supplement exsting Davis Road Culverts to increase stormwater conveyance.*	*1*

Part of the CDBG-DR Infrastructure Feasibility Study- AECOM 2017

OPT D

***Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)**

Site No.: *59F* **Location:** *Midtown/Aquarena Springs (FEAS)* BACK TO MAP

BACKGROUND INFO

Date: _____ Time: _____ Attendees: _____

Flood Complaint Summary: _____

Watershed: _____ Hydro Subbasin: _____

Est. Drainage Area (ac): _____ Est. Flood Freq. (yrs): _____

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes: _____

Local Storm Drain System? Y / N Notes: _____

GIS Data Available? Y / N

Related Flood Complaint(s): _____

Included in Previous Study: CDBG-DR Infrastructure Feasibility- AECOM, 2017

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other: _____

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None
Inches: ____ Date: _____ Notes: _____

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear
Notes: _____

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry
Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid
Notes: _____

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None
Notes: _____

Future Erosion / Debris Potential: Y / N Notes: _____

Affected Properties: _____

Affected Buildings: _____

Affected Roadways: _____

Other: _____

City Staff Input: _____

Citizen Input: _____

Notes: _____

Site No.: *59F* **Location:** *Midtown/Aquarena Springs (FEAS)* BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: _____

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements
Vegetation Mgmt / Curb & Gutter / Driveway Adjustments
Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: _____

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

Notes: _____

Add'l Assessment Required: _____

ROW Required: _____

Potential Water Quality Feature: _____

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*

Overview Photos (Attached pgs):

Photo #	Caption
P1	
P2	
P3	
P4	

Site No.: *59F* **Location:** ***Midtown/Aquarena Springs (FEAS)*** BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	

Photo #	Caption

Site No.: *59F* **Location:** *Midtown/Aquarena Springs (FEAS)* BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption

Photo #	Caption

Site No.: *59F* **Location:** *Midtown/Aquarena Springs (FEAS)* BACK TO MAP

Engineers Opinion of Probable Construction Cost

0

Infrastructure project to resolve local flooding in events up to 25-years in

Item	Description	Quantity	Unit	Unit Price	Amount	
1.01	Misc. Excavation and Grading		LS			
1.02	Install New Ponds		CY			
1.03	Land Acquisition		LS			
1.04	Pavement Repair		LS			
1.05	E&S and Traffic Controls and Misc.		LS			
	Subtotal				$	-
	Engineering, Survey and Permitting					
	Construction Contingency	35%			$	-
	Total Project Cost				$	-

Site No.:	*59F*	Location:	*Midtown/Aquarena Springs (FEAS)*	BACK TO MAP

Project Description
Infrastructure project to resolve local flooding in events up to 25-years in Midtown/Aquarena Springs Area including: Intersection improvements east of intersection of IH-35 and Aquarena Springs Rd. (curb cuts and inlet improvements) to address significant roadway ponding in a low lying area; TxDOT outfall ditch improvments to address overgrown & unmaintained vegetation to increase drainage capacity; and addition of dual 8'x4' culverts to supplement exsting Davis Road Culverts to increase stormwater conveyance.

	PROJECT TOTAL	
Cost	DR	City/Other
$850,000	$850,000	$0

Project ID*
623**

2017	2018	2019	2020	2021	2022
$ 85,000	$ 765,000				

Site No.: *60F* **Location:** *Clarewood/ Barbara Drive (FEAS)* BACK TO MAP

SITE SUMMARY

Project covered by CIP #602 according to the new "2018-2027 CIP"

Potential Solutions **Est. Construction Cost Level***

OPT A *Infrastructure project to resolve local flooding in events up to 25-years in Clarewood/Barbara Dr. area including: providing a new storm drain system to Clarewood Dr. with a connection to both the Bugg Lane system and the existing Highway 80 ditch; regrading Barbara Drive to drain to Bugg Lane for adequate drainage.* *1*

Part of the CDBG-DR Infrastructure Feasibility Study- AECOM 2017

Site No.: *60F* **Location:** *Clarewood/ Barbara Drive (FEAS)* BACK TO MAP

BACKGROUND INFO

Date: _____ Time: _____ Attendees: _____

Flood Complaint Summary: _____

Watershed: _____ Hydro Subbasin: _____

Est. Drainage Area (ac): _____ Est. Flood Freq. (yrs): _____

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes: _____

Local Storm Drain System? Y / N Notes: _____

GIS Data Available? Y / N

Related Flood Complaint(s): _____

Included in Previous Study: CDBG-DR Infrastructure Feasibility- AECOM, 2017

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other: _____

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None
Inches: ____ Date: _____ Notes: _____

