



# Dudley Avenue Flood Resilience Project

March 2022





## AGENDA:

- Project Overview
- Existing Conditions
- Alternatives Studied
- Conclusions

# Dudley Avenue Flood Resilience Project

March 2022



**STUDY ELEMENTS:**

- Analysis - existing conditions
- Analysis - potential alternatives
- Opinion of Construction Costs



Dudley Avenue Project Area



Dudley Ave residence - April 2016



Dudley Ave residence - August 2021



Dudley Ave residence - March 2018





Elevation Contour Map



Dudley Avenue Drainage Area



# Modeling Existing Conditions – Design Storms & Calibration

Storm Event	Total Rainfall Depth (in)	Duration (hr)
1-inch	1.00	24
2-inch	2.00	24
2-year	3.40	24
10-year	5.03	24



Dudley Ave residence - March 2, 2020



Dudley Ave residence - April 14, 2020



# Simulated Existing Conditions - Peak Flooding Depths

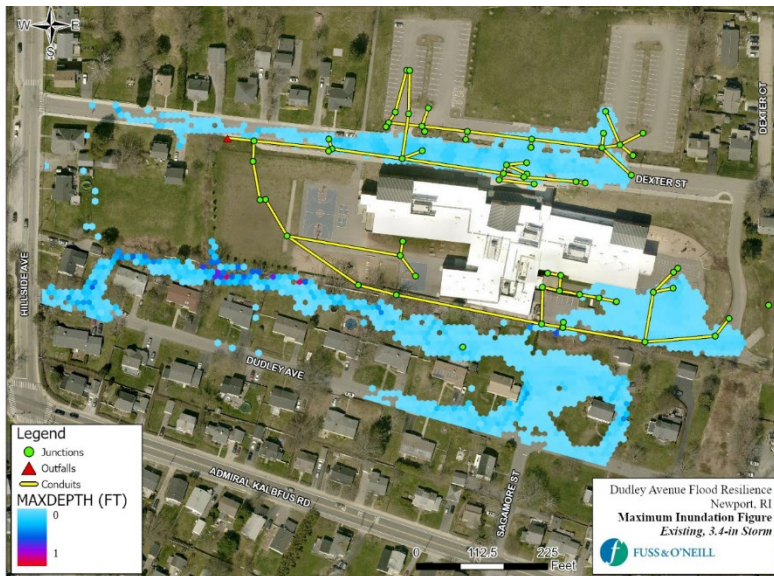
EXISTING  
1-in STORM



