Dept. of Public Works
3501 Civic Center Dr.
Suite 304
San Rafael, CA 94903
415 473 6528 T
415 473 3799 F
415 473 3232 TTY
CRS Dial 711
marincounty.org/pw

03.09.24

MARIN COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT

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Marin City Stormwater Plan
Community Meeting 2

Slide 2

Introductions
Technical Team

Judd Goodman, Project Manager County of Marin

Robin J. Lee, Project Manager, Schaaf & Wheeler

Patti Ransdell, Project Manager, Circlepoint

Susan Harden, Meeting Facilitator, Circlepoint

June Farmer, Community Coordinator, Marin City Resident

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Ground Rules
For a Productive Meeting

- Strive to create a **problem-solving** environment;
- Use common conversational **courtesy**;
- **All ideas and points of view** have unique value;
- Strive to be **concise**;
- Think **innovatively** and welcome new ideas;
- Conversations should be **forward focused**;
- **Equal opportunities** for participation will be given;
- **Avoid ascribing motives** for the opinions expressed by others;
- Avoid adopting right-wrong paradigms.

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Community Meeting 2

Slide 4

Agenda – Community Meeting #2

We Value Your Time and Input

- Welcome
- Project Overview and Background
- Review of Project Concepts
- Project Scoring Criteria
- Break Out Session
- Group Activity
- Facilitated Q&A

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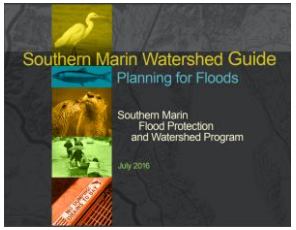
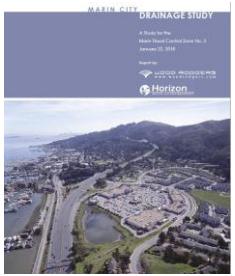
Slide 5

Background
Past Events and Actions

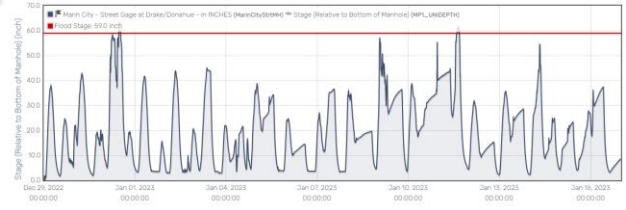
2014 – flooding →



2017 – flooding →



2021 – flooding →



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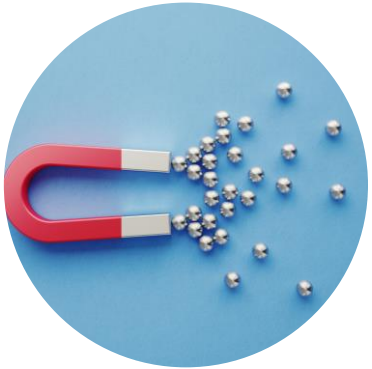
Stormwater Plan Goals

What We Hope to Achieve

1. **Identify** projects to protect public access during flood events.
2. **Recommend** and prioritize improvements to reduce flood risk to Marin City with community input.
3. **Improve** effectiveness of flood management operations.
4. **Integrate** with CalTrans Planning (but focused on Marin City community and not the freeway).
5. **Attract** additional funding sources



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Additional Important Issues

Not Primary Focus of Plan

- Secondary access
  - Marin City Community-Based Transportation Plan Update
  - Coordinating with Caltrans
- Water quality
  - Trash capture
  - Low Impact Development
- Ground Settlement (ground sinking)
  - Geotechnical study
  - Mapping Bay Mud

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Marin City Stormwater Plan

Moving Forward

- Learn from flooding events
- Build upon previous work
- Scope
  - Collect Ideas/Data
  - Modify model
  - Analyze
  - Recommend
  - Prioritize
  - Develop Plan

COLLABORATE

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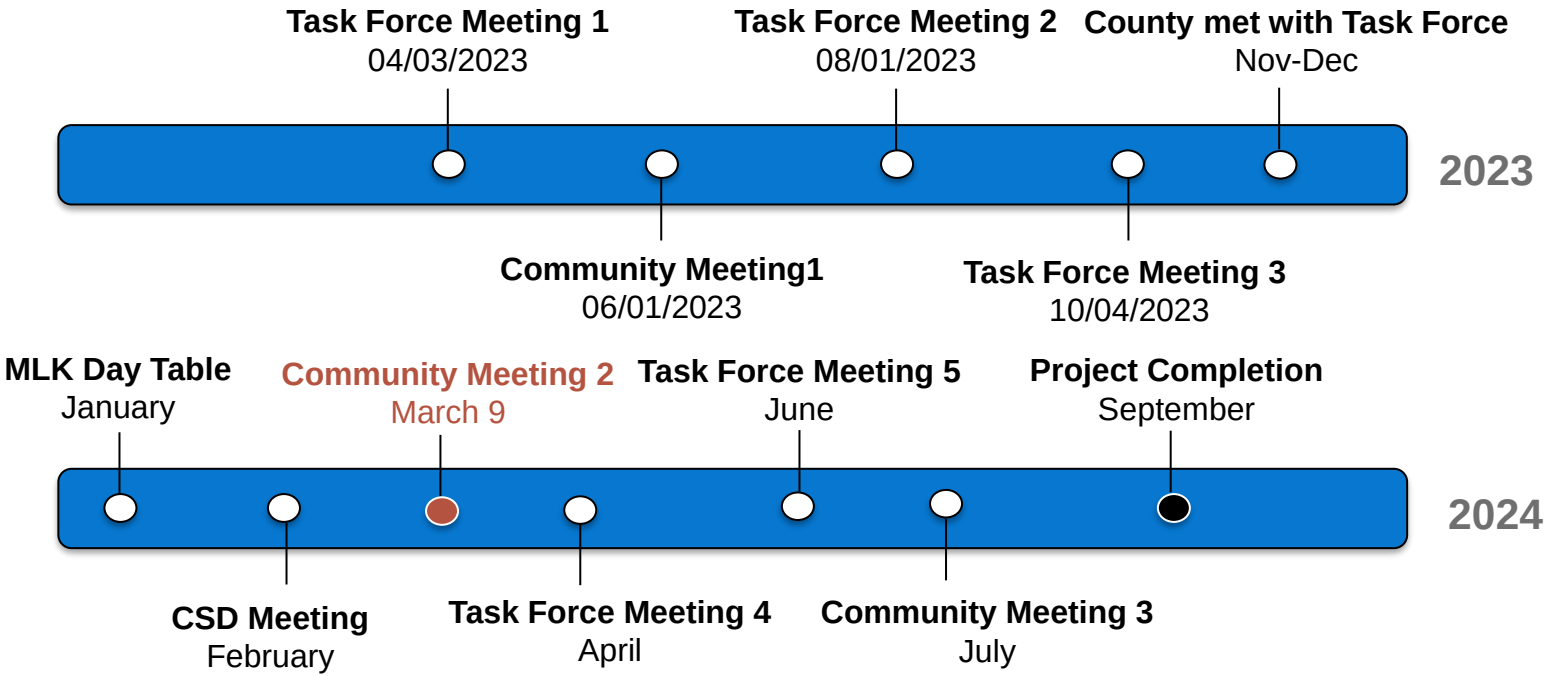
Project Timeline

Slide 9



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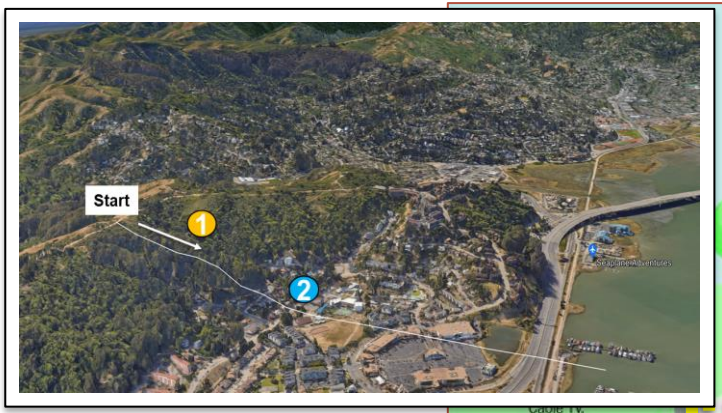
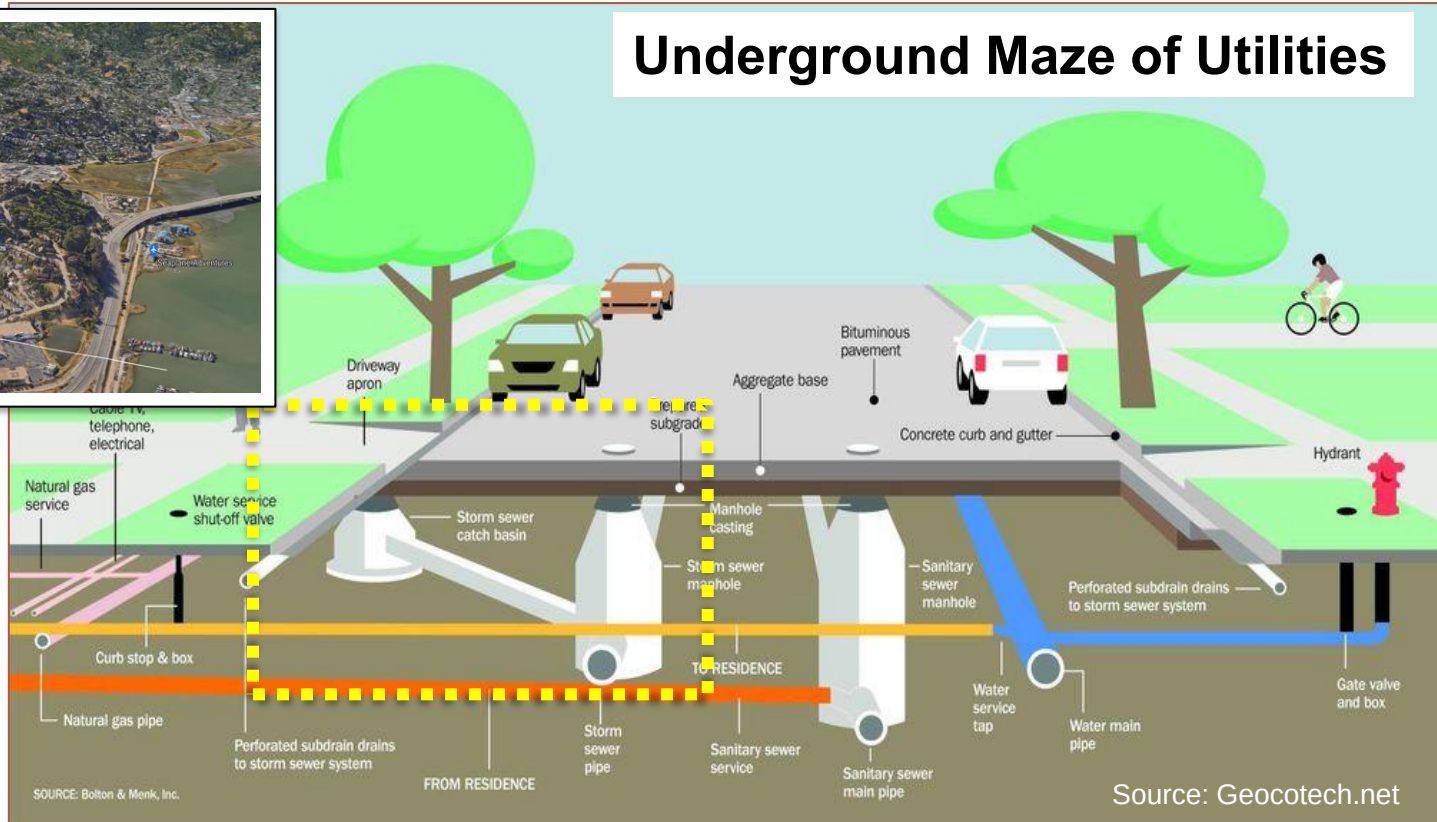
Community Meeting 2

What is stormwater?