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear
Notes: _____

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry
Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid
Notes: _____

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None
Notes: _____

Future Erosion / Debris Potential: Y / N Notes: _____

Affected Properties: _____

Affected Buildings: _____

Affected Roadways: _____

Other: _____

City Staff Input: _____

Citizen Input: _____

Notes: _____

Site No.: *60F* **Location:** *Clarewood/ Barbara Drive (FEAS)* BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: _____

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements
Vegetation Mgmt / Curb & Gutter / Driveway Adjustments
Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: _____

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

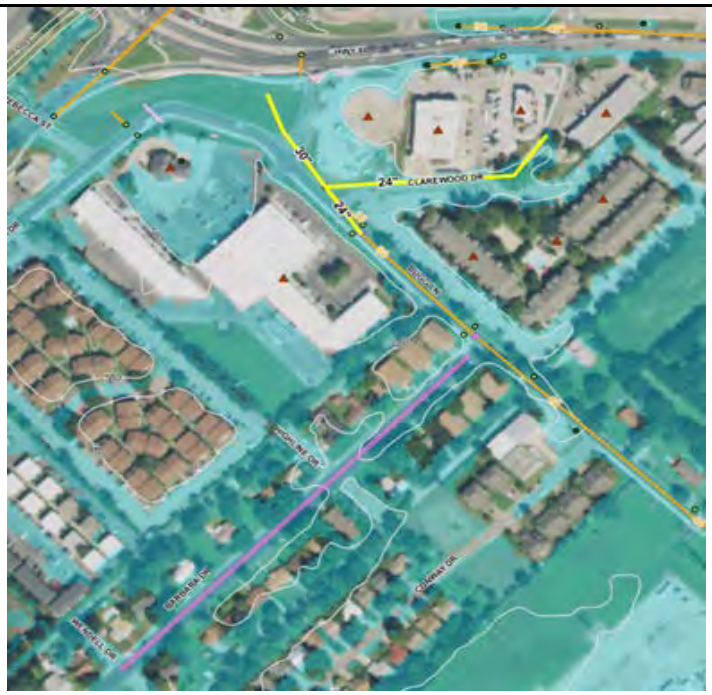
Notes: _____

Add'l Assessment Required: _____

ROW Required: _____

Potential Water Quality Feature: _____

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*



Overview Photos (Attached pgs):

Photo #	Caption
P1	
P2	
P3	
P4	

Site No.: *60F* **Location:** *Clarewood/ Barbara Drive (FEAS)* BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption

Photo #	Caption

Site No.: *60F* **Location:** *Clarewood/ Barbara Drive (FEAS)* BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption

Photo #	Caption

Site No.: *60F* **Location:** *Clarewood/ Barbara Drive (FEAS)* BACK TO MAP

Engineers Opinion of Probable Construction Cost

0

Infrastructure project to resolve local flooding in events up to 25-years in

Item	Description	Quantity	Unit	Unit Price	Amount	
1.01	Misc. Excavation and Grading		LS			
1.02	Install New Ponds		CY			
1.03	Land Acquisition		LS			
1.04	Pavement Repair		LS			
1.05	E&S and Traffic Controls and Misc.		LS			
	Subtotal				$	-
	Engineering, Survey and Permitting					
	Construction Contingency	35%			$	-
	Total Project Cost				$	-

Site No.:	*60F*	**Location:**	*Clarewood/ Barbara Drive (FEAS)*	BACK TO MAP

Project Description
Infrastructure project to resolve local flooding in events up to 25-years in Clarewood/Barbara Dr. area including: providing a new storm drain system to Clarewood Dr. with a connection to both the Bugg Lane system and the existing Highway 80 ditch; regrading Barbara Drive to drain to Bugg Lane for adequate drainage.