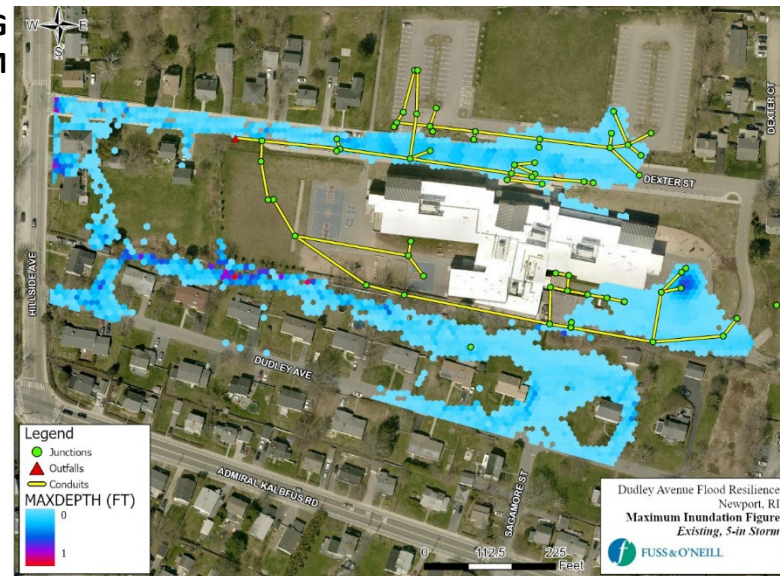
EXISTING  
2-in STORM



EXISTING  
3.4-in STORM



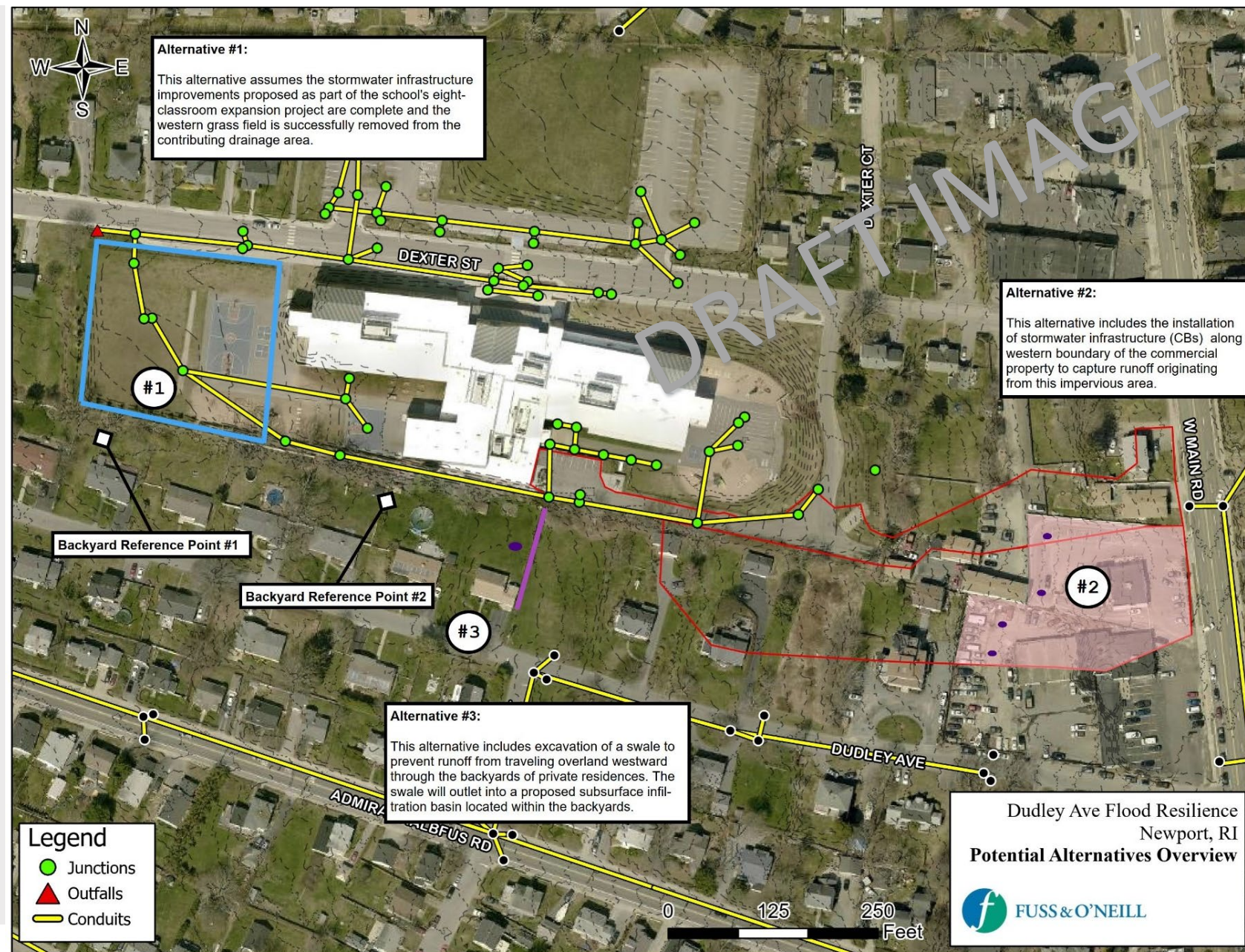
EXISTING  
5-in STORM





## ALTERNATIVES STUDIED:

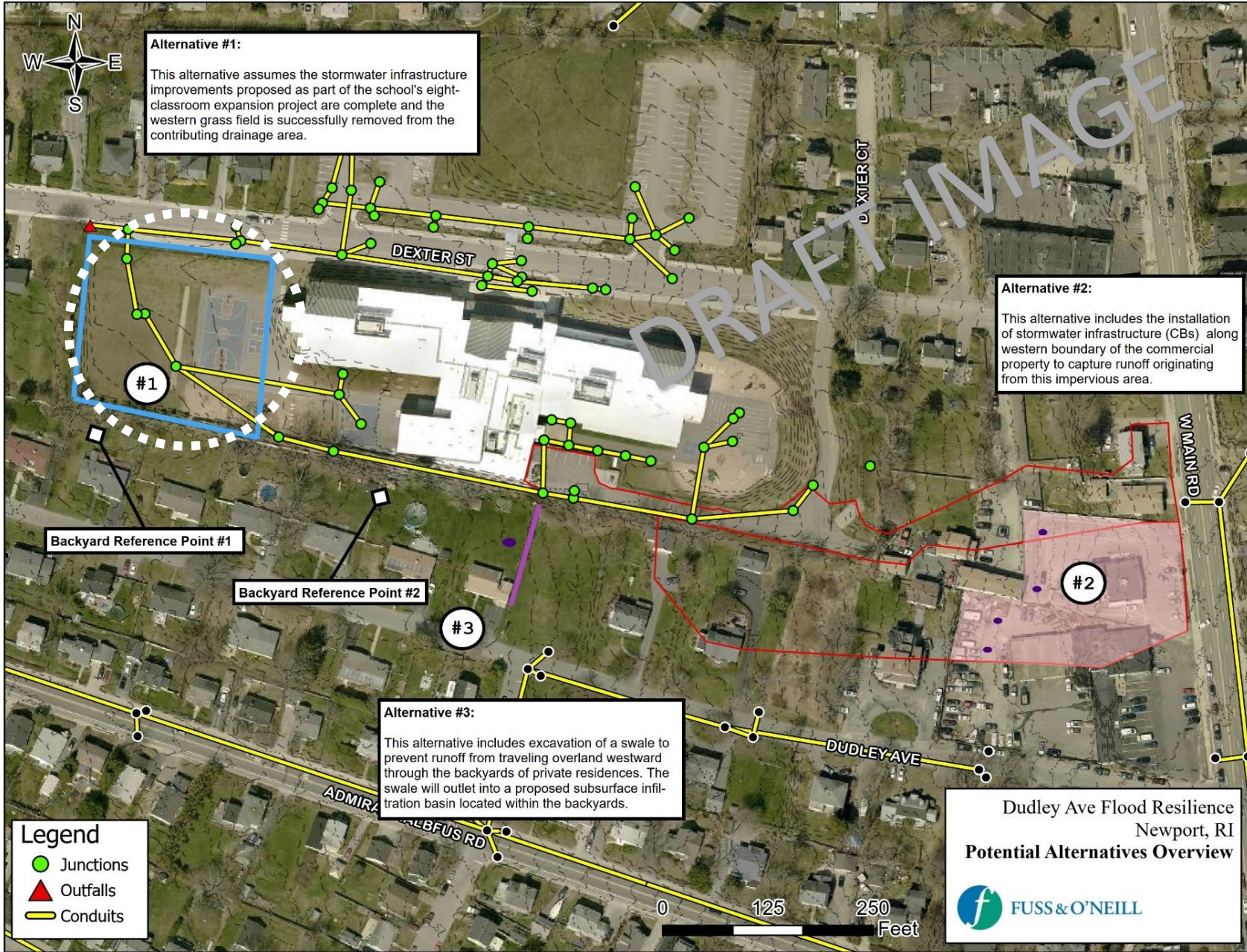
- ALTERNATIVE 1 –  
Proposed School Stormwater Infrastructure
- ALTERNATIVE 2 –  
Stormwater Infrastructure Along West Main Road Properties
- ALTERNATIVE 3 –  
Stormwater Infrastructure on Private Property Along Dudley Ave





