Skagit County
Flood Insurance Study Update

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FEMA Region 10

Skagit County

Flood Insurance Study Process Overview

- Process, Schedule, & Deliverables
- Base Flood Elevations, Modeling, & Levees
- Flood Insurance Rates & Grandfathering

Process & Schedule

Flood Insurance Study Phase 1 Product Overview

- New maps cover Sedro Woolley downstream to bay
- Study uses an unsteady-state, 2-D hydraulic model
- The hydrologic data for the study:
  - Regulated 100-year discharge of 226,400 cfs (at Concrete)
  - 50-year discharge of 185,000 cfs (at Concrete)
- There are no 100-year flood protective levees
- Vertical datum changes from NGVD 29 to NAVD 88
- New maps will not contain a floodway (at this time)

Process & Schedule

Flood Insurance Study Product Overview

- Follows a USGS Quad layout – countywide coverage with no city "cut-outs"
- Currently working with the County GIS staffs to ensure that quality LiDAR-topo data is used
- Contains 100 & 500 year floodplains (AE/X zones)
- 10, 50, 100, 500 year flood elevations published
- Not the same results as the USACE is using for their Flood Damage Reduction Study

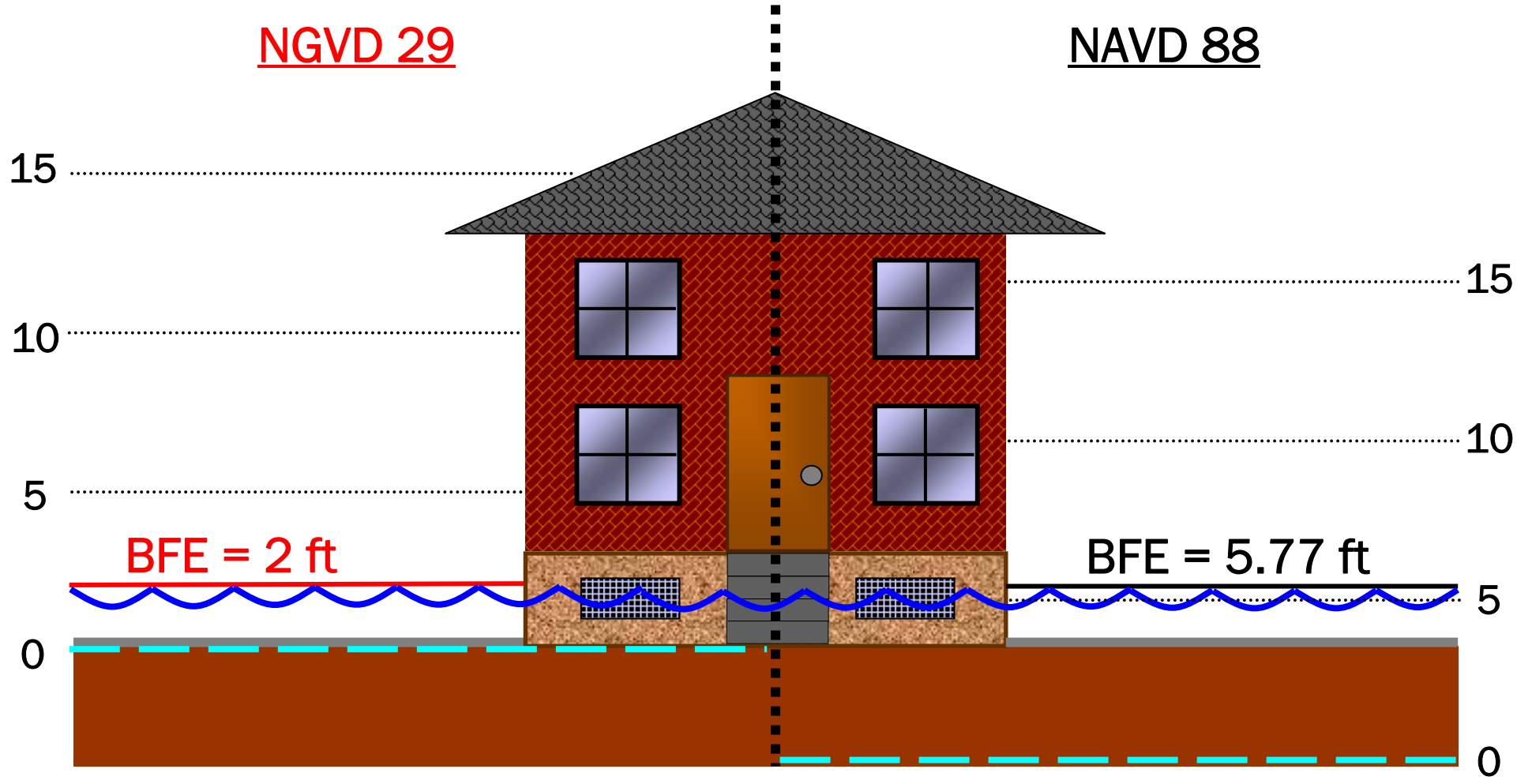
Digital Flood Insurance Rate Maps

Vertical Datum Change

- **NGVD 29**
  - Based on a mean sea level from 21 tidal stations in the US & 5 stations in Canada
- **NAVD 88**
  - Based on the density of the Earth instead of varying values of sea heights
  - More accurate
- **Conversion in Skagit County is 3.77’**
  - NGVD + (3.77’) = NAVD

Digital Flood Insurance Rate Maps

Vertical Datum and FIRMs (ex uses 3.77’ conversion)