	PROJECT TOTAL	
	$2,500,000	$2,500,000	$0

Project ID*
602**

2017	2018	2019	2020	2021	2022
			$ 250,000	$ 2,250,000	

Site No.: *61F* **Location:** *Rio Vista Improvements (FEAS)* BACK TO MAP

SITE SUMMARY

Project covered by CIP #675 according to the new "2018-2027 CIP"

Potential Solutions **Est. Construction Cost Level***

OPT A *Infrastructure project to resolve local flooding in events up to 25-years in Rio Vista area including: re-grading of roadways and ditches in 3 areas along Riverside Dr. and Riviera St. to address overland flow and ponding issues by improving conveyance to the San Marcos River.* *5*

Part of the CDBG-DR Infrastructure Feasibility Study- AECOM 2017

***Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)**

Site No.: *61F* **Location:** *Rio Vista Improvements (FEAS)* BACK TO MAP

BACKGROUND INFO

Date: _____ Time: _____ Attendees: _____

Flood Complaint Summary: _____

Watershed: _____ Hydro Subbasin: _____

Est. Drainage Area (ac): _____ Est. Flood Freq. (yrs): _____

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes: _____

Local Storm Drain System? Y / N Notes: _____

GIS Data Available? Y / N

Related Flood Complaint(s): _____

Included in Previous Study: CDBG-DR Infrastructure Feasibility- AECOM, 2017

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other: _____

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None
Inches: ____ Date: _____ Notes: _____

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear
Notes: _____

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry
Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid
Notes: _____

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None
Notes: _____

Future Erosion / Debris Potential: Y / N Notes: _____

Affected Properties: _____

Affected Buildings: _____

Affected Roadways: _____

Other: _____

City Staff Input: _____

Citizen Input: _____

Notes: _____

Site No.: *61F* **Location:** *Rio Vista Improvements (FEAS)* BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: _____

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements
Vegetation Mgmt / Curb & Gutter / Driveway Adjustments
Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: _____

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

Notes: _____

Add'l Assessment Required: _____

ROW Required: _____

Potential Water Quality Feature: _____

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*

Overview Photos (Attached pgs):

Photo #	Caption
P1	
P2	
P3	
P4	

Site No.: *61F* **Location:** *Rio Vista Improvements (FEAS)* BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption
P1	

Photo #	Caption

Site No.: *61F* **Location:** *Rio Vista Improvements (FEAS)* BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption

Photo #	Caption

Site No.: *61F* **Location:** *Rio Vista Improvements (FEAS)* BACK TO MAP

Engineers Opinion of Probable Construction Cost

0

Infrastructure project to resolve local flooding in events up to 25-years in Rio Vista

Item	Description	Quantity	Unit	Unit Price	Amount
1.01	Misc. Excavation and Grading		LS		
1.02	Install New Ponds		CY		
1.03	Land Acquisition		LS		
1.04	Pavement Repair		LS		
1.05	E&S and Traffic Controls and Misc.		LS		
	Subtotal				$ -
	Engineering, Survey and Permitting				
	Construction Contingency	35%			$ -
	Total Project Cost				$ 680,000.00

Site No.:	*61F*	**Location:**	*Rio Vista Improvements (FEAS)*	BACK TO MAP

Project Description
Infrastructure project to resolve local flooding in events up to 25-years in Rio Vista area including: re-grading of roadways and ditches in 3 areas along Riverside Dr. and Riviera St. to address overland flow and ponding issues by improving conveyance to the San Marcos River.

	PROJECT TOTAL	
Cost	DR	City/Other
$680,000	$0	$700,000

I

2017	2018	2019	2020	2021	2022
			$ 68,000		$ 612,000

Site No.: *62F* **Location:** *Blanco River Bank Trail and River Improvements (FEA* BACK TO MAP

SITE SUMMARY

Project covered by CIP #633 according to the new "2018-2027 CIP"

Potential Solutions		**Est. Construction Cost Level***
OPT A	*Infrastructrue project to address Blanco River overflow influence on the Blanco Gardens subdivision area along the river bank from Highway 80 to Old Martindale Road. Project includes construction of ~4000 feet of a 10' wide trail, and an associated overflow channel and oxbox notch on the Blanco River banks for mitigation. Project provides significantly increased protection to Blanco Gardens from overflows in river events up to 36 years.*	*7*
OPT B		
OPT C		
OPT D		

Part of the CDBG-DR Infrastructure Feasibility Study- AECOM 2017

Cost Levels - 1 (<$10k), 2 ($10-50k), 3 ($50-100k), 4 ($100-500k), 5 ($500k-1M), 6 ($1M-5M), 7 (>$5M)