**ALTERNATIVES STUDIED:**

- **ALTERNATIVE 1 – Proposed School Stormwater Infrastructure**
- ALTERNATIVE 2 – Stormwater Infrastructure Along West Main Road Properties
- ALTERNATIVE 3 – Stormwater Infrastructure on Private Property Along Dudley Ave





# Alternative 1 - Proposed School Stormwater Infrastructure

**ALTERNATIVE 1**  
**1-in STORM**



**ALTERNATIVE 1**  
**2-in STORM**



**ALTERNATIVE 1**  
**3.4-in STORM**



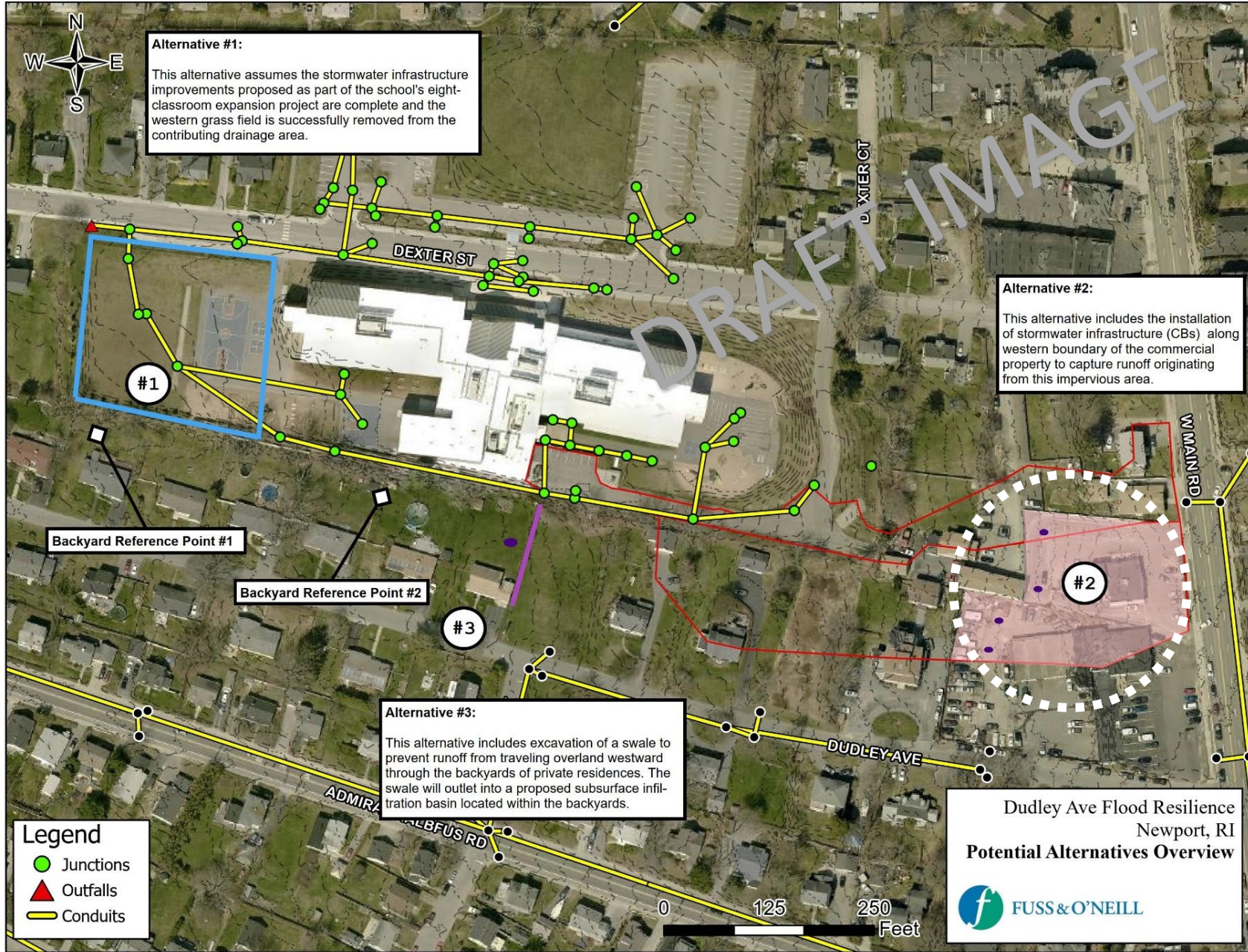
**ALTERNATIVE 1**  
**5-in STORM**





## ALTERNATIVES STUDIED:

- ALTERNATIVE 1 –  
Proposed School Stormwater Infrastructure
- ALTERNATIVE 2 –  
Stormwater Infrastructure Along West Main Road Properties
- ALTERNATIVE 3 –  
Stormwater Infrastructure on Private Property Along Dudley Ave