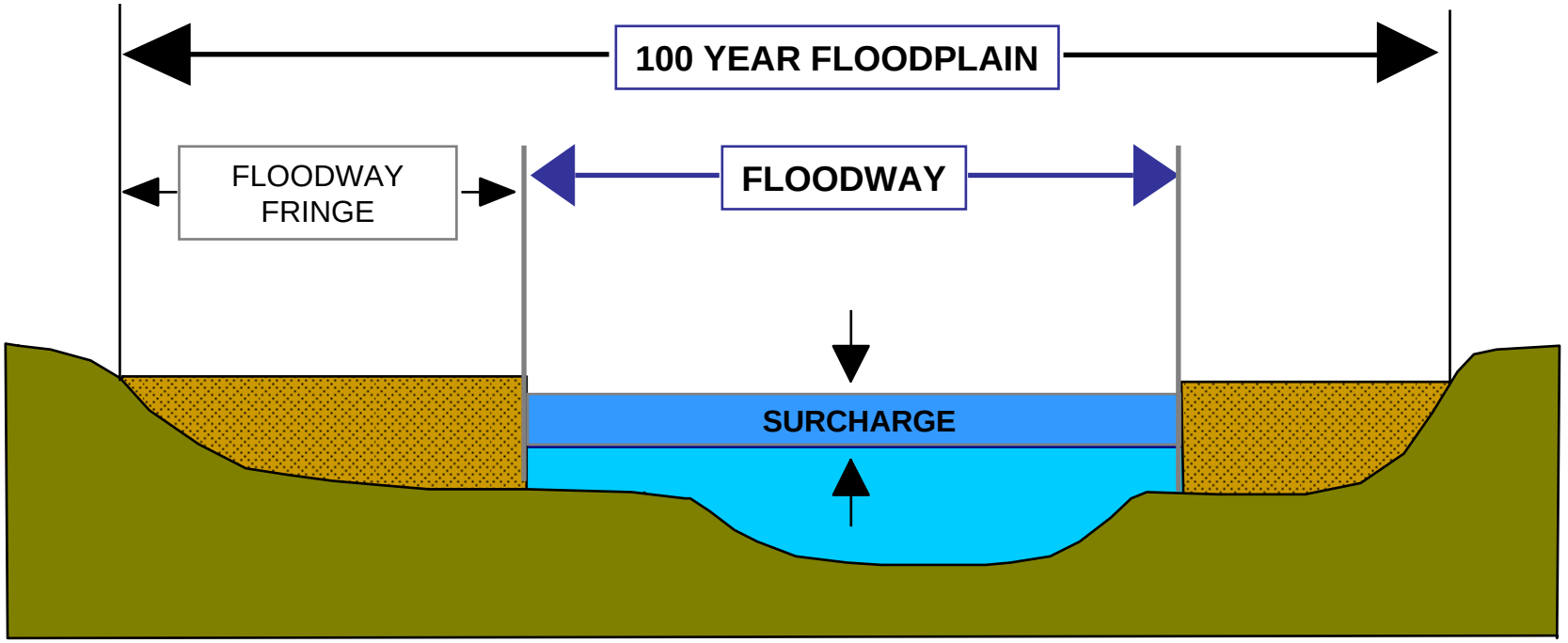


Process & Schedule

Flood Insurance Study Phase 2 Overview

- Finish mapping upper Skagit from Sedro Woolley to Concrete (including portions of the Sauk)
  - Will include updated topo/floodway/new BFEs
- Meet with communities to start to discuss a floodway downstream of Sedro Woolley
- Work with the communities to outreach study results and homeowner implications
- Issue revised maps

Floodway Schematic



FLOODWAY + FLOODWAY FRINGE = 100 YEAR FLOODPLAIN
SURCHARGE NOT TO EXCEED 1.0 FEET

Floodway

- Historically, Skagit County, Burlington, and Mount Vernon have all adopted their own version of a conveyance preservation tool pursuant to 60.3(C)(10) of the 44 Code of Federal Regulations.
- RCW 86.16 applies to a “floodway” as shown on a FEMA map
- A floodway is a standardized approach to preserving open space to convey the 100-year flood without causing greater than a 1’ rise.
- Floodways are used from Sedro Woolley upstream

Restudy Process

1. Restudy is requested – July 1997 (part of USACE GI)
2. Scoping meetings - January 4, 2001
3. Draft study / maps – March, 2007
4. Preliminary maps issued – est. July, 2007
5. Hold Final Coordination Meeting – est. Sept, 2007
6. 90 day appeal period begins after 2nd public notice in local newspaper – est. Sept, 2007

Restudy Process

7. 90-day appeal period ends – est. December, 2007
8. FEMA reviews submitted technical appeals and modifies or maintains maps as appropriate
8. FEMA issues "Letter of Final Determination (LFD)" to communities and publishes the BFEs in the Federal Register – est. January/February, 2008
9. Communities have 6 months to adopt the study before the data becomes "effective".
   Failure to adopt results in suspension from NFIP
10. Effective date – est. July, 2008

90 day Appeal Period

Appeals

- *"requests for changes to proposed BFEs"*
- *Must be based on scientific evidence demonstrating error*
- *<u>FEMA will not accept anecdotal information</u>*

Protests

- *"requests that do not involve BFEs"*
- *Floodplain boundaries*
- *corporate limits*
- *road locations*
- *road names*
- *etc.*

Rumors vs. Facts

- **Myth:** *"BFEs would be lower if we removed the four controversial "Stewart" floods!"*
- **Fact:** FEMA evaluated a 50-year flood event with a lower discharge than would occur with the 4 floods removed and verified that the BFE would only decrease by about 1-2'