What happens when it rains





Source: Geocotech.net

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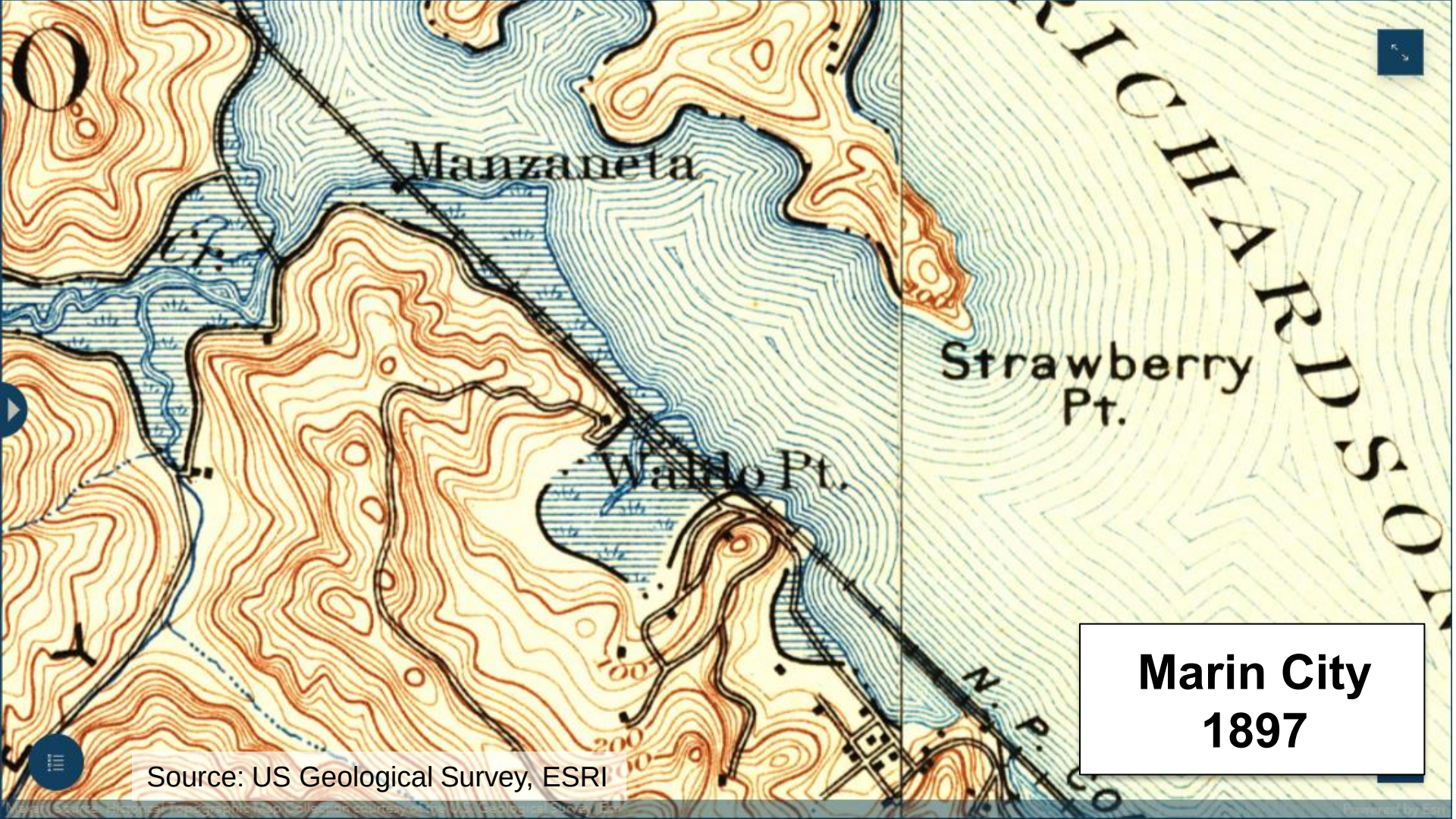
Source: US Geological Survey, ESRI

Marin City 2021



Source: US Geological Survey, ESRI

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Stormwater Plan
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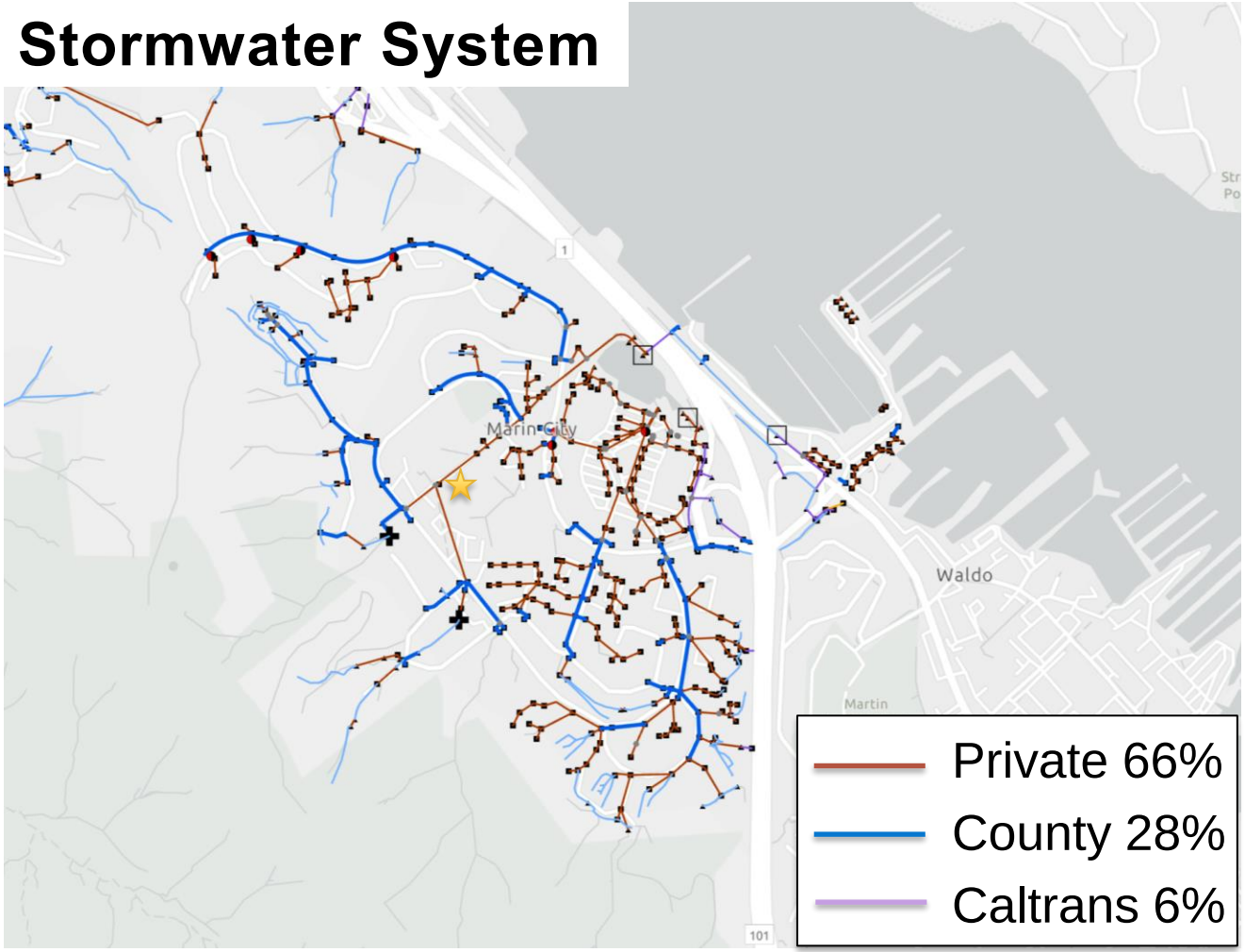
Stormwater System



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[Marin City Stormwater Plan]
Community Meeting 2

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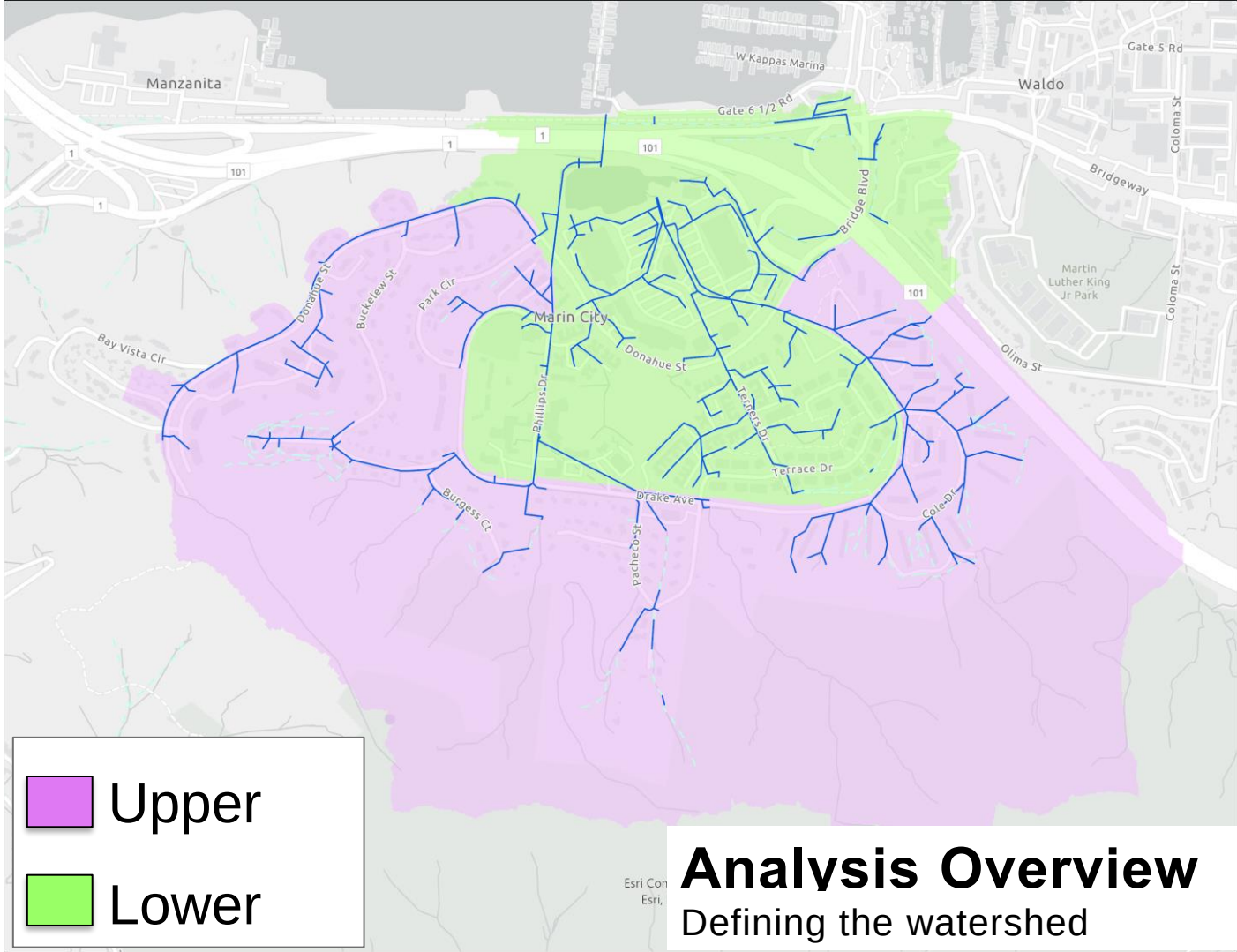

Analysis Overview

Defining the watershed

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Stormwater Issues

Sea Level Rise

Detention Pond

Donahue/ Drake

Flooding

Drainage

Debris

Steep Hillslopes

Pipe Capacity/ Condition

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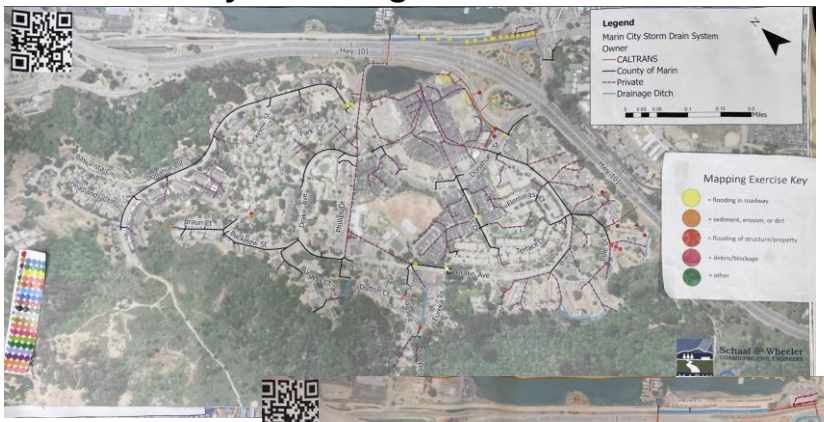
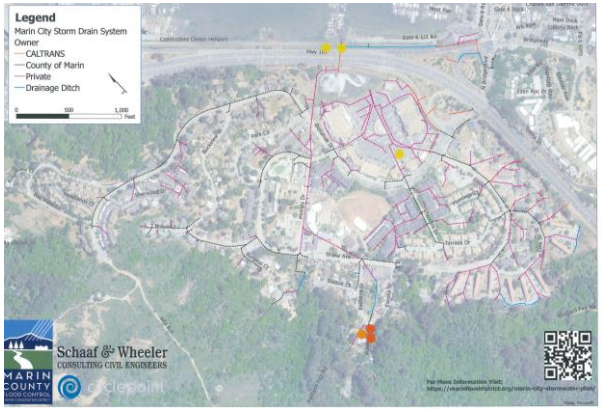
Community Meeting 2

