

Snyder/Edgewood Avenues Area Stormwater Improvements Project

Public Meeting #2
February 28, 2019



Agenda



Welcome and Introductions (10 min.)



Presentation (30 min.)

Project overview
Recap of first meeting
Review alternatives and modeling results



Discussion (30 min.)

- Discussion, question/answer
- Compile feedback
- Ranking of alternatives



Next Steps (15 min.)

Outline steps to select and develop solutions

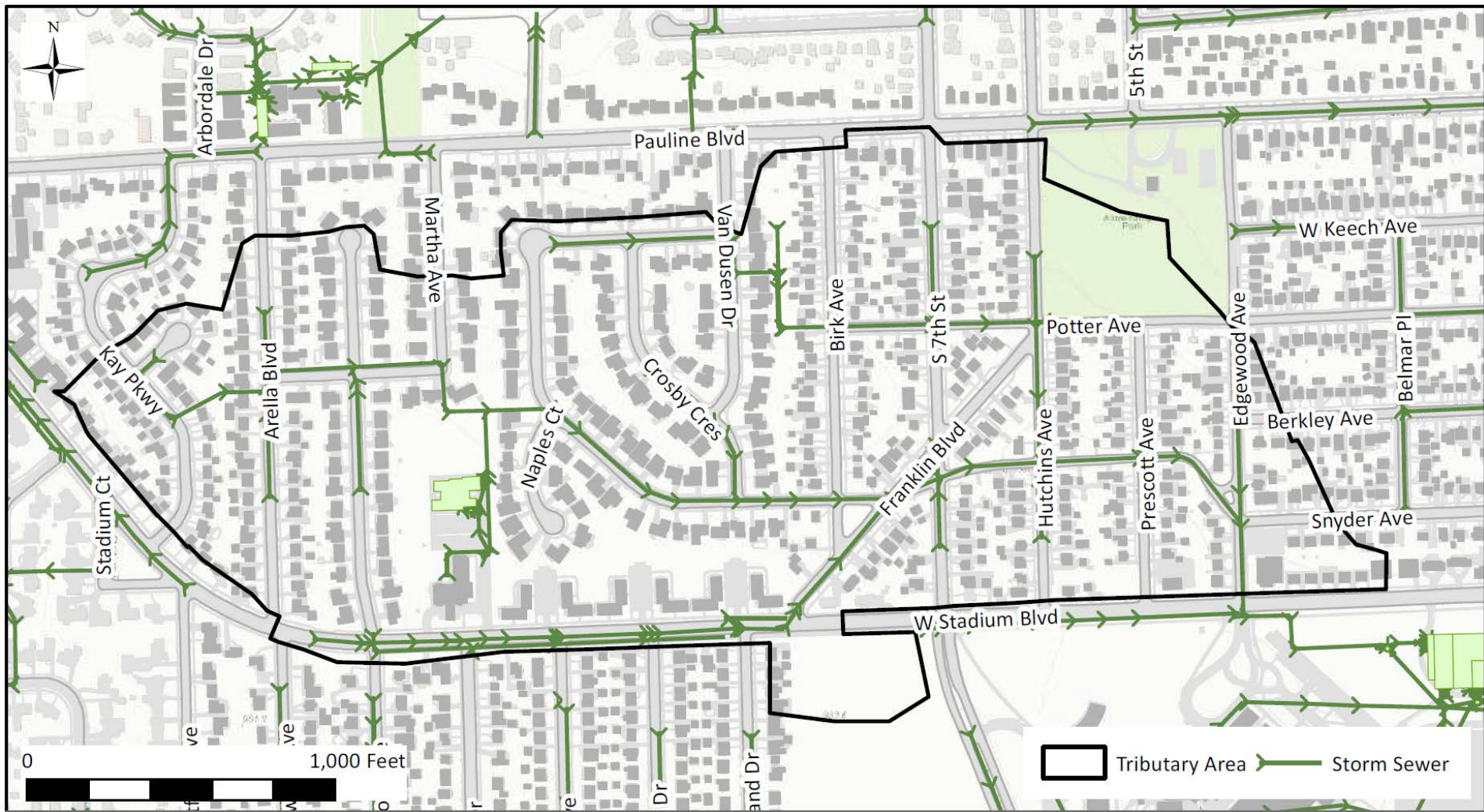


Background

Why are we here? What are we doing?

- Based on stormwater analysis projects, the City identified this as a highly flood prone area
- Previous survey of residents provided information regarding property flooding
- Address issues or concerns with proposed improvements





Edgewood/Snyder Drainage Area

Stormwater Alternatives

- Identify options to manage stormwater to reduce flooding – storage, conveyance, infiltration
- Use stormwater model to analyze impacts on flows and water levels
- Design target is to keep peak hydraulic grade line (HGL) one foot below ground level



Stormwater Alternatives

- Volume requirements vary by location, but are in the range of **120,000 – 140,000** cubic feet (ft³) of storage for the 10-year, 12-hour storm standard
- Designing for a 100-year, 24-hour storm standard would require over **3x** the volume
- CIP includes estimated construction budget of about \$1.5M



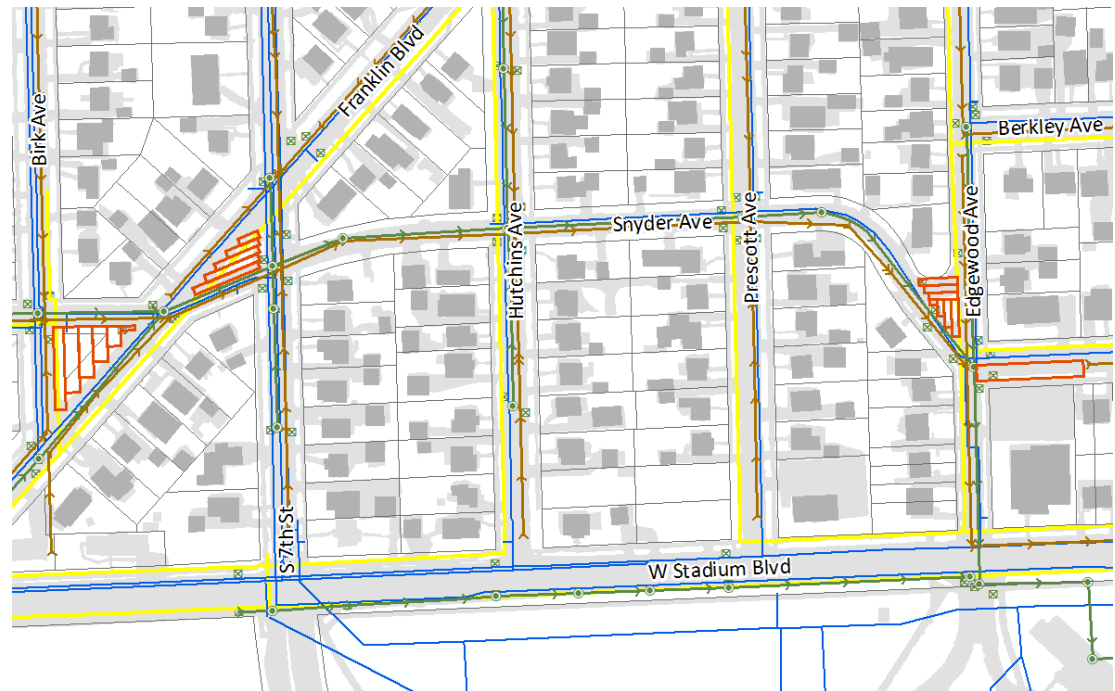
Alternatives Summary

Alternative	Option Name	Description
1	Snyder Right-of-Way (ROW) storage	Underground basins, minimal utility relocations
2	ROW storage with deeper discharge	Underground basins, deeper discharge across Stadium
3	Snyder In-line Storage	Larger, flatter pipes along Snyder with discharge controls
4	Future Green Streets	Future stormwater controls in tributary areas
5	Expanded storage – Utility Relocations	Underground basins, significant utility relocations (water and sewer)
6	Expanded storage – Traffic Changes	Underground or open basins, possible traffic changes
7	Expanded storage – Private Property Areas	Underground or open basins, extended into areas outside of ROW; easement or property acquisition
8	Downstream Storage - Pioneer	Conveyance (larger pipes) with new storage on Pioneer HS property
9	Downstream Storage - UM Golf	Conveyance (larger pipes) with modifications to existing UM golf pond
10	In-Line Storage along W. Stadium	In-line storage in W. Stadium ROW; no modifications to UM pond



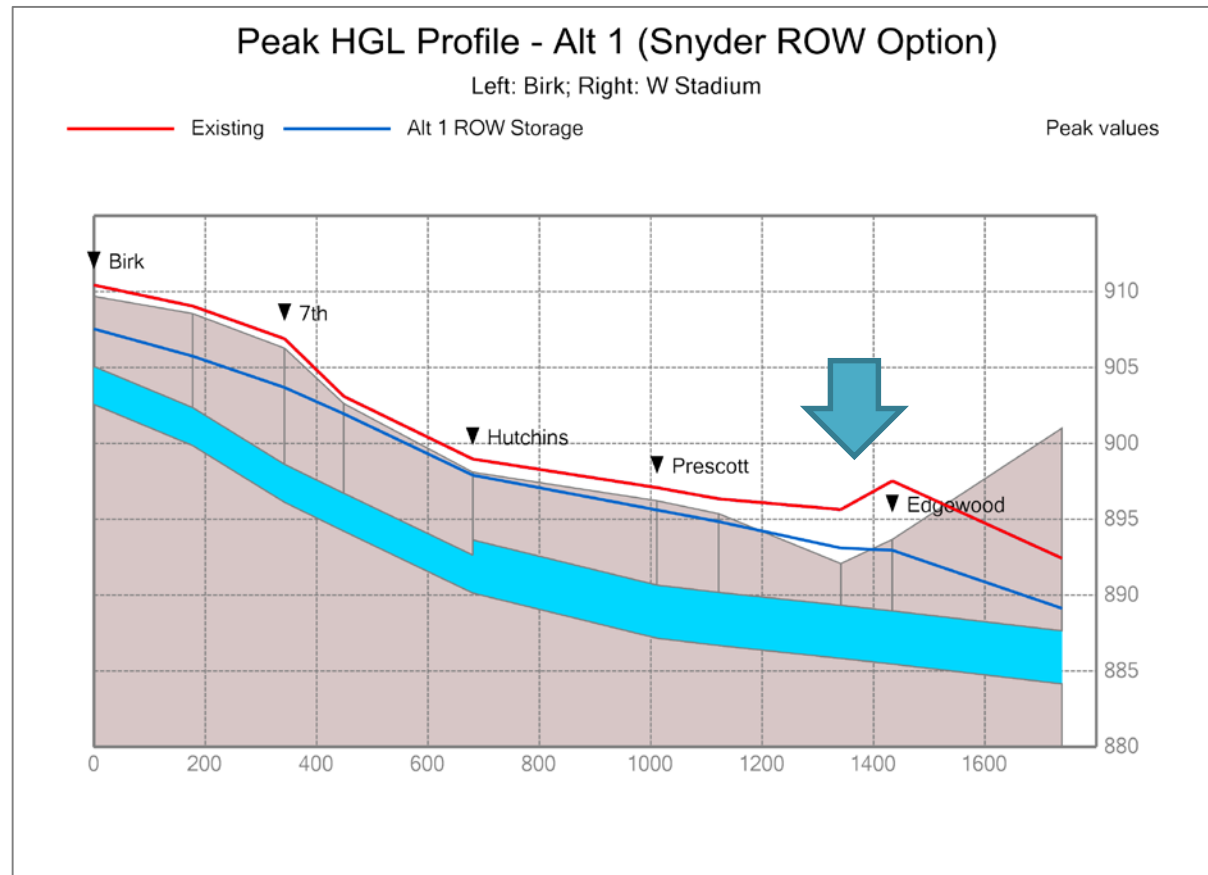
Alternative 1: Storage in Right-of-Way along Snyder Avenue