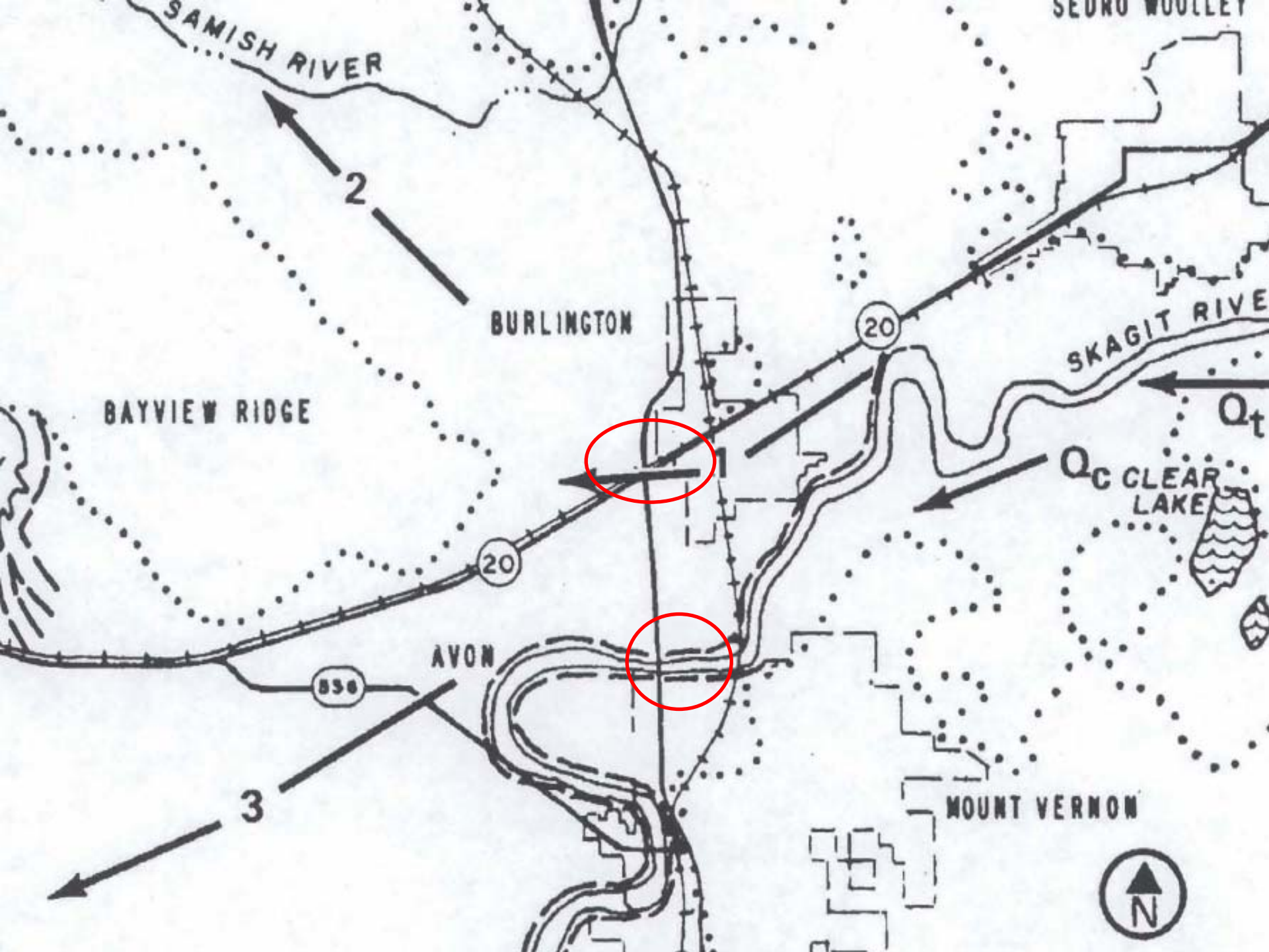
Base Flood Elevations

Using Flo2D 100 year (226,400 cfs) vs. 50 year (185,000 cfs)

- A 50-year flood has a 2% chance of occurring (or being exceeded) each year or a 45% chance of occurring over 30 years

Two Examples…

- At I-5 (in "3 bridge corridor") NAVD 88
  - *Draft* 100 year SWL: ~44.3'
  - *Draft* 50 year SWL: ~43.8' (.5' less than draft 100 year)
  - Effective BFE: ~39.2' (5.1' less than draft 100 year)
- At intersection of I-5 & HW20 "Overflow Path 1" NAVD 88
  - *Draft* 100 year SWL: ~39.8'
  - *Draft* 50 year SWL: ~38.9' (.9' less than draft 100 year)
  - Effective BFE: ~34.2' (5.6' less than draft 100 year)


SAMISH RIVER
2
BURLINGTON
20
SKAGIT RIVE
BAYVIEW RIDGE
Qt
1
Qc CLEAR LAKE
20
AVON
536
3
MOUNT VERNON
N

Base Flood Elevations

What accounts for the change from 1984 – 2007?

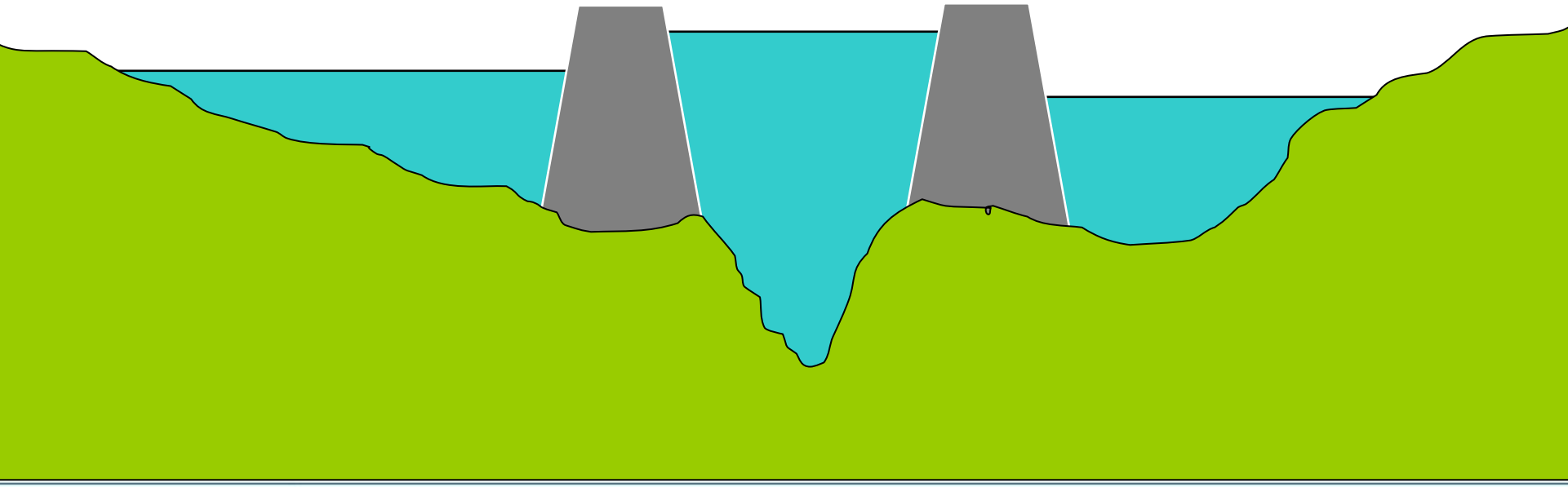
- **Previous model**
  - Assumed 3 "Flow Paths" each caring a limited amount of water
    - Flow Path 1: 130k CFS Flow Path 2: 86k CFS Flow Path 3: 44k CFS
  - Did not factor levee failures
    - Flooding in Fir Island: effective BFE is 12.7' (NAVD88), but levee failure resulted in observed depths of 10' above the ground (exceeding BFE's by 3-9')
  - Used a single est. of 240,000 cfs entering the river (steady-state) and routed it in a uniform direction downstream (1-dimension)
  - Relied on a variety of simplified engineering assumptions (e.g. 3 flow paths with finite amounts of water)

Base Flood Elevations

What accounts for the change from 1984 – 2007?

