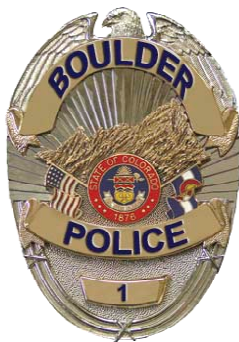


# **CITY OF BOULDER**

## **FIELD GUIDE FOR FLOOD RESPONSE**

### **2013**



**A Joint Flood Response Guide for  
Boulder Police and Fire Departments and  
University of Colorado Police Department**

Revised March, 2013



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## **Goal**

Work collaboratively with other departments, agencies, and the community to minimize the risk to life and property, while maintaining the ability to provide emergency **Police and Fire** services.

## **Objectives**

- Provide flood evacuation warnings and assist with initial evacuations when possible;
- Keep individuals and vehicles from entering flooded areas;
- Assist with search and rescue;
- Protect Police and Fire resources and personnel;
- Systematically move Fire Department apparatus and personnel to designated safe areas;
- Evacuate Public Safety Building if necessary;
- Maintain some ability to respond to emergency calls for service.

Available resources will determine the extent to which the objectives are met.

## **All Hazards Alert System (AHA)**

The Office of Emergency Management (OEM) has emergency management responsibility for both the City of Boulder and Boulder County. The City of Boulder is at the highest risk of flash flood in the State of Colorado. After the 2010 fire in Fourmile Canyon, Boulder is at an even higher risk for flood due to loss of vegetation and will remain at that higher risk for several years to come. As little as one inch of rain in the Fourmile Watershed could cause issues for the City of Boulder dependent on the duration of the storm and the rate of flow already in Boulder Creek.

For 2012, the OEM will implement a severe weather monitoring protocol when weather patterns indicate a possible thunderstorm approaching the Fourmile Watershed. The protocol will include constant evaluation of weather radar, stream flow gauges and rain fall gauges. If required, OEM will also consult with Technical Specialists from the Urban Drainage & Flood Control District, the National Weather Service and City & County Hydrologists. Additional weather and stream flow information will also be obtained from first responders and weather spotters in the field. Gathering information from multiple sources will increase the level of confidence when making decisions related to implementing portions of this Flood Response Guide.

CITY OF BOULDER AND BOULDER COUNTY LEVELS OF READINESS are identified through the use of the ALL HAZARDS ALERT System (AHA)

During each color alert level, department members should familiarize themselves with the City of Boulder Field Guide for Flood Response and consider the following:

### **GREEN**

**Normal operations**

### **YELLOW**

**Flash Flood Watch**

**Heightened awareness** – *The potential of a flood-producing storm has been observed.* Yellow: starts at the earliest time a threat of disaster is indicated.

Weather threats will be communicated from the OEM to the OEM Board of Directors, consisting of the Police Chief, the Fire Chief and the Sheriff, and any other City/County or University of Colorado officials deemed appropriate. During threat of a disaster, raising the alert level from Green to Yellow is generally done when both OEM Staff and the Technical Specialists concur that the threat of a disaster exists. If personnel from the OEM are not available, raising the alert level to Yellow may be issued by the highest ranking Police or Fire Officer On-Duty in the City of Boulder; and for Boulder County, by the highest ranking Sheriff's Deputy On-Duty.

### **All On-Duty Police/Fire Staff**

- Review the current City of Boulder Flood Procedure;
- Monitor weather related conditions;
- Assemble all on-shift Dive Personnel at Station 3 (Fire)

### **Communications**

Implement employee and citizen notification procedures as outlined using the appropriate checklist.

## **YELLOW**

### **Flash Flood Watch with Imminent Nuisance Flooding**

**Flooding Possible.** *The possibility of flooding may necessitate internal mobilization of potentially affected agencies and departments. The EOC will be activated and public warnings may be undertaken as the situation warrants.*

If personnel from the OEM are unavailable, a Yellow alert may be issued by the highest ranking on-duty Police or Fire Officer in the City of Boulder; and for Boulder County, the highest ranking on-duty Sheriff's Deputy.

### **On-Duty Patrol Supervisor**

- Consider internal actions to protect employees and records, to include Public Safety Building evacuation and relocations. If this is a consideration and if time permits, page additional staff to assist with the building evacuation;
- Assess available resources and develop strategies in preparation for moving to Red if needed;
- Make arrangements through communications to transport the Incident Command Vehicle (ICV) to the Boulder Fire Training Center at the Boulder Reservoir by Boulder Fire Department personnel;
- Ensure, through Communications, the Emergency Operations Center (EOC) has been established;
- Provide warning by patrol car Public Address (PA) system for any Special Events occurring along Boulder Creek;
- Familiarize yourself with the steps for community evacuation (page 10).

## Fire Operations

- Staff Page for response of all Management Personnel;
- Notification Page for “Information Only” for all Dive Team Members;
- Station 3 and 7 crews will shut down all utilities and remove items from the floor that can be damaged by a foot of water;
- Fire Operations will remain dynamic and fluid;
- Log-on to WebEOC for current updates and information;
- Review Community Evacuation Plan;
- Assemble all on-shift Dive Personnel at Station 3;
- Personal vehicles will be moved to the nearest point outside the flood zone, time permitting.

## Communications

- Implement employee and citizen notification procedures as outlined using the appropriate checklist;
- Page Fire Department Staff personnel for response;
- Notification Page for “Information Only” for all Dive Team members.

## RED

### **Flash Flood Warning**

**Flooding will occur.** *Flooding is imminent or occurring; action is necessary to protect lives and property and to warn the public to seek high ground immediately or evacuate the flood plain areas. The EOC will be fully engaged and all agencies will execute responses according to the Emergency Operations Plan. Protection of City personnel and the public is necessary.*

If personnel from the OEM are unavailable, a Red alert may be issued by the highest ranking on-duty Police or Fire Officer in the City of Boulder; and for Boulder County, the highest ranking on-duty Sheriff’s Deputy.

The decision to evacuate the community will be made by the City Manager. If the City Manager or the Deputy City Manager is not available, the Police Chief, Fire Chief or the highest ranking available Public Safety official will make the decision based on the **totality of circumstances and information** available at the time, including but not limited to:

- Anticipated Flooding (Low Level Flooding versus Flash Flooding). **In the event of catastrophic flooding or a complete failure of Barker Dam or Gross Dam, life safety takes priority over any evacuation plans.**
- Time involved;
- Data from rain and stream flow gauges;
- Weather reports;
- Warnings from the National Weather Service or Private Meteorological Service;
- Information from field personnel;
- Consideration of the drainage system/flood plain effected.



### **On-Duty Patrol Supervisor**

- Consider internal actions to protect employees and records, to include Public Safety Building evacuation. If this is a consideration and if time permits, page additional staff to assist with the building evacuation;
- Work with on-duty/on-call Communications Supervisor for evacuation of the Communications Center;
- Assignment of personnel to North and South Staging for a major Boulder Creek flood;
- Assignment of two officers to West staging, as staffing permits for a major Boulder Creek flood;
- Assess available resources and develop strategies to respond to the situation;
- Consider community evacuation as outlined on page 10.

### **Fire Operations**

- Page all Dive Team Members for response;
- Fire Operations will remain dynamic and fluid.

### **Communications**

- Implement employee and citizen notification procedures as outlined using the appropriate checklist;
- Page all Dive Team Members for response;
- If the Public Safety Building is in the flood zone, relocate to the Boulder County Communications Center at the direction of the on-duty patrol supervisor.

### **After Flood Plan and Demobilization (Fire)**

- Search and Rescue Operations will be coordinated through the Police Department Liaison for Search and Rescue, Recovery, Body Identification, Tagging and Location Information;
- Dive Team Operations and all resources available for Operations;
- Personnel will be relieved or reassigned through the Incident Commander.

## **RED**

### **Flooding is Occurring**

Confirmation that flooding is occurring, gather intelligence, identify impacts and damage assessments, medical assistance, sheltering operations, traffic control, safety reviews and public health danger evaluations will be conducted. The EOC will remain operational with most, if not all, Emergency Support Functions (ESF) operational. *Damage will be assessed and evacuations will continue. If necessary, medical and rescue assistance will be fully utilized to sustain lives and protect property. Recovery operations will begin.*

#### **On-duty patrol supervisor**

- Manage community evacuation;
- Establish operations at the North and South staging locations (page 13).

#### **Fire operations**

- Fire Operations will remain dynamic and fluid;
- Boulder Fire-Rescue Liaison to Communications Center for assistance with call prioritization.

#### **Communications**

- Implement notification procedures as outlined using the appropriate checklist from the PSB or the Boulder County Communications Center, if evacuation has occurred.

#### **After Flood Plan and Demobilization (Fire)**

- Search and Rescue Operations will be coordinated through the Police Department Liaison for Search and Rescue, Recovery, Body Identification, Tagging and Location Information;
- Dive Team Operations and all resources available for Operations;
- Personnel will be relieved or reassigned through the Incident Commander.

## **Barker and Gross Dam Protocols**

**Barker Dam** is located in Nederland, west of Boulder, and drains into Boulder Creek. The Barker Dam reservoir holds a significant volume of water year-round and usually fills to capacity in the summer after the snowmelt finishes. Issues at Barker Dam are identified as a Level 1, Level 2 or Level 3 incident:

**Level 1 Incident** is a non-emergency incident, unusual event, or slowly developing situation.

**Level 2 Incident** is a potential dam failure, or a rapidly developing situation.

**Level 3 Incident** is a catastrophic failure of the dam.

**Gross Dam** is located southwest of Boulder and drains into South Boulder Creek. Gross Dam and its reservoir are significantly larger than Barker and hold a significantly larger volume of water. Incidents at Gross Dam will be identified as a Level 1 or Level 2 incident based on information at the location or other reliable sources.

Knowledge of either type of incident are of great concern to both City and County officials and will be communicated to the Boulder OEM, the OEM Board of directors (consisting of the Police Chief, the Fire Chief, and the Sheriff) and any other City/County or University of Colorado officials deemed appropriate. During a threat of disaster at either Barker or Gross Dams, raising the threat level from **Green** to **Yellow** or **Red** is generally issued when both OEM Staff and Technical Specialists concur that the threat of disaster exists. If personnel from the OEM are not available, raising the threat level from **Green** to **Yellow** or **Red** may be issued by the highest ranking on-duty Police or Fire Officer in the City of Boulder; and for the County, the highest ranking on-duty Sheriff's Deputy, based on available information.

**Level 1 Incident:** Non-emergency; unusual event; or a slow developing situation at either dam would usually be identified as a **Yellow** alert (**Non-Catastrophic**).

**Level 2 Incident:** A potential dam failure, or a rapidly developing situation at either dam, would usually be identified as a **Red** alert (**Catastrophic**). As additional information becomes available the alert level will be adjusted.

**Level 3 Incident:** A confirmed catastrophic failure of Barker Dam would be identified as a **Red** alert (**Catastrophic**).

**GREEN**

**All Clear**

This message cancels the flood or potential flood message and operations return to normal.

## EVACUATIONS

### **Evacuation of the Public Safety Building (PSB)**

The decision to evacuate the PSB will be made by the highest-ranking Police official available, and based on the totality of circumstances and information available at the time, including but not limited to:

- Anticipated Flooding (Low Level Flooding versus Flash Flooding). **In the event of catastrophic flooding or a complete failure of Barker Dam, life safety takes priority over any evacuation plans.**
- Time involved;
- Data from rain and stream flow gauges;
- Weather reports;
- Warnings from the National Weather Service or Private Meteorological Service;
- Information from field personnel;
- Consideration of the drainage system/flood plain effected;
- Review of the cameras located at Barker Dam if appropriate;
- Status of radios and other communication devices in the Communications Center.

In the event the PSB is evacuated, Police personnel will respond to the primary North and South staging locations. The supervisor in charge of staging will direct employees to one of the staging areas. Police personnel and the Emergency Response Team (ERT) may be paged and/or contacted by telephone to respond as needed to pre-determined staging areas. Vehicles and equipment will be transported to the North and South primary staging locations. The primary staging locations are indicated on the equipment evacuation maps. On-duty supervisor(s) or designee(s) will assign commissioned and non-commissioned personnel to either vehicle or equipment transport to staging locations.

If circumstances permit, the following equipment will be given priority during the evacuation process:

- Department Vehicles (Priority vehicles are tagged in the Equipment Room)
- Department Specialty Vehicles
  - SWAT Truck – If no SWAT member is available to transport, follow operating directions posted in the vehicle.
  - Bomb Truck – If no Bomb team member is available to transport, the truck is located in the North garages and the combination is available in dispatch in the Flood Protocol Book.
  - Peacekeeper – If no SWAT member is available to transport, the Peacekeeper truck is located in the North garages and the door combination is available in dispatch in the Flood Control Book.
- Tasers & Holsters
- Shotguns/Rifles/Ammunition
- Pack Set Batteries and Chargers

**Each section will be responsible for relocating the following equipment:**

Patrol/Traffic:

Collect portable radios and the chargers, shotguns, ammunition, and tasers from the equipment room; evacuate and transport patrol vehicles to the North and South staging areas as directed by a patrol supervisor or his/her designee. Bring any “ready box” that has been previously assembled for an evacuation as well as any assigned laptops.

Detectives:

Collect portable radios, desk chargers, all laptops, secure and store critical case files; evacuate and transport patrol and detective vehicles to the North and South staging areas as directed by a patrol supervisor or his/her designee. Bring any “ready box” that has been previously assembled for an evacuation as well as any assigned laptops.

Records:

Secure and store essential police documents and files; evacuate and transport patrol vehicles to the North and South staging areas as directed by a patrol supervisor or his/her designee. Bring any “ready box” that has been previously assembled for an evacuation as well as any assigned laptops.

Communications:

Notify Boulder County Communications and UCPD of the evacuation; transfer 9-1-1 calls to the Boulder County Communications Center and time permitting, transfer non-emergency lines. Bring any portable radios and chargers. Bring the “ready box” that has been previously assembled for an evacuation. Communications personnel shall respond to the Boulder County Communications Center.

Administrative Services:

Secure and store police personnel and financial files, records and documents, and evacuate and transport patrol vehicles to the North and South staging areas as directed by a patrol supervisor or his/her designee. Bring any “ready box” that has been previously assembled for an evacuation as well as any assigned laptops.

Property & Evidence:

Secure and properly store files, records, documents, and critical evidence. Evacuate and transport patrol vehicles to the North and South staging areas as directed by a patrol supervisor or his/her designee. Bring any “ready box” that has been previously assembled for an evacuation as well as any assigned laptops.

## Community Evacuation

The decision to evacuate the community will be made by the City Manager. If the City Manager or Deputy City Manager is not available, the Police Chief, Fire Chief, or the highest-ranking available Public Safety Official will make the decision, based on the totality of circumstances and information available at the time, including but not limited to:

- Anticipated Flooding (Low Level Flooding versus Flash Flooding). **In the event of catastrophic flooding or a complete failure of Barker Dam or Gross Dam, life safety takes priority over any evacuation plans.**
- Time involved;
- Data from rain and stream flow gauges;
- Weather reports;
- Warnings from the National Weather Service or Private Meteorological Service;
- Information from field personnel;
- Consideration of the drainage system/flood plain effected.