Collect Data

Finding the Issues From the Community





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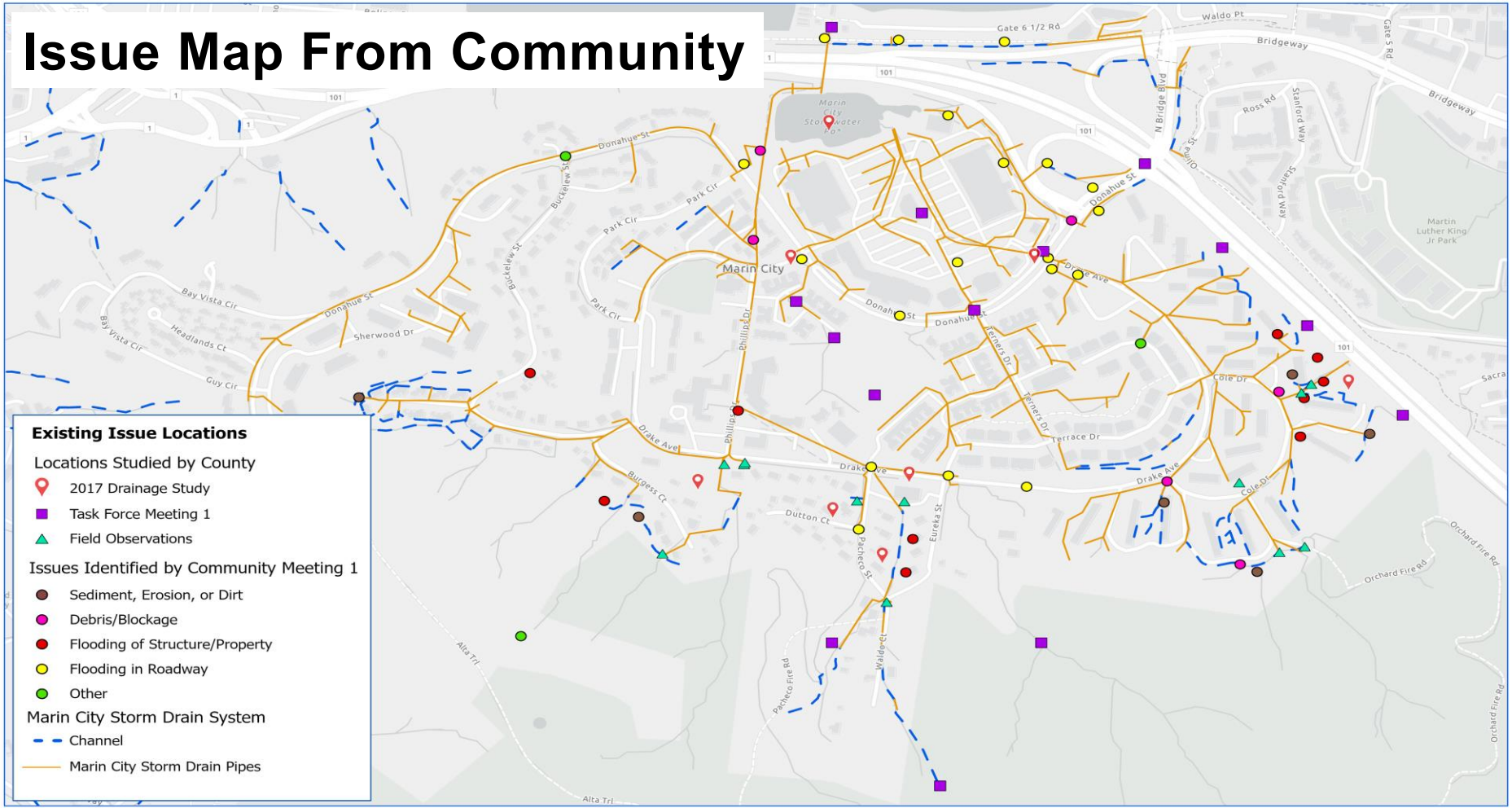
Issue Map From Community



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0 200 400 Feet

Drainage and Flooding Issue Map

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Slide 18

Analyze
Modeling

- Level of Service
  - Storm
  - Tides
  - Climate Change
- Model Updates
  - Additional Pipes
  - Updated Lidar
  - New Infrastructure
  - Proposed LID
- Model Validation

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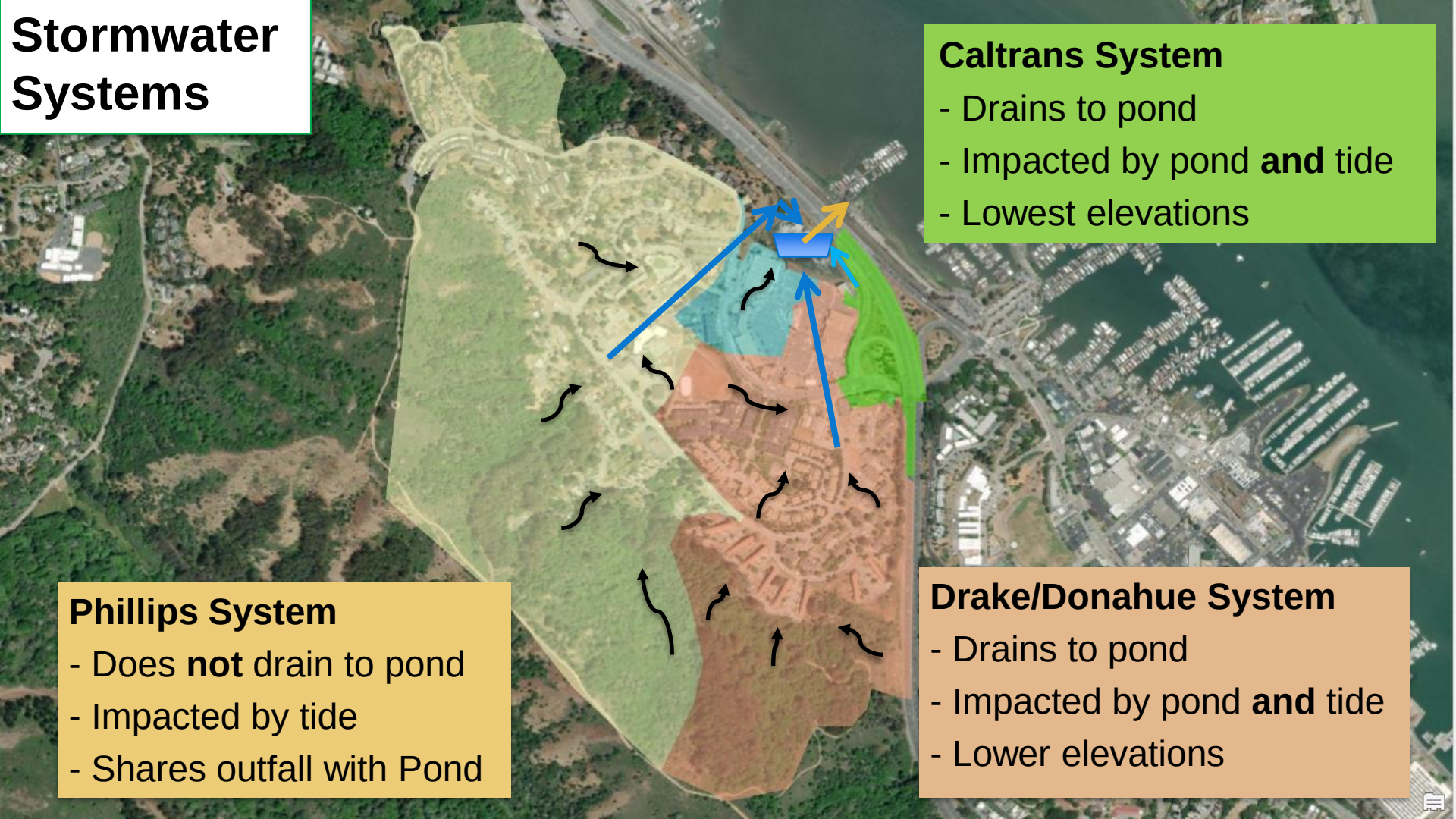
Manzanita
Bolinas St
Gate 6 1/2 Rd
1
1
101
101
101
Bridge Blvd
Stanford Way
Olema St
Donahue St
Marin City
Rocky Graham Park
Park Cir
Brackelow St
Alumni Dr
Terrace Dr
Drake Ave
Burgess Ct
Padnos St
Legend
Marin City Storm Drain System
To Be Modeled
Previously Modeled
Channel

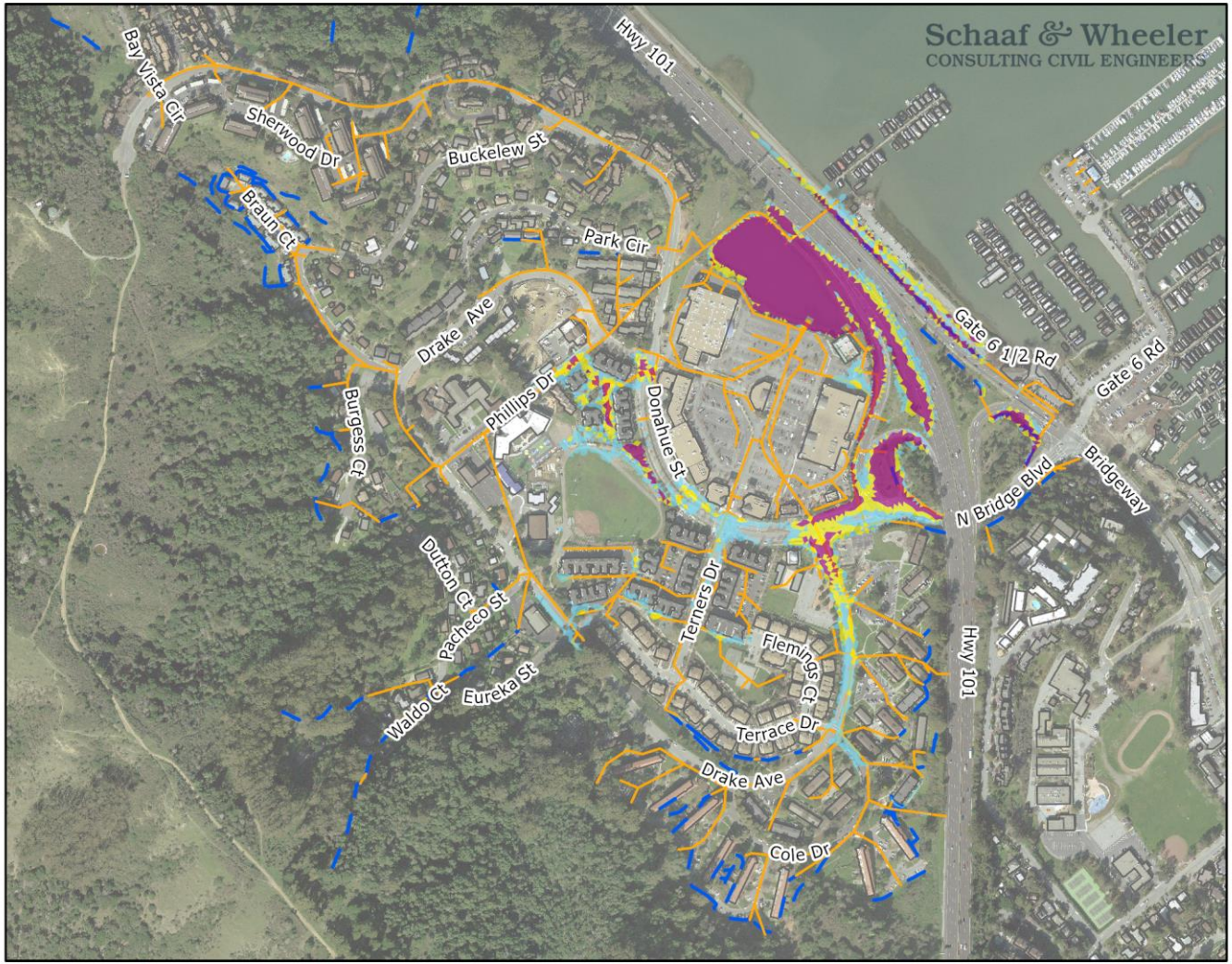
Stormwater Systems



Caltrans System
- Drains to pond
- Impacted by pond **and** tide
- Lowest elevations