# Alternative 2 - Stormwater Infrastructure Along West Main Road Properties

**ALTERNATIVE 2  
1-in STORM**



**ALTERNATIVE 2  
2-in STORM**



**ALTERNATIVE 2  
3.4-in STORM**



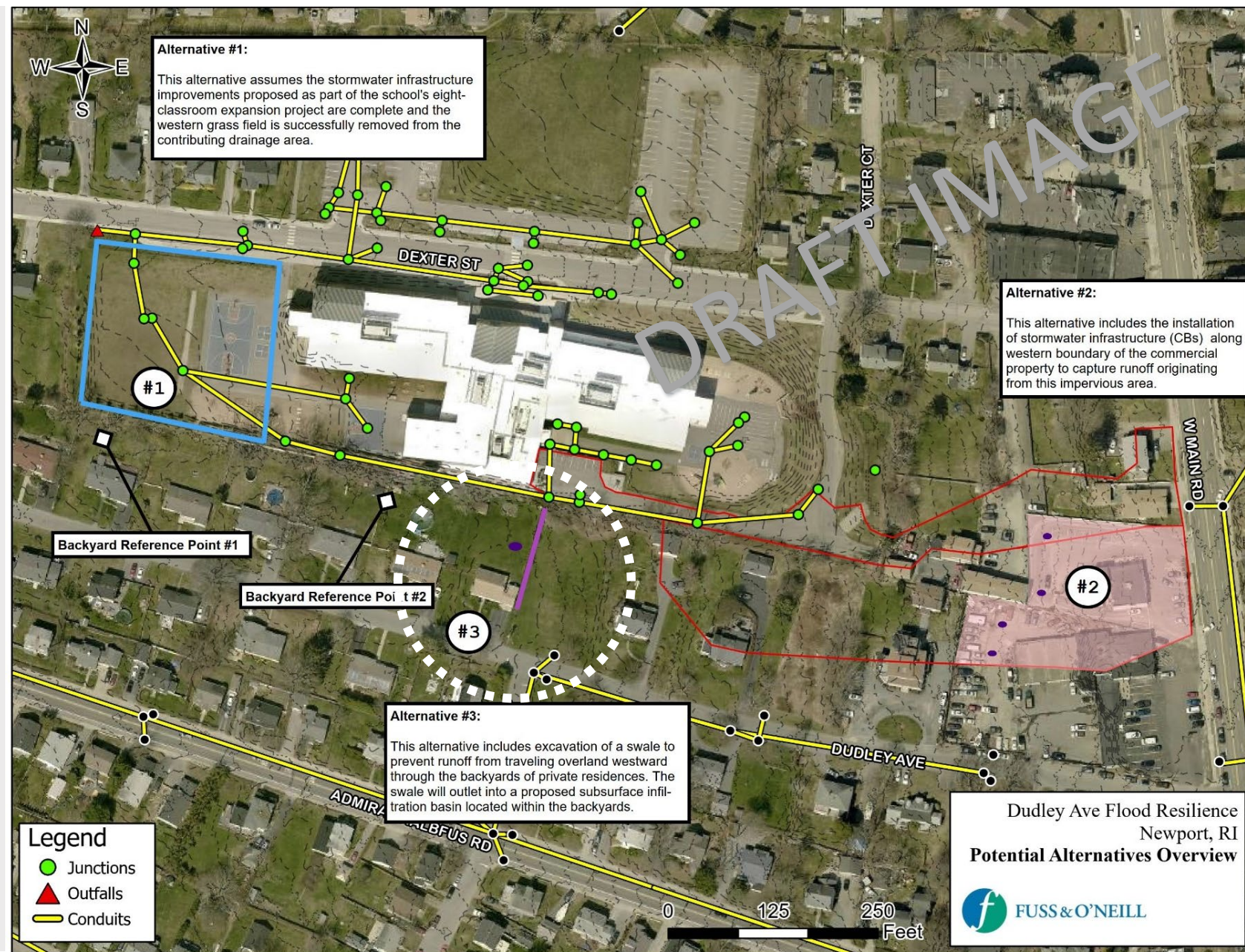
**ALTERNATIVE 2  
5-in STORM**





## ALTERNATIVES STUDIED:

- ALTERNATIVE 1 –  
Proposed School Stormwater Infrastructure
- ALTERNATIVE 2 –  
Stormwater Infrastructure Along West Main Road Properties
- **ALTERNATIVE 3 –  
Stormwater Infrastructure on Private Property Along Dudley Ave  
(small swale and subsurface infiltration chamber)**