- 4 basins in available Snyder ROW locations
- Total storage volume = 103,000 (ft³)
Assumes min 18" cover on top of basins



Alternative 1: Snyder ROW Storage

- 103,000 ft³ of underground storage
- Model shows flooding reduced to 1 foot of water at the lowest spot in 10-year storm



Alternative 1: Snyder ROW Storage

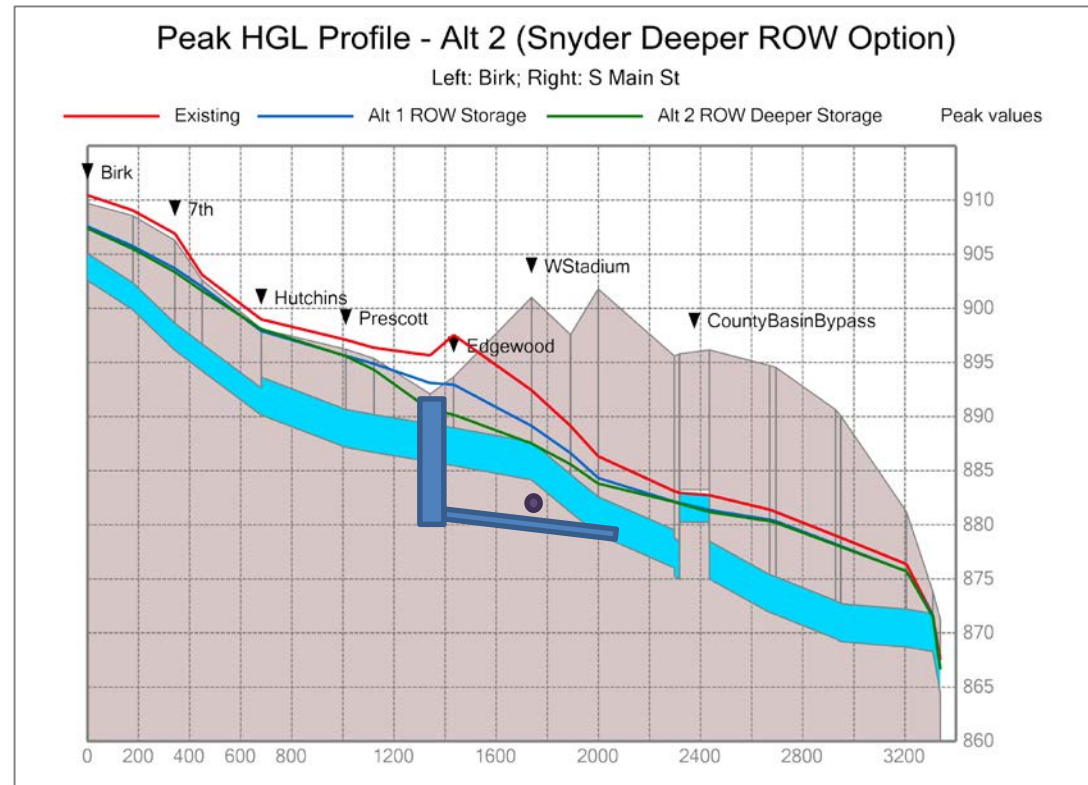
Basin	Description	Notes	Basin Size (ft ³)
1	Edgewood-Snyder ROW (intersection)	Relocate gas line	13,000
2	Snyder east of Edgewood	Eastbound lane along church parking lot	21,500
3	Franklin-Snyder-7th	Relocate gas line	27,500
4	Franklin-Snyder-Birk	Relocate 1 hydrant	41,000
	Total (all locations)		103,000

Considerations:

- Volume required to meet 10-year, 12-hour design standard is 135,000 ft³
- Temporary driveway access limitations during construction

Alternative 2: ROW Storage with Deeper Discharge across Stadium

- Deeper storage (134,700 ft³) to get water level below ground at Edgewood-Snyder
- Basin outlet goes under 15" sanitary sewer on W Stadium



Alternative 2: ROW Storage with Deeper Discharge across Stadium

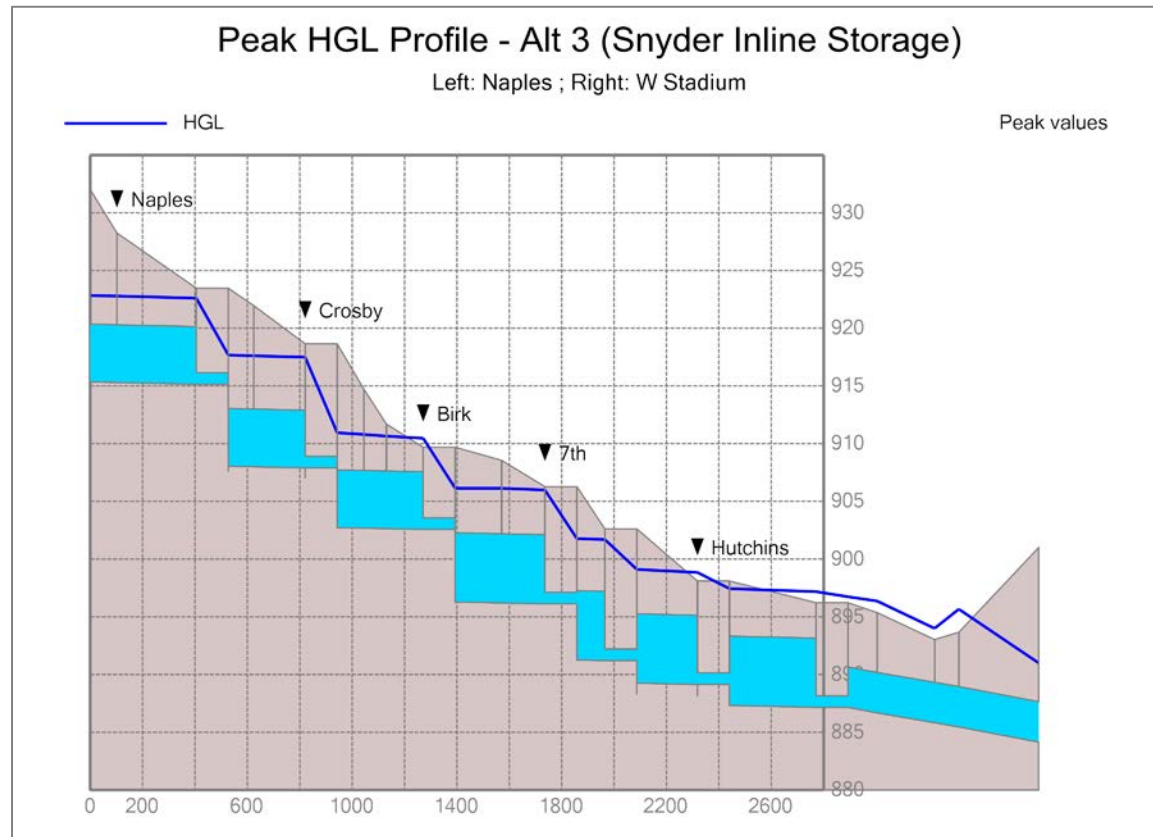
Basin	Description	Note	Alt 1 Basin Size (ft ³)	Alt 2 Basin Size (ft ³)
1	Edgewood-Snyder ROW (intersection)	Relocate gas line	13,000	28,000
2	Snyder east of Edgewood	Eastbound lane outside church parking lot	21,500	38,200
3	Franklin-Snyder-7th	Relocate gas line	27,500	27,500
4	Franklin-Snyder-Birk	Relocate 1 hydrant	41,000	41,000
	Total (all locations)		103,000	134,700

Considerations:

- Potential conflict with sanitary sewers and house leads
- Construction likely requires excavation support, leading to more significant access limitations and longer duration

Alternative 3: Snyder In-Line Storage

- Provide flatter, deeper pipes along Snyder
- Increases storage without changing conveyance



Alternative 3: Snyder In-Line Storage

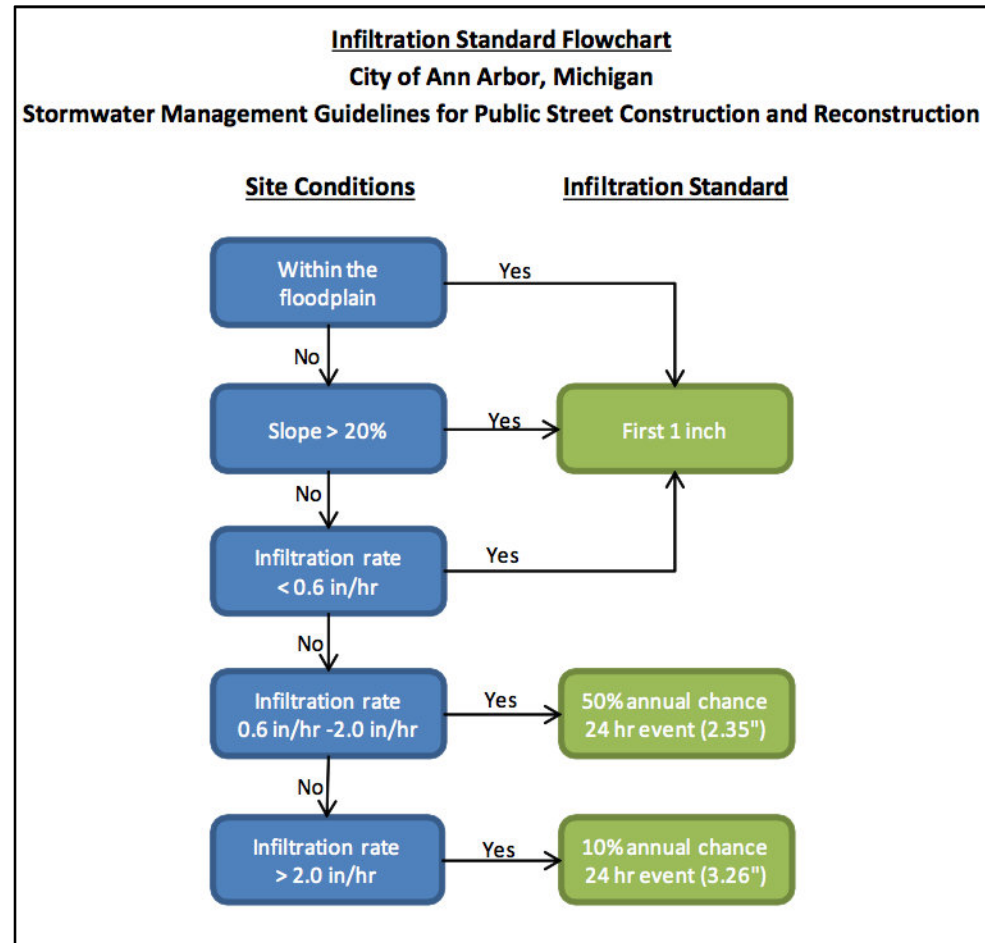
Pipe Sections	Description	Original Pipe Size (in)	Revised Pipe Size (in)	Storage Volume Provided (ft ³)
1	Edgewood – Prescott	42	42	--
2	Prescott – Hutchins	42	72	
3	Hutchins – S. Seventh	30	72	
4	S. Seventh – Birk	30	72	
5	Birk – Naples	24 – 30	60	
	Total (all locations)			48,750