Phillips System
- Does **not** drain to pond
- Impacted by tide
- Shares outfall with Pond

Drake/Donahue System
- Drains to pond
- Impacted by pond **and** tide
- Lower elevations



EXISTING CONDITION: 10 YR STORM MHHW TIDE

DRAINAGE

- Channel
- Pipe

Basemap

- Buildings

Flood Depth (Ft)

- 0.1 - 0.5
- 0.5 - 1
- > 1

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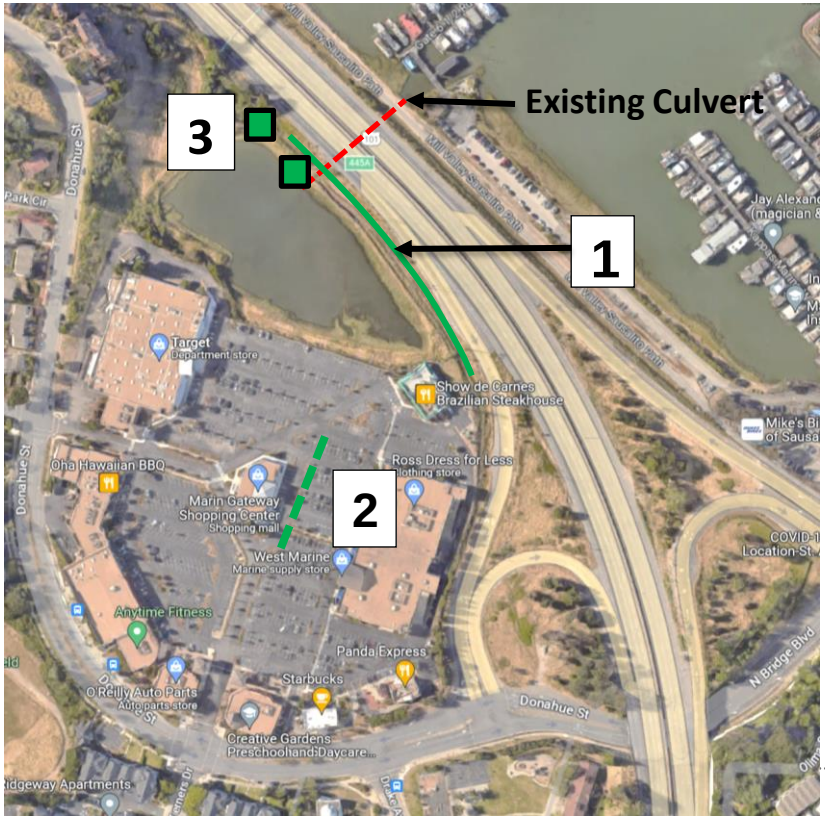
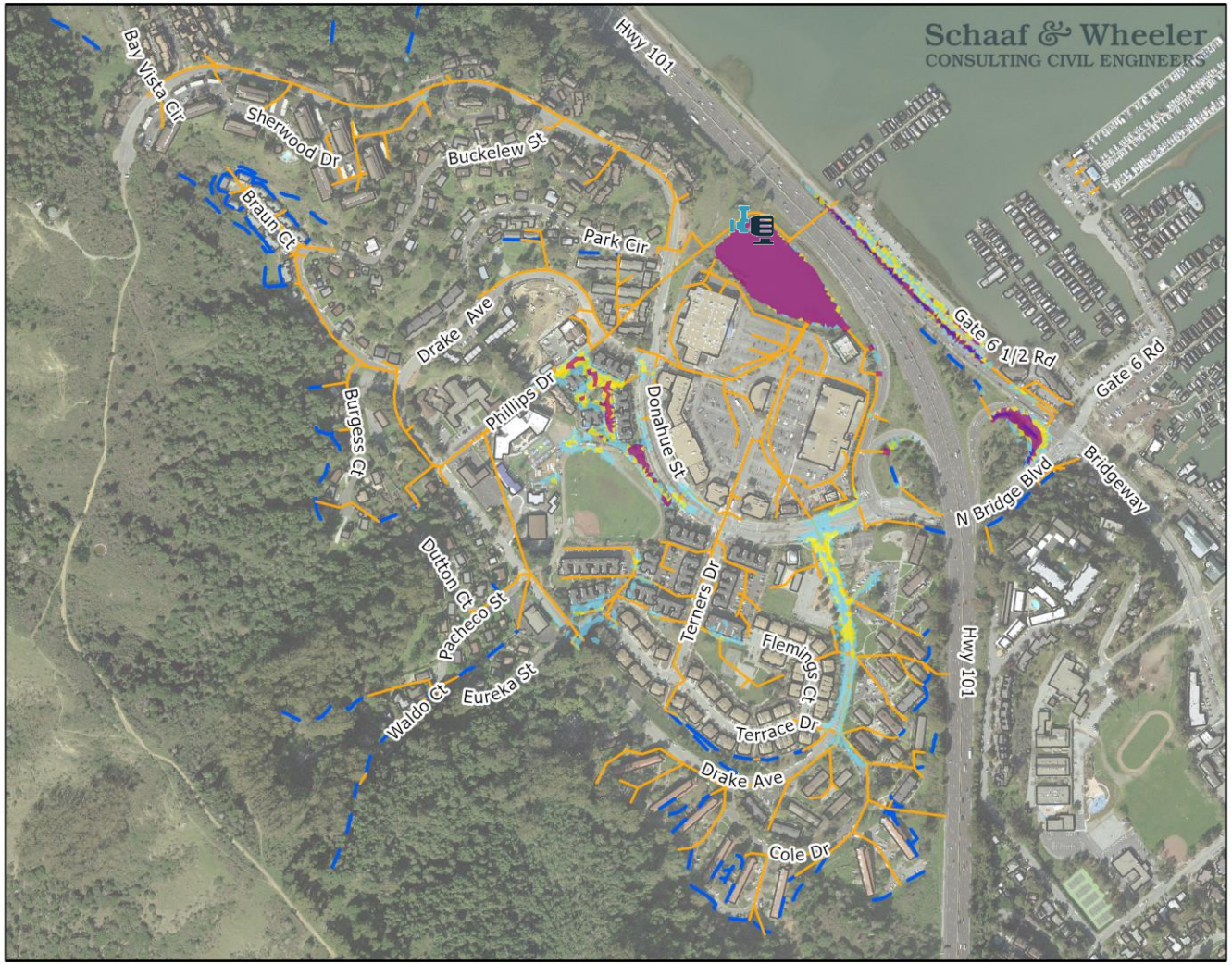
Community Meeting 2

Lower Watershed

Ongoing Work by County/FCZ3



1. Install Permanent Floodwall
2. Upsize pipe
3. Permanent Pump Station



PROPOSED PROJECTS: 10 YR STORM MHHW TIDE

DRAINAGE

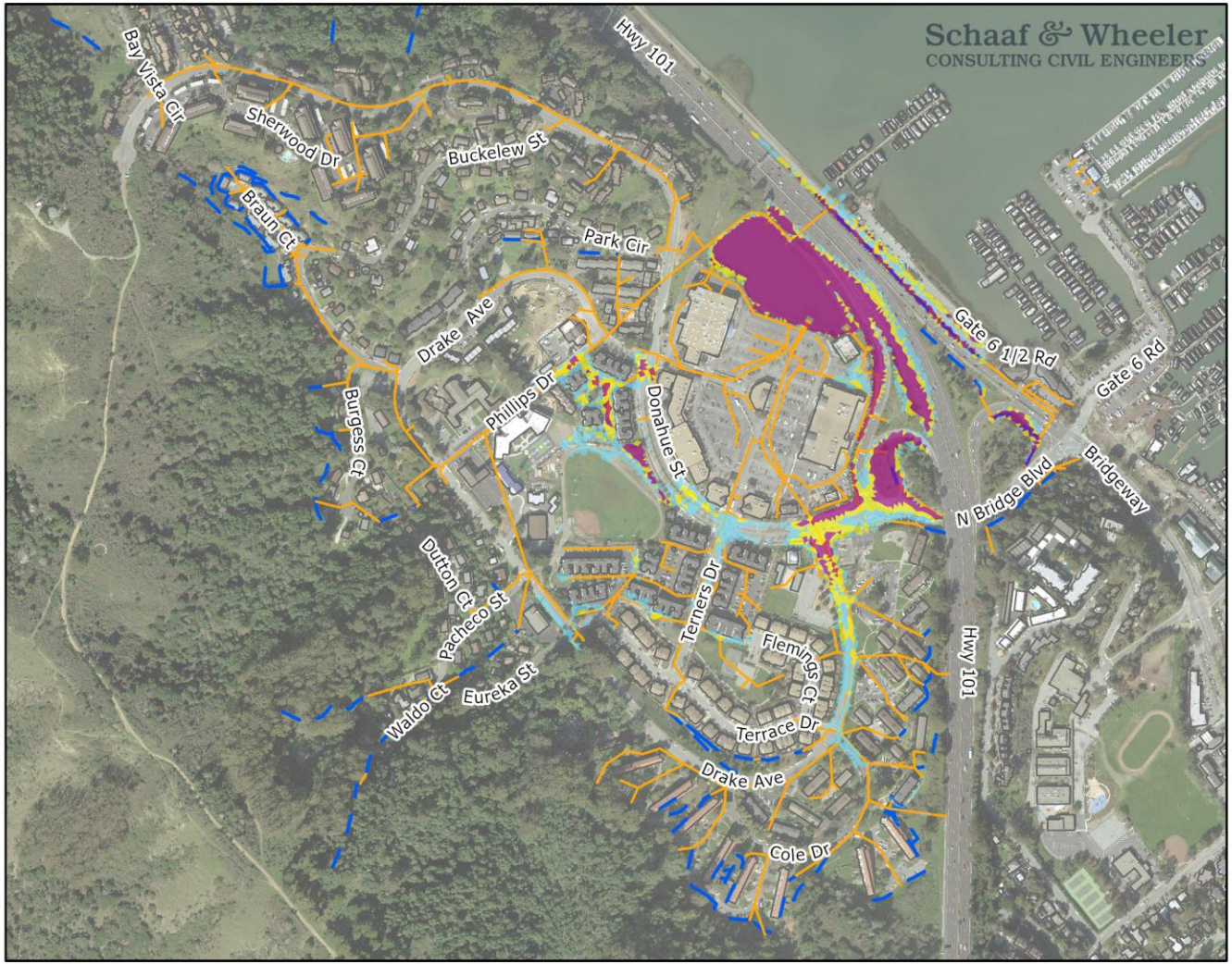
- Channel
- Pipe

Basemap

- Buildings

Flood Depth (Ft)

- 0.1 - 0.5
- 0.5 - 1
- > 1



EXISTING CONDITION: 10 YR STORM MHHW TIDE

DRAINAGE

- Channel
- Pipe

Basemap

- Buildings

Flood Depth (Ft)

- 0.1 - 0.5
- 0.5 - 1
- > 1

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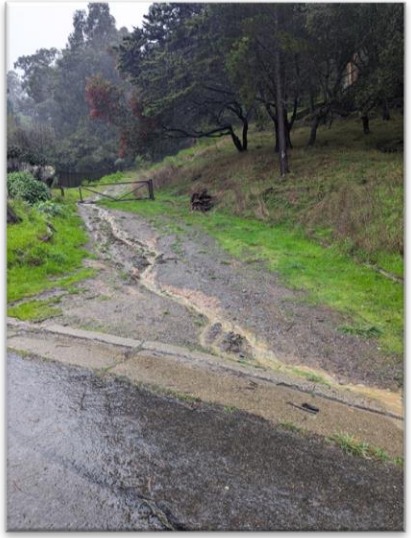
Analyze
Not Just Modeling



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Analyze
Not Just Modeling

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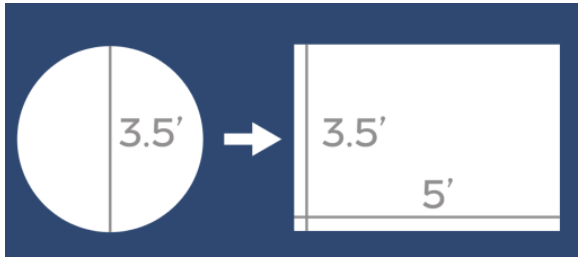
Recommend

Projects and Concepts



- Increase

- Repair

- Maintain

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Lower Watershed
Recommended Concepts

- Drake Pipe Upsize and Increase Inlet Capacity
- Donahue Full Bypass
- Drake Partial Bypass to Pond
- Drake Partial Bypass to Bay
- Drake and Donahue Street Raising
- Drake Watershed Detention
- New Outfall
- Maintenance!