**Evacuation Procedures:** If a decision has been made to evacuate, the following should occur:

City of Boulder and the University of Colorado Communications Centers:

1. The decision to initiate an evacuation will be communicated to the Boulder Police and Fire Communications Center (BPFCC).
2. The BPFCC will initiate their procedures, which includes notifying the University of Colorado Communications Center, including a decision to evacuate.
3. Each Communications Center will follow their pre-established flood protocols, including broadcasting an advisory to officers if a flash flood evacuation has been ordered.

University of Colorado Police:

1. The Street Supervisor will contact Boulder Police (and go to Boulder Police command post, if appropriate) and begin to coordinate resources.
2. Once notified, the On-call Commander will take over resources coordination responsibilities as soon as they are able.

### **Field Supervisors**

#### **Less than thirty (30) minutes to anticipated onset of flash flooding:**

If the predicted time of flooding is less than thirty (30) minutes, supervisors should consider the use of citizen emergency notification systems which are initiated through respective communications centers including the Everbridge Notification System, the University of Colorado's RAVE Notification System, and community sirens.

## **Greater than thirty (30) minutes to anticipated onset of flash flooding:**

### **Supervisors should consider:**

1. Use of citizen emergency notification systems including the Everbridge Notification System and the University of Colorado's RAVE Notification System, and community sirens;
2. The use of emergency vehicles from the Boulder Police Department, Boulder Fire Department, and/or the University of Colorado Police Department (UCPD) to broadcast emergency warnings to the public located within pre-assigned flood evacuation sectors as resources permit (see City of Boulder Flood Evacuation Map). As officers are able to do so safely, warnings should be initiated in the areas where the hazard is the greatest.

Flash flooding evacuation sectors have been pre-assigned to the City of Boulder Police Department, the Boulder Fire Department, and the University of Colorado Police Department (see map on page 12). However, due to potential resource constraints these sector assignments must be confirmed and/or revised when a flash flood evacuation is ordered. The primary focus for UCPD will be University property in Sector Four. UCPD will assist in other areas of Sector Four and Sector Eight as resources are available.

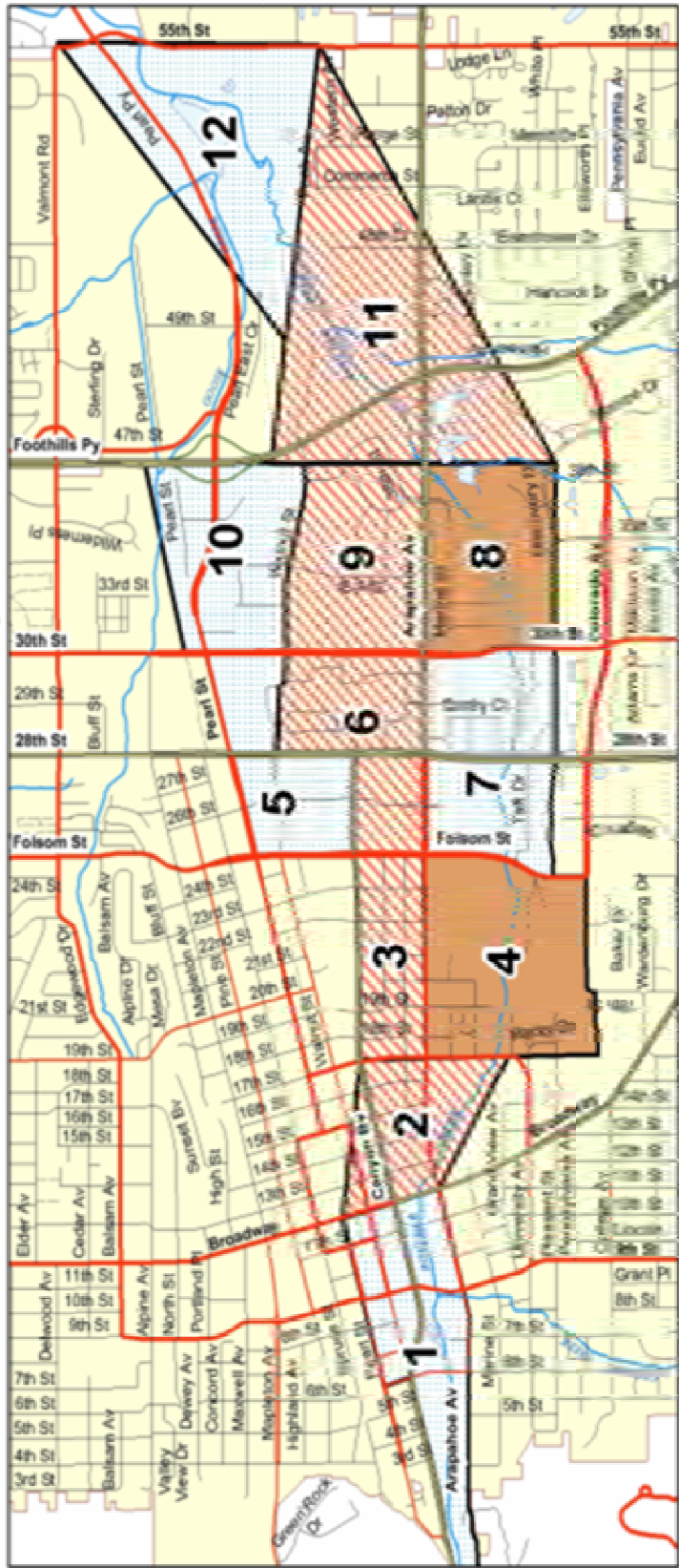
### **Public Address (PA) System Warning**

To issue the warning (under ideal circumstances) the emergency vehicle should be positioned in the middle of the block. The siren should be activated for approximately five (5) seconds followed by the warning message in its entirety. The message should be given twice over the public address system. This should be repeated block-by-block for as long as possible.

### **Warning Message:**

“Flash Flooding May Occur Along Boulder Creek Or Other Areas (i.e. **Two Mile Canyon, Four Mile Canyon, Skunk Creek, Wonderland Creek, Bear Canyon Creek And/Or South Boulder Creek**). The Boulder Police Department Advises Everyone In The Boulder Creek Flood Area (Or Other Area) To Evacuate The Area Immediately, Move To Higher Ground And Away From The Creek.”

# City of Boulder Flood Evacuation Areas Boulder Creek Drainage



**Evacuation Response Agency**

- Boulder Fire
- Boulder Police
- Boulder P.D.
- CU Police

Police Department  
Boulder, Colorado  
1805 33rd Street  
Boulder, CO 80302  
Map Date March 11, 2004  
0 625 1,250 2,500 3,750 5,000 Feet

- 1 Boulder P.D.
- 2 Boulder P.D.
- 3 Boulder P.D.
- 4 CU Police
- 5 Boulder P.D.
- 6 Boulder Fire
- 7 Boulder P.D.
- 8 Boulder P.D.
- 9 Boulder P.D.
- 10 Boulder P.D.
- 11 Boulder P.D.
- 12 Boulder P.D.

North Corridor: Canyon Blvd from mouth of Boulder Canyon to 28th St  
South Corridor: Arapahoe from mouth of Boulder Canyon to 47th St.



## FLOOD OPERATIONS

### Primary Staging Locations:

**South Staging:** Horizons Elementary (4545 Sioux Dr.)

Secondary South Staging: Southern Hills Middle School (1500 Knox Dr.)

**North Staging:** Boulder Fire Training Center at the Boulder Reservoir (5500 51<sup>st</sup>)

Horizons Elementary School and Boulder Fire Training Center at the Boulder Reservoir will be the primary staging areas for Police resources and equipment. Records, Detectives, Property & Evidence, Patrol, and Administrative Services units/sections will be established at the Boulder Fire Training Center at the Boulder Reservoir (North staging) and Horizons Elementary School (South staging). Boulder Police and Fire Communications personnel will operate from the Boulder County Communications Center.

Staging areas should consist of security personnel, check-in procedures for personnel and equipment (i.e. tents etc.). The Operations Branch directors will be in charge of the deployment of personnel and resources to the affected flood areas.

**University of Colorado:** University of Colorado at Boulder Environmental Health and Safety Building (EHS) 413 UCB may become a gathering area for those individuals unable to leave the campus due to the flood water. Boulder Police Department supervisors should coordinate with supervisors from the University of Colorado Police Department for staffing this location.

### Operational Period

In the event of a multi-day flood event, Police personnel will work 12 ½-hour shifts. Shifts will consist of Watch A, 0600-1830 hours and Watch B, 1800 to 0630 hours. Scheduled leave may be cancelled during the operational period of a flood event (See General Order 220: Emergency Mobilization).

### Communications

The Boulder Police and Fire Communications Center personnel have designated the following operational channel use during a flood disaster:

Police Operations:

**Police 1** is the designated channel for day-to-day operations.

[**TBD at time of incident**] is the designated channel for the South branch.

**Data** is the designated channel for the North branch.

Fire Operations:

As assigned by Incident Command

### **Check-In and Credentialing at staging locations**

Personnel arriving at staging locations or any designated Police facility will be provided with an assignment and supervisor for that operational period.

Individuals with non-readily identifiable uniforms will first be credentialed at the North staging location prior to receiving their assignment and supervisor information.

### **Arrests**

During a flood disaster, arrests may be suspended by the Chief of Police or designee.

### **Police Security**

As available, Boulder Police will attempt to maintain security at the following locations:

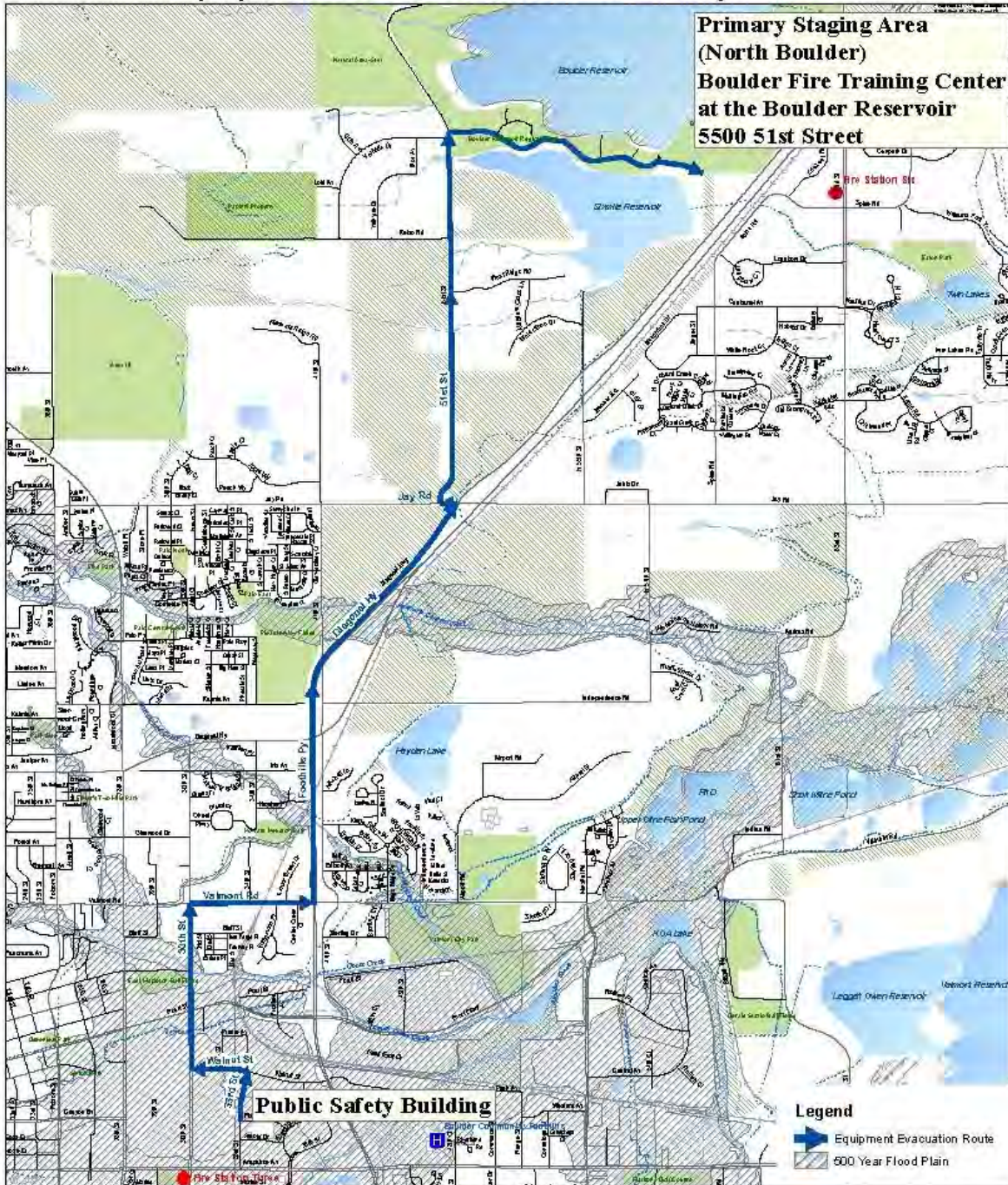
- Community evacuation sites
- Government offices/buildings
- Downtown business district

In the event of a Boulder Creek flood and as resources allow, inner perimeter access to the downtown business area will be cordoned off by law enforcement. Once floodwaters stabilize or recede, search and rescue personnel will conduct a building-by-building search for injured or trapped persons. Access to areas cordoned off will be limited to emergency personnel only and restricted to others. Only those individuals with official identification and/or readily identifiable uniform will be allowed into the disaster area.

### **Mutual Aid**

The Chief of Police or designee will determine and approve all requests for mutual aid (See General Order 111: Mutual Aid).

# Equipment Evacuation Plan Map - North



Primary North Staging Area is Boulder Fire Training Center  
At the Boulder Reservoir  
5500 Blk of 51st St.