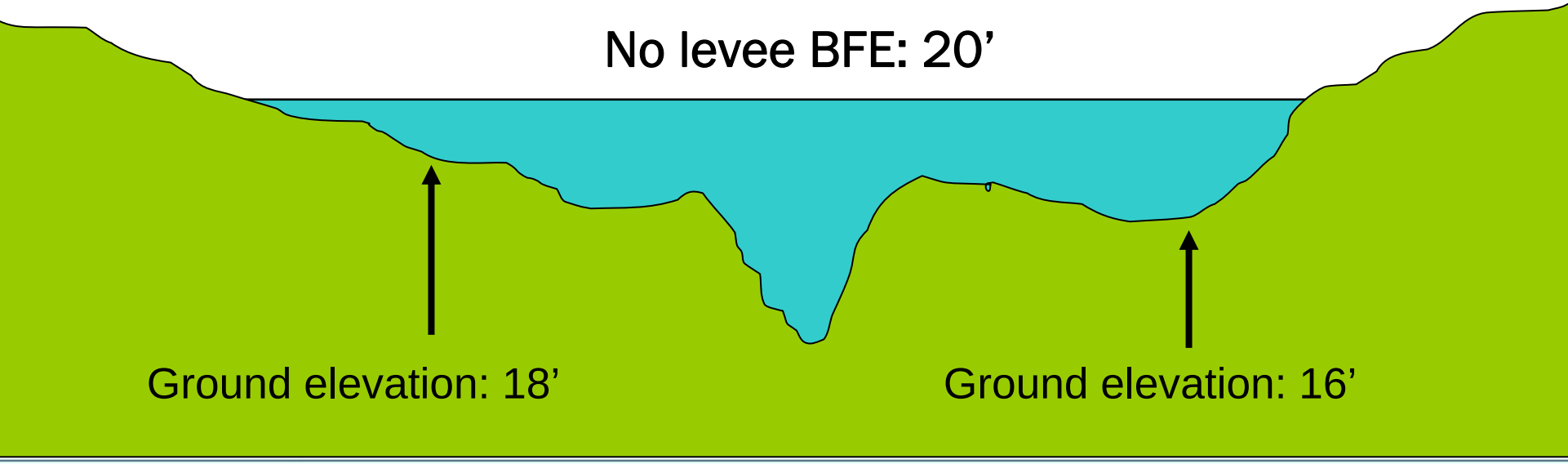
- New model factors conditions such as:
  - Water *entering or exiting* the river system 2-dimensions) as the river rises, crests, and falls over time (unsteady-state)
  - Water freely moving/interacting throughout the entire delta (as opposed to assumed separate "flow paths" with their own assumed 100-year discharge)
  - levee failure scenarios

How does FEMA model levees?



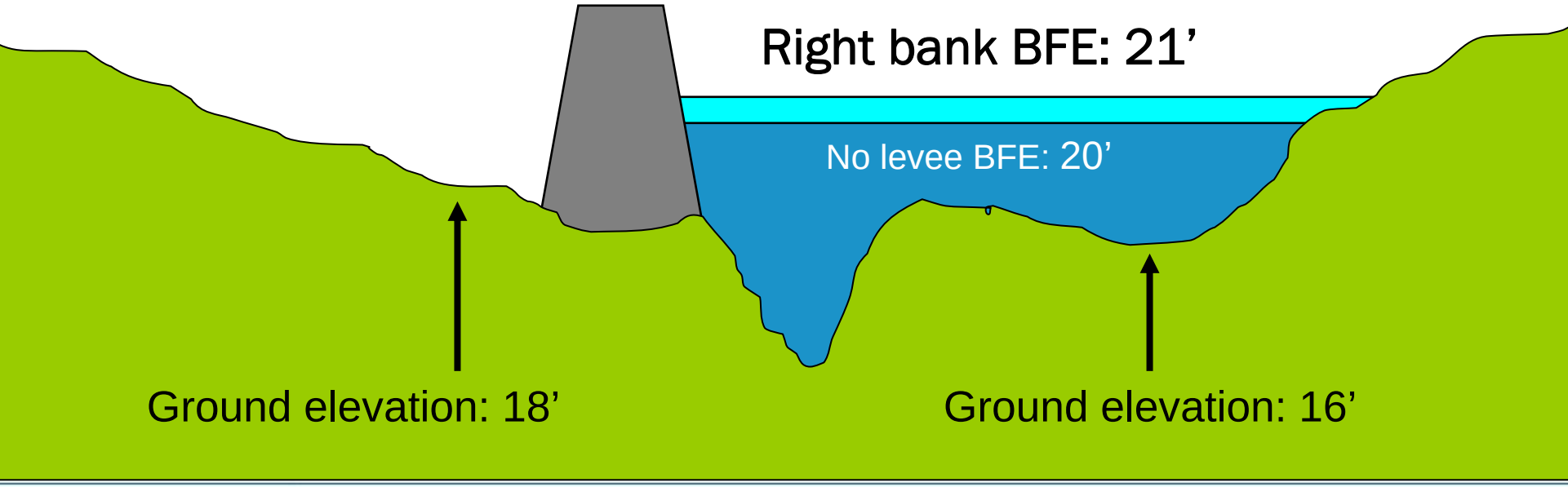
Scenario 1:
Assume no levees exist

- Establishes a baseline for comparison
- Used for calculating the Floodway
- Provides lowest BFEs