Considerations:

- Linear approach results in more surface disruption and restoration
- Pipe size increases may lead to utility conflicts

Alternative 4: Future Green Streets

- Make up any shortfall in volume with distributed stormwater control and infiltration
- Stormwater management along 15,000 lf of streets can be accomplished with:
 - Larger pipes and outlet control
 - Linear green infrastructure (infiltration trenches, bioswales)
 - Private property programs (rain gardens, rain barrels, etc.)



Alternative 4: Future Green Streets



Considerations:

- Aligns with other neighborhood improvement projects (roads, water mains) – indefinite project schedule
- Intent of Green Streets program is for water quality improvements, not stormwater quantity reductions

Alternative 5: Expanded Storage – Utility Relocations

- Relocate water mains and/or sanitary sewers
- Larger basins while maintaining utility clearances



Alternative 5: Expanded storage - Utility Relocation

Option	Location	Description	Additional Volume (ft ³)
1	Franklin-Snyder-7th	Relocate water and sanitary sewer on Franklin (north)	15,000
2	Franklin-Snyder-Birk	Relocate sanitary sewer on Birk (west) and on Snyder (north)	29,000
Net Total Volume Stored (with Alternative 1) (ft ³)			147,000

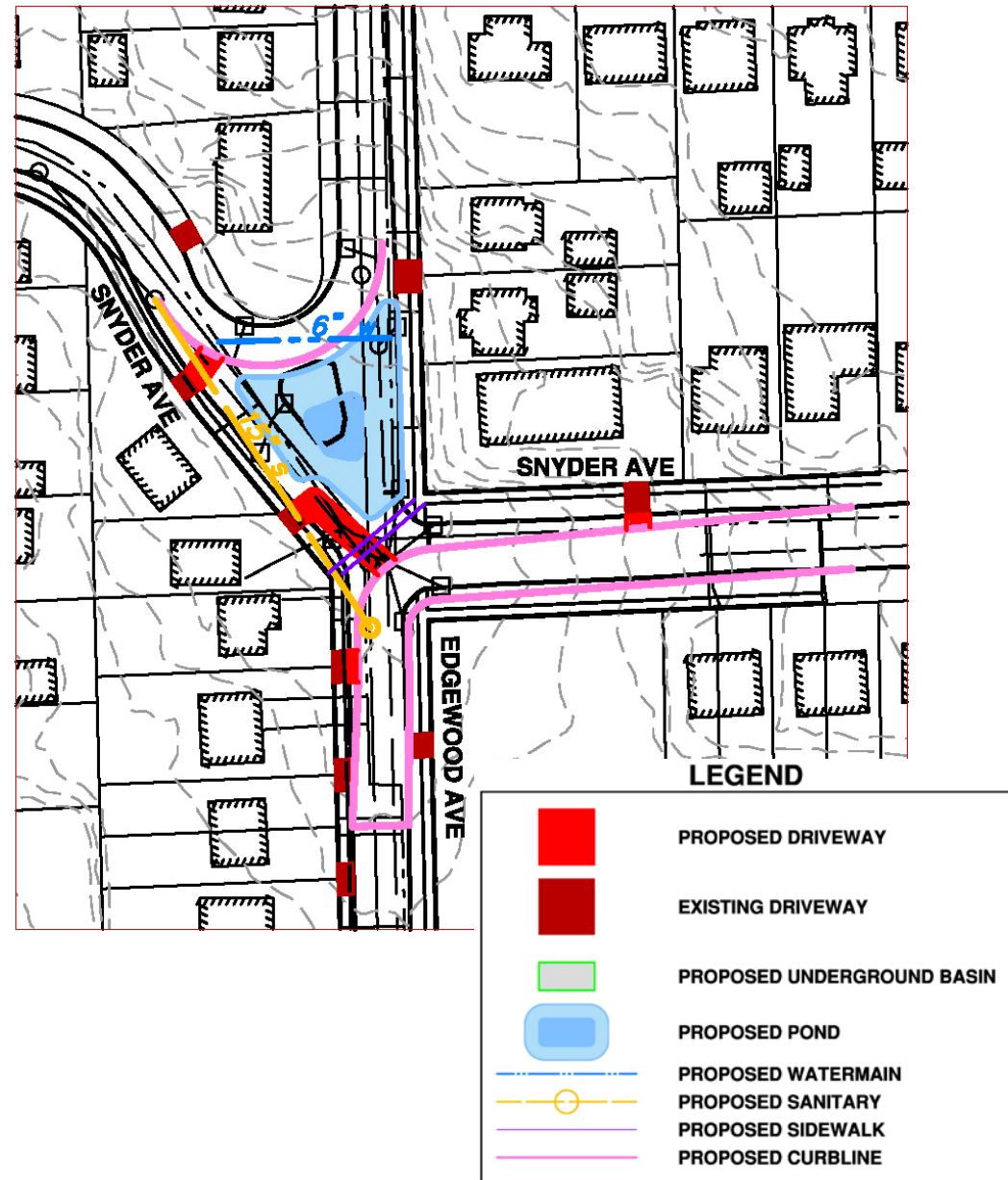
Considerations:

- Adds possibility of temporary service disruptions

Alternative 6: Expanded Storage – Traffic Changes

- Change roadway layout (lanes, curbs) to expand basins
- Provides additional space for potential open basins (storage ponds)

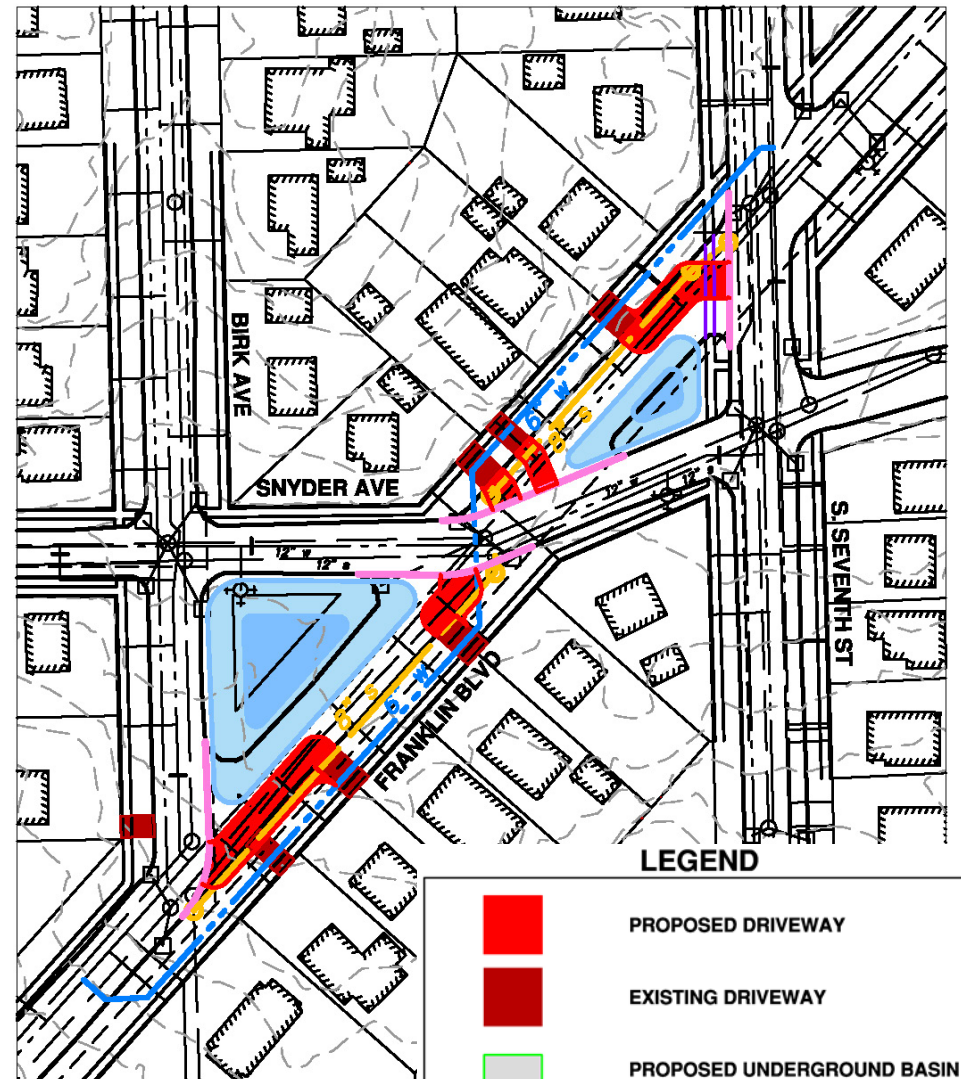
Edgewood-Snyder Intersection



Franklin-Snyder-Birk Intersections

Alternative 6: Expanded Storage – Traffic Changes

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Alternative 6: Expanded storage - Traffic Changes