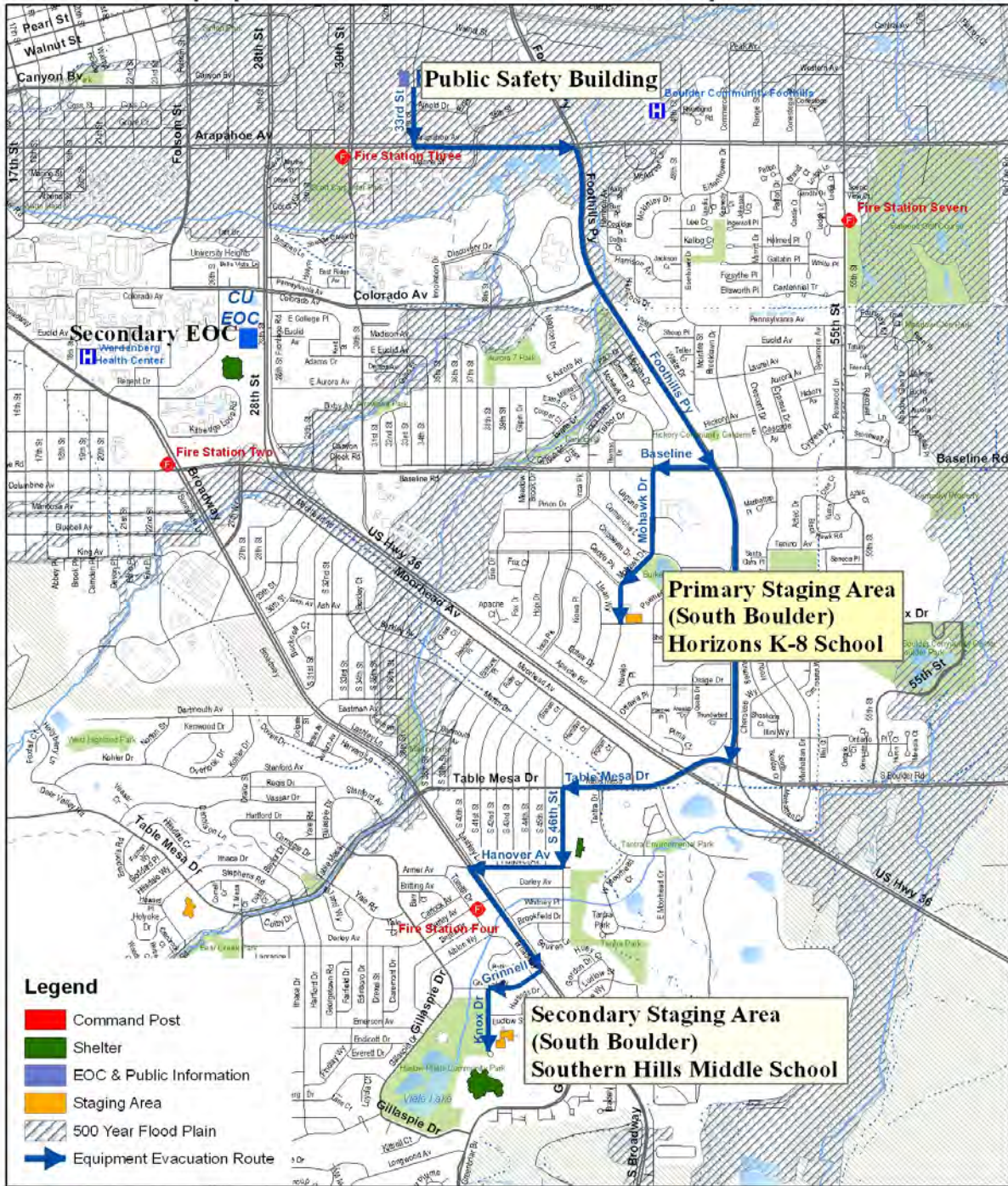
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Boulder Police Department  
1805 33rd Street  
Boulder, Colo. 80302

Map Printed  
May 5, 2010  
1:30000



# Equipment Evacuation Plan Map - South



Primary South Staging Area is Horizons K-8 School, 4545 Sioux Dr.  
 Secondary Staging Area is Southern Hills Middle, 1500 Knox Dr.

Boulder Police Department  
 1805 33rd Street  
 Boulder, Colo. 80302

Map Printed  
 July 14, 2006  
 1:24000



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# Appendix A

## Critical Infrastructure

## APPENDIX A

### Critical Infrastructure

An assessment within the City of Boulder identified the following locations as critical infrastructures:

<b>Name</b>	<b>Address</b>
Public Safety Building	1805 33 <sup>rd</sup> Street
Criminal Justice Center (CJC)	1777 6 <sup>th</sup> Street
Municipal Building	1777 Broadway
Planning/Public Works	1739 Broadway
County Court House	1325 Pearl St.
Boulder County Jail	3200 Airport Rd.
Boulder County Health	3450 N. Broadway
NIST	325 Broadway
NOAA	325 Broadway
NCAR/UCAR	3450 Mitchell Lane
NCAR	1850 Table Mesa
Lockheed Martin	6304 Spine Rd.
Boulder Sheriff	5600 Flatiron Pkwy.
Boulder Emergency Squad	3532 Diagonal Hwy.
Boulder Fire Station #1	2441 13 <sup>th</sup> St.
Boulder Fire Station #2	2225 Baseline Rd.
Boulder Fire Station #3	1585 30 <sup>th</sup> St.
Boulder Fire Station #4	4100 Darley Ave.
Boulder Fire Station #5	4365 19 <sup>th</sup> St.
Boulder Fire Station #6	5145 N. 63 <sup>rd</sup> St.
Boulder Fire Station #7	1380 55 <sup>th</sup> St.
Boulder Community Hospital	1100 Balsam
Boulder Community Hospital - Foothills	4747 Arapahoe
Mapleton Center	311 Mapleton
Century Link	1200 Broadway
Century Link	1545 Walnut
KBCO Radio	2500 Pearl St.
AMR Paramedic Service	3800 Pearl St.

<b>Name</b>	<b>Address</b>
US Postal Facility	1905 15 <sup>th</sup>
US Postal Facility	2995 55 <sup>th</sup>
US Postal Facility	4985 Moorhead
United Parcel Service (UPS)	3795 Frontier Ave.
Fed Ex	2205 Central Ave.
RTD	1707 Exposition
Amgen	5550 Airport Rd.
Roche	2075 55 <sup>th</sup> St.
Paxis	5555 Airport Rd.
Water Treatment	5605 N. 63 <sup>rd</sup> St.
Betasso	1094 Betasso Rd.
Water Quality and Treatment	4049 75 <sup>th</sup> St.
Water Shed	800 County Rd.
Xcel Energy	2655 N. 63 <sup>rd</sup> St.
IBM	6301 Diagonal
Lexmark	6555 Monarch Rd.
University of Colorado	Boulder Campus
Ball Aerospace	1600 Commerce
Boulder High School	1604 Arapahoe
Fairview High School	1515 Greenbriar
Folsom Field	CU Campus – Folsom & Colorado
Coors Event Center	CU Campus – Regent Drive
Macky Auditorium	CU Campus – Pleasant St.
University of Colorado Police Department	1050 Regent Dr.
Environmental Health & Safety Building	1000 Regent Dr.
Federal Bureau of Investigation (Boulder)	1050 Walnut #219





## Appendix B

### Schools in Flood Plain

## APPENDIX B

### Schools in Flood Plain

The following public and private schools are located within the City of Boulder flood corridor or creek areas.

<b>Schools</b>	<b>Creek(s)</b>
Casey Middle School 13 <sup>th</sup> and High Streets	Two Mile Canyon Creek
Columbine Elementary 3130 Replier	Two Mile Canyon Creek
Foothills Elementary 1001 Hawthorne	Two Mile Canyon Creek
Mount Zion School 1680 Balsam	Two Mile Canyon Creek
Sacred Heart of Jesus 1317 Mapleton	Two Mile Canyon Creek
Shining Mountain Waldorf School 1179 Union	Four Mile Canyon Creek
Flatirons Elementary 1150 7 <sup>th</sup> St.	Gregory Canyon Creek
Boulder High School 1604 Arapahoe	Boulder Canyon Creek
September School 1902 Walnut	Boulder Canyon Creek
Water Shed 800 County Road 116 (Indian Peaks)	Boulder Canyon Creek
Justice High 1777 6 <sup>th</sup> St.	Boulder Canyon Creek
Aurora Seven 3995 E. Aurora	Skunk Creek & Bear Canyon Creek
Centennial Middle School 2205 Norwood Avenue	Wonderland Creek, Four Mile Canyon Creek
Crestview Middle School 1897 Sumac	Wonderland Creek, Four Mile Canyon Creek
Manhattan Middle School 290 Manhattan	South Boulder Creek
Platt Middle School 6096 Baseline Rd.	South Boulder Creek

## Appendix C

### Directions to the Staging Areas from the Public Safety Building

## **APPENDIX C**

### **Directions to the staging areas from the Public Safety Building**

#### **North staging – Primary**

##### **Boulder Fire Training Center at the Boulder Reservoir at 5500 51<sup>st</sup> St.**

From the Public Safety Building go left (north) to Walnut  
At Walnut go left (west) to 30<sup>th</sup> Street  
At 30<sup>th</sup> Street go right (north) to Valmont  
At Valmont go right (east) to Foothills Highway  
At Foothills Highway go left (northeast) - Follow Foothills Highway /Diagonal Highway to the  
turn right (east-Longmont bound)  
At Jay Road go left (west) to 51<sup>st</sup> Street  
At 51<sup>st</sup> Street go right (north) Boulder Reservoir  
At the Reservoir, turn right, passing through the main entrance and continue east to Training  
Center

#### **South staging-Primary**

##### **Horizons Elementary School at 4545 Sioux Dr.**

From the Public Safety Building go right (south) to Arapahoe  
At Arapahoe go left (east) to Foothills Highway  
At Foothills Highway go right (south) to Baseline Road  
At Baseline Road go right (west) to Mohawk Drive  
At Mohawk Drive go left (south) to Horizons School

#### **South staging – Secondary**

##### **Southern Hills Middle School at 1500 Knox Dr.**

From the Public Safety Building go right (south) to Arapahoe  
At Arapahoe go left (east) to Foothills Highway  
At Foothills Highway to right (south) South Boulder Road/Table Mesa Drive  
At South Boulder Road/Table Mesa Drive go right (west) to Broadway  
At Broadway go left (south) to Grinnell Avenue  
At Grinnell Avenue go right (west) to Knox Drive.  
At Knox Drive go left (south) to Southern Hills Middle School

#### **Gathering Area at the**

##### **EHS Building on the University of Colorado Campus**

From the Public Safety Building go right (south) to Arapahoe  
At Arapahoe go right (west) to 28<sup>th</sup> St.  
At 28<sup>th</sup> St. go left (south) to Colorado  
At Colorado go right (west) to Regent  
At Regent, go left (south) to Environmental Health and Safety Building (first building south of  
the University of Colorado Police Department on east side of the street).

# Appendix D

## Traffic Control Points

## **APPENDIX D**

### **Traffic Control Points**

Once evacuation is ordered and as resources allow, traffic will be controlled from going into a designated flood area at the following locations:

#### **Boulder Creek Flood Plain**

- 9<sup>th</sup> at University
- 9<sup>th</sup> at Mapleton
- Broadway at Mapleton
- Broadway at University
- 28<sup>th</sup> at Colorado
- 30<sup>th</sup> at Valmont

#### **South Boulder Creek Flood Plain**

- Eastbound US 36 at Table Mesa
- Southbound Hwy 157 at Table Mesa
- South Boulder Road at Hwy 157
- 55<sup>th</sup> St. South of the East Boulder Recreation Center
- 55<sup>th</sup> at Sioux Dr.
- Baseline at 55<sup>th</sup> St.
- Arapahoe at 55<sup>th</sup> St.
- Arapahoe at Conestoga

Should outside agencies be asked to assist with traffic control, the following locations should be considered as traffic points:

- Boulder bound US 36
- Boulder bound South Boulder Rd.
- Boulder bound Baseline Rd.
- Northbound Cherryvale at South Boulder
- Southbound Cherryvale at Arapahoe

# Appendix E

## Incident Command System (ICS)

## APPENDIX E

### **Incident Command System (ICS)**

The Boulder Police Department will use ICS functional groups. Those groups are command, operations, logistics, planning, and finance. The primary command functions will occur at the North staging under a unified command system.

- *Command* is in charge of overall incident.
- *Operations* controls and supports the tactical response activities.
- *Logistics* facilitates and provides resources to support operations.
- *Planning* monitors progress and anticipates the effects of the operations.
- *Finance* keeps track of costs, records, and pays vendors services, etc.

### **Boulder Police personnel will be assigned as follows using the ICS:**

#### Policy Group & Emergency Operations Center

Policy Group  
E.O.C. ESF#13 Leader  
E.O.C. Manager  
E.O.C. PIO

#### Incident Management Team

Incident Commander  
Incident Command Vehicle Operator  
Incident Command Public Information Officer  
Incident Command Liaison Officer  
Incident Command Safety Officer  
Operations Chief  
Logistics Chief  
Planning Section Chief  
Finance/Administration Section Chief

#### Operations

North Branch  
North Branch Director  
Staging Area Manager  
Task Force Supervisor

South Branch  
South Branch Director  
Staging Area Manager  
Task Force Supervisor



## **Logistics**

All incident support needs (e.g. personnel, equipment, supplies) are provided by Logistics. The following units are part of Logistics:

**Staging Officer:** Is responsible for maintaining a location where personnel and equipment can be staged to support the incident.

**Communications Unit:** Is responsible for developing plans for effective use of incident communications and equipment such as the available frequencies, communication capabilities, and distribution of communication equipment to incident personnel, and maintenance and repair of communication equipment.

**Food & Facilities Unit:** Is responsible for determining feeding requirements at all incident facilities such as the incident command post, staging areas, etc. In addition, determines (if applicable) facilities such as sanitation and resting locations.

**Armorer:** Is responsible for repairing and/or replacing authorized weapons.

**Personnel Unit:** Is responsible for providing staffing needed to respond to the incident.

**Check-In Recorder:** Is responsible for tracking resources.

## **Planning**

The Planning Section evaluates processes and disseminates information for use at the incident. The Planning Section develops incident intelligence information to assist in the development of contingency plans for the incident commander. The Planning Section provides information needed to understand the current situation, predicts probable courses of incident events, and assists in preparing alternative strategies. The following units are part of the Planning Section:

**Resource Unit:** Is responsible for preparation, processing, and reporting resource status change information. The Resource Unit tracks personnel and equipment relating to the incident.

**Demobilization Unit:** Is responsible for preparing the demobilization plan and the safe, cost effective movement of police personnel and equipment.

**Incident Scribe:** Records incident information at the command level.

**Situation Unit:** Collects and processes information on the current situation, prepares situation displays and situation summaries, and develops maps and projections.

## **Finance**

The Finance Section is responsible for the compilation of all information related to the cost of the operation. This may include, but is not limited to, equipment and its usage, personnel, hours, supplies etc. The following units are part of the Finance Section:

**Compensation and Claims Unit:** Is responsible for administering financial matters arising from serious injuries, deaths and other emergency claims related to the incident.

**Procurement Unit:** Is responsible for administering all financial matters pertaining to commercial vendors.

**Time Unit:** Ensures that all personnel time on an incident or event is recorded.

**Cost Unit:** Responsible for collecting all cost information, and for providing cost estimates and cost savings recommendations.