# Alternative 3 - Stormwater Infrastructure on Private Property Along Dudley Ave

**ALTERNATIVE 3  
1-in STORM**



**ALTERNATIVE 3  
2-in STORM**



**ALTERNATIVE 3  
3.4-in STORM**



**ALTERNATIVE 3  
5-in STORM**





# Conclusions

## OPINION OF CONSTRUCTION COSTS

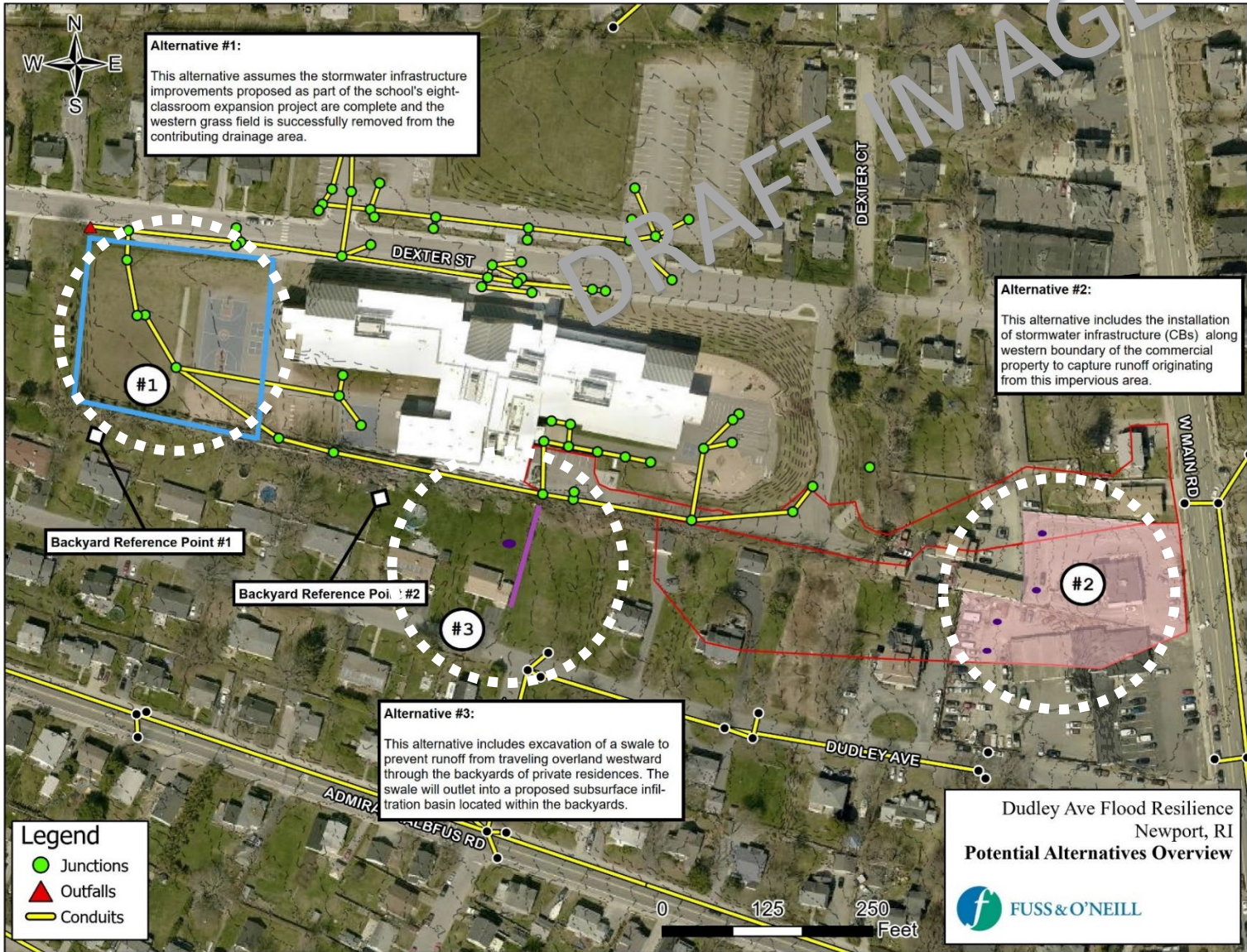
Description	Estimated Cost	-30%	+50%
Alternative #1	Not Calculated	Not Calculated	Not Calculated
Alternative #2	\$240,000	\$160,000	\$350,000
Alternative #3	\$50,000	\$30,000	\$70,000

## Causes of Flooding:

- NOT RELATED TO SCHOOL DEVELOPMENT
- CAUSED BY LOW LYING TOPOGRAPHY
- POOR SOILS DO NOT ALLOW INFILTRATION AND PROMOTE RUNOFF TO LOW AREAS
- INCREASING STORM EVENTS DUE TO CLIMATE CHANGE

## Opportunity for Homeowners:

- A COLLECTIVE APPROACH (CITY & HOMEOWNERS)
- THIS STUDY HAS INFORMED THE CITY ON CAUSES / SOLUTIONS
- OPPORTUNITY FOR HOMEOWNERS...





# A Collective Approach

## Opportunity for Homeowners:

A COLLECTIVE APPROACH (CITY & HOMEOWNERS)  
THIS STUDY HAS INFORMED THE CITY ON CAUSES / SOLUTIONS  
OPPORTUNITY FOR HOMEOWNERS...

### Eastern RI Conservation District Green Infrastructure Pilot Project

- PILOT DEMONSTRATION PROJECT:  
NEWPORT HOMEOWNERS' GUIDE TO  
STORMWATER MANAGEMENT
- \$54,000 FUNDING AVAILABLE
- VOLUNTARY PROGRAM

#### Express Interest To:

Sara Churgin  
Eastern RI Conservation District  
[schurgin.ericd@gmail.com](mailto:schurgin.ericd@gmail.com)  
(401) 934-0842