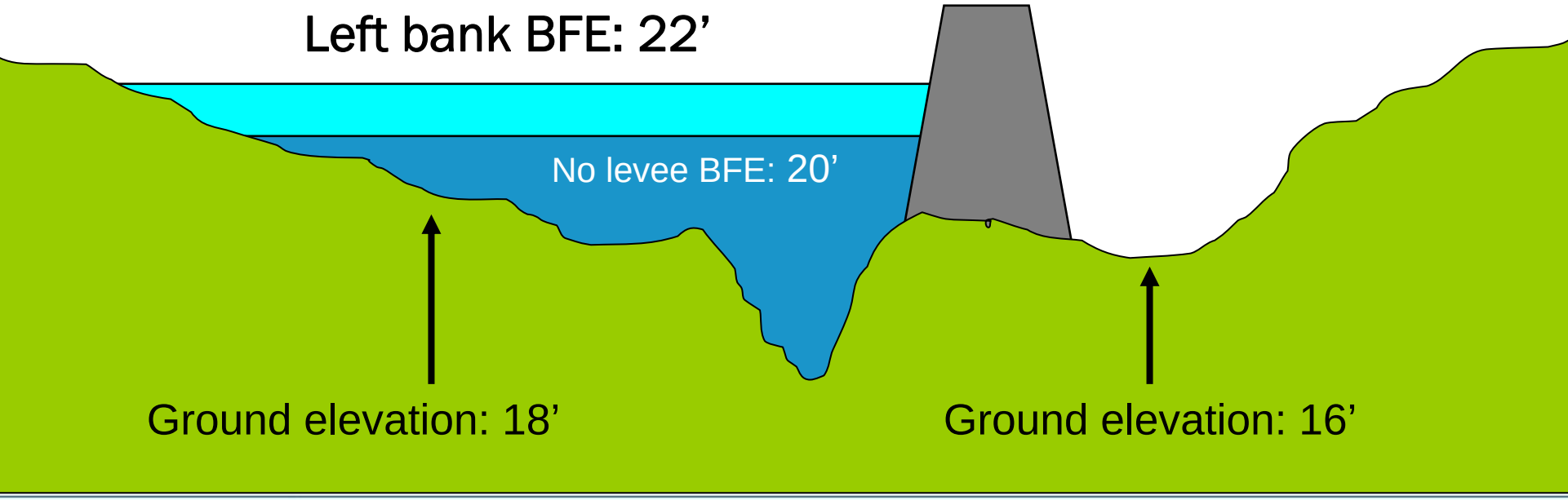
Scenario 2:
Simulate right bank Levee failure

This determines the BFE on the right bank (behind levee)



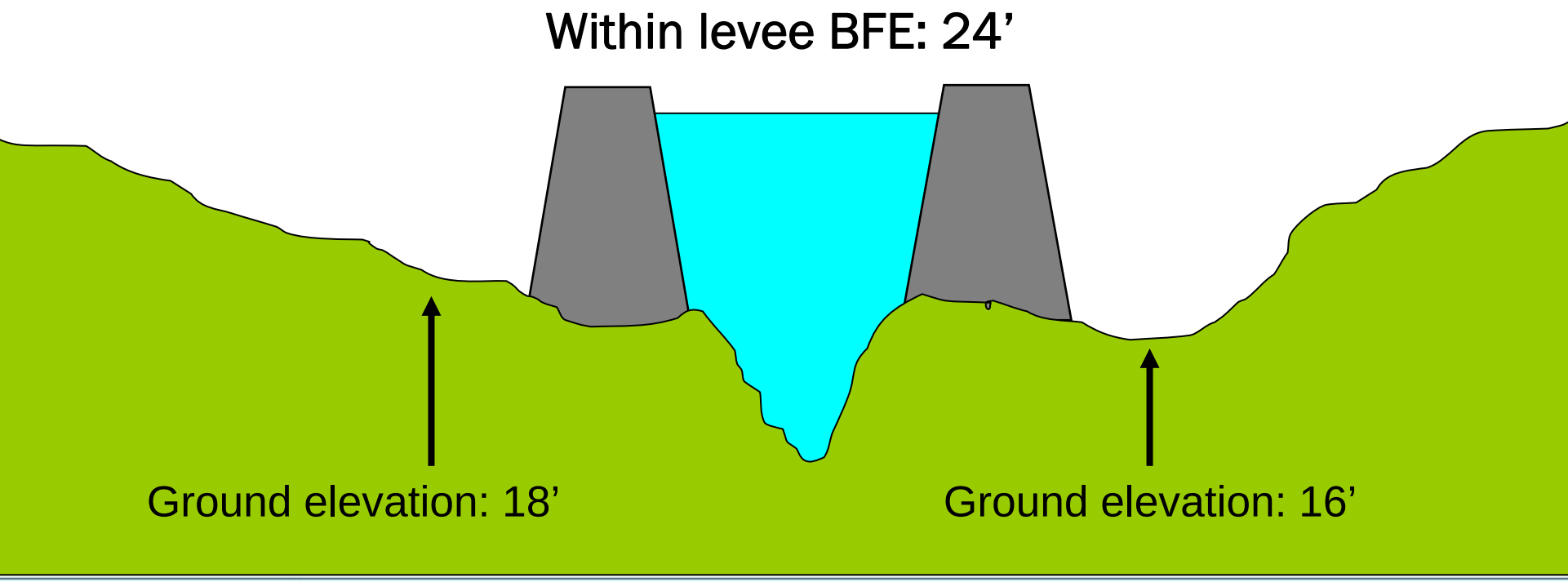
Scenario 3:
Simulate left bank levee failure

- This determines the BFE on the left bank (behind levee)