## **Demobilization**

When the incident is controlled and available resources are beginning to be released, the amount of necessary staff will be monitored. The following will be taken into consideration:

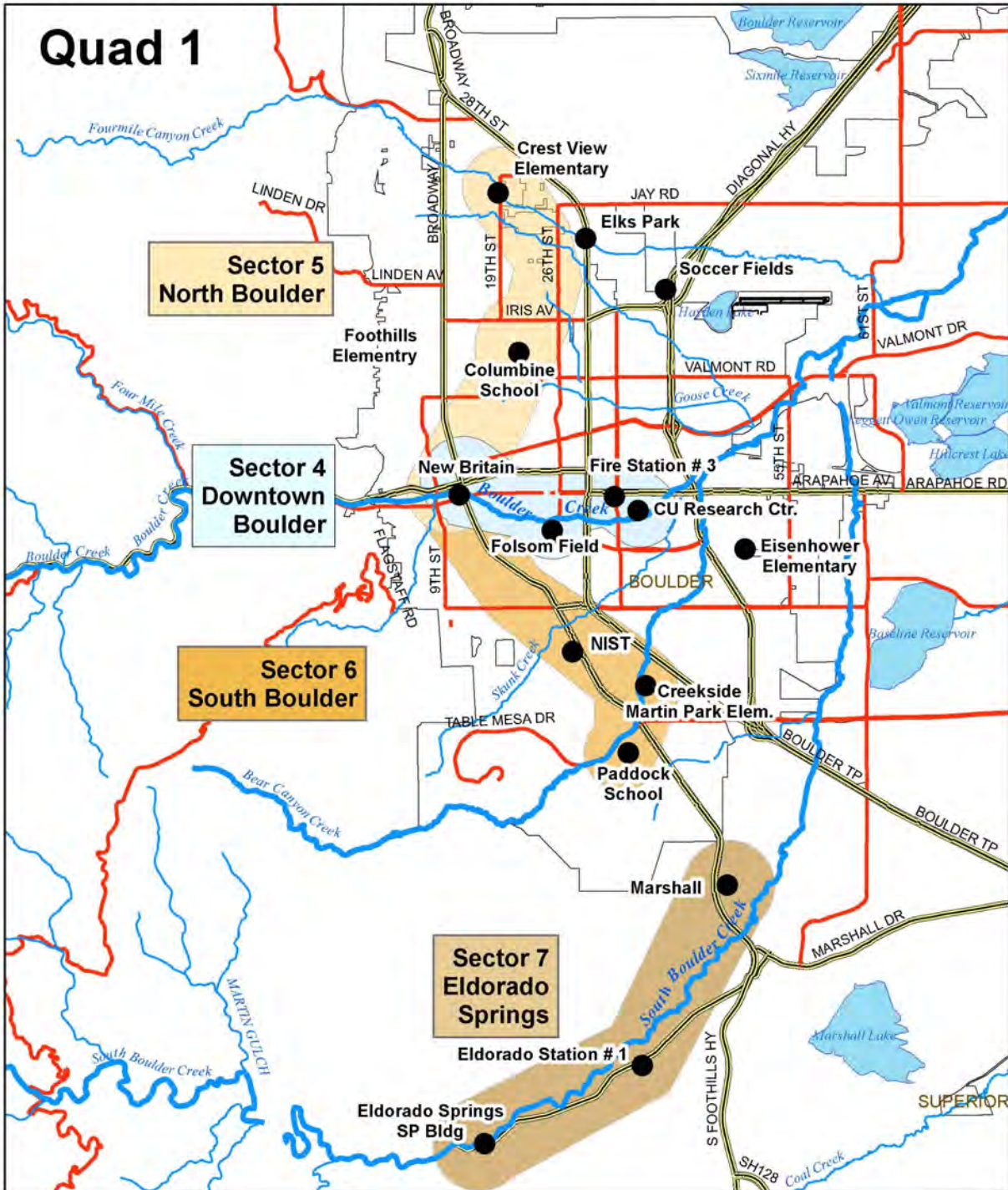
- Excess resources/physical condition of personnel
- Plan development, resource information
- Continuing need for tactical resources
- Transportation availability
- Communication maintenance
- Costs of resources
- Agency agreements

## Appendix F

### Warning Siren Locations Map/ Call Keys by HAZARD

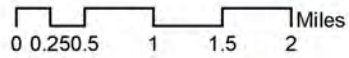
# APPENDIX F (1)

## Warning Sirens in Quad 1 - City of Boulder & Eldorado Springs



**Legend**  
 ● Siren  
 — Creeks

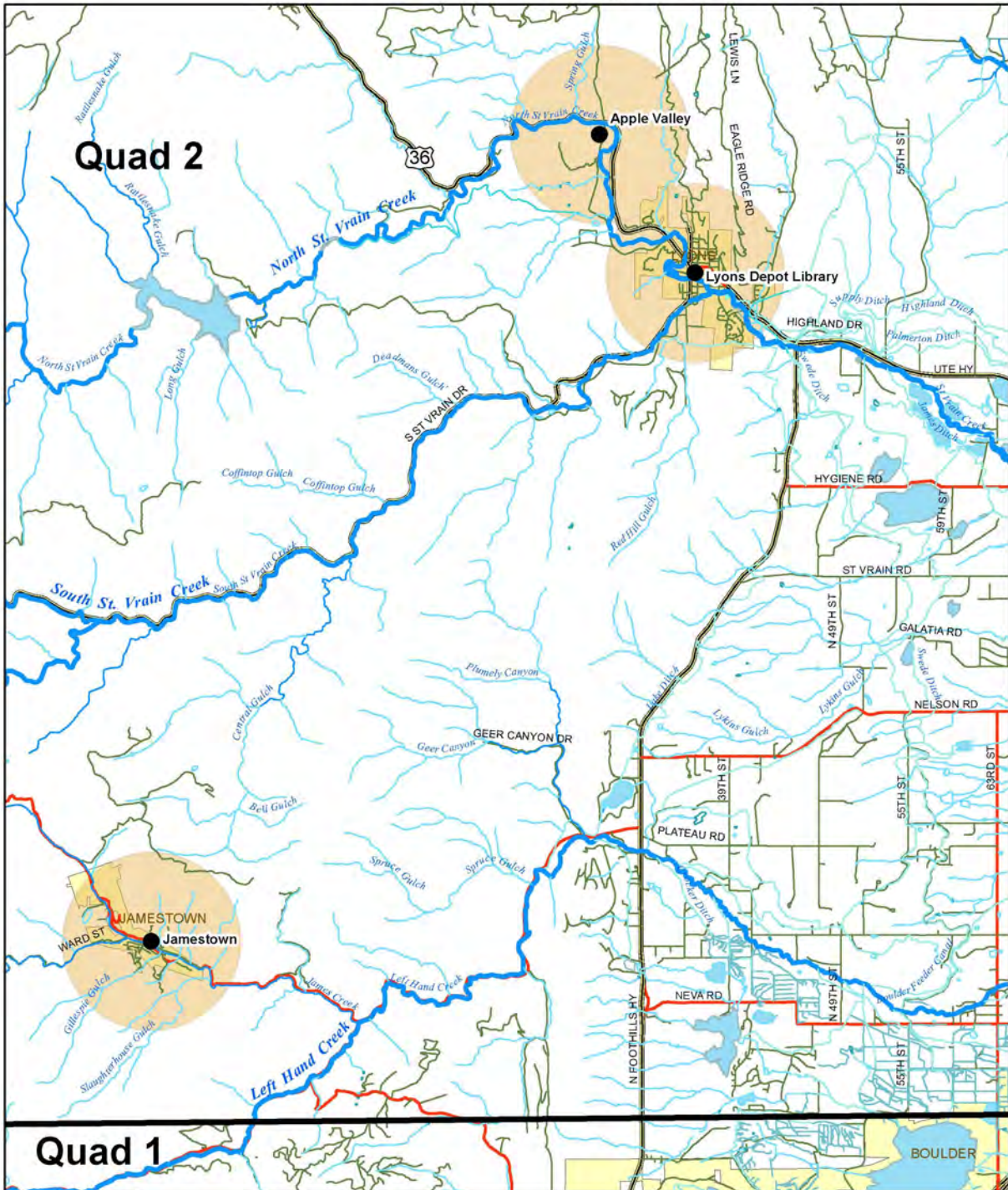
City of Boulder & CU = Area 2  
 All Others = Area 1



North arrow with N, S, E, W directions.  
 June 1, 2011

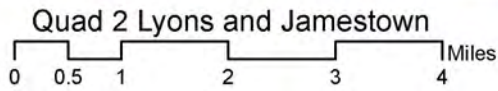
APPENDIX F (2)

Quad 2 Boulder Warning Sirens 2011



**Legend**

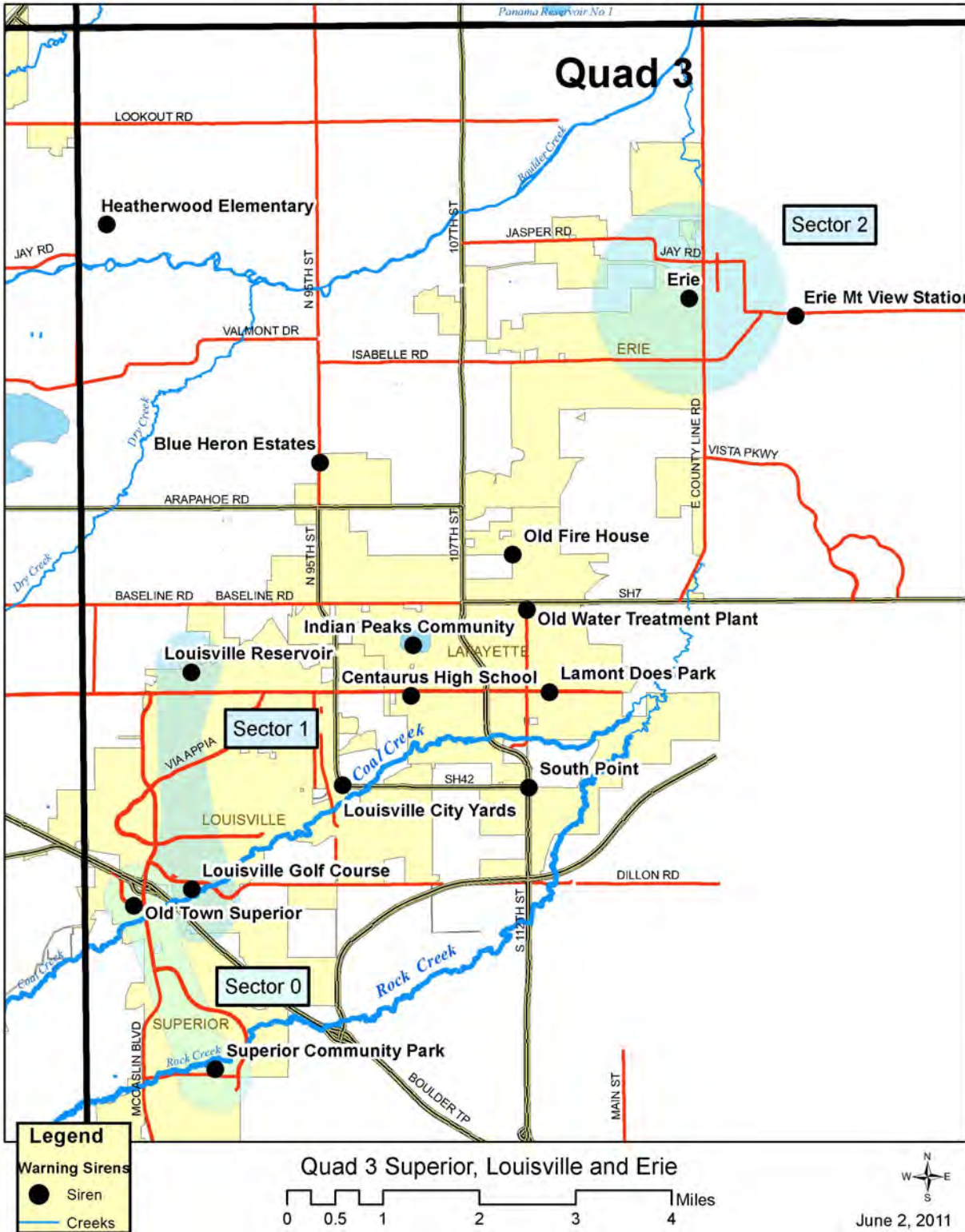
- Warning Sirens
- Siren
- Siren Radius



June 2, 2011

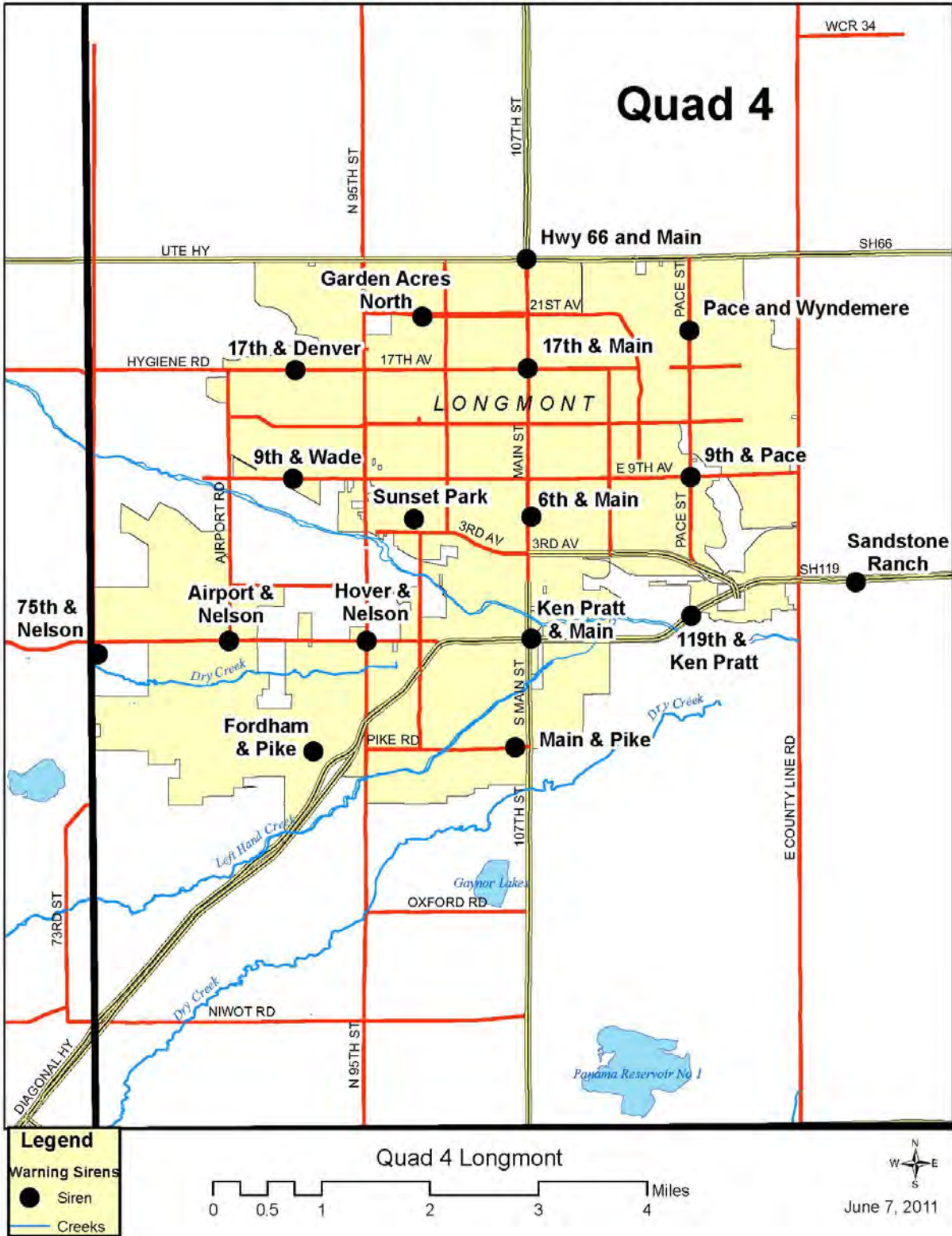
APPENDIX F (3)