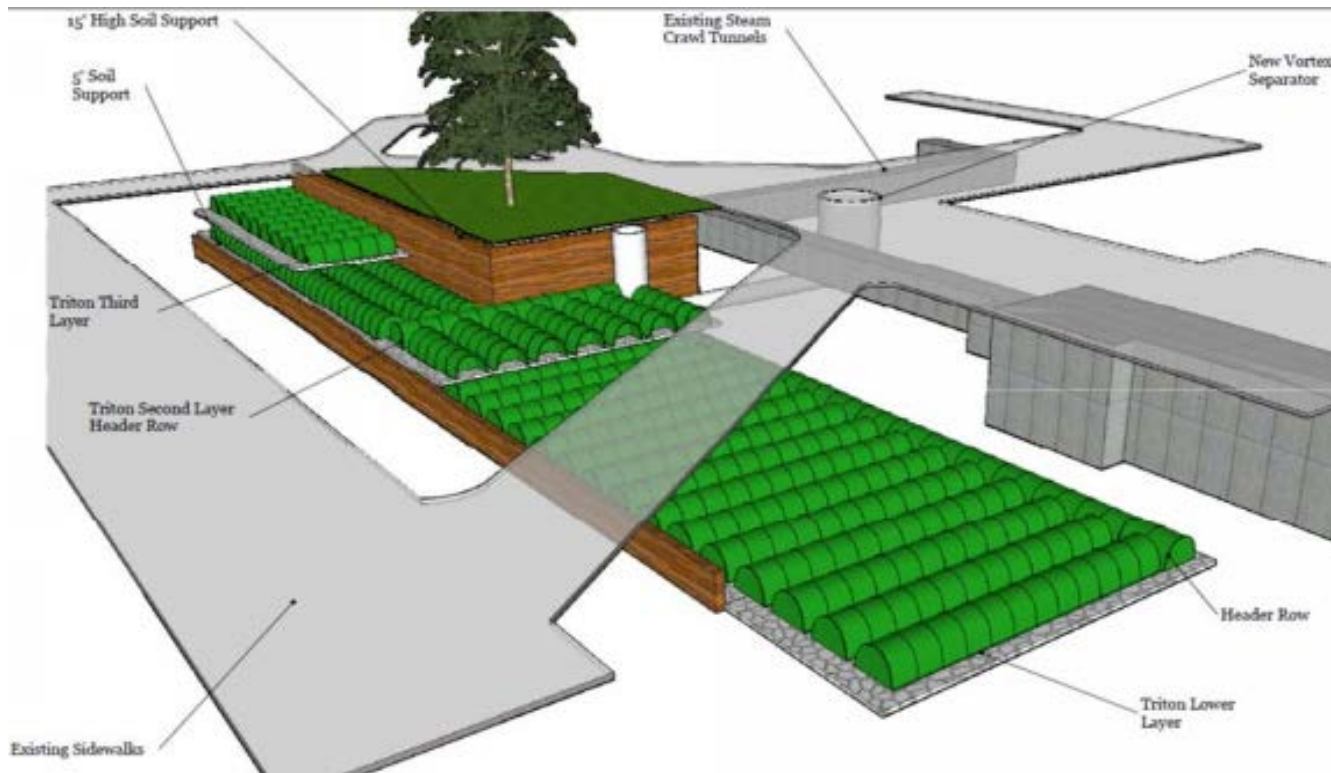
Option	Description	Notes	Volume change (ft ³)	Net Volume with Alt 1 (ft ³)
1	Snyder-Edgewood intersection	Closes Edgewood North-South and Snyder East-West	4,600	107,600
2	Franklin Re-routing	Closes Franklin, routing traffic onto Snyder	-25,000	78,000

Considerations

- Traffic changes could potentially be beneficial
- Open ponds are a significant change to neighborhood aesthetics – visibility, maintenance, safety

Alternative 7: Expanded Storage – Private Property Areas

- Consider where easements or property acquisition could provide storage at strategic locations



Alternative 7: Expanded Storage – Private Property Areas

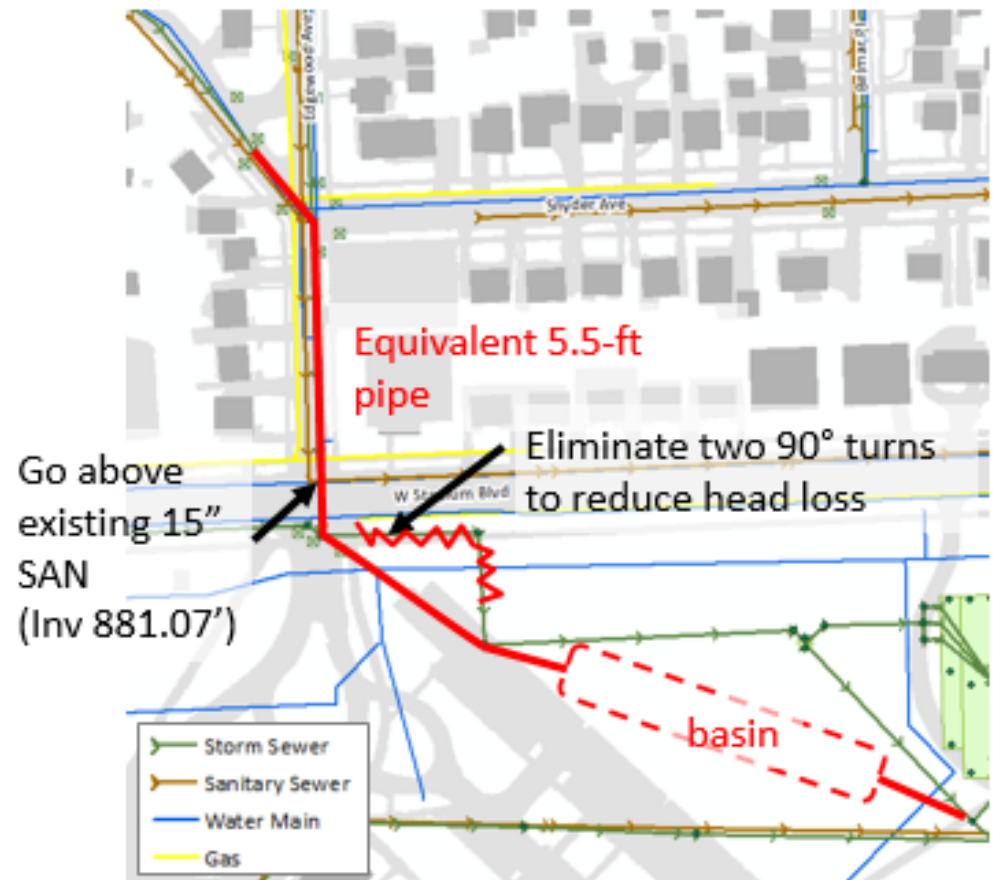
Option	Description	Additional Volume (ft ³)	Net Volume with Alt 1 (ft ³)
1	Edgewood-Snyder Property 1	35,000	138,000
2	Edgewood-Snyder Properties 2 & 3	31,000	132,000
3	West of Seventh Property 1	75,000	178,000

Considerations

- Property acquisition (acceptability, cost)
- Locations away from main drainage pathway are less effective and could require additional conveyance improvements

Alternative 8: Downstream Storage - Pioneer High School

- Larger pipe conveys flow from Snyder-Edgewood
- New basin would be located under soccer field, west of existing stormwater infiltration basin



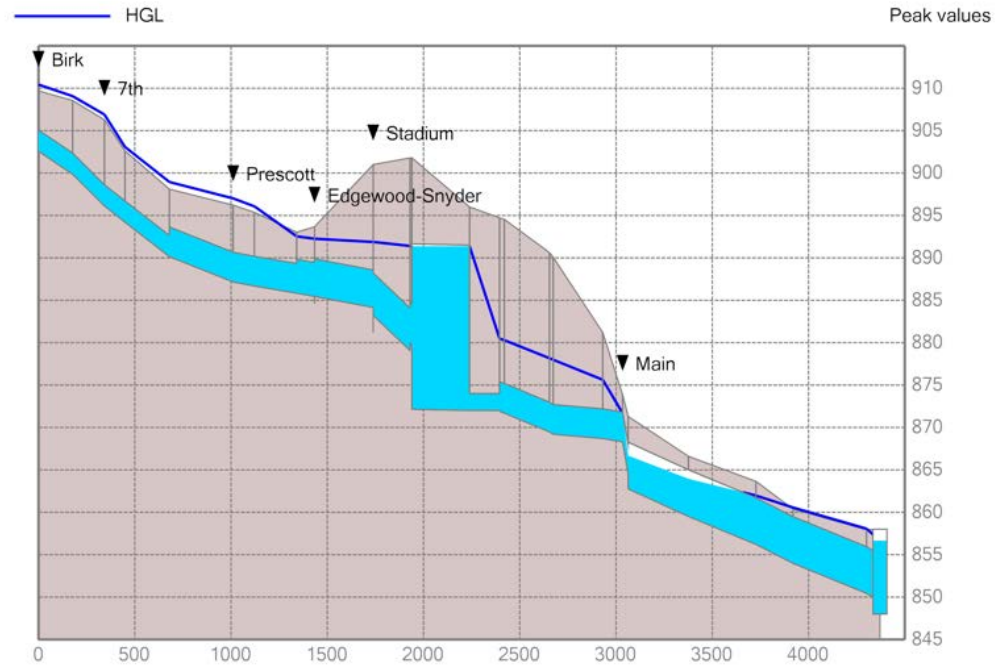
Alternative 8: Downstream Storage - Pioneer High School

Considerations:

- Requires AAPS approval and coordination
- Deeper basin, but more open work area

Peak HGL Profile - Pioneer HS Basin Option

Left: Birk; Right: UM Golf Course Pond



Target Elevation (ft)	Target Description	Basin Size (ft ³)
891	1 ft below ground	121,800

Alternative 9: Downstream Storage – UM Golf Course Pond



Design targets:

- Edgewood peak HGL 1 ft below ground
- Maintain existing condition peak outflow at Golf course pond (200 ft³/s)