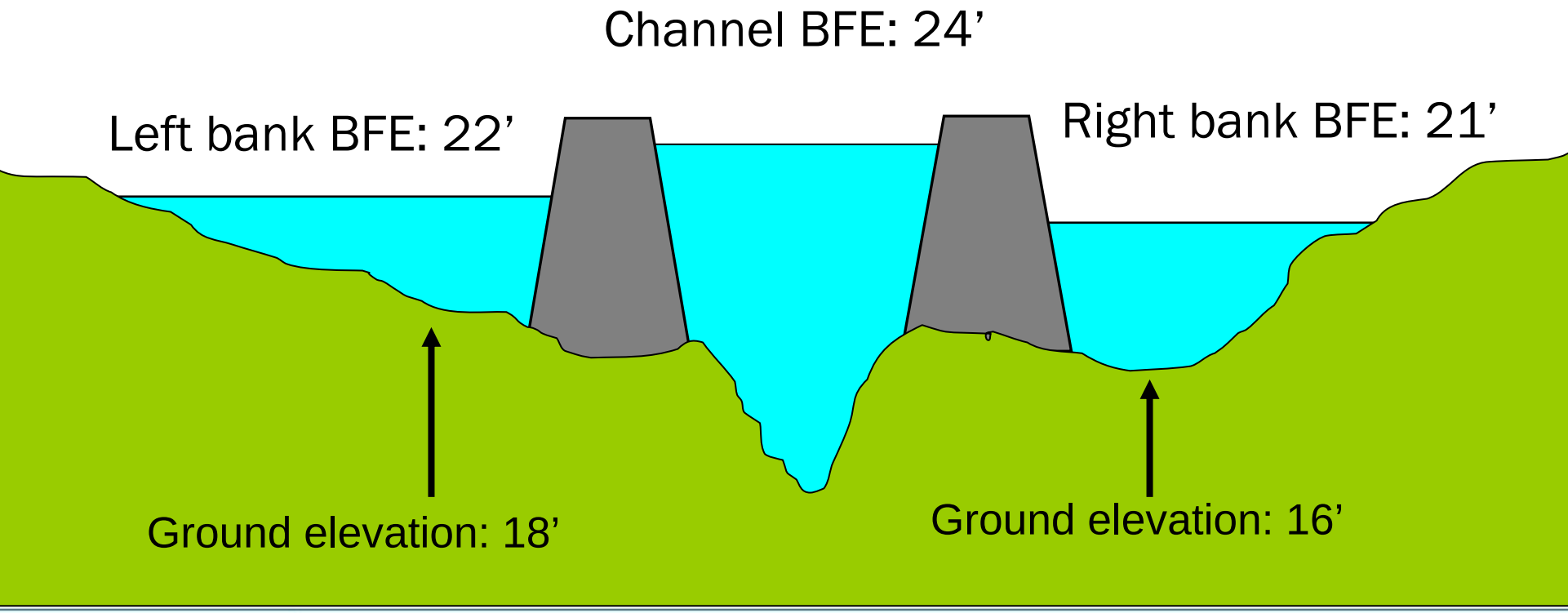
Scenario 4:
Simulate no levee Failures

- Determines the BFE within the levee
- Indicates insufficient freeboard?



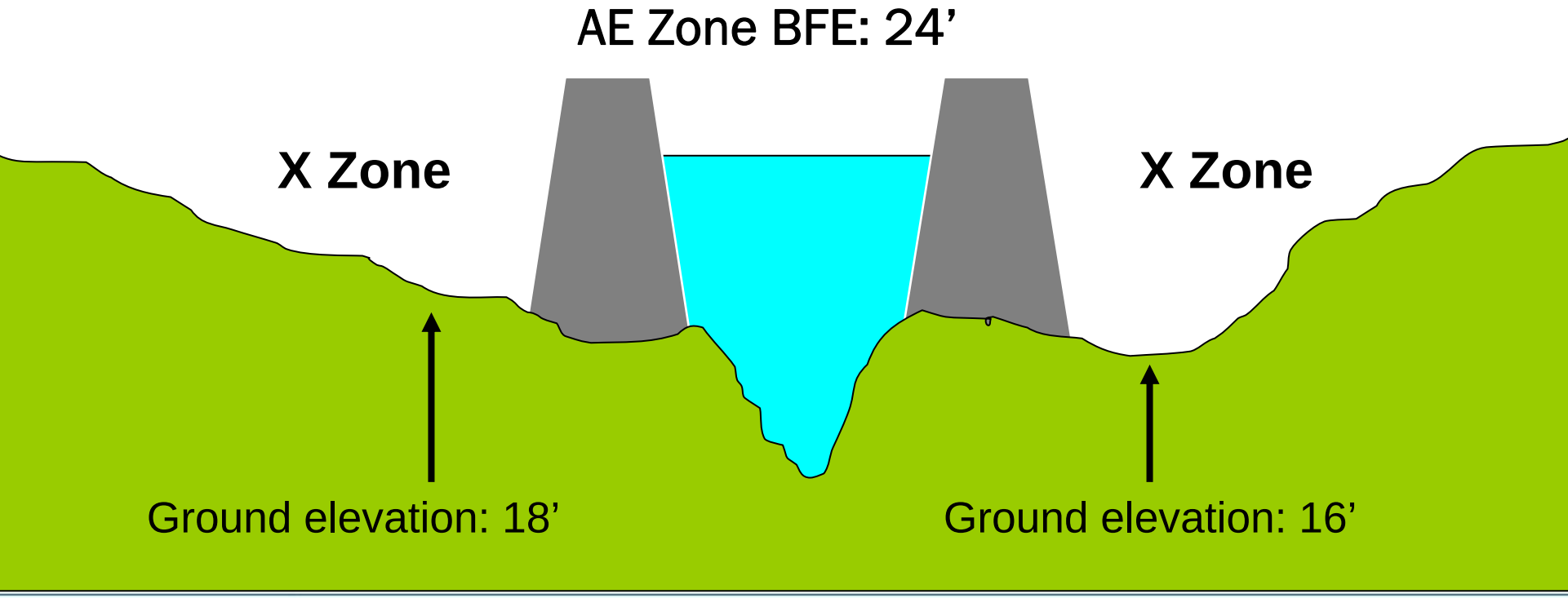
Mapping: Combine the results – Assign risk zone & assign BFE

- Final BFE shown reflects what would occur when a levee fails by factoring in the unknown of where the levee will fail



Is the levee certified by USACE?

- Levees must meet standards identified at 44 CFR 65.10
- Based on FEMA Guidelines and Specifications for mapping
- Original interim levee policy: May 15, 1981



Flood Insurance Statistics

- **Myth:** *"I won't be able to purchase flood insurance because of FEMA's maps"*
- **Fact:** Flood Insurance will remain available to every resident in Skagit County or City
  - Skagit Co residents save 25%
  - Mount Vernon Residents save 20%
  - Burlington Residents save 20%
  - La Conner Residents save 10%

Flood Insurance Statistics

Skagit County Facts

- Total number of policies: 2,737 (highest in State)
- Average premium: $650
  - 90% of policies are in the floodplain
- Insurance in force: $489 million
- 73% of County buildings are Pre-FIRM
- 27% are Post-FIRM
- Total losses since 1978: 532
- $6.7 million claims paid

Community Rating System Class 5

Skagit County Facts

- Policy holders in the SFHA save 25% on premiums
- SFHA buildings save $227 annually
  - This equals ~$561,000 saved each year
- B, C, X Zone buildings save $55 annually
- Average residential premium: $605
- Average non-residential premium: $986

Key Regulatory Provisions

Increased Cost of Compliance: what can I do?