Quad 3 Warning Sirens 2011



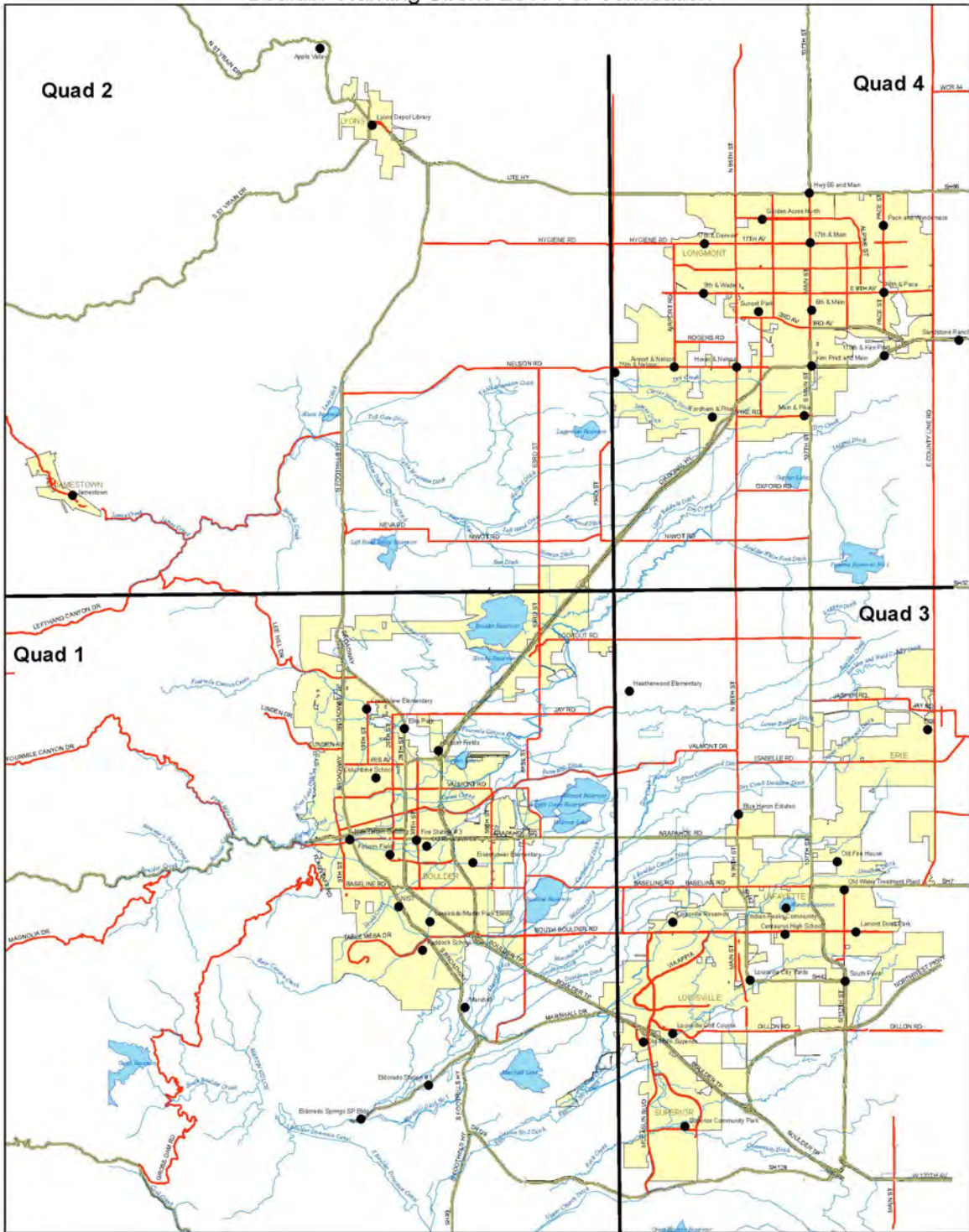
APPENDIX F (4)

Quad 4 Warning Sirens 2011

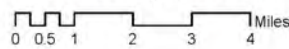


# APPENDIX F (5)

## Boulder Warning Sirens 2011 For Verification



Boulder County Siren Quads



June 7, 2011

**Legend**

- Warning Sirens
- Creeks



## Siren Encoder - Call Keys by HAZARD

Whelen Siren Encoder Model E-2010

Use	Location	Notes	Call Key
OFF - All Sirens OFF	County-wide	Silences ALL sirens	1
Siren Test - Monthly	County-wide	Send Lafayette test thru CAD	2
Flood	Jamestown		15
Flood	Lafayette	Send all Lafayette alerts thru CAD	n/a
Flood	Louisville		20
Flood	Lyons		13
Flood	Superior		37
Flood	Eldorado/Marshall	South Boulder Creek Flooding	6
Flood BLDR CREEK IMMEDIATE FLOOD	Boulder	Boulder Creek FLASH FLOOD ZONE	4
Flood - Wide area flooding	Boulder	All of Boulder sirens	5
Barker Dam Failure	Boulder	All of Boulder sirens	53
Gross Dam Failure	Quadrant 1	Boulder / Eldorado / Marshall	54
Tornado	Quadrant 1	Boulder/Eldorado/Marshall	7
Tornado	Quad 1 & 3	Southern half of County (S of 52)	9
Tornado	Quadrant 3	Superior/Louisville/Erie	8
Tornado	Lafayette	* Alert Lafayette thru CAD *	n/a
Fire - Wildfire	Jamestown		16
Fire - Wildfire	Lyons		14
Fire - Wildfire	Marshall		31
Fire - Wildfire - NW Boulder	Boulder	North of Canyon Blvd	10
Fire - Wildfire - SW Boulder	Boulder	South of Canyon Blvd	11
Severe Weather	Jamestown		17
Severe Weather	Louisville		21
Severe Weather	Lyons		26
Severe Weather	Marshall		32
Severe Weather	Superior		38
Hazmat - evacuate	Louisville		23
Hazmat - evacuate	Lyons		28
Hazmat - evacuate	Marshall		34
Hazmat - evacuate	Superior		40
Hazmat - shelter in place	Louisville		22
Hazmat - shelter in place	Lyons		27
Hazmat - shelter in place	Marshall		33
Hazmat - shelter in place	Superior		39

**TO ACTIVATE SIRENS: On the Siren Encoder - Select desired "CALL KEY", then press "SEND"**

# Siren Encoder - Call Keys by HAZARD

Whelen Siren Encoder Model E-2010

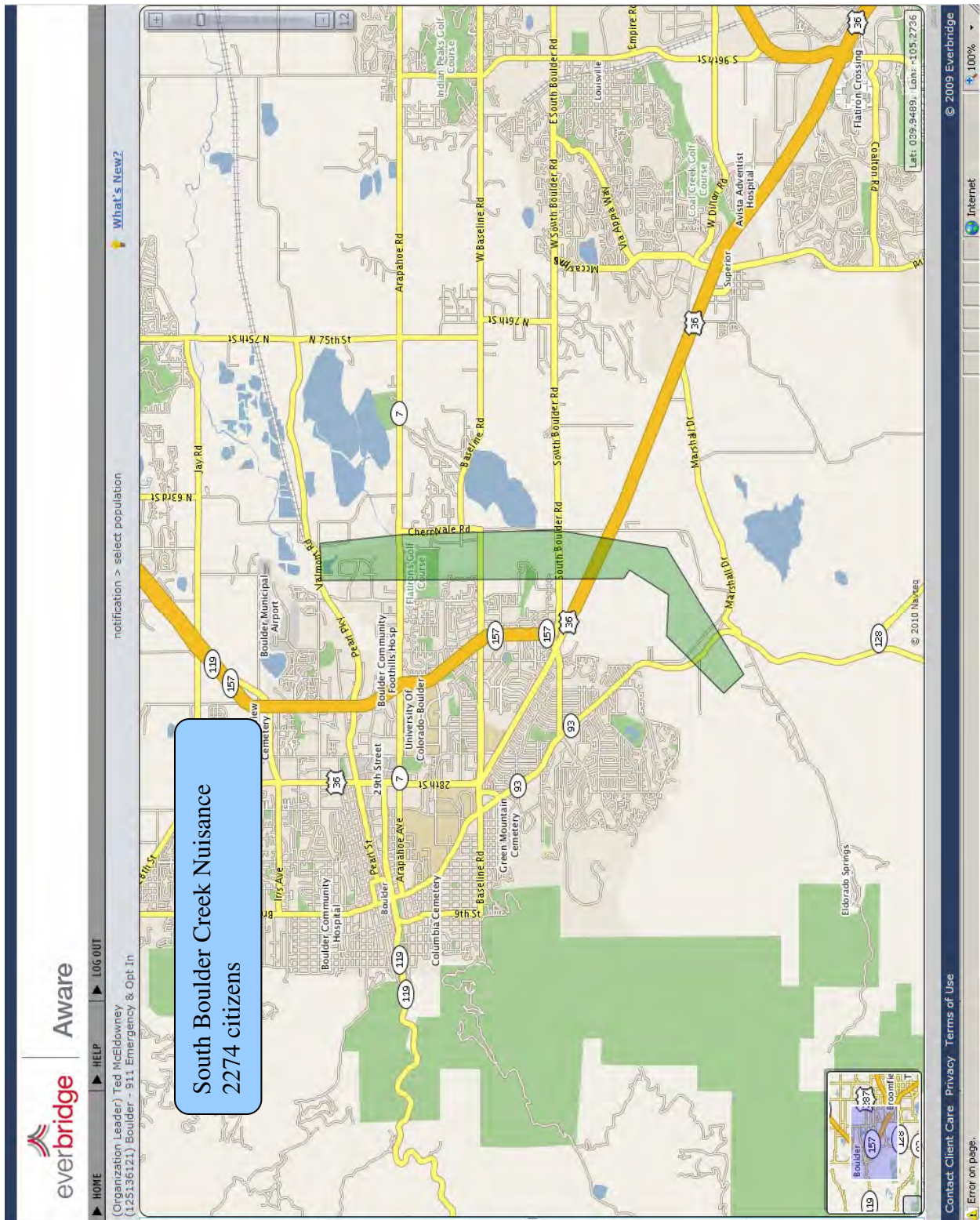
Use	Location	Notes	Call Key
PA message	Boulder	Manual PA message	12
PA message	Eldorado/Marshall		36
PA message	Jamestown		19
PA message	Louisville		25
PA message	Lyons		30
PA message	Superior		42
15 minute attack tone	County-wide	Use if county is under attack	3
5 Minute Alert Tone	Boulder	Boulder sirens only	47
5 Minute Alert Tone	Eldorado/Marshall		48
5 Minute Alert Tone	Erie		43
5 Minute Alert Tone	Jamestown		50
5 Minute Alert Tone	Lafayette	Send all Lafayette alerts thru CAD	n/a
5 Minute Alert Tone	Louisville		51
5 Minute Alert Tone	Lyons		49
5 Minute Alert Tone	Quadrant 1	Boulder/Eldorado/Marshall	44
5 Minute Alert Tone	Quadrant 2	Lyons/Jamestown	45
5 Minute Alert Tone	Quadrant 3	Superior/Louisville/Erie	46
5 Minute Alert Tone	Superior		52
Cancellation	Eldorado/Marshall		35
Cancellation	Jamestown		18
Cancellation	Louisville		24
Cancellation	Lyons		29
Cancellation	Superior		41

**TO ACTIVATE SIRENS: On the Siren Encoder - Select desired "CALL KEY", then press "SEND"**

## Appendix G

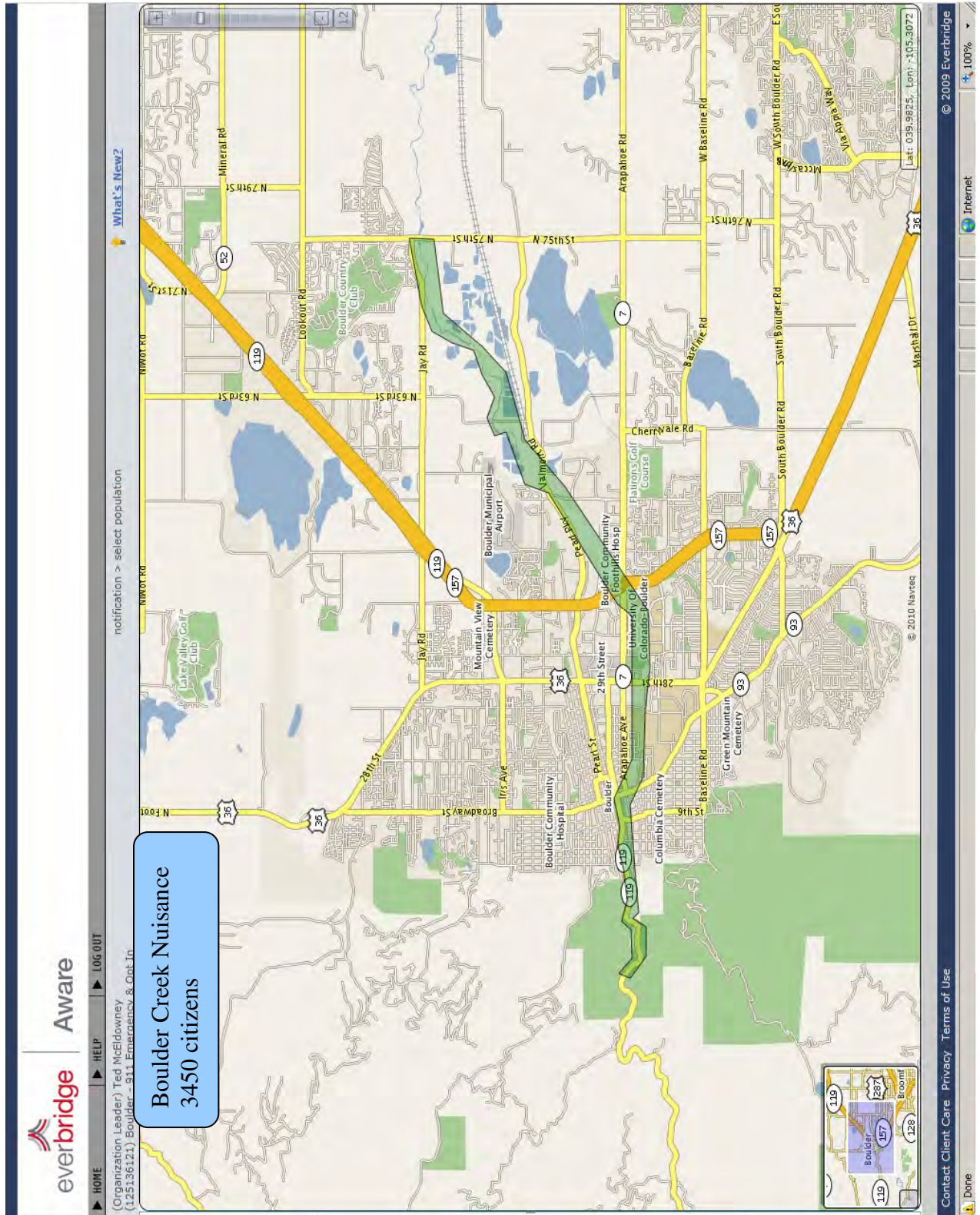
### Everbridge Notification Maps/ Pre-Planned Voice & Text Messages