Alternative 9: Conveyance + Golf Course Pond Detention

Conveyance

5-ft dia: 1,500 ft

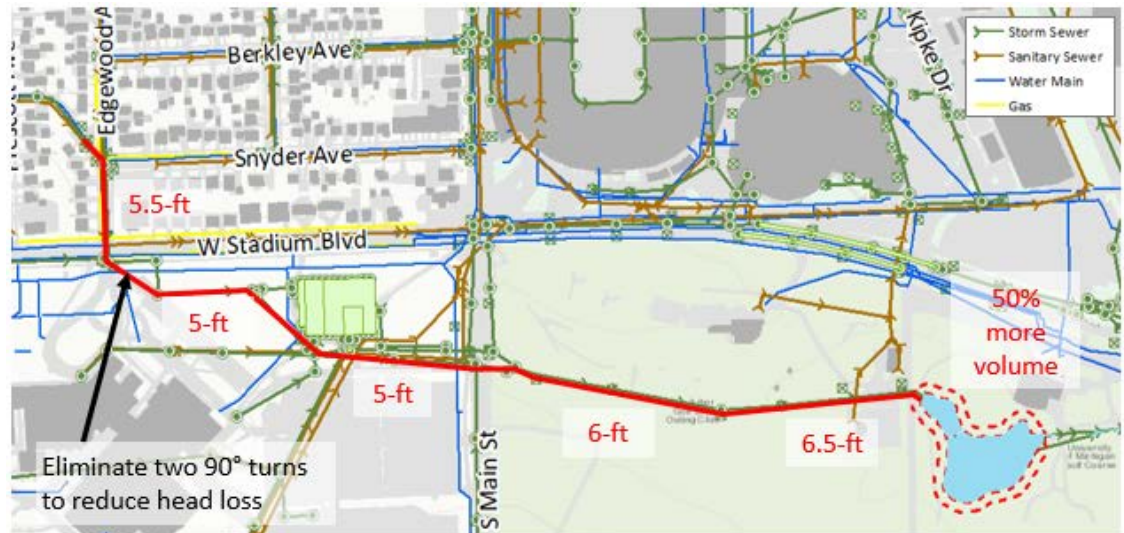
5.5-ft dia: 310 ft

6-ft dia: 660 ft

6.5-ft dia: 650 ft

UM Pond Storage

50% volume increase



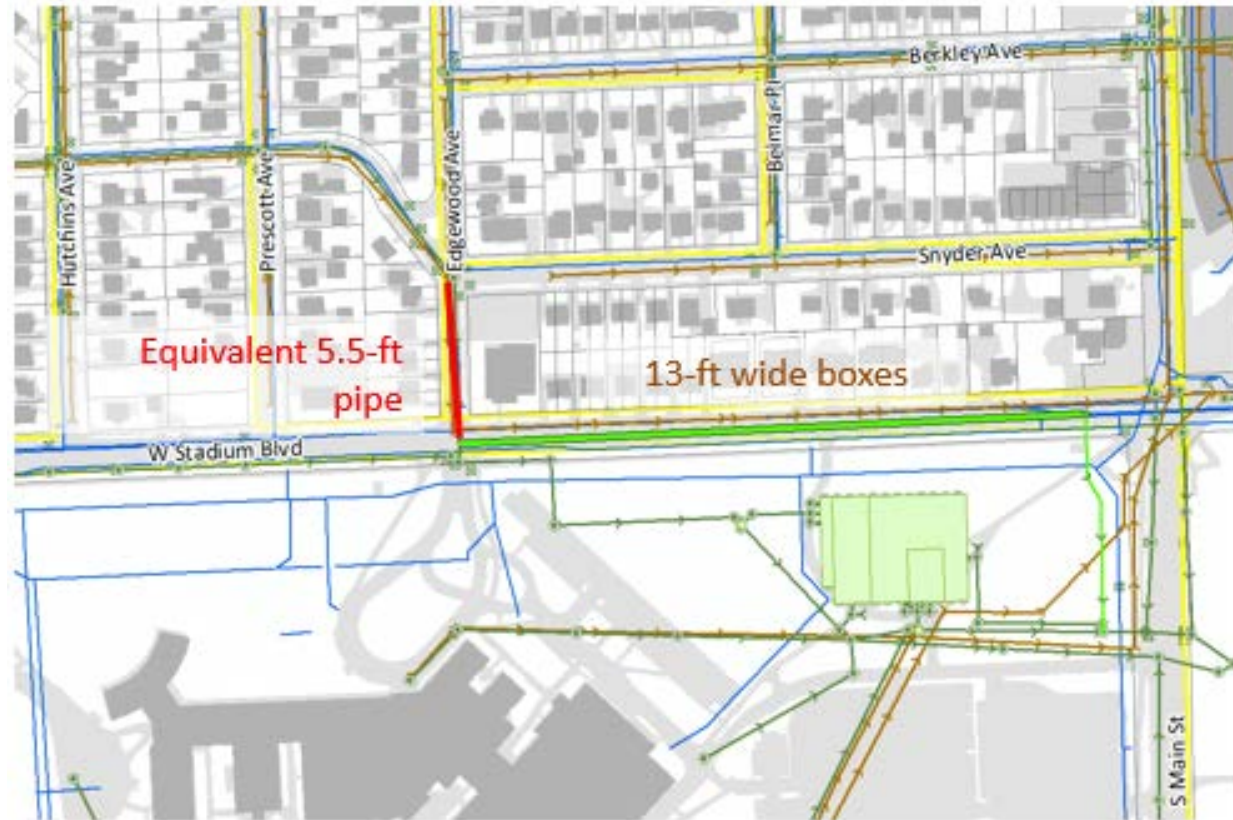
Considerations

- Construction across Ann Arbor Golf & Outing property in easement but would be highly disruptive and cost prohibitive
- Increased flows would require physical changes to UM golf course pond, potentially affecting 18th hole and/or new clubhouse



Alternative 10: Inline Storage along W. Stadium Blvd.

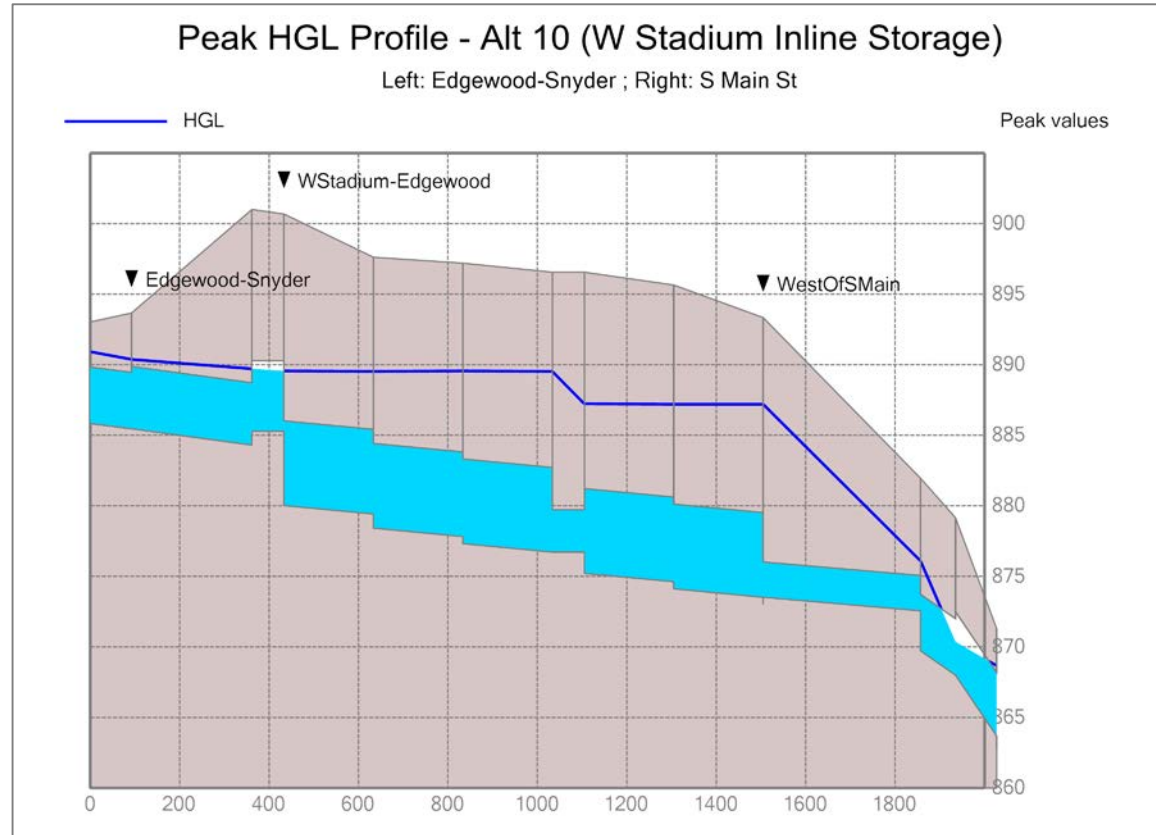
- 80,200 ft³ to drop peak HGL to 1 foot below ground at Edgewood-Snyder intersection
- 13-ft wide along ROW



Alternative 10: Inline Storage along W. Stadium Blvd

Considerations:

- Would be combined with planned improvements to W. Stadium (likely 2023 or later)
- Still sends higher peak flows to UM Golf Course pond that would need to be managed



Alternatives Summary

	Alternative	Description	Cost Projection	Volume (ft ³)	Other Considerations
1	Snyder Right-of-Way (ROW) Storage	Underground basins, minimal utility relocations	Medium	103,000	Driveway disruption
2	ROW Storage with deeper discharge	Underground basins, deeper discharge across Stadium	High	135,000	Utility conflicts
3	Snyder In-line Storage	Larger, flatter pipes along Snyder with discharge controls	Medium	48,750	Utility conflicts
4	Future Green Streets	Future stormwater controls in tributary areas	Various	Various	Coordination with other projects
5	Expanded Storage – Utility Relocations	Underground basins, significant utility relocations (water and sewer)	High	147,000	Service disruptions



Alternatives Summary

	Alternative	Description	Cost Projection	Volume (ft ³)	Other Considerations
6	Expanded Storage – Traffic Changes	Underground or open basins, possible traffic changes	High	108,000	Neighborhood aesthetics
7	Expanded Storage – Private Property Areas	Underground or open basins, extended into areas outside of ROW; easement or property acquisition	High	30,000 – 140,000	Cost, acceptability
8	Downstream Storage - Pioneer	Conveyance (larger pipes) with new storage on Pioneer HS property	Medium	121,800	Easement needed
9	Downstream Storage - UM Golf	Conveyance (larger pipes) with modifications to existing UM golf pond	Very High	161,500*	Easement needed *peak volume added to UM golf pond
10	In-Line Storage along W. Stadium	In-line storage in W. Stadium ROW; modifications to UM golf pond	Medium	80,200*	2023 or later *requires additional storage at UM golf pond





Questions?



Discussion

(1) Questions or concerns related to:

- Modeling
- Cost projections

(2) Requests for additional information at future meetings

(4) Preliminary ranking of alternatives

(3) Take-aways from the information presented



Polling Alternatives

- Participants will use a polling device to cast a “yes”, “no”, or “no preference” choice for each alternative
- Participants will choose viability criteria for each alternative
- Polling is anonymous
- Compiled results will be shown after polling is completed
- Please wait until instructed to use polling device!