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Lower Watershed

Considered But Not Carried Forward

- Ballfield detention
- MHA detention site
- Full bypass – no runoff to pond
- Phillips Drive Bolted Manholes
- Elevated pedestrian walkways

Drake Pipe Upsize and Increase Inlet Capacity

Marin City Pond Flood Reduction Project (under design, construction 2026)

New inlets with increased capacity

Marin City Storm Drain Pipe

Channel

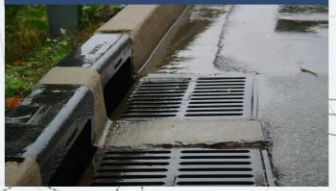
Proposed Improvement Pipe

New upsized pipe

Donahue Full Bypass to Bay

Marin City Pond Flood Reduction Project (under design, construction 2026)

New inlets with increased capacity



~1,600 feet of **new** 5-foot by 3-foot box pipe to Bay outfall

New Bay Outfall

Phased pumping for future resilience

New upsized pipe

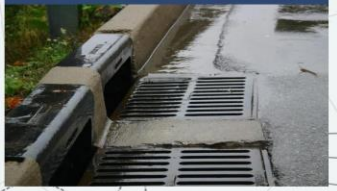
- Marin City Storm Drain Pipe
- Channel
- Proposed Improvement Pipe
- Alternate Alignments for Improvement Pipe

Drake Partial Bypass to Pond

Marin City Pond Flood Reduction Project (under design, construction 2026)

Bypassed flows are conveyed in existing 2-ft pipe to pond

New inlets with increased capacity



135 feet of upsized 2-foot to 3-foot pipe

Phased pumping for future resilience

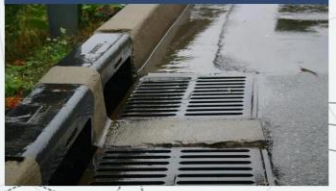
New upsized pipe

- Marin City Storm Drain Pipe
- Channel
- Proposed Improvement Pipe
- Alternate Alignments for Improvement Pipe

Drake Partial Bypass to Bay

Marin City Pond Flood Reduction Project (under design, construction 2026)

New inlets with increased capacity



~1,600 feet of **new** 5-foot by 3-foot box pipe to Bay outfall

New Bay Outfall

Phased pumping for future resilience

New upsized pipe

- Marin City Storm Drain Pipe
- Channel
- Proposed Improvement Pipe
- Alternate Alignments for Improvement Pipe

Drake Watershed Detention

Marin City Pond Flood Reduction Project (under design, construction 2026)

New inlets with increased capacity

Above ground detention site

Possible underground detention sites

New upsized pipe

- Marin City Storm Drain Pipe
- Channel
- Proposed Improvement Pipe
- Possible Underground Detention Site

Drake and Donahue Street Raising

Marin City Pond Flood Reduction Project (under design, construction 2026)

New inlets with increased capacity

Raised roadway

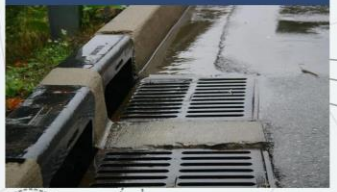
New upsized pipe

- Marin City Storm Drain Pipe
- Channel
- Proposed Improvement Pipe

New Outfall to Bay

Marin City Pond Flood Reduction Project (under design, construction 2026)

New inlets with increased capacity



New Bay outfall with flap gate (Caltrans)

- Marin City Storm Drain Pipe
- Channel
- Proposed Improvement Pipe
- Alternate Alignments for Improvement Pipe

New upsized pipe

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Upper Watershed
Recommended Concepts

- Improve trash racks
- Increase inlet capacity
- Connect hillside drainage pipes
- Replace sandbags with headwall
- Coordinate with Caltrans
- Hillside Management
- Maintenance!

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Trash Racks

Increasing Flow

Improve Trash Racks

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Increase inlet capacity

Waldo Court

Increase inlet capacity

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Connect Pipes on Hillside

Coordinate with Caltrans & MHA

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Additional ideas

More for coordination

- Planting hillsides with Redwoods
- Disconnection Caltrans runoff
- Vegetated channel

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Hillside Management

Removing Debris and Sediments

- Retaining walls at existing slides
- Bulkheads at cut slopes
- Erosion control and landslide repair
- Fire road BMPs
- Vegetation management
- Ditch cleaning
- Pavement repairs
- Sedimentation basins

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Hillside management

Sediment basin example

Laurel Way basin example

Phillip Drive Possible Site

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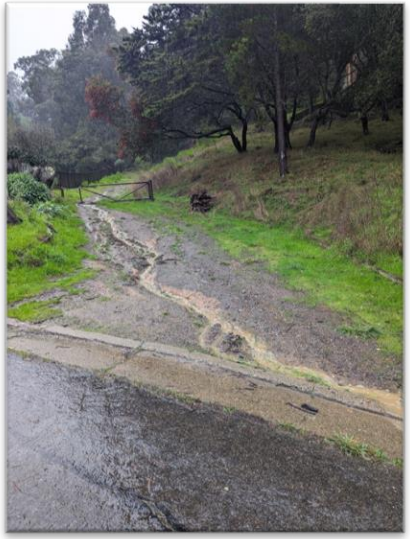
Hillside Management

Dirt Fire Road BMPs



Fire road erosion

Straw wattles example

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Topside Maintenance

Before it Rains – Clear the Drains

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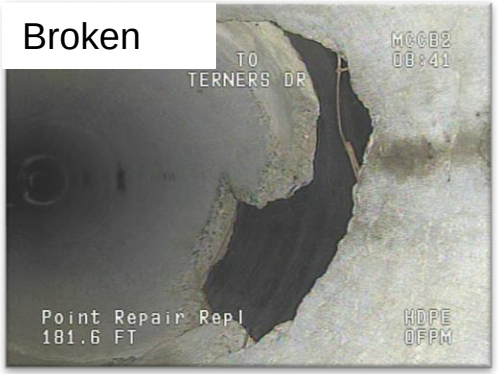
Below Grade Maintenance!

Clean and Repair

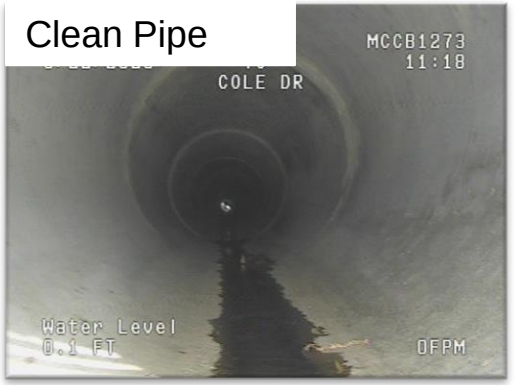
Debris

Sediments

Broken



Clean Pipe



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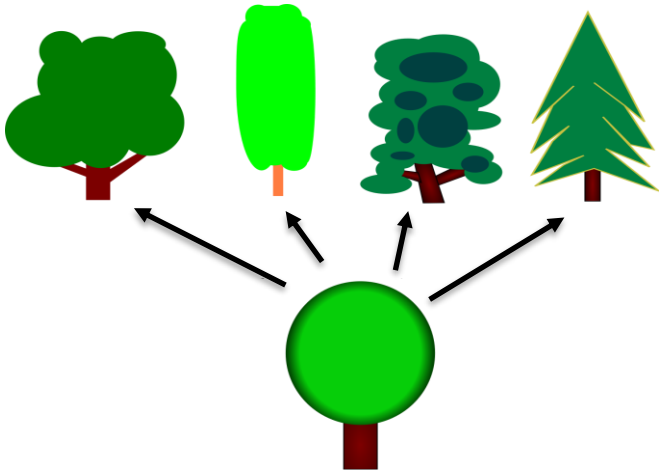
Develop the plan

How to summarize concepts



Present Concepts Into Plan

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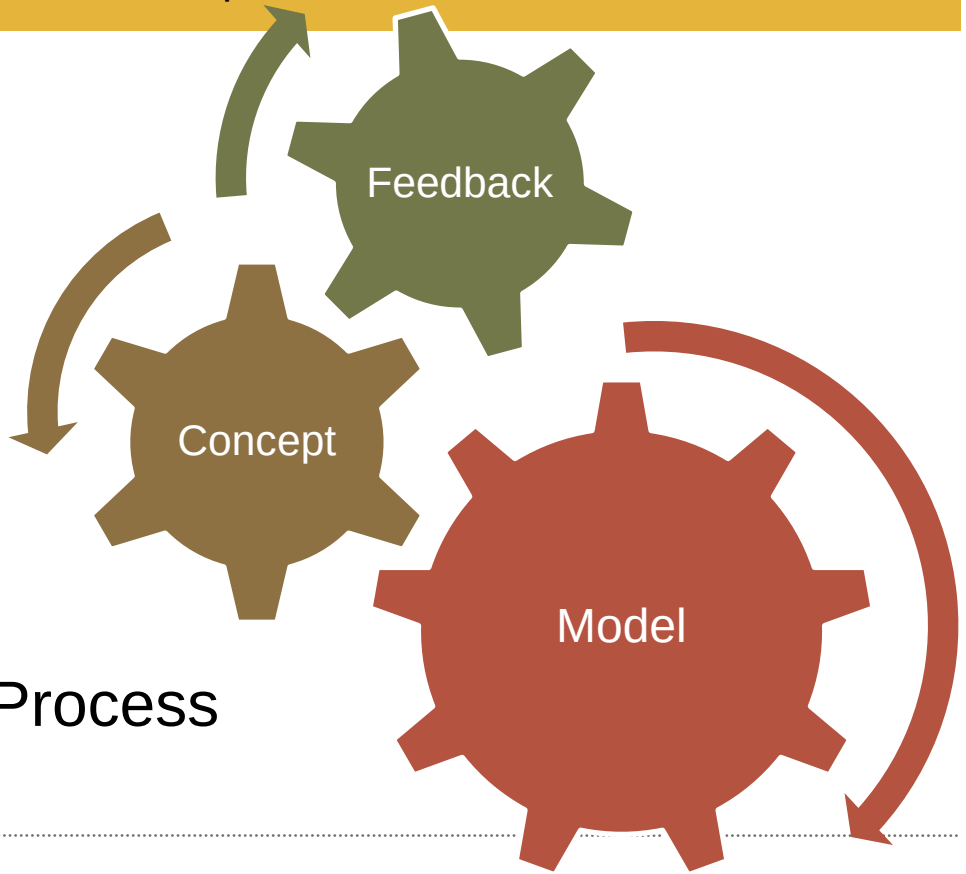
Develop the plan

How to summarize concepts



Iterative Process

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How to Present Concepts in Plan

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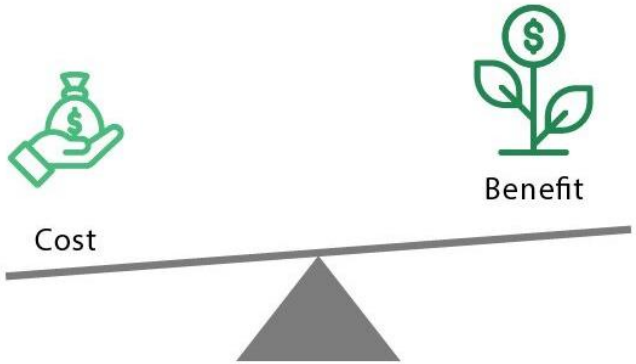
Instead of a Cost Benefit Analysis



Our Goal: Develop a Decision-Making Tree That Is

- Simple
- Defensible
- Community Input

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Community Meeting 2

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Develop Criteria

To Be Weighted By Community

- Flood management effectiveness
- How can this improve the entrance/exit to Marin City?
- Does this reduce flooding near our homes and buildings?
- Climate change resiliency
- What is the impact on our community's health?
- Will this project affect our plants, air, trees, water, etc.?
- Will this increase access to our recreational areas?
- Can the project be combined with green infrastructure features?
- How will this impact our community during construction?