# Everbridge Notification Map – South Boulder Creek Nuisance

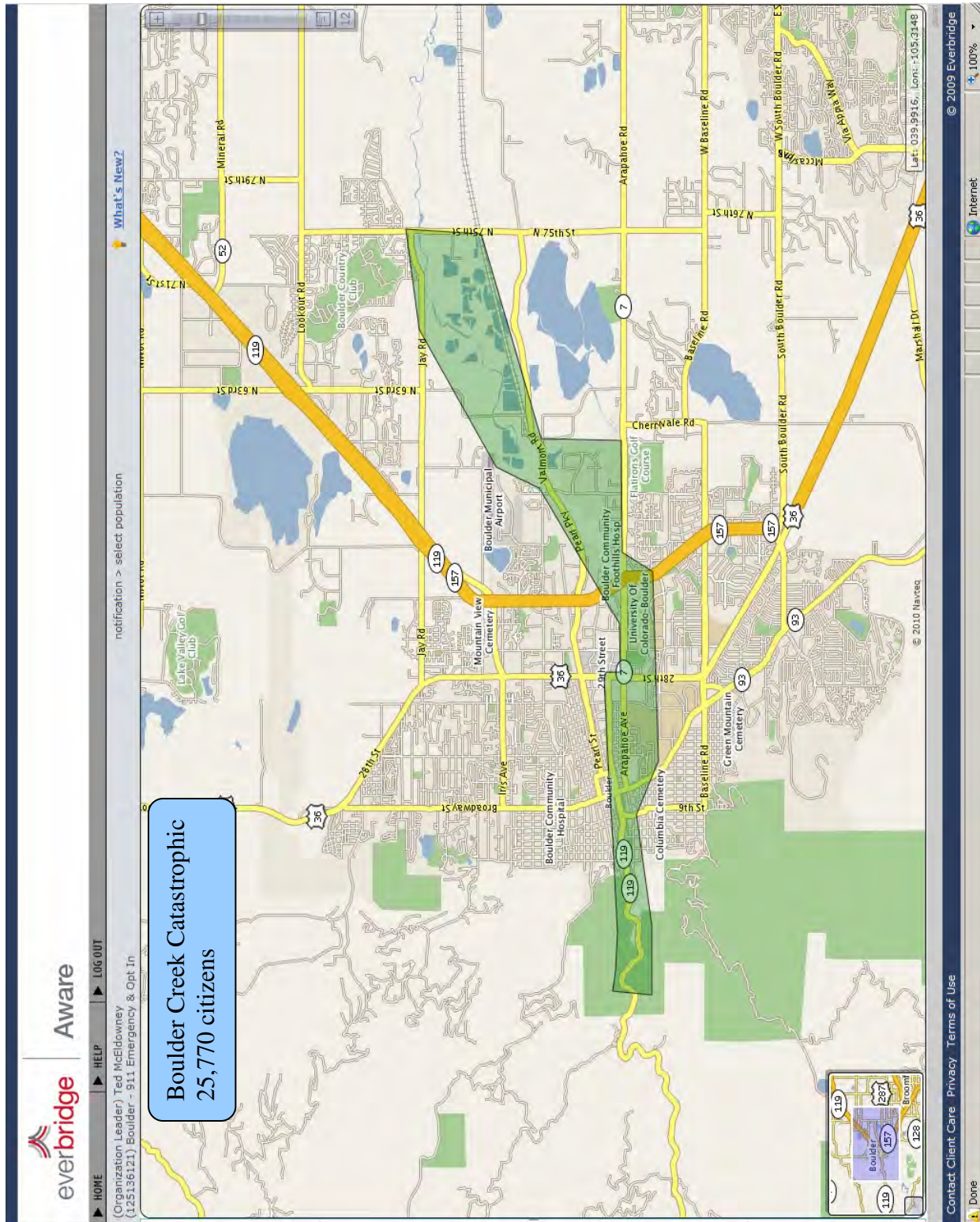




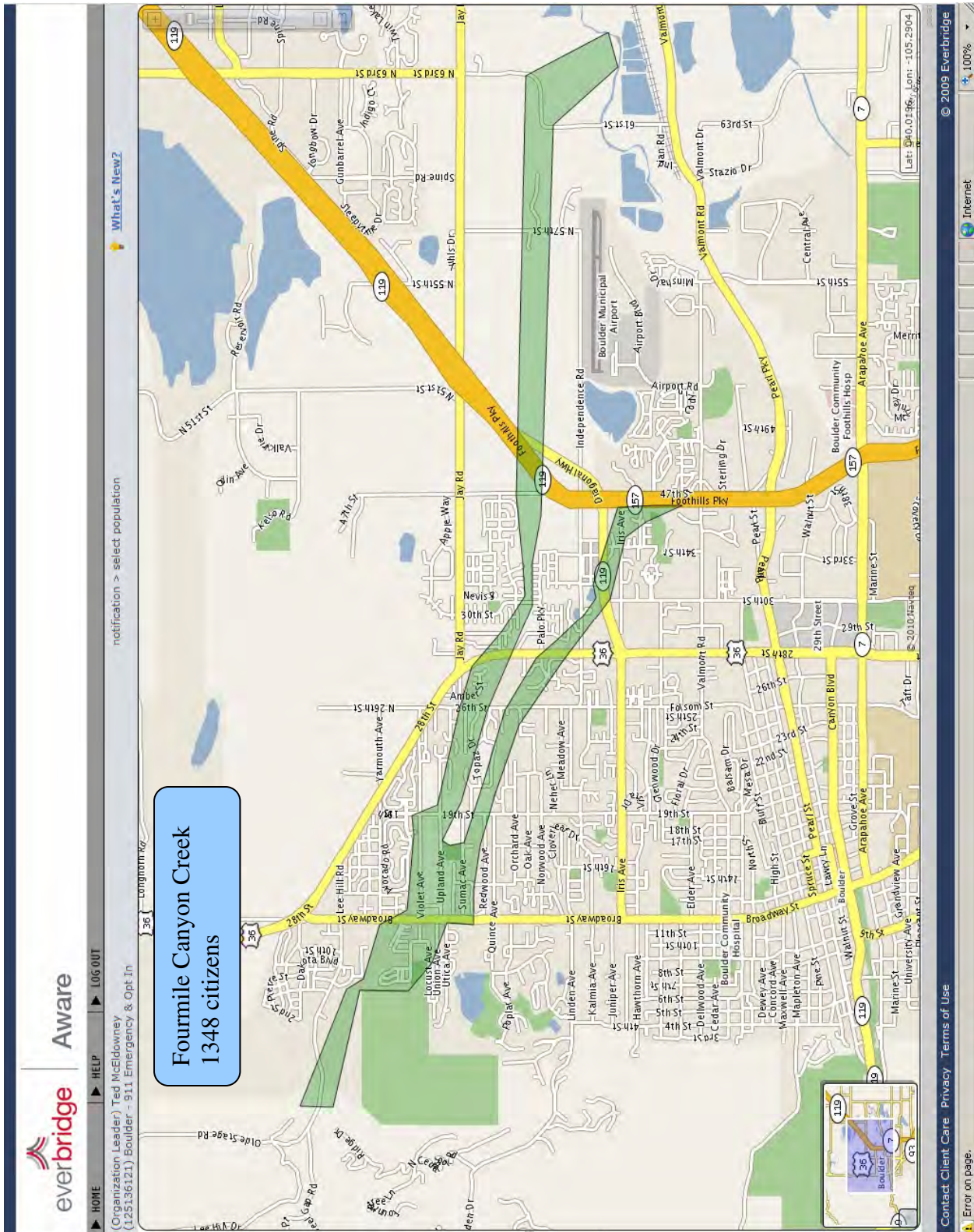
# Everbridge Notification Map –Boulder Creek Nuisance



# Everbridge Notification Map –Boulder Creek Catastrophic

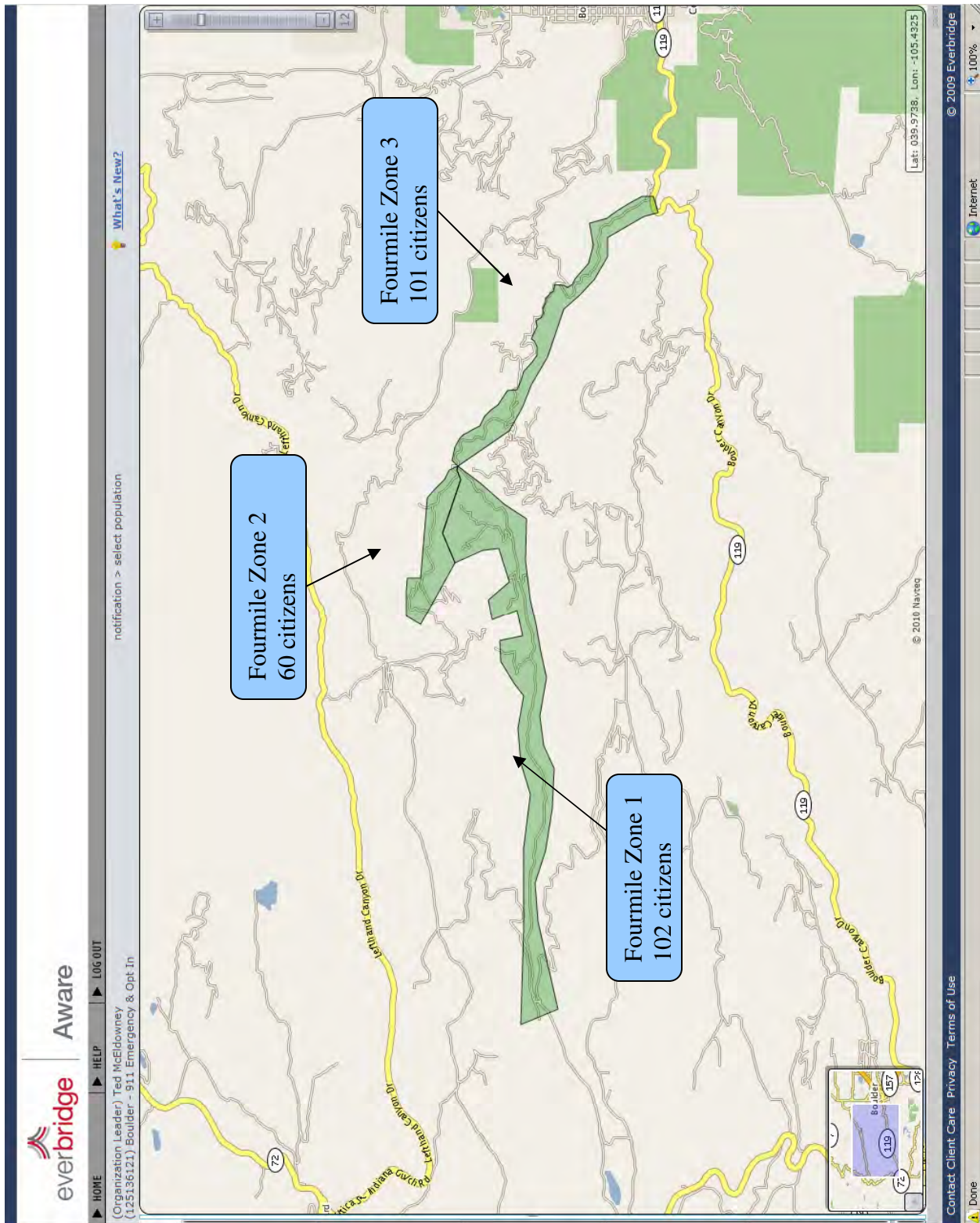


# Everbridge Notification Map – Fourmile Canyon Creek





# Everbridge Notification Map – Fourmile Zones



## Everbridge Pre-planned Voice and Text Messages

### **BPFC Nuisance Flooding-No Evac from Bldgs**

Flash flooding in low lying areas is expected. People located outdoors should move away from creeks to avoid rising waters or a surge. This includes people in adjacent parks and along bike paths. Evacuations from buildings are not necessary at this time. Remain alert for additional messages and be prepared to move to higher ground if so advised. Updates are available at [www.boulderoem.com/emergency-status](http://www.boulderoem.com/emergency-status) .

### **BPFC Flood Evac–Risk coming but time to leave area**

Flash flooding is expected due to weather conditions in the area. Leave immediately and quickly using flood safety routes and move to higher ground. Avoid crossing flood waters at any time, on foot or in your vehicle.

### **BPFC Flood Evac–Imminent risk**

Emergency officials advise flash flooding is imminent. Evacuate the area immediately, move away from the creek and go to higher ground. Avoid crossing flood waters on foot or in your vehicle. If you are in a building and cannot evacuate safely, go to the highest floor possible.

### **BPFC - Barker Dam Full Failure Evacuation Message**

Emergency officials have confirmed a failure of the Barker Dam located just east of Nederland in Boulder Canyon. Significant flooding, property damage, and loss of life are likely. Evacuate the area immediately. Move to higher ground or away from the city. Avoid crossing flood waters on foot or in your vehicle. If you cannot leave your building safely, go to the highest floor possible. Updates are available at [www.boulderoem.com/emergency-status](http://www.boulderoem.com/emergency-status)

### **BPFC ALL CLEAR – Flood**

Emergency officials have determined it is safe to return to your home. Be aware of debris and other potential hazards and avoid crossing flood waters on foot or in your vehicle. Continue to monitor conditions and tune to local media or visit [www.boulderoem.com/emergency-status](http://www.boulderoem.com/emergency-status) for more information.

# Appendix H

## City of Boulder Flood Notification Operational Guidelines

# City of Boulder CFS/Rainfall Thresholds

The following tables present threshold CFS/rainfall rates for the Fourmile Watershed, Boulder Creek and Fourmile Canyon Creek. When calculating risk, be sure to include baseline CFS levels in Boulder Creek at the time of the assessment and add the CFS to the expected flood level.

The thresholds are for inches of rainfall per hour estimate for a storm located over the entire burn area. The thresholds were based on the likely inundation resulting from the estimated peak flows from the burn area.

Table 1: City of Boulder Fourmile Canyon Creek Flood Notification Matrix

Location	Rainfall Threshold In/hr	Flow Rate CFS (cubic ft / sec)	Homes at Risk	Flood Affects Bridges & Roads Affected. Life Safety Risk	AHA System Alert Level	Public Warning Level
Fourmile Canyon Creek	1 - 1/4"	750	N/A	<ul style="list-style-type: none"> <li>Low lying area flooding and some street flooding.</li> <li>Life Safety risk is present.</li> <li>See Table 2 for road impacts</li> </ul>	COB Yellow	<ul style="list-style-type: none"> <li>City of Boulder Communications Center determines or is contacted by the EOC to page Police/Fire Chief and Shift Commander to call provided EOC phone number.</li> <li>Police/Fire Chief and Shift Commander authorize dispatch to launch an Everbridge FFW Advisory to affected areas along Fourmile Canyon Creek. City of Boulder operates public information systems to communicate the condition.</li> <li>Employees are notified through the employee alert system if authorized via dispatch.</li> <li>City of Boulder Communications Center launches an Everbridge FFW Advisory to affected areas of the City.</li> <li>NWS issues Flash Flood Warning for City of Boulder areas affected by flooding.</li> </ul>

Location	Rainfall Threshold In/hr	Flow Rate CFS (cubic ft / sec)	Homes at Risk	Flood Affects Bridges & Roads Affected. Life Safety Risk	AHA System Alert Level	Public Warning Level
Fourmile Canyon Creek	1.5"	1,000	N/A	<ul style="list-style-type: none"> <li>• Road access problems</li> <li>• North Boulder impacted by flooding.</li> <li>• Life Safety risk is high</li> <li>• See Table 2 for road impacts</li> </ul>	COB Red	<p><b>Public Warning Level</b>  FFW- Flash flood warning  FMCC- Fourmile canyon creek  CMO- City Manager's Office</p> <ul style="list-style-type: none"> <li>• City of Boulder Communications Center determines or is contacted by the EOC to page Police/Fire Chief and Shift Commander to call provided EOC phone number.</li> <li>• Police/Fire Chief and Shift Commander authorize dispatch to launch an Everbridge FFW Advisory to affected areas along Fourmile Canyon Creek. City of Boulder operates public information systems to communicate the condition.</li> <li>• City of Boulder operates public information systems to communicate the condition.</li> <li>• Employees are notified through the employee alert system if authorized via dispatch.</li> <li>• City of Boulder Communications Center launches an Everbridge FFW Advisory to affected areas of the City.</li> <li>• NWS issues Flash Flood Warning for City of Boulder areas affected by flooding.</li> </ul>

**Table 2: Flow Rates by Event for Fourmile Canyon Creek**

Location	Rainfall Event (cfs)			
	2-yr	5-yr	10-yr	50-yr
Lee Hill Drive	36	287	715	2461
Broadway	58	316	794	1842
19 <sup>th</sup> Street	155	331	697	1194
28 <sup>th</sup> Street	172	360	732	1260
				100-yr
				3296
				1967
				1277
				1451

750 CFS is likely to result from 1.24" of rainfall in one hour over the entire Fourmile Burn area. This flow rate is approximately the 10-yr event along Fourmile Canyon Creek. The following impacts to roads would likely occur:

- Violet Ave overtopping of 18" or more
- Upland Ave overtopping of 18" or more
- 19<sup>th</sup> Street overtopping of 6" or less
- Topaz Drive overtopping of 18" or more
- 26<sup>th</sup> Street overtopping of 6" or more
- 47<sup>th</sup> Street overtopping of 18" or more

1,000 CFS is likely to result from 1.5" of rainfall in one hour over the entire Fourmile Burn area. This flow rate is between the 10-yr and 25-yr event along Fourmile Canyon Creek.