Polling Alternatives

1. Do you support this alternative to resolve the stormwater issues?
 - 1 – Yes
 - 2 – No
 - 3 – No preference

2. Choose any of the following to explain why you believe this may be a viable alternative (Select all that apply):
 - 1 – Cost effectiveness
 - 2 – Level of impact to area
 - 3 – Time to resolution
 - 4 – Amount of stormwater captured
 - 5 – Other



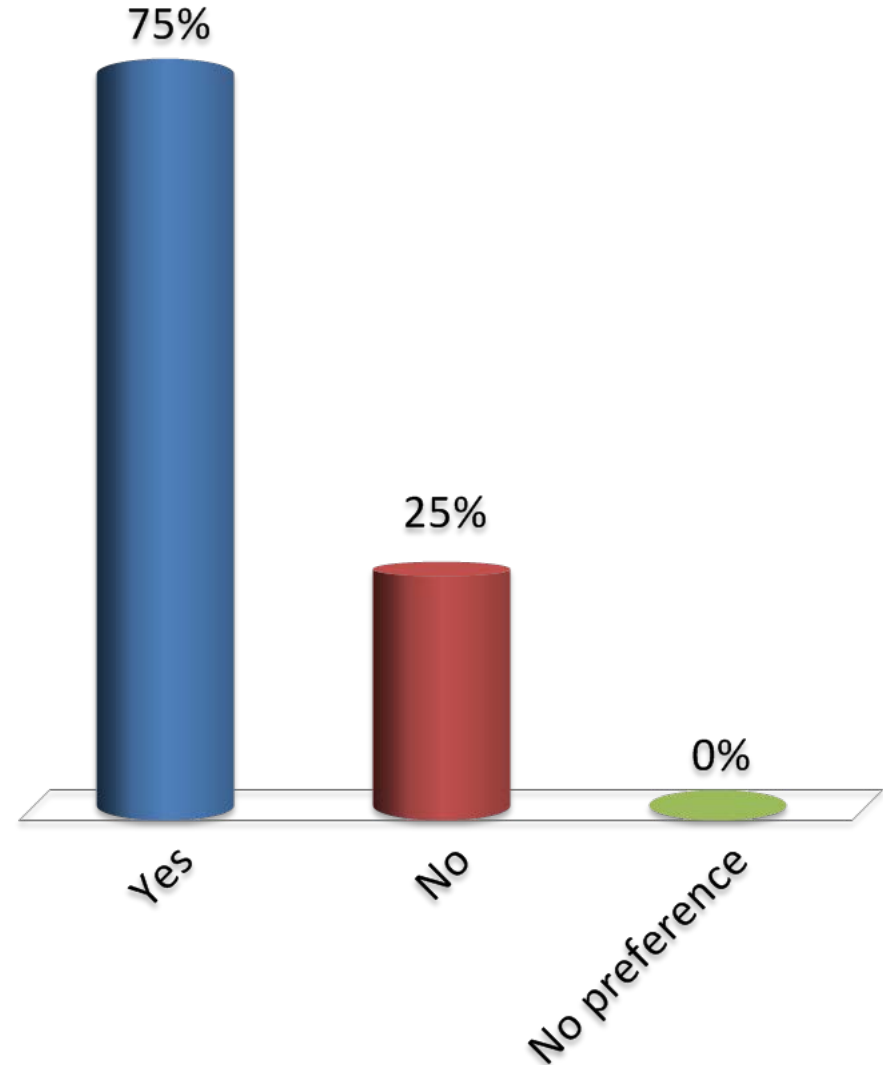
Alternative #1

Alternative #1	Description	Cost Projection	Volume (ft ³)	Other Considerations
Snyder Right-of-Way (ROW) Storage	Underground basins, minimal utility relocations	Medium	103,000	Driveway disruption



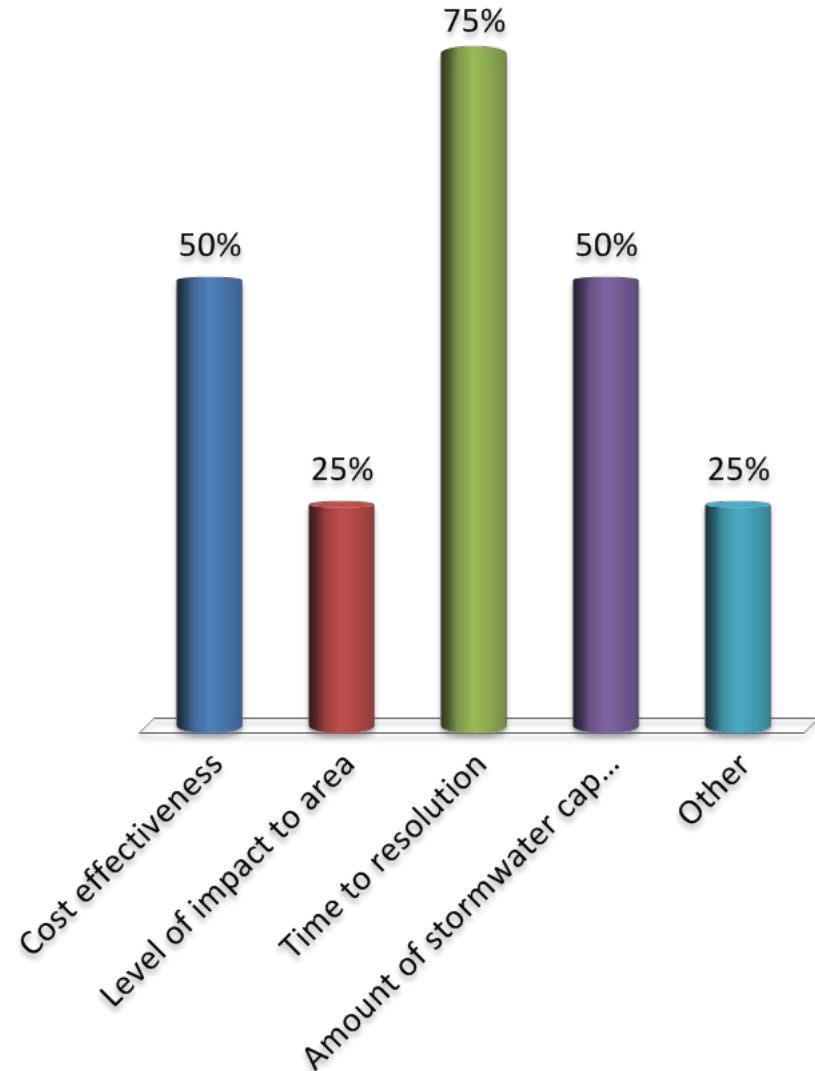
A1.1 - Do you support this alternative to resolve the stormwater issues?

- A. Yes
- B. No
- C. No preference



A1.2 - Choose any of the following to explain why you believe this may be a viable alternative? (Select all that apply)

- A. Cost effectiveness
- B. Level of impact to area
- C. Time to resolution
- D. Amount of stormwater captured
- E. Other



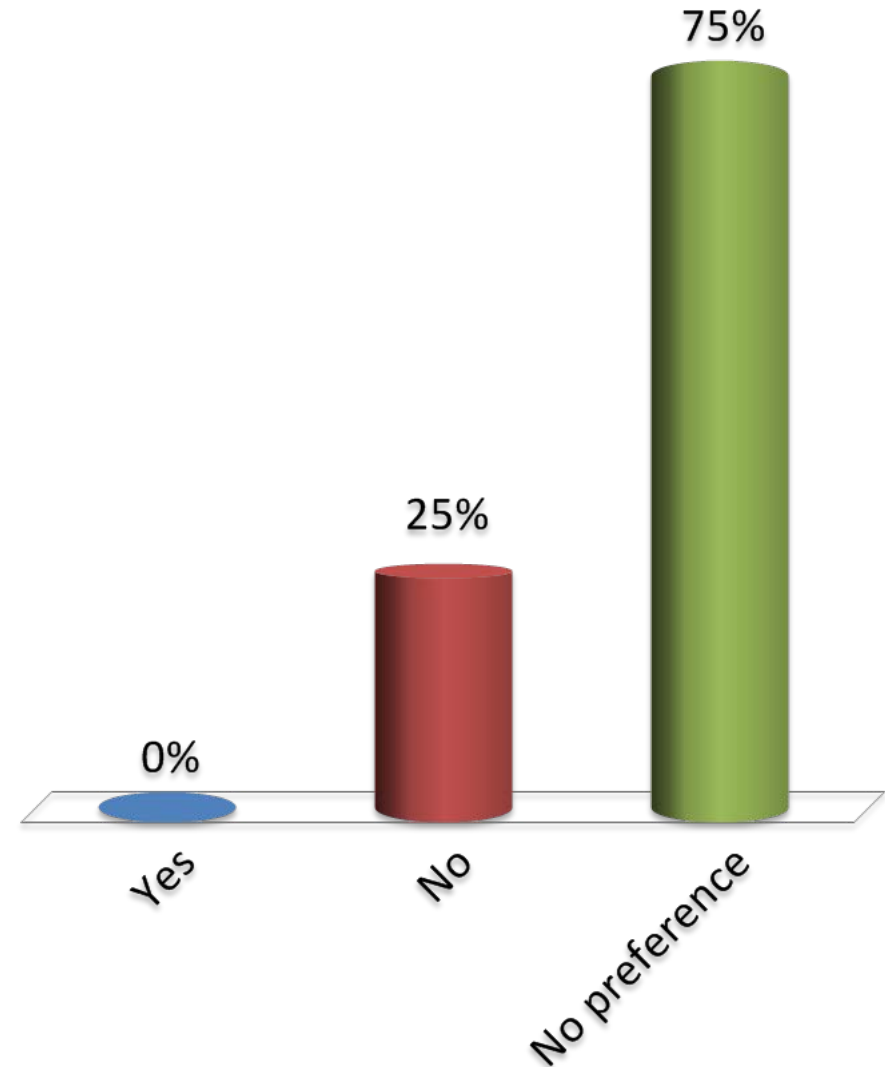
Alternative #2

Alternative #2	Description	Cost Projection	Volume (ft ³)	Other Considerations
ROW Storage with deeper discharge	Underground basins, deeper discharge across Stadium	High	135,000	Utility conflicts



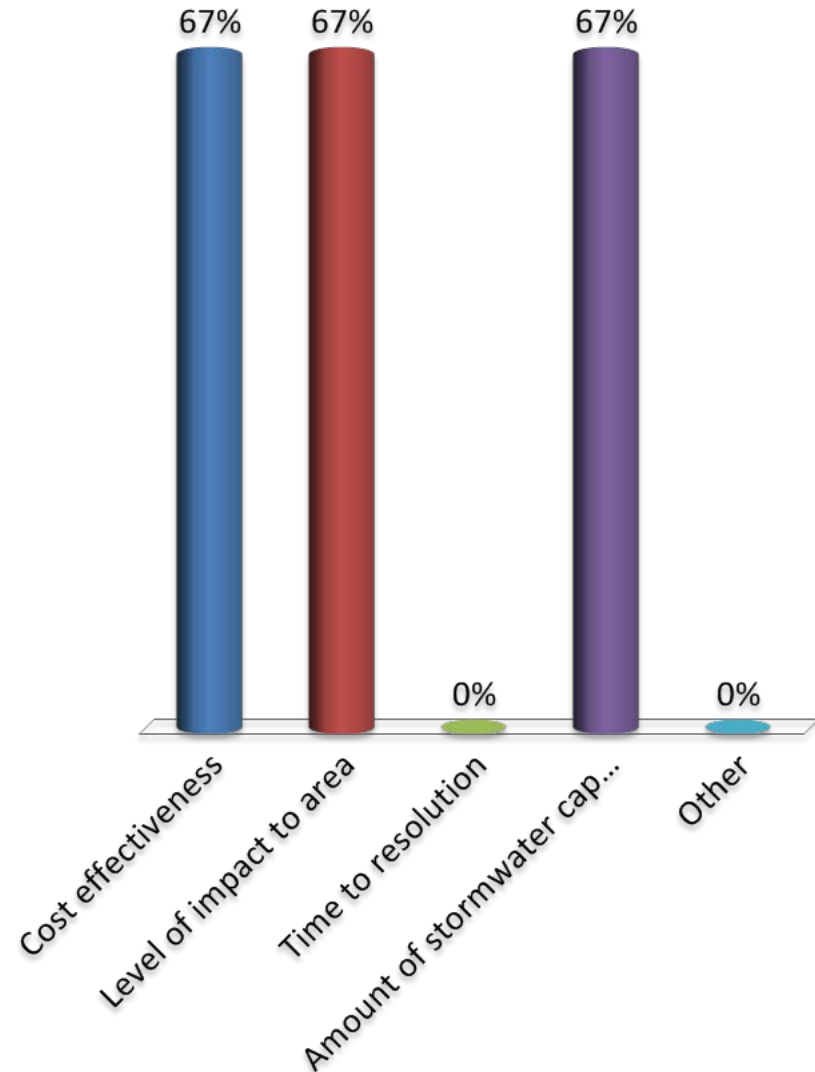
A2.1 - Do you support this alternative to resolve the stormwater issues?