Site No.: *62F* **Location:** *Blanco River Bank Trail and River Improvements (FEA* BACK TO MAP

BACKGROUND INFO

Date: _____ Time: _____ Attendees: _____

Flood Complaint Summary: _____

Watershed: _____ Hydro Subbasin: _____

Est. Drainage Area (ac): _____ Est. Flood Freq. (yrs): _____

FEMA Flood Zone: Floodway / 100-yr FP / 500-yr FP / N/A

Edwards Aquifer Zone: Recharge / Transition / Contributing / Artesian / N/A

Flood Type: Storm Drain / Riverine / Channel / Street / Conveyance

Potential Backwater Effects? Y / N Notes: _____

Local Storm Drain System? Y / N Notes: _____

GIS Data Available? Y / N

Related Flood Complaint(s): _____

Included in Previous Study: CDBG-DR Infrastructure Feasibility- AECOM, 2017

Surrounding Land Use: Residential / Industrial / Public/Park / Commercial / Institutional / Agricultural / Other: _____

FIELD OBSERVATIONS

Recent Rainfall: Heavy rain / Intermittent / Steady Rain / Trace / None
Inches: ____ Date: _____ Notes: _____

Present Conditions: Heavy rain / Intermittent / Steady Rain / Trace / Cloudy / Clear
Notes: _____

Present Flooding: Type: Standing Water / Sheet Flow / Channel Flow / Dry
Odor: None / Sewage / Sulfide / Chemical / Gas / Rancid
Notes: _____

Evidence of Flooding/Erosion: Type: Erosion / Debris Accumulation / Structure Damage / None
Notes: _____

Future Erosion / Debris Potential: Y / N Notes: _____

Affected Properties: _____

Affected Buildings: _____

Affected Roadways: _____

Other: _____

City Staff Input: _____

Citizen Input: _____

Notes: _____

Site No.: *62F* **Location:** *Blanco River Bank Trail and River Improvements (FEA* BACK TO MAP

SITE ASSESSMENT

Cause of Flooding: _____

Conceptual Solution(s): Add Inlet / Storm Drain Pipe / Detention / Channel Improvements
Vegetation Mgmt / Curb & Gutter / Driveway Adjustments
Bridge/Culvert Upgrade / Structural Repair / Grading

Notes: _____

Survey Required: Inlet / Pipe / Outfall / Channel / Street / Building / Bridge / Utility

Notes: _____

Add'l Assessment Required: _____

ROW Required: _____

Potential Water Quality Feature: _____

SITE DIAGRAM - *Note physical features of the site, flow patterns, storm drain system, evidence of flooding/erosion, obstructions, outfalls, landscape features (i.e. roads, buildings), and photo location/direction.*

Overview Photos (Attached pgs):

Photo #	Caption
P1	
P2	
P3	
P4	

Site No.: *62F* **Location:** *Blanco River Bank Trail and River Improvements (FEA* BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption

Photo #	Caption

Site No.: *62F* **Location:** *Blanco River Bank Trail and River Improvements (FEA* BACK TO MAP

SITE PHOTOGRAPHS

Photo #	Caption

Photo #	Caption

Site No.: *62F* **Location:** *Blanco River Bank Trail and River Improvements (FEA* BACK TO MAP

Engineers Opinion of Probable Construction Cost

0

Infrastructrue project to address Blanco River overflow influence on the Blanco Gardens

Item	Description	Quantity	Unit	Unit Price	Amount
1.01			LS		
1.02			CY		
1.03			LS		
1.04			LS		
1.05			LS		
	Subtotal				$ -
	Engineering, Survey and Permitting				
	Construction Contingency	35%			$ -
	Total Project Cost				$ 9,600,000.00

Site No.:	62F	Location:	*Blanco River Bank Trail and River Improvements (FEA*	BACK TO MAP

Project Description
Infrastructrue project to address Blanco River overflow influence on the Blanco Gardens subdivision area along the river bank from Highway 80 to Old Martindale Road. Project includes construction of ~4000 feet of a 10' wide trail, and an associated overflow channel and oxbox notch on the Blanco River banks for mitigation. Project provides significantly increased protection to Blanco Gardens from overflows in river events up to 36 years.

Cost	DR	City/Other
$11,500,000	$4,000,000	$7,511,821

2017	2018	2019	2020	2021	2022
$ 1,550,500	$ 1,550,500	$ 899,000	? Rest not from DR		