- When maps change, homeowners may have access to additional funds to help mitigate…
- ICC provides up to $30,000 to:
  - *Elevate the building on site;*
  - *Relocate the building to another site;*
  - *Demolish the building;*
  - *Floodproof the building (non-residential only)*
  - *Any combination above*
- Total claim payment cannot exceed $250k for residential, $500k for non-residential

Flood Insurance Rates

2007 Post FIRM Residential Rates ($100k)

3 ft above BFE = $196

2 ft above BFE = $261

1 ft above BFE = $411

0 ft at BFE = $741

-1 ft below BFE = $2,296

-2 ft below BFE = $2,535

-3 ft below BFE = $2,825

-5 ft below BFE = $5,500

Flood Insurance Rates

2007 Post FIRM Non-residential Rates ($150k)

+4 ft above BFE *= $888

1 ft above BFE = $726

0 ft at BFE = $1,806

-1 ft below BFE = $7,041

*$500k building, $500k contents w/ Class 5 CRS discount

Flood Insurance

Grandfathering Rate Require Documentation

- To recognize policy holders who have built in compliance and have maintained a continuous and current flood insurance policy, FEMA will allow the policy holder to continue to benefit from the original rating of that building.
- Policies are transferable from one owner to another (e.g. due sale of property)
- Owner has the option of using the updated maps as the rating criteria for that property or continuing to use the rate established based on the original (old) maps.
- Or…

Flood Insurance

Grandfathering Rate Require Documentation

- The date of the FIRM in effect when building was constructed
- The flood zone from that FIRM in which the property is located
- The Base Flood Elevation (BFE) for that zone (if applicable)
- A copy of the map panel showing the location of the building
- The rating element that is to be grandfathered (rate or zone). Evidence supporting the rating element includes documents such as Elevation Certificates.
- A letter from the community official verifying this information also is acceptable, as long as the above information is provided.

Flood Insurance

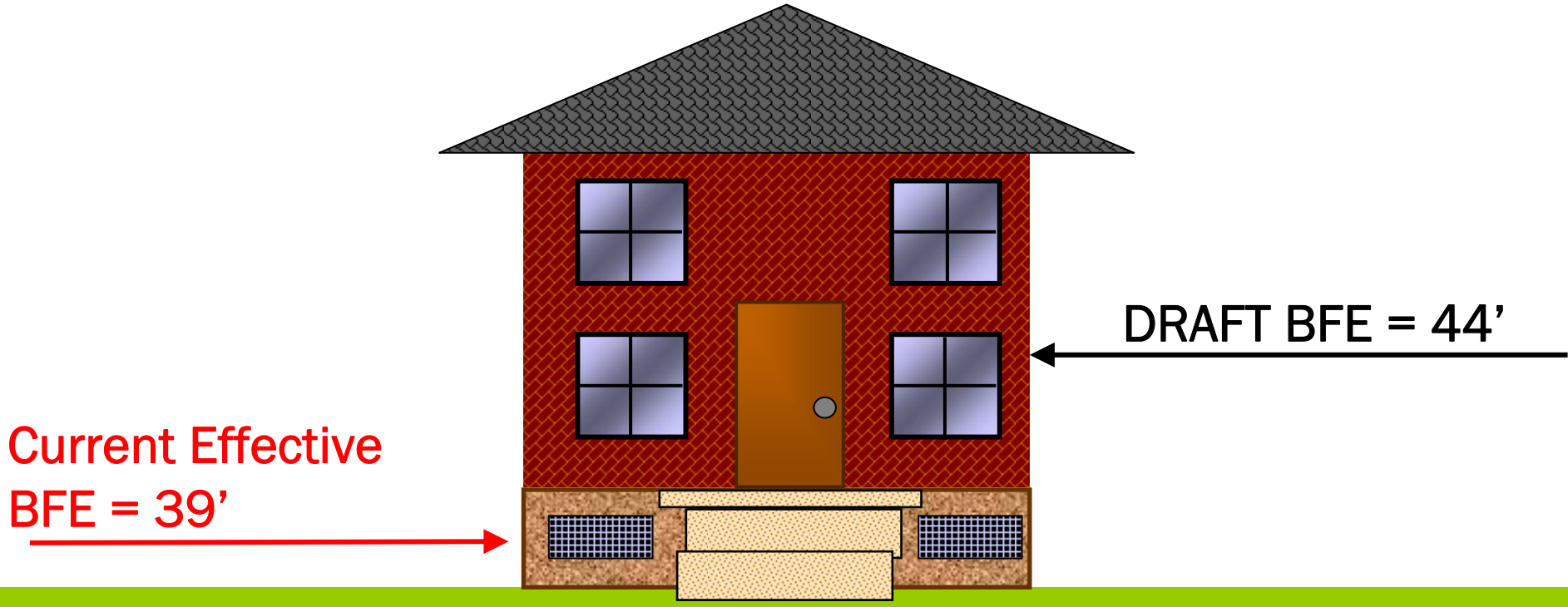
Grandfathering Rates

Why use the draft maps for permitting?

- If a building is voluntarily elevated today using the draft BFEs, when the maps become effective, that owner will still be able to pay rates reflecting the additional freeboard!
- **The key to rating buildings built in compliance with old maps is to retain copies of the old maps!**