- A. Yes
- B. No
- C. No preference



A2.2 - Choose any of the following to explain why you believe this may be a viable alternative? (Select all that apply)

- A. Cost effectiveness
- B. Level of impact to area
- C. Time to resolution
- D. Amount of stormwater captured
- E. Other



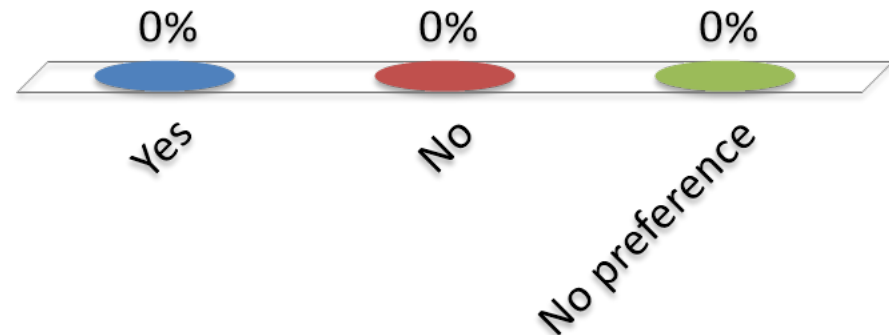
Alternative #3

Alternative #3	Description	Cost Projection	Volume (ft ³)	Other Considerations
Snyder In-line Storage	Larger, flatter pipes along Snyder with discharge controls	Medium	48,750	Utility conflicts



A3.1 - Do you support this alternative to resolve the stormwater issues?

- A. Yes
- B. No
- C. No preference



A3.2 - Choose any of the following to explain why you believe this may be a viable alternative? (Select all that apply)

- A. Cost effectiveness
- B. Level of impact to area
- C. Time to resolution
- D. Amount of stormwater captured
- E. Other



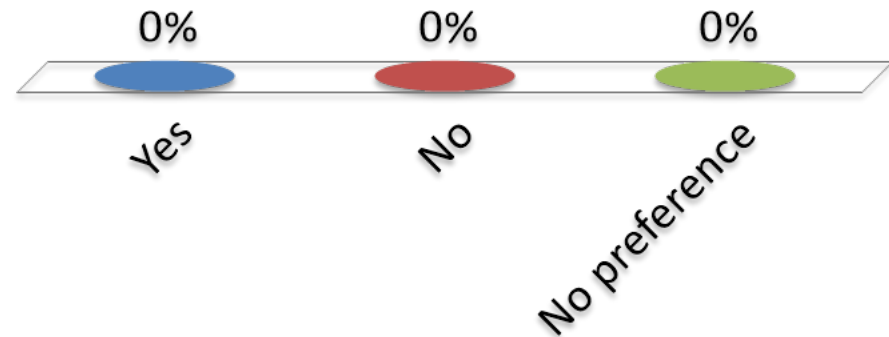
Alternative #4

Alternative #4	Description	Cost Projection	Volume (ft ³)	Other Considerations
Future Green Streets	Future stormwater controls in tributary areas	Various	Various	Coordination with other projects



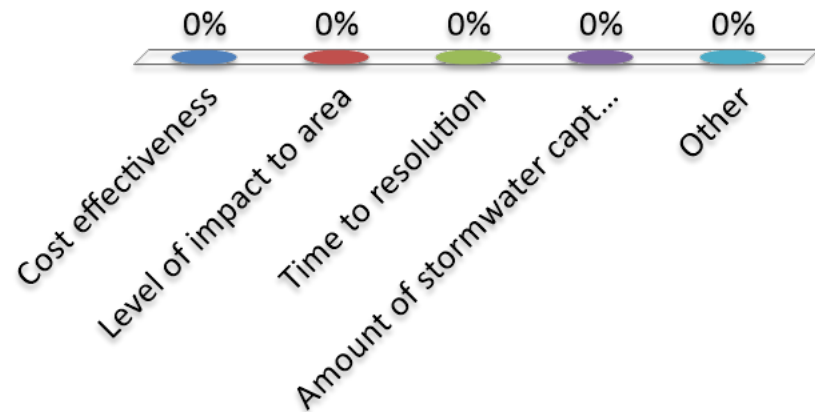
A4.1 - Do you support this alternative to resolve the stormwater issues?

- A. Yes
- B. No
- C. No preference



A4.2 - Choose any of the following to explain why you believe this may be a viable alternative? (Select all that apply)

- A. Cost effectiveness
- B. Level of impact to area
- C. Time to resolution
- D. Amount of stormwater captured
- E. Other



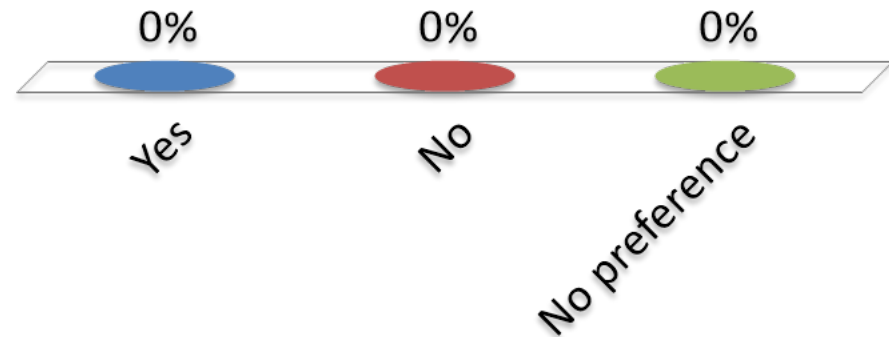
Alternative #5

Alternative #5	Description	Cost Projection	Volume (ft ³)	Other Considerations
Expanded Storage – Utility Relocations	Underground basins, significant utility relocations (water and sewer)	High	147,000	Service disruptions



A5.1 - Do you support this alternative to resolve the stormwater issues?

- A. Yes
- B. No
- C. No preference



A5.2 - Choose any of the following to explain why you believe this may be a viable alternative? (Select all that apply)

- A. Cost effectiveness
- B. Level of impact to area
- C. Time to resolution
- D. Amount of stormwater captured
- E. Other



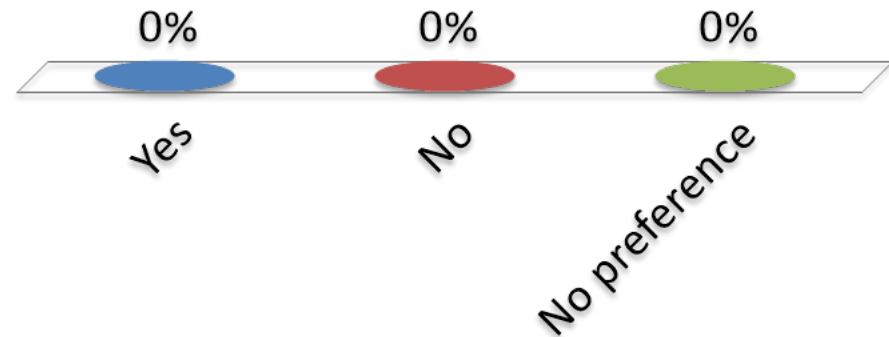
Alternative #6

Alternative #6	Description	Cost Projection	Volume (ft ³)	Other Considerations
Expanded Storage – Traffic Changes	Underground or open basins, possible traffic changes	High	108,000	Neighborhood aesthetics



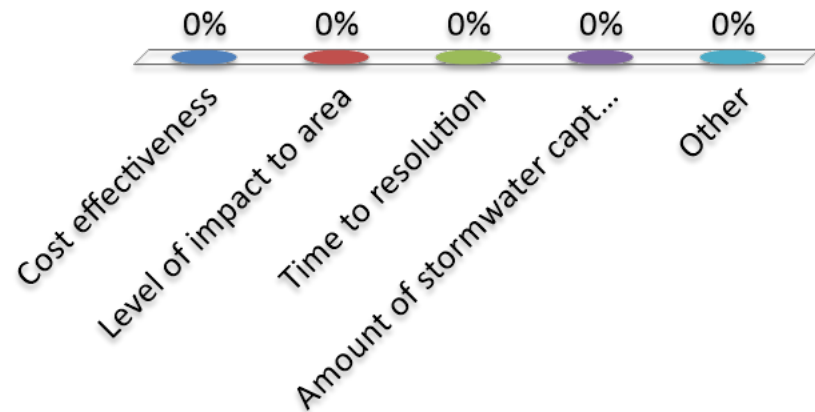
A6.1 - Do you support this alternative to resolve the stormwater issues?