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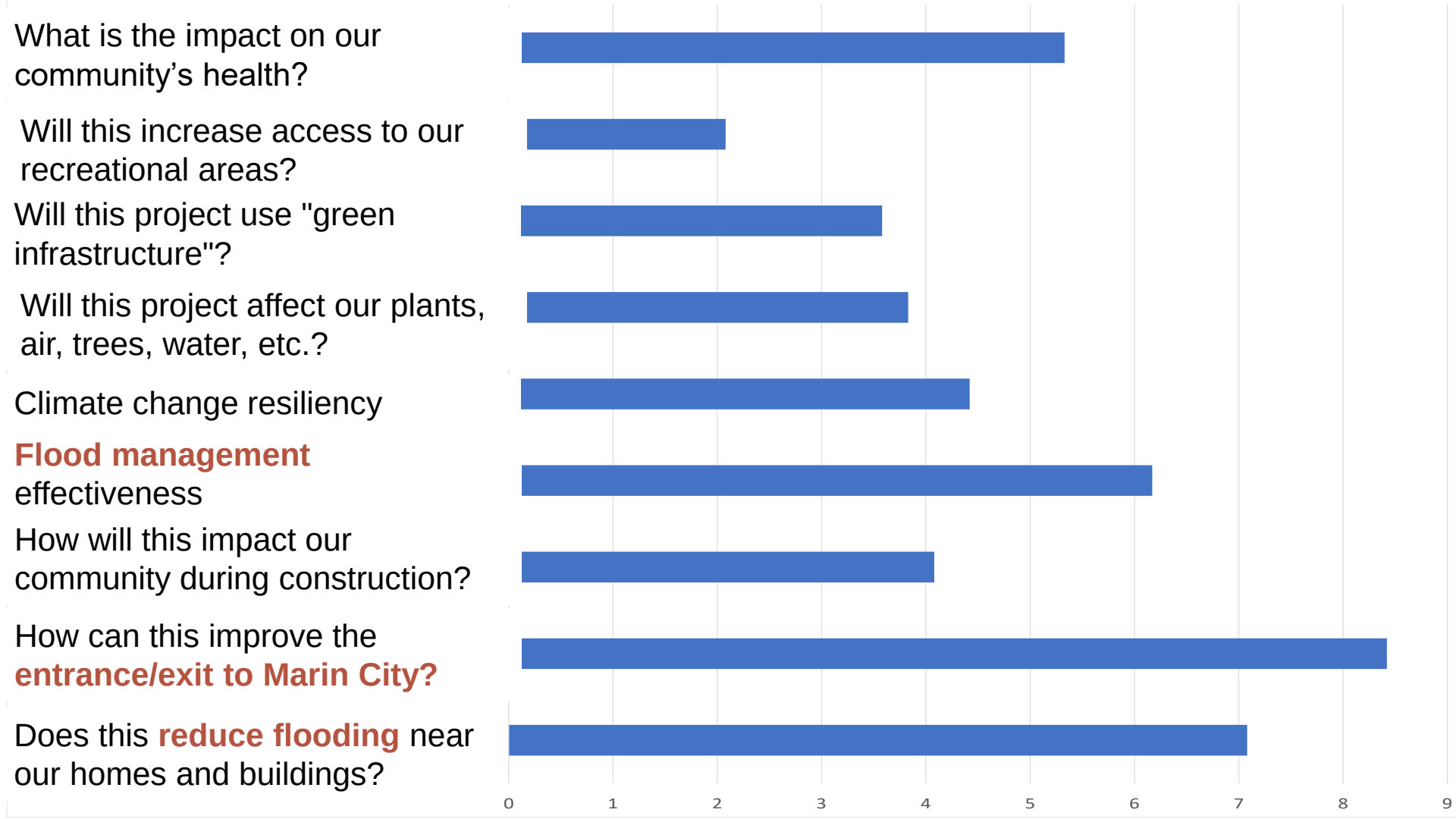
Slide 51

Online Survey

Community Input on Criteria

- 30 responses
- 18 Marin City residents
- Survey open until after March 9th Community Meeting
- Link:

  https://www.surveymonkey.com/r/MarinCityTaskForceSurvey


What is the impact on our community's health?
Will this increase access to our recreational areas?
Will this project use "green infrastructure"?
Will this project affect our plants, air, trees, water, etc.?
Climate change resiliency
Flood management effectiveness
How will this impact our community during construction?
How can this improve the entrance/exit to Marin City?
Does this reduce flooding near our homes and buildings?
0
1
2
3
4
5
6
7
8
9

Marin City Stormwater Plan
Community Meeting 2

Slide 53

Prioritize
Criteria and Score Cards

Project Concept	Community Criteria: Flood Control: Access to/from Marin City	Flood Control: Home and Building Inundation	Flood Control: Climate Resilience	Environmental and Community Health: Long-Term Environmental Benefit	Environmental and Community Health: Green Infrastructure	Environmental and Community Health: Recreational Access	Construction Impact: Road Closure Magnitude	Construction Impact: Road Closure Duration	Construction Impact: Permitting	Other Factors: Cost (Order of Magnitude)	Other Factors: County Ownership
Units/Weight											
Drake Pipe Upsize											Y
Donahue Full Bypass											Y
Drake Partial Bypass to Pond											Y
Drake Partial Bypass through GWC to Pond											N
Drake Watershed Detention											TBD
Drake and Donue Street Raising											Y
Pond New Outfall											N
Phillips Drive Bypass to New Bay Outfall											N
Phillips Drive Bolted Manholes											N
New Trash Rack at top of Phillips											Y
New Trask Rack at bottom of Eureka Pacheco Ditch											N
Vegetated Channel											N
Re-Reroute Caltrans											N
Vegetate hillside with GGNR											N
											N

Task Force and Community

DRAFT

Technical Team

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Community Meeting 2

Slide 54

Entrance/Exit Marin City

What is Low and High Score

A

- No flooding in road for 10-year design storm

F

- Flooding in road of 1 foot or greater

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Community Meeting 2

Slide 55

Flood Reduction Near Structures

What is Low and High Score

A

- All structures removed from 100-year flooding

F

- No reduction in flooding

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Community Meeting 2

Slide 56

Climate Change Resiliency

What is Low and High Score

A

- Resilient to increased rain intensity and sea level rise

F

- Not resilient to increased rain intensity or sea level rise

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Community Meeting 2

Slide 57

Green Infrastructure Opportunities

What is Low and High Score

A

- Project can be co-located and include added benefits of green infrastructure

F

- No opportunities to link grey infrastructure with green infrastructure

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Community Meeting 2

Slide 58

Construction Impacts

What is Low and High Score

A

- No road closure necessary
- No environmental permitting needed

F

- Full road closure for the summer (3 months) or longer
- Environmental permitting needed for receiving waters or Bay

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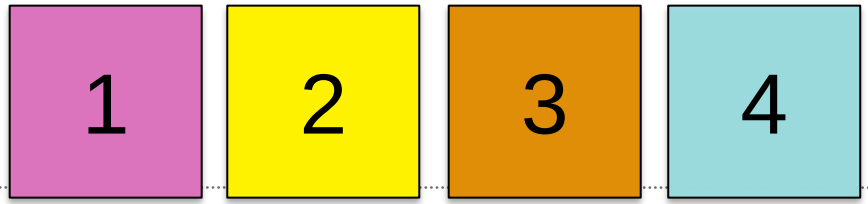
Community Meeting 2

Slide 59

Activity: Criteria Ranking

1. Review criteria and discuss with others at your table.
   - The Project Team is available for questions.
2. Identify your personal priorities.
   - 1 = top priority
3. Place your cards in the appropriate bin to indicate your priorities.
   - Ex. Place card 1 in the box that matches your top priority. Place card 2 in the box that matches your second most important priority, etc.



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Community Meeting 2

Slide 60

Break out session

15 minutes

- Comment cards on tables
- Please discuss with neighbors
- Activity instructions
- List of criteria
- Ask questions

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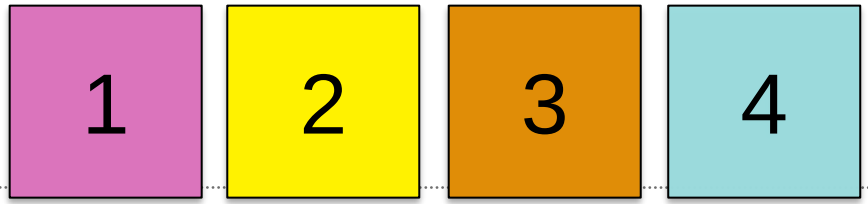
Community Meeting 2

Slide 61

Activity: Criteria Ranking

1. Review criteria and discuss with others at your table.
   - The Project Team is available for questions.
2. Identify your personal priorities.
   - 1 = top priority
3. Place your cards in the appropriate bin to indicate your priorities.
   - Ex. Place card 1 in the box that matches your top priority. Place card 2 in the box that matches your second most important priority, etc.



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Criteria

To Be Weighted By Community

- How can this improve the entrance/exit to Marin City?
- Does this reduce flooding near our homes and buildings?
- Flood management effectiveness
- What is the impact on our community's health?
- Climate change resiliency

Slide 63

Criteria (continued)

To Be Weighted By Community

- How will this impact our community during construction?
- Will this project affect our plants, air, trees, water, etc.?
- Can the project be combined with green infrastructure features?
- Will this increase access to our recreational areas?

Questions and Answers

- Website
  - marinflooddistrict.org/marin-city-stormwater-plan/
- Email
  - MarinCityStormwaterPlan@marincounty.org
- Office Hours

Marin City Stormwater Plan
Community Meeting 2

Slide 65

Future work
Upcoming events

- Review priority on criteria and set weights
- Develop Scores/Grades for Concepts
  - Task Force Meeting 4
- Develop Draft Plan
  - Task Force Review @ Meeting 5
  - Community Review @ Meeting 3
- Publish Report
- Find Funding
- Design Projects
- Get Projects in the Ground!

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Comments
Marin City
Google Earth
1985
Imagery Date: 6/10/2019 37°52'44.14" N 122°31'21.29" W elev 0 ft eye alt 5276 ft

Marin City Stormwater Plan

Project Website

- https://marinflooddistrict.org/marin-city-stormwater-plan/

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Community Meeting 2

Slide 68

Flood management effectiveness

What is Low and High Score

A

- No flooding during 100-yr

F

- Flooding during 10-yr

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Community Meeting 2

Slide 69

Impact to Plants/Air/Trees/Water

What is Low and High Score

A

- High value habitat created

F

- High value habitat removed

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Community Meeting 2

Slide 70

Recreation Access

What is Low and High Score

A

- Increase of recreation access

F

- Reduction of recreation access

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Community Meeting 2

Slide 71

Impact on Community Health

What is Low and High Score

A

- Community is not walking through water ponded on streets and sidewalks
- Reduction in mold issues

F

- Ponded water blocking pedestrians and cars
- Mold issues

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Community Meeting 2

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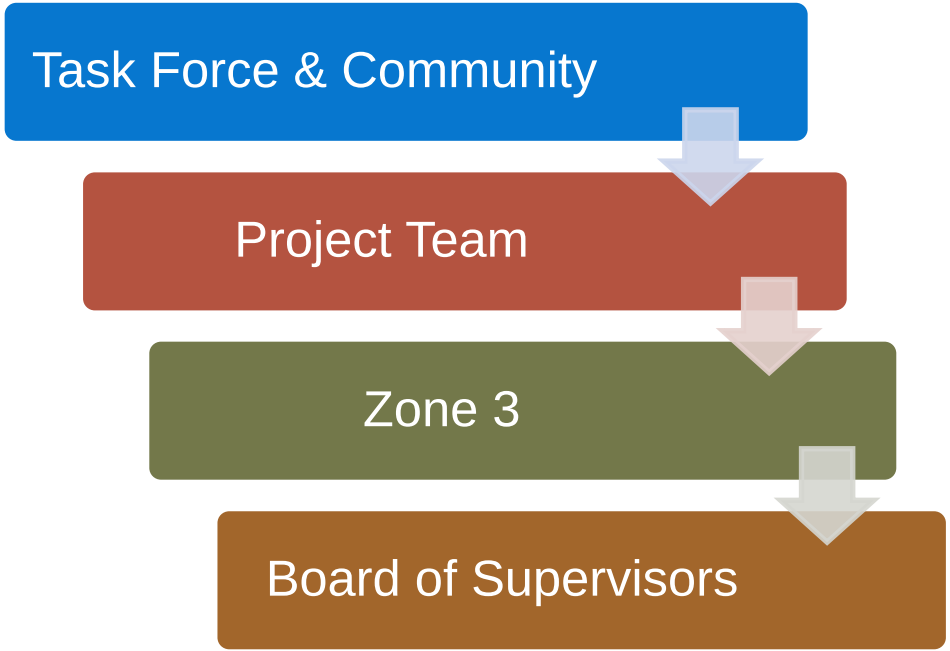
Stormwater planning

For a productive meeting



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Community Meeting 2

Slide 73

How criteria is scored

What is low and high score

- How can this improve the entrance/exit to Marin City?
  - **A** - No runoff in MAJOR intersections in a 100yr
  - **B** - 2 lanes open in MAJOR intersections in 10yr
  - **C** - 1 lane open in MAJOR intersections in 10yr
  - **D** - 6 inches ponding in MAJOR intersection
  - **F** - Excess runoff ponds 1-ft or more in the MAJOR intersections in 10yr

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Slide 74

How criteria is scored

What is low and high score

- Climate Change Resiliency
  - **A** - Resilient to end of century rain and tides
  - **B** - Resilient to end of century rain or tides only
  - **C** - Resilient to mid century
  - **D** - Mid century to rain or tides only
  - **F** - No resiliency to rain or tides