- Violet Ave overtopping of 18" or more
- Upland Ave overtopping of 18" or more
- 19<sup>th</sup> Street overtopping of 6" or less
- Topaz Drive overtopping of 18" or more
- 26<sup>th</sup> Street overtopping of 6"-18"
- 47<sup>th</sup> Street overtopping of 18" or more

Table 3: City of Boulder Fourmile Creek Watershed / Boulder Creek Flood Notification Matrix

Cubic Feet Per Second ( CFS) in Boulder Creek	Structures at Risk	Flood Affects Bridges & Roads Affected. Life Safety Risk	AHA System Alert Level	Public Warning Level FFW- Flash flood warning FMCC- Fourmile canyon creek CMO- City Manager's Office
800	No	<ul style="list-style-type: none"> <li>Trail crossings only</li> </ul>	City of Boulder & CU AHA recommended Alert Level Green	<ul style="list-style-type: none"> <li>City of Boulder operates public information systems to communicate the condition.</li> <li>Employees are notified through the employee alert system if authorized by the CMO, Police or Fire through the Boulder Dispatch Center..</li> </ul>
2200	No	<ul style="list-style-type: none"> <li>Trail crossings only</li> </ul>	City of Boulder & CU AHA recommended Alert Level Yellow	<ul style="list-style-type: none"> <li>City of Boulder operates public information systems to communicate the condition. Employees are notified through the employee alert system if authorized.</li> <li>If there is a possible additional risk or CFS increase the AHA system should be elevated to a condition Yellow.</li> <li>The City Manager's Office authorizes the AHA system change. Employees are notified through the employee alert system if authorized through the Boulder Dispatch Center.</li> <li>NWS may be a flood advisory along Boulder Creek.</li> </ul>
2900	Yes	<ul style="list-style-type: none"> <li>Flooding along Boulder Creek trails.</li> <li>City Campus flooding</li> <li>CU Parking West of Folsom</li> <li>Preschool at 1345 28<sup>th</sup> Street</li> <li>Business parking lots east of Foothills on the North side of the creek</li> <li>Industrial buildings North of Arapaho ( Boulder Industrial park)</li> </ul>	City of Boulder & CU AHA recommended Alert Level Red	<ul style="list-style-type: none"> <li>City of Boulder Communications Center is contacted by the EOC to page Police/Fire Chief and Shift Commander to call provided EOC phone number.</li> <li>Police/Fire Chief and Shift Commander authorize dispatch to launch an Everbridge FFW Advisory to affected areas along Boulder Creek and CU advising of hazard and siren activation.</li> <li>City of Boulder operates public information systems to communicate the condition.</li> <li>Employees are notified through the employee alert system if authorized via dispatch.</li> <li>NWS issues Flash Flood Warning for Boulder Creek.</li> </ul>
5600	Yes	<ul style="list-style-type: none"> <li>Library</li> <li>City campus flooding</li> <li>CU Parking West of Folsom</li> <li>Flooding along Boulder Creek between Folsom to 28<sup>th</sup> street.</li> <li>Industrial park north of Arapahoe</li> </ul>	City of Boulder & CU AHA recommended Alert Level Red	<ul style="list-style-type: none"> <li>City of Boulder Communications Center is contacted by the EOC to page Police/Fire Chief and Shift Commander to call provided EOC phone number.</li> <li>Police/Fire Chief and Shift Commander authorize dispatch to launch an Everbridge FFW Advisory to affected areas along Boulder Creek and CU advising of hazard and siren activation.</li> <li>CU Communications advised of FFW and siren activation if necessary.</li> <li>NWS issues Flash Flood Warning for Boulder Creek.</li> </ul>

Table 4: City of Boulder - Boulder Creek Flood Notification Matrix

Rainfall Rate Over Entire Burn Area (in/hr)	USGS Gage in Burn Area <sup>1</sup> (cfs)	Boulder Creek Flows (no base flow) <sup>2</sup>		
		6th Street (cfs)	Broadway (cfs)	28th Street (cfs)
1"	870	825	800	460
1.5"	2250	2200	2180	1850
1.7"	3090	2990	2940	2579
2.4"	6000	5760	5640	5100

<sup>2</sup> Must add base flow in Boulder Creek to these flows for total flow

Table 5: Regulatory Peak Flows for Boulder Creek and Fourmile Canyon Creek

Event	Peak Flow (CFS)
<b>Boulder Creek at Eben Fine Park</b>	
2-yr	-
10-yr	2,000
25-yr	5,580
100-yr	11,650
<b>Fourmile Canyon Creek at Lee Hill Drive</b>	
2-yr	36
5-yr	375
10-yr	715
25-yr	1,600
100-yr	3,296



Table 6: Flood Effects on Bridges and Roads in Boulder County

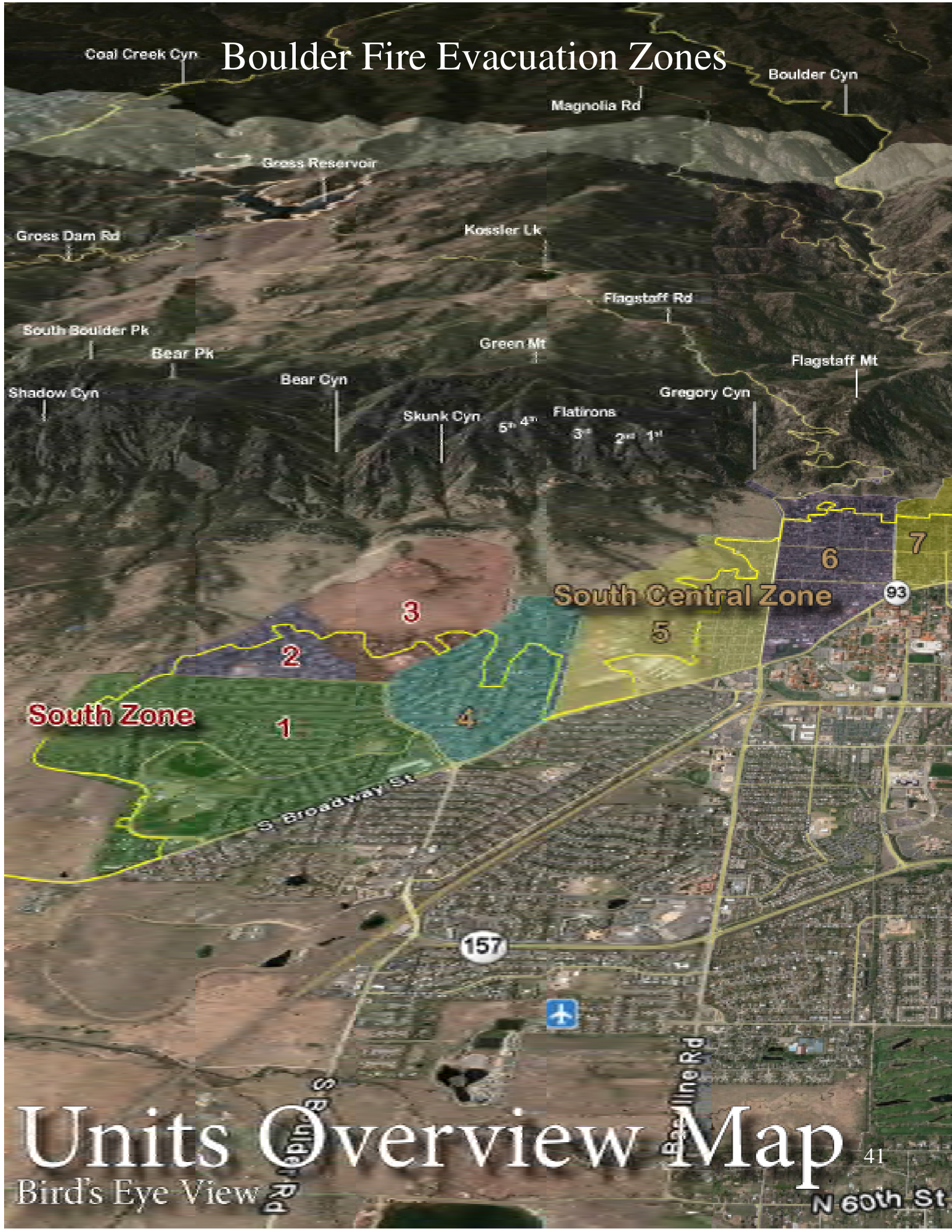
Bridge and Road Impacts	Est. Capacity – CFS (Assumes no debris blockage)	Precip. Event of Concern (Inch per Hour)
SH119 (Boulder Canyon)	1,700	1 <sup>1/2</sup>
Private upstream of SH119	500	3/4
Logan Mill Road	1,500	1 <sup>1/4</sup> - 1 <sup>1/2</sup>
Crisman Road Bridge	1,200	1 <sup>1/4</sup>
Private Drive Upstream of Logan Mill Road	2,000	1 <sup>1/2</sup>
Most Small Residential Bridges	100 – 500 (approx.)	1/2 - 3/4



# Appendix I

## Boulder Fire Evacuation Zone Map

# Boulder Fire Evacuation Zones



Coal Creek Cyn

Boulder Cyn

Magnolia Rd

Gross Reservoir

Gross Dam Rd

Kessler Lk

Flagstaff Rd

South Boulder Pk

Bear Pk

Green Mt

Flagstaff Mt

Shadow Cyn

Bear Cyn

Gregory Cyn

Skunk Cyn

5<sup>th</sup> 4<sup>th</sup>

Flatirons

3<sup>rd</sup>

2<sup>nd</sup>

1<sup>st</sup>

**South Zone**

**South Central Zone**

S Broadway St

157



Baseline Rd

# Units Overview Map

41

Bird's Eye View

N 60th St

# Boulder Fire Evacuation Zones

Sugarloaf Rd

Lefthand Cyn

Fourmile Cyn Dr

Sunshine Cyn Dr

Boulder Heights

Pinebrook Hills

Mt. Sanitas

North Zone

119

8

9

10

11

12

13

7

North Central Zone

36

Footfalls Pkwy

Diagonal Hwy

Arapahoe Ave



Valmont Rd



# Appendix J

## Flood Inundation Maps

### Boulder Creek & Fourmile Canyon Creek




Impacts to Structures	
Address	Inundation Depth
1101 Arapahoe Ave (New Britain)	<1ft
1739 Broadway (Park Central)	<1ft

**Legend**

- No Inundation
- 6" of water
- 6-18" of water
- >18" of water
- ▽ Red Alert Floodplain
- ▴ Flood Depth
- ▾ Flood Depth (Main Channel)
- ~ Creek


\*Red Alert- 1.7" over entire burn area in one hr (2,900 cfs)  
 Regulatory 10-yr event (2,000 cfs)  
 Regulatory 25-yr event (5,580 cfs)

\*\*Add base flow to this cfs for total flow in Boulder Creek

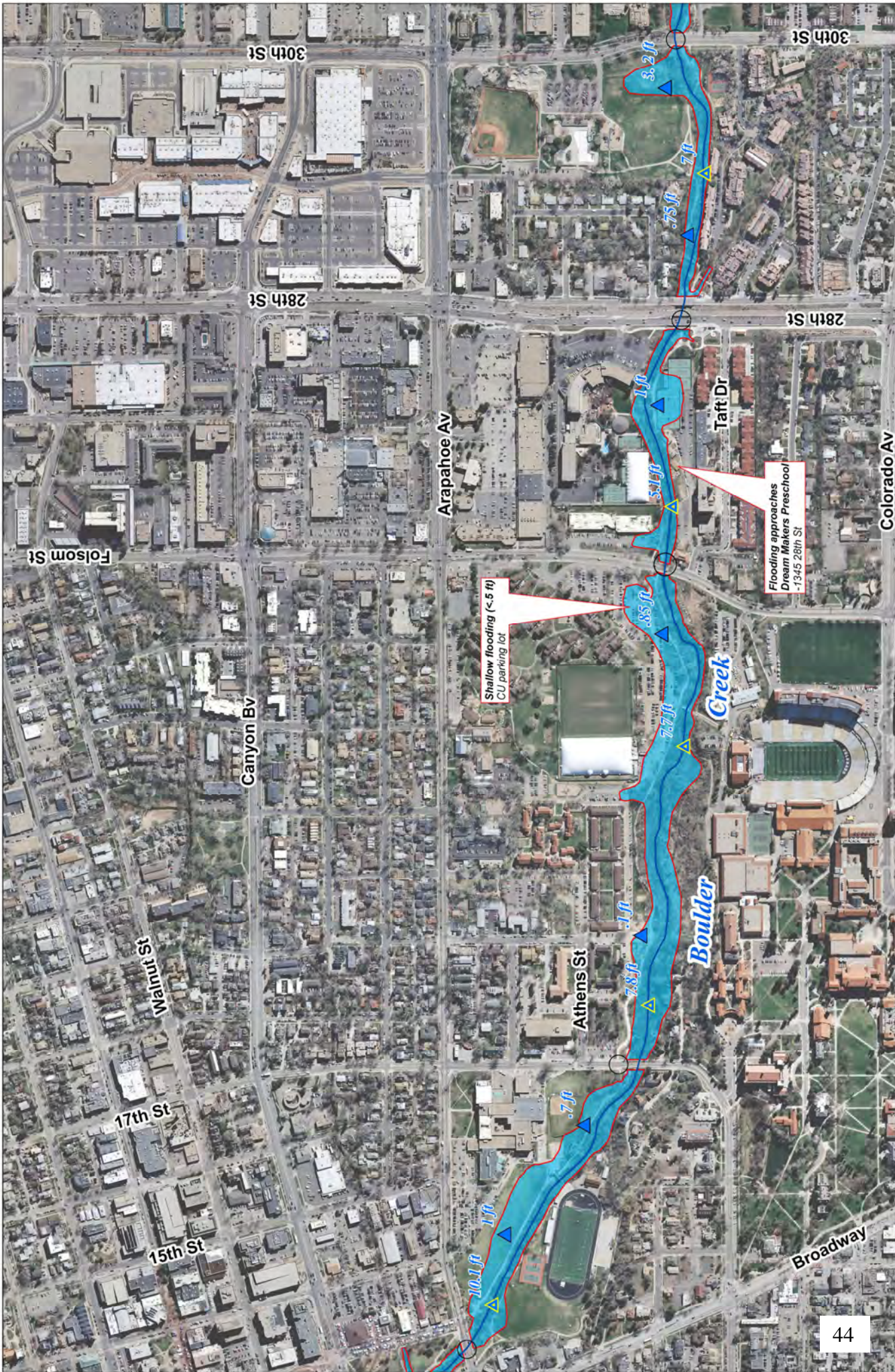
  
 City of Boulder  
 Utilities Division

This information depicted on this map is provided as graphical information only and is not intended to be used for engineering purposes. The information is provided as is, without warranty, and the City of Boulder does not assume any liability for the accuracy and/or completeness of the information contained herein.