- A. Yes
- B. No
- C. No preference



A6.2 - Choose any of the following to explain why you believe this may be a viable alternative? (Select all that apply)

- A. Cost effectiveness
- B. Level of impact to area
- C. Time to resolution
- D. Amount of stormwater captured
- E. Other



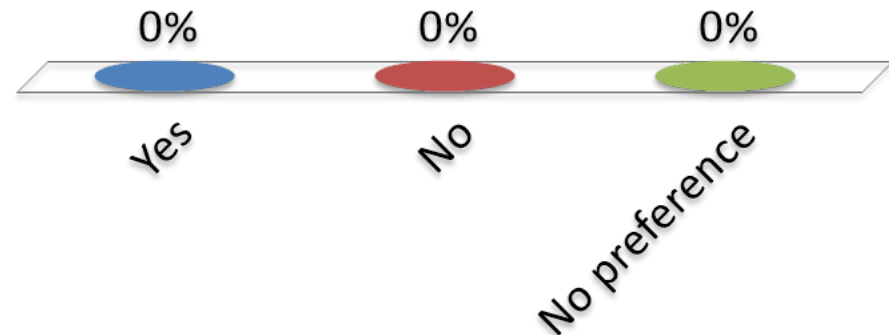
Alternative #7

Alternative #7	Description	Cost Projection	Volume (ft ³)	Other Considerations
Expanded Storage – Private Property Areas	Underground or open basins, extended into areas outside of ROW; easement or property acquisition	High	30,000 – 140,000	Cost, acceptability



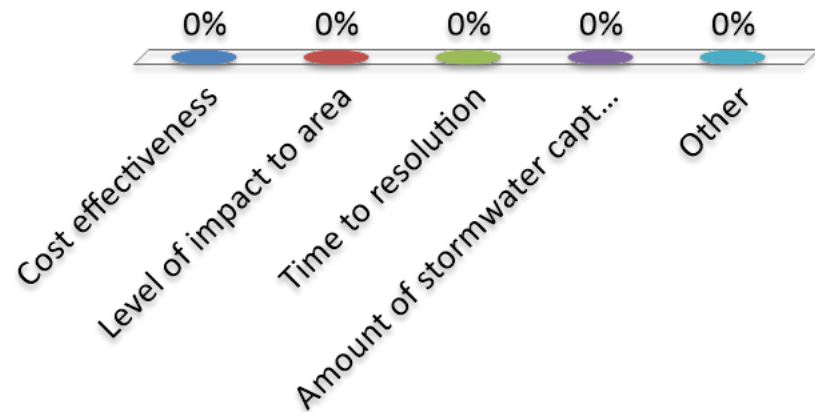
A7.1 - Do you support this alternative to resolve the stormwater issues?

- A. Yes
- B. No
- C. No preference



A7.2 - Choose any of the following to explain why you believe this may be a viable alternative? (Select all that apply)

- A. Cost effectiveness
- B. Level of impact to area
- C. Time to resolution
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- E. Other



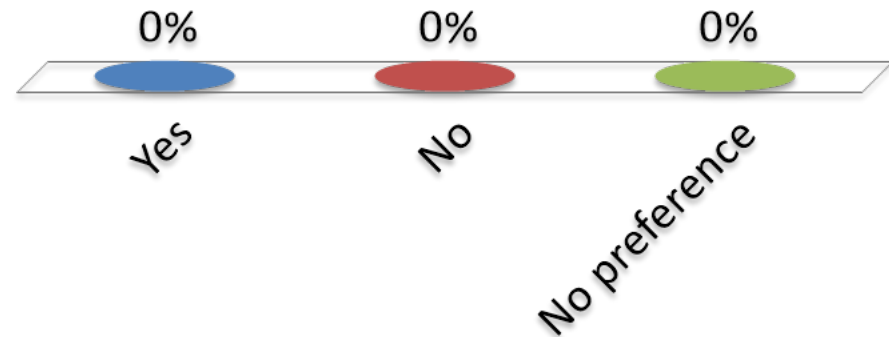
Alternative #8

Alternative #8	Description	Cost Projection	Volume (ft ³)	Other Considerations
Downstream Storage - Pioneer	Conveyance (larger pipes) with new storage on Pioneer HS property	Medium	121,800	Easement needed



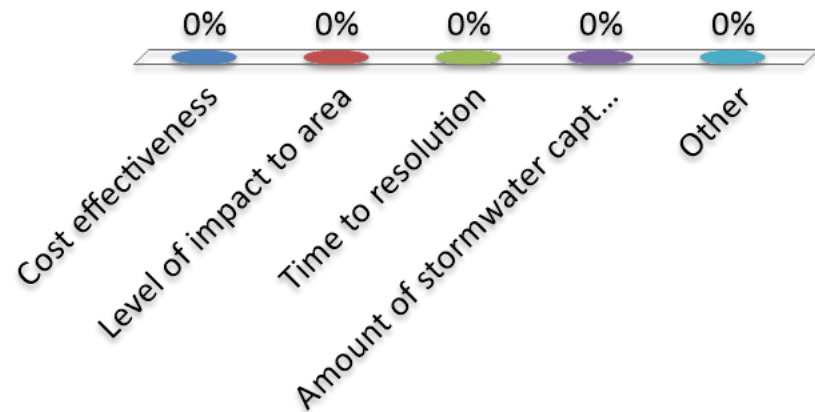
A8.1 - Do you support this alternative to resolve the stormwater issues?

- A. Yes
- B. No
- C. No preference



A8.2 - Choose any of the following to explain why you believe this may be a viable alternative? (Select all that apply)

- A. Cost effectiveness
- B. Level of impact to area
- C. Time to resolution
- D. Amount of stormwater captured
- E. Other



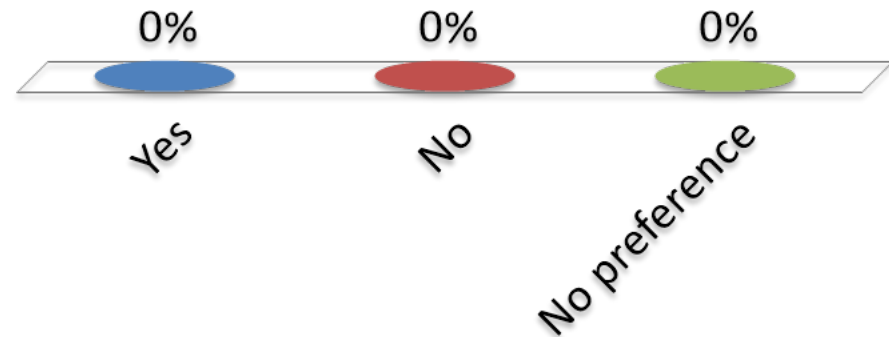
Alternative #9

Alternative #9	Description	Cost Projection	Volume (ft ³)	Other Considerations
Downstream Storage - UM Golf	Conveyance (larger pipes) with modifications to existing UM golf pond	Very High	161,500	Easement needed



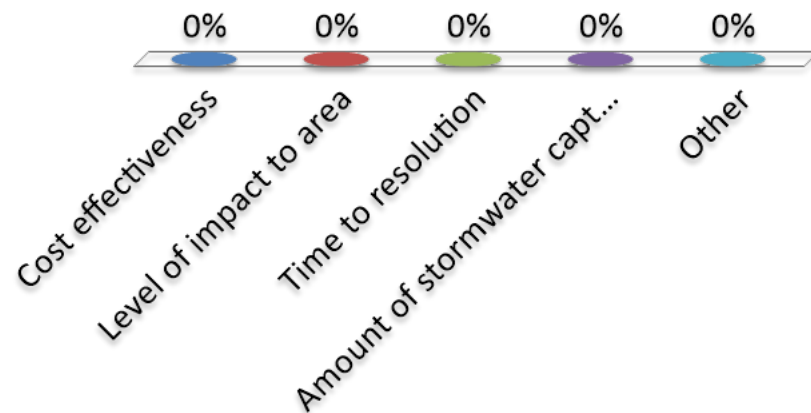
A9.1 - Do you support this alternative to resolve the stormwater issues?

- A. Yes
- B. No
- C. No preference



A9.2 - Choose any of the following to explain why you believe this may be a viable alternative? (Select all that apply)

- A. Cost effectiveness
- B. Level of impact to area
- C. Time to resolution
- D. Amount of stormwater captured
- E. Other



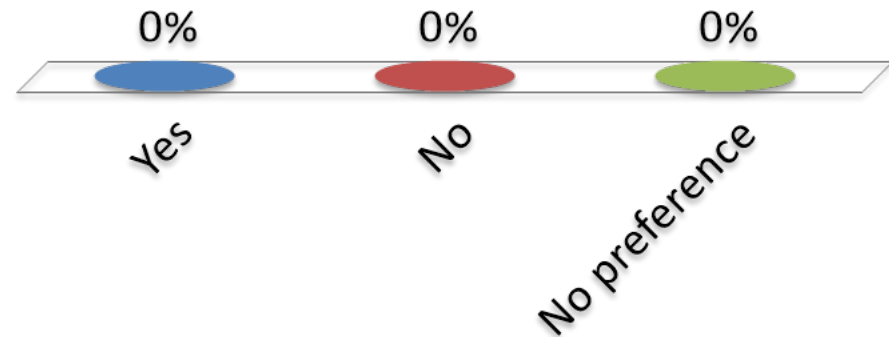
Alternative #10

Alternative #10	Description	Cost Projection	Volume (ft ³)	Other Considerations
In-Line Storage along W. Stadium	In-line storage in W. Stadium ROW; minor modifications to UM golf pond	Medium	80,200	2023 or later



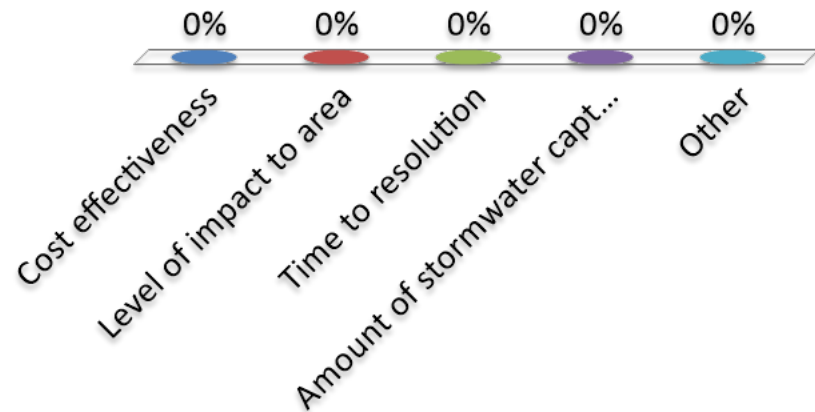
A10.1 - Do you support this alternative to resolve the stormwater issues?

- A. Yes
- B. No
- C. No preference



A10.2 - Choose any of the following to explain why you believe this may be a viable alternative? (Select all that apply)

- A. Cost effectiveness
- B. Level of impact to area
- C. Time to resolution
- D. Amount of stormwater captured
- E. Other



Results will be available at the conclusion of the presentation

Next Steps

- Preliminary review of alternatives
- Select alternatives for detailed evaluation
- Provide additional analysis of selected alternatives
 - Stormwater modeling
 - Preliminary cost estimating
- Present selection criteria and evaluation results at meeting #3



Proposed Timeline of Activities

- February 28, 2019
 - Model Updates & Alternatives
 - Public Meeting #2
- Early Spring 2019
 - Basis of Design Report
 - Public Meeting #3
- Late Spring 2019
 - 30% Design Model Analysis
 - Public Meeting #4
- June 2019
 - 30% Plan Submittal
- July 2019
 - Finalize 30% Plan



Thank you for participating!

- A summary of the meeting will be shared with all participants.
- Updates will be provided on the project web page - a2gov.org/sesip.