Marin City Stormwater Plan
Community Meeting 2

Example – Mill Valley Stormwater Master Plan

Slide 75

Flood Source	Mitigation Measure	Mitigation Level	Cost	Environmental Impacts	City Owned Property	Permitting/Design Duration	Construction Duration	Task Force Recommendation
	Detention	10-year	$$$		Y			Does not resolve flooding issues
CREEKS	Dredging	1-2-year	$$		Y			Does not resolve flooding issues
	Bypass	10-year	$$$		Y			Too expensive, only resolves 10-year
	Channel Widening	10-year	$$$		N			Do not pursue as not within public property
	Flood Walls	10-year	$$$		N			Do not pursue as not within public property
STORM DRAIN SYSTEM	Upsize Pipes	10-year	$$		Y			City to seek funding for improvements
	Repair Flap Gates	10-year	$		Y			City to seek funding for improvements
	Repair damaged pipes	10-year	$$		Y			City to seek funding for improvements
	Replace CMP	10-year	$$		Y			City to seek funding for improvements
	Maintain System	10-year	$$		Y			City to seek funding for improvements
	Map System	N/A	$		Y			City to seek funding for improvements
	Address nuisance drainage issues	10-year	$		Y			City to seek funding for improvements
LOW LYING AREAS	City shoreline improvements	2100 SLR	$$$		N			City to play support role to regional efforts
	Richardson Bay Tide Gate	2100 SLR	$$$		N			City to play support role to regional efforts
	Raising Home	100-year + SLR	$		N			City to work to develop and implement a program

LEGEND				
$	<$1M project costs		Low Environmental Impact	2-31 year to complete
$$	>$1M & <$3M project costs		Medium Environmental Impact	3-5 years to completed
$$$	>$3M project costs		High Environmental Impact	More than 5 years to complete

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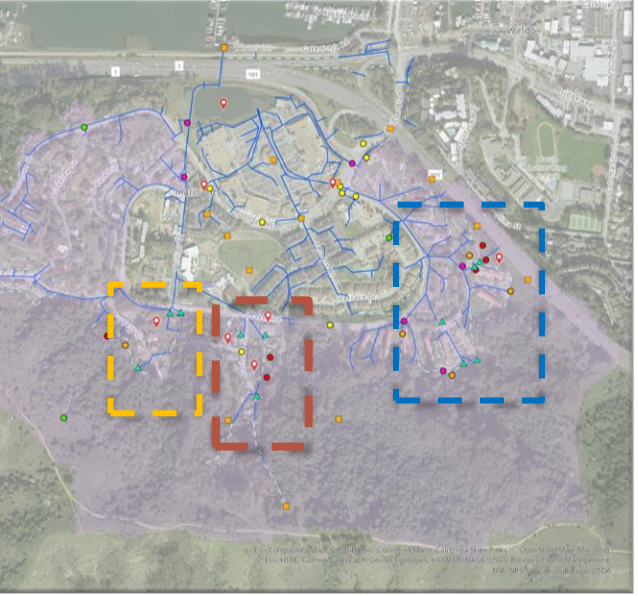

Improvement Concept Summary

Upper Watershed

A. Burgess and Phillips/ Drake Staircase

- Updated trash rack
- Improve open channel flow
- Coordinate crushed pipe with GGNR

B. Eureka/Pacheco Ditch

- Higher capacity inlets at top
- Vegetated channel
- Replace trash rack

C. Hillside Drainage/ Cole Drive

- Vegetated hillsides
- Higher capacity inlets
- Sedimentation basin
- Maintenance - MHA
- Re-route Caltrans runoff
- Pressurized bypass

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Problem Area A
Burgess and Drake /Phillips Staircase

Task Force Meeting 1

- Flooding in Roadway

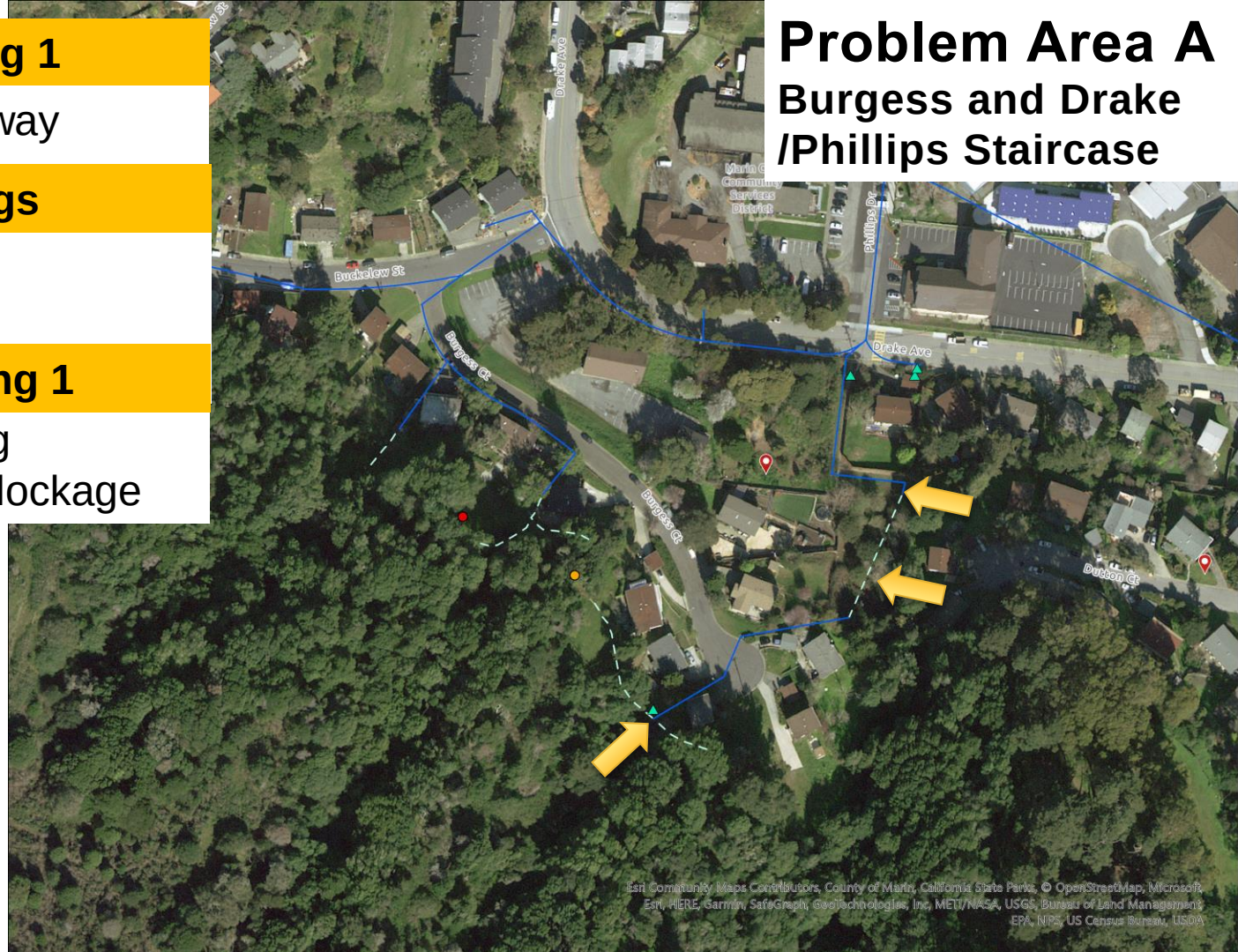
Field Work Findings

- Sink Hole
- Erosion

Community Meeting 1

- Structure Flooding
- Mudflow/Debris/Blockage

Improvement location



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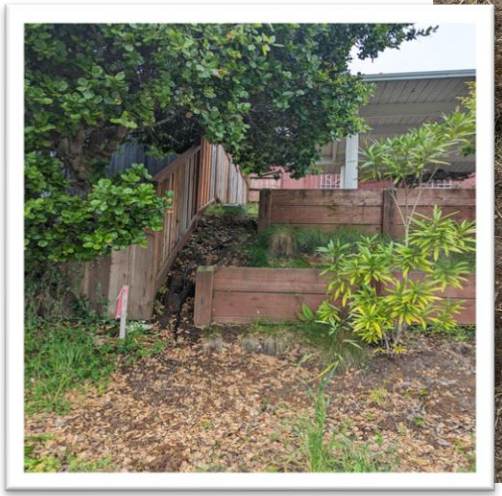
Marin City
Stormwater Plan
Community Meeting 2

Problem Area

A. Burgess and Phillips/ Drake Staircase



Problem Area A
Flooding

(photos by Schaaf & Wheeler, taken May 5th, 2023)

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[Marin City Stormwater Plan]
Community Meeting 2

Problem Area

A. Burgess and Phillips/ Drake Staircase

Problem Area A
Burgess Hillside

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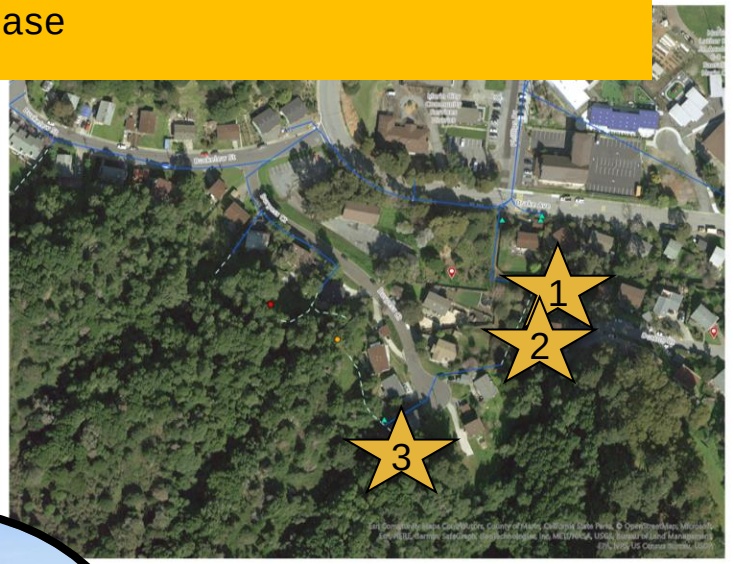
(photos by Schaaf & Wheeler, taken May 5th, 2023)