Grandfathering

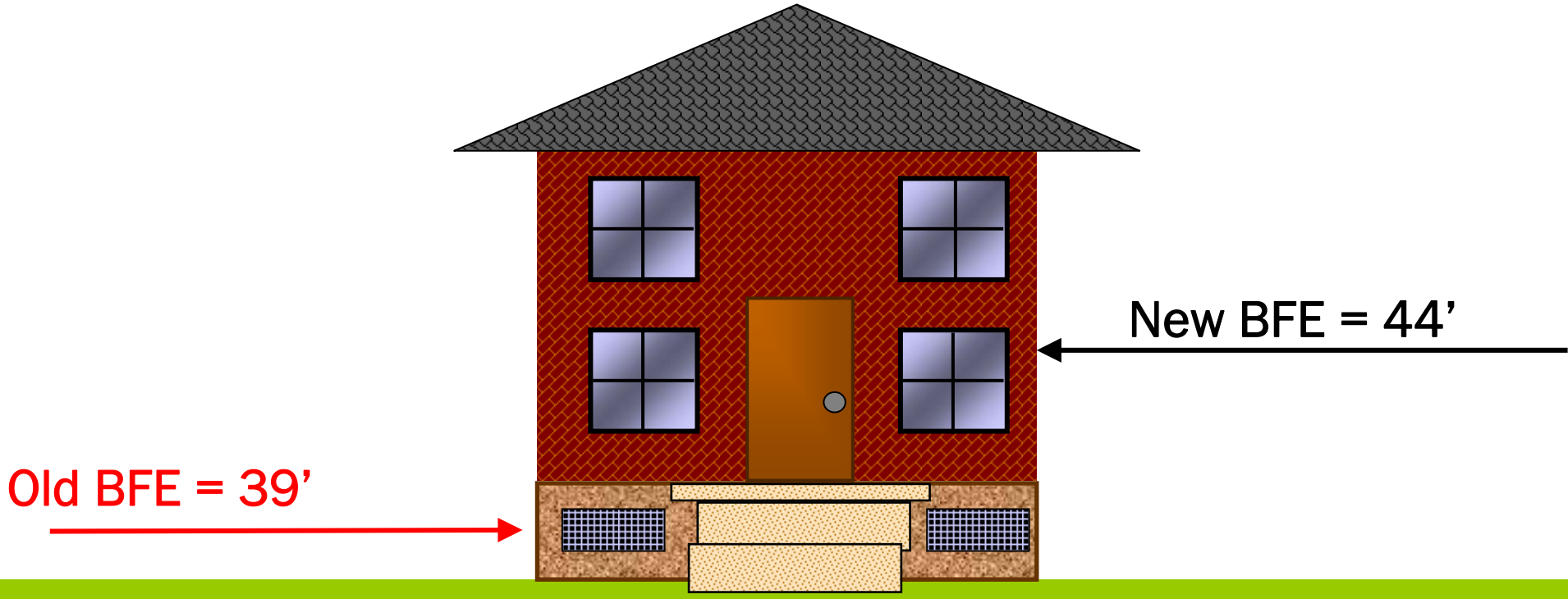
2007 – Existing, Compliant, Post-FIRM Structure



Annual premium: ~$411 (BFE +1’ rate)
for $100,000 insurance

Grandfathering

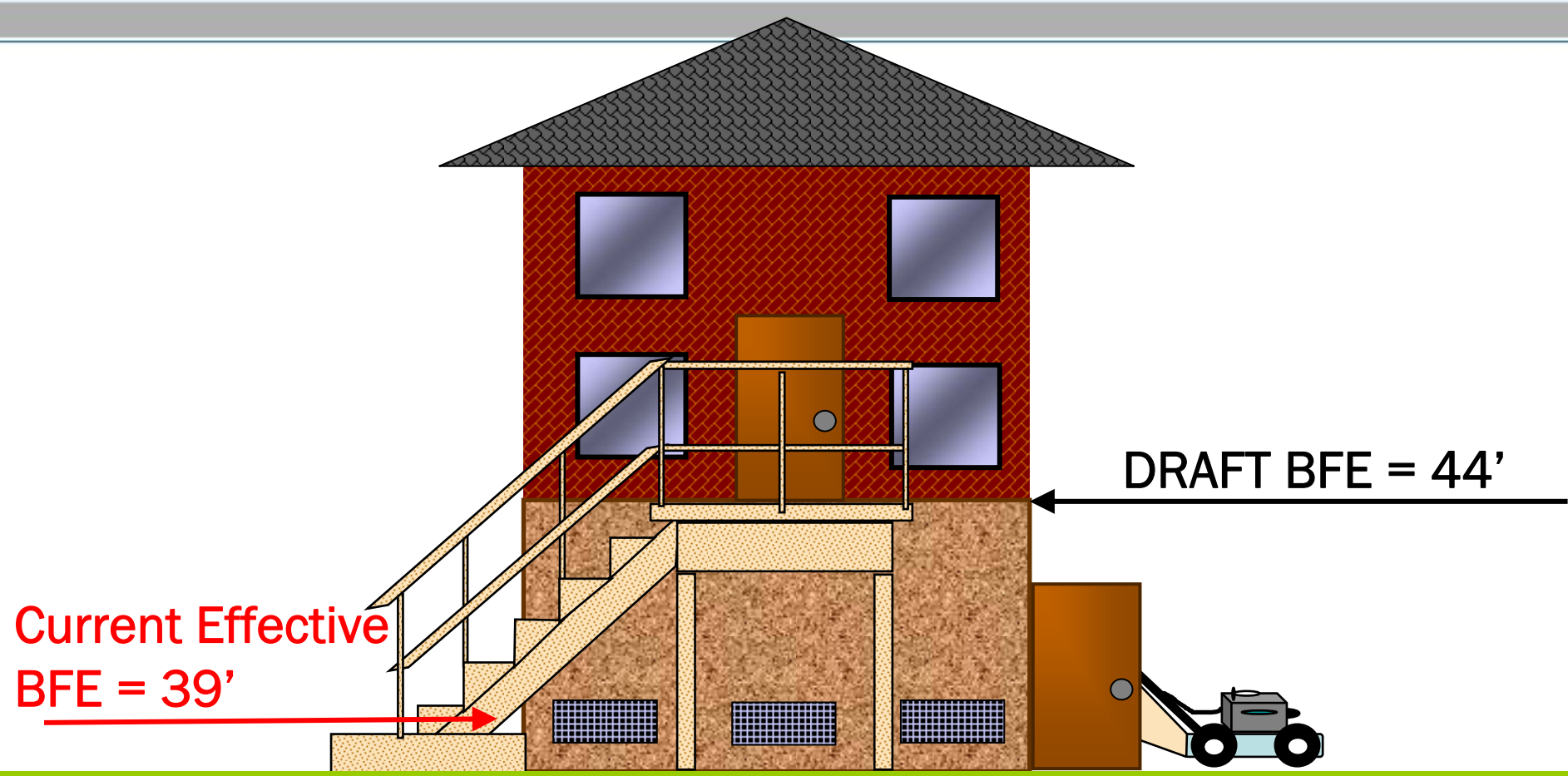
2007 – Existing, Compliant, Post-FIRM Structure: no changes



Grandfathered annual premium: ~$411 (retains BFE +1’ rate)
for $100,000 insurance (unless substantially improved)

Grandfathering

2007 – New construction or substantial improvement



Grandfathered annual premium: ~$196 (retains BFE + 5’ rate) for $100,000 insurance

Questions & Comments

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NFIP Insurance Questions

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FEMA Map Services Center: www.msc.fema.gov

Access *current* maps for your location

Letter of Map Amendment (LOMA) Hotline - **1-877-FEMA-MAP**