Marin City Stormwater Plan
Community Meeting 2

Area A – Improvement Concepts

Burgess and Drake/Phillips Staircase

1. Updated trash rack
2. Improve open channel flow
3. Coordinate crushed pipe with GGNR



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GOLDEN GATE NATIONAL RECREATION AREA
50TH ANNIVERSARY

Task Force Meeting 1

- High Velocity Flow

Field Work Findings

- Limited Capacity Ditch

Community Meeting 1

- Structure Flooding
- Mold/Mildew
- Flooding in Roadway

Improvement locations

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Problem Area B

Eureka / Pacheco Ditch

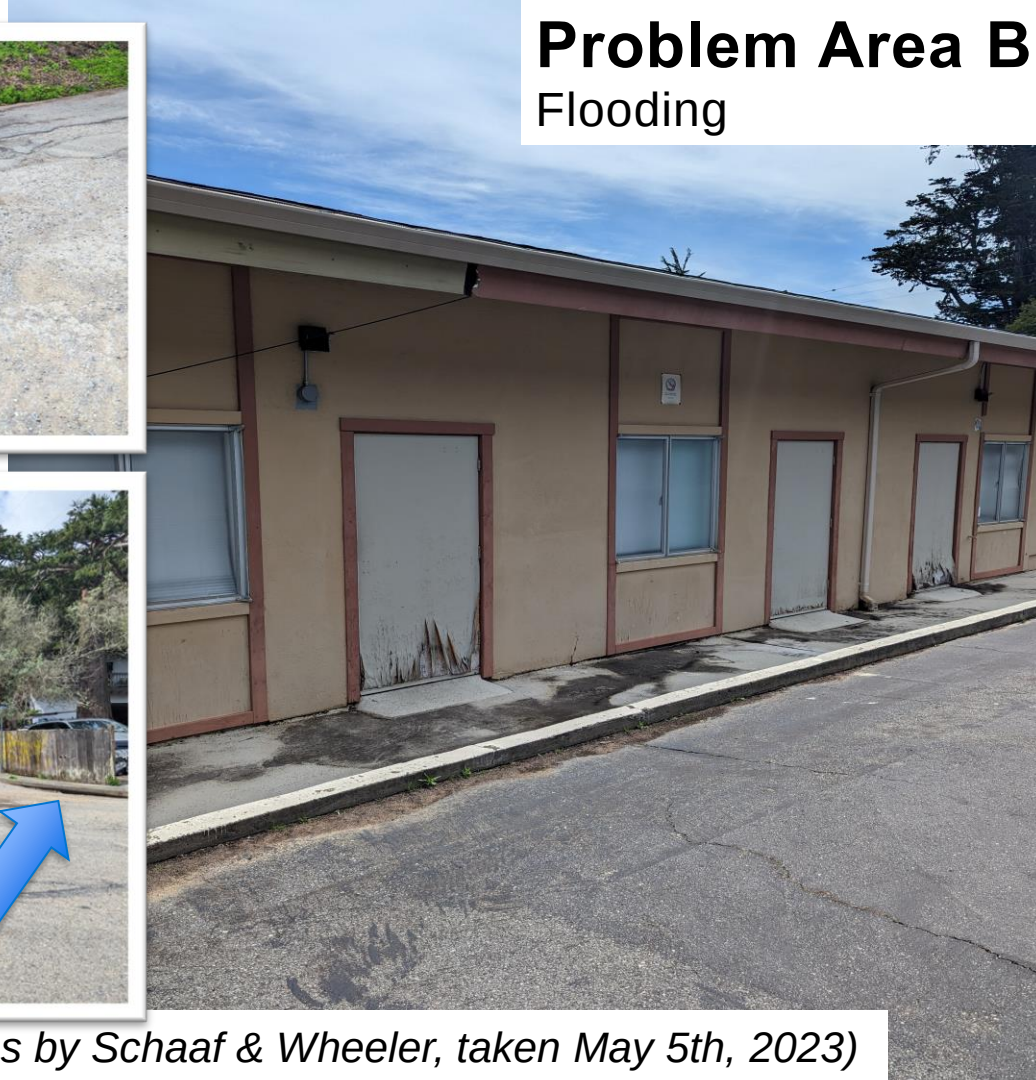
Problem Area B
Flooding

[Marin City Stormwater Plan](#)
Community Meeting 2

Problem Area

B. Eureka/Pacheco Ditch

Flow direction



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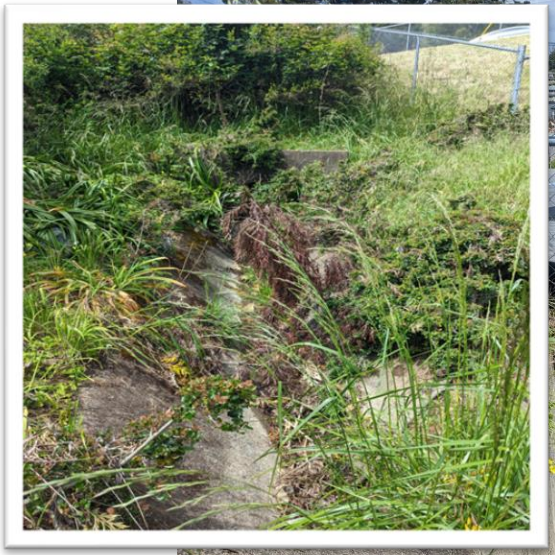
Problem Area B
Eureka/PachecoDitch

Marin City
Stormwater Plan
Community Meeting 2

Problem Area

B. Eureka/Pacheco Ditch



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(Photos by Schaaf & Wheeler, taken May 5th, 2023)

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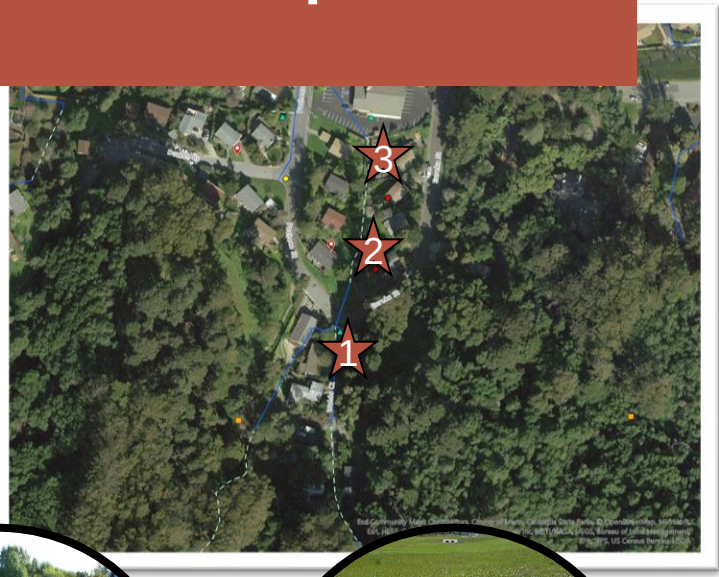
Area B - Improvement Concepts

Eureka and Pacheco

1. Higher capacity inlets at top
2. Vegetated channel
3. Replace trash rack and higher headwall



Marin City Stormwater Plan
Community Meeting 2

Problem Area C
Sediment/Debris

Problem Area

C. Hillside Drainage/ Cole Drive

Flow direction

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Problem Area C

Hillside Drainage / Cole Drive

Task Force Meeting 1

- Needed Caltrans Coord.

Field Work Findings

- Low-Capacity Inlets

Community Meeting 1

- Structure Flooding
- Drainage System Failure
- Mold/Mildew
- Mudflow/Debris/Blockage

Improvement locations

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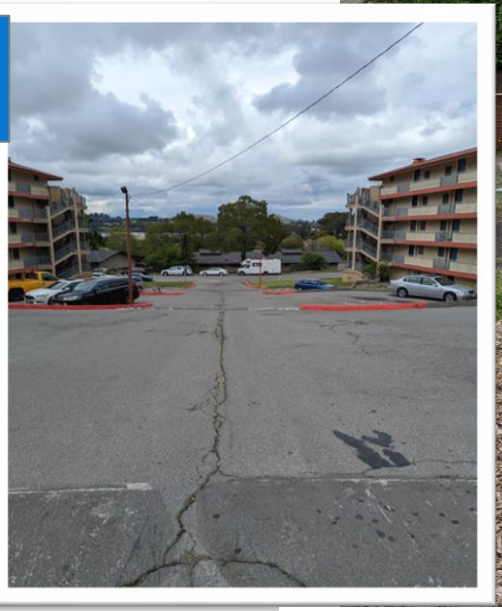
Community Meeting 2

Problem Area C
Flooding

Problem Area

C. Hillside Drainage/ Cole Drive



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Stormwater Plan
Community Meeting 2

Problem Area

C. Hillside Drainage/ Cole Drive

Problem Area C

Golden Gate Village
SD System Failure

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Community Meeting 2

Area C - Improvement Concepts

Problem Area

C. Hillside Drainage/ Cole Drive

1. Vegetated hillsides
2. Higher capacity inlets
3. Sedimentation basin
4. Maintenance
5. Re-route Caltrans runoff
6. Pressurized bypass

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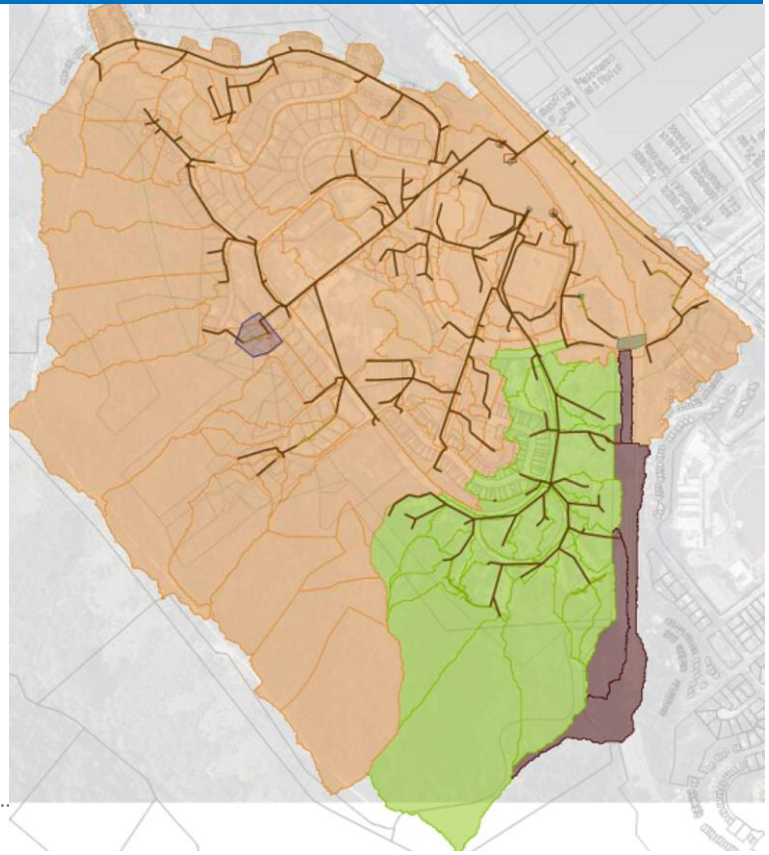
Community Meeting 2

Re-Route Caltrans
Removing 10 Acres of Highway Runoff

Problem Area

C. Hillside Drainage/ Cole Drive



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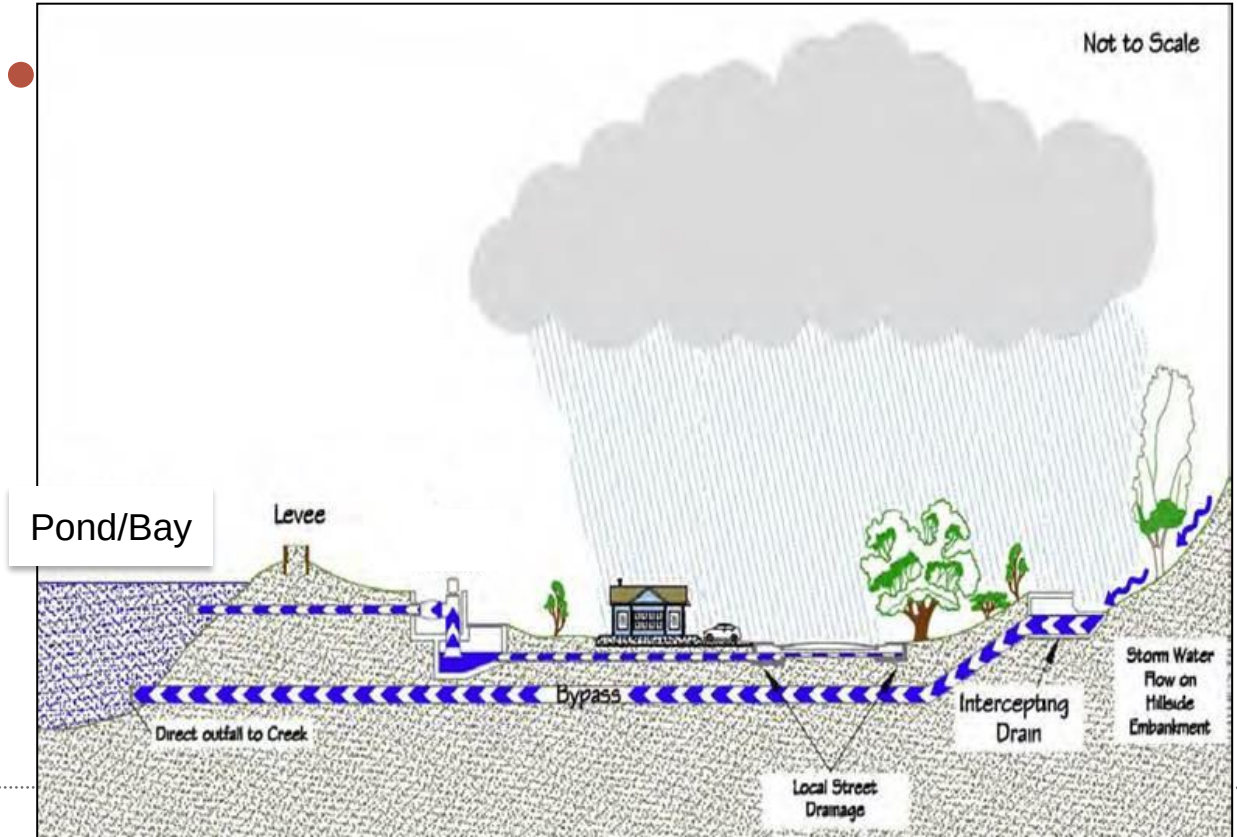
Community Meeting 2

Pressurized Bypass

Upper watershed bypass lower watershed

Problem Area

C. Hillside Drainage/ Cole Drive



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Summary

Diverting high flows during intense rain around shopping center to pond at existing eastern outfall

Concept Elements

- 195 LF of New Pipe
- Upsized Drake/Donahue Inlet
- 650 LF of Upsized Pipe
- xx ac-ft detention
- xx cfs pump

Improvement Concepts

Ongoing Projects