0 250 500 1,000 1,500 2,000 Feet  
 1:2,000







# Boulder Creek Red Alert Threshold & Roadway Inundation



The information depicted on this map is provided as graphical representation only. The City of Boulder provides no warranty, representation, or liability for the accuracy and/or completeness of the information contained herein.



\*Red Alert: 1.7" over entire burn area in one hr (2,900 cfs)  
 Regulatory 10-yr event (2,000 cfs)  
 Regulatory 25-yr event (5,580 cfs)  
 \*Add base flow to this cfs for total flow in Boulder Creek

- No Inundation
- <6" of water
- 6-18" of water
- >18" of water
- △ Red Alert Floodplain
- △ Flood Depth
- △ Flood Depth (Main Channel)
- △ Creek

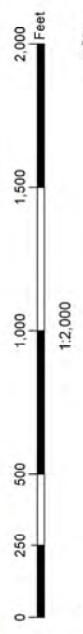


Shallow flooding (<1ft)  
 Pearl East Business Park  
 Parking Lot  
 -4754 Walnut St

Address	Inundation Depth
1835 Range St	1-2ft
1845 Range St	1-2ft
1800 Commerce St	1-2ft
1840 Commerce St	1-2ft

# Boulder Creek

## Red Alert Threshold & Roadway Inundation



The information depicted on this map is provided as graphical information only and is not intended to be used for engineering or other purposes. The information is provided as is, without warranty, and the City of Boulder does not assume any liability for the accuracy and/or completeness of the information contained herein.

- Legend**
- No Inundation
  - Roadway Inundation
  - Red Alert Floodplain
  - <6" of water
  - 6-18" of water
  - >18" of water
  - ▲ Flood Depth
  - ▲ Flood Depth (Main Channel)
  - ~ Creek
- \*Red Alert- 1.7' over entire burn area in one hr (2,900 cfs)  
 Regulatory 10-yr event (2,000 cfs)  
 Regulatory 25-yr event (5,580 cfs)  
 \*\*Add base flow to this cfs for total flow in Boulder Creek



March 2013  
 Recent information indicates the potential water spread may be a larger area than indicated here.

Structure	Inundation Depth
Rosewood Ave	< 5ft
Broadway	< 5ft
Broadway	< 5ft
Broadway	< 5ft
Upland Ave	< 5ft
19th St	< 5ft
Upland Ave	< 5ft
Tamarack Ave	< 5ft
Tamarack Ave	< 5ft
Tamarack Ave	< 5ft

- Red Alert Floodplain
- Flood Depth
- Flood Depth (Main Channel)
- Creek
- Inundation
- 1' of water
- 2' of water
- 3' of water

Red Alert - 1.25" over entire burn area in one hr (750 cfs)  
 Regulatory 10-yr event (715 cfs)  
 Regulatory 25-yr event (1,600 cfs)

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Utilities Division

# Fourmile Canyon Creek

## Red Alert Threshold & Roadway Inundation



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**Impacts to Structures**

Address	Inundation Depth
4270 19th St	<5ft
4306 19th St	<5ft
2020 Upland Ave	<5ft
2130 Tamarack Ave	<5ft
2140 Tamarack Ave	<5ft
2150 Tamarack Ave	<5ft
2455 Sumac Ave	1-3ft
2435 Topaz Dr	<5ft
4450 Ruby St	1ft
2400 Topaz Dr	1ft
4097 26th St	1ft
2590 Agate Rd	<5ft
4066 26th St	1ft

**Legend**

- Roadway Inundation
- No Inundation
- <6" of water
- 6-18" of water
- >18" of water
- Red Alert Floodplain
- Flood Depth
- Flood Depth (Main Channel)
- Creek

**Red Alert - 1.25" over entire burn area in one hr (750 cfs)**  
**Regulatory 10-yr event (715 cfs)**  
**Regulatory 25-yr event (1,600 cfs)**

The information depicted on this map is provided as graphical information only and does not constitute an offer, warranty, expressed or implied, as to the accuracy and/or completeness of the information contained herein.

City of Boulder  
 Utilities Division

0 300 600 1,200 1,800 2,400 Feet

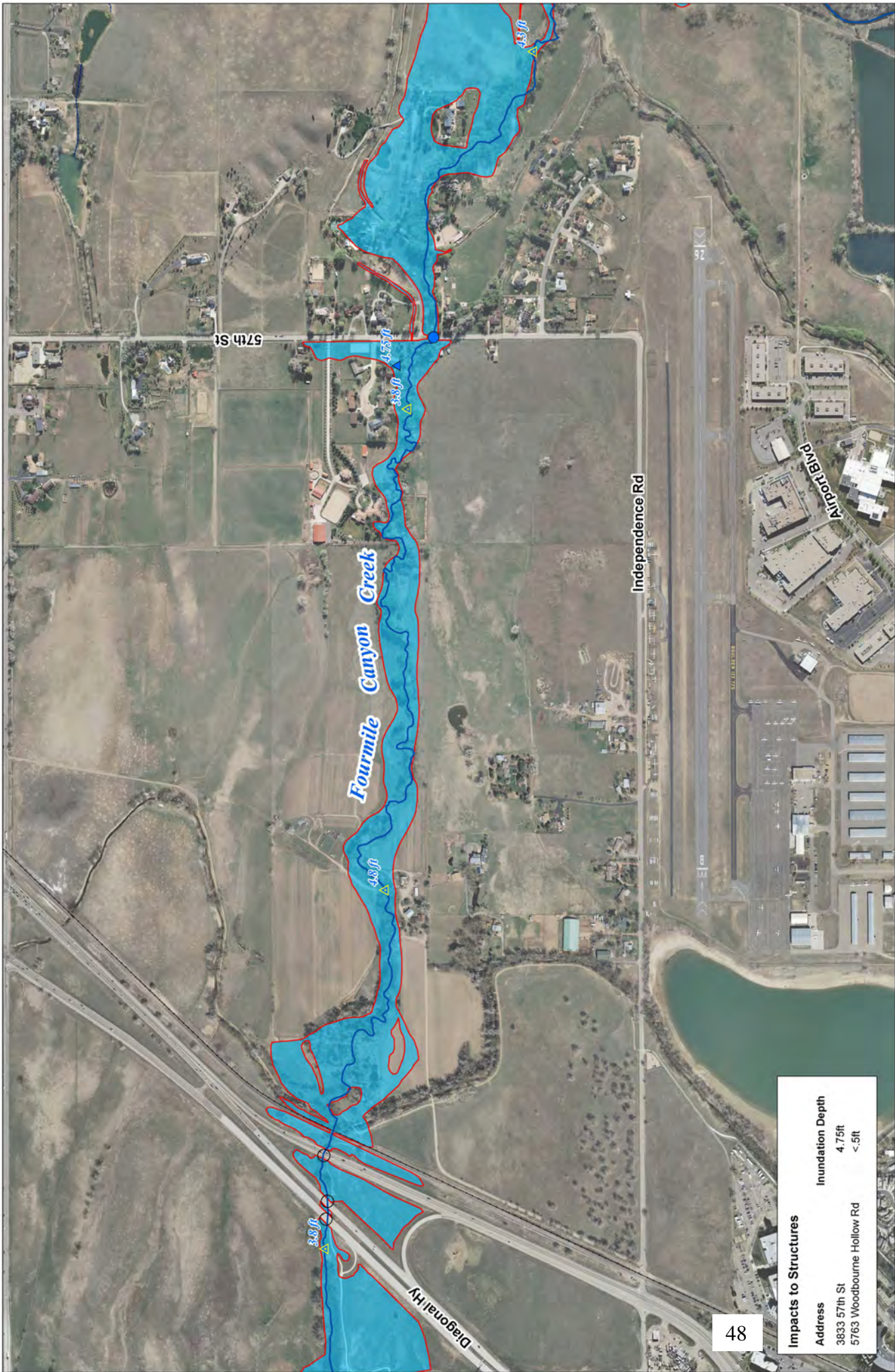
1:2,400

North Arrow

# Fourmile Canyon Creek

## Red Alert Threshold & Roadway Inundation

Map 2 of 4



Impacts to Structures	
Address	Inundation Depth
3833 57th St	4.75ft
5763 Woodbourne Hollow Rd	<.5ft

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# Fourmile Canyon Creek Red Alert Threshold & Roadway Inundation

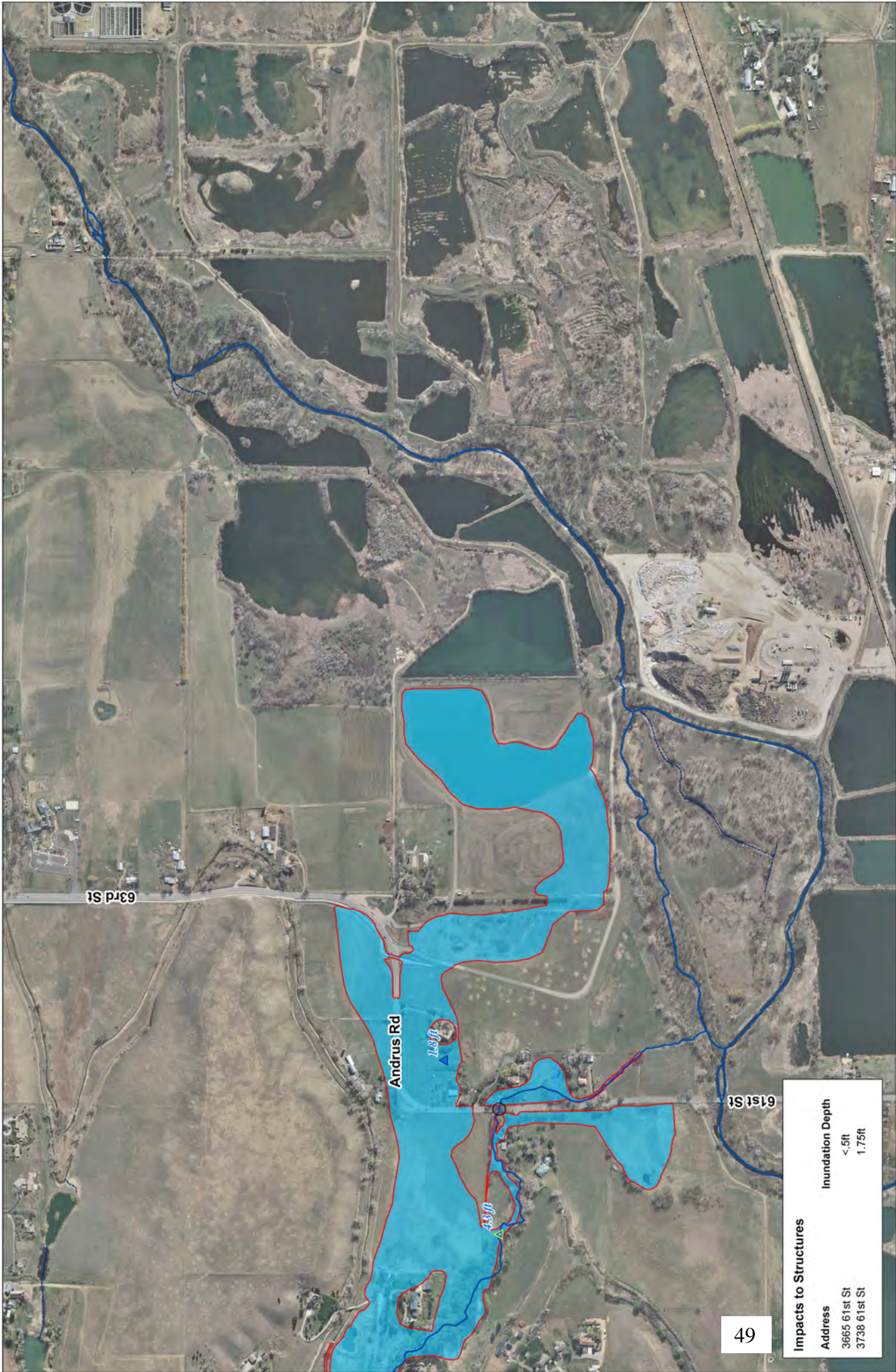
The information depicted on this map is provided as graphical information only and is not intended to be used for engineering purposes. The accuracy and/or completeness of the information contained herein.

0 300 600 1,200 1,800 2,400 Feet

CITY OF BOULDER  
Utilities Division

**Legend**

	Red Alert - 1.25" over entire burn area in one hr (750 cfs)
	Regulatory 10-yr event (715 cfs)
	Regulatory 25-yr event (1,600 cfs)
	Flood Depth (Main Channel)
	Creek



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Impacts to Structures	
Address	Inundation Depth
3665 61st St	< 5ft
3738 61st St	1.75ft

# Fourmile Canyon Creek

## Red Alert Threshold & Roadway Inundation

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0 300 600 1,200 1,800 2,400 Feet

1:2,400

- Legend**
- Red Alert Inundation
  - No Inundation
  - 6-18" of water
  - >18" of water
  - Roadway Floodplain
  - Red Alert Floodplain
  - Flood Depth
  - Flood Depth (Main Channel)
  - Creek
  - Regulatory 10-yr event (715 cfs)
  - Regulatory 25-yr event (1,600 cfs)
  - Red Alert - 1.25" over entire burn area in one hr (750 cfs)



# Appendix K

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Dave Zader, Boulder Wildland Division







Structure Protection Plan

# EVACUATION APPENDIX

City of Boulder



## MAP LEGEND

-  Urban Interface Zone Area 1 (Area 1 Evacuations)
-  Area 2 Evacuations
-  Units 1-13
-  Urban Interface Zone (Outside Boulder city limits)





Structure Protection Plan  
**EVACUATION**  
**APPENDIX**

City of Boulder, Colorado

Version 2012.2



# Acknowledgments

CREATED BY	<b>Dave Zader</b>	Wildland Fire Management Coordinator, Boulder Wildland Division
SPECIAL THANKS TO	<b>Brian Oliver</b>	Fuels Management Supervisor, Boulder Wildland Division
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	<b>Troy Spahn</b>	Asst. Crew Supervisor, Boulder Wildland Division
	<b>Kip White</b>	GIS, City of Boulder
	<b>Edward McEldowney</b>	Communications Manager, Boulder Police Department
LAYOUT	<b>Sky Mignery</b>	

Introduction

Evacuation Overview Map

North Evacuation Map

Unit 13 Evacuation Map

Unit 12 Evacuation Map

Unit 11 Evacuation Map

North Central Evacuation Map

Unit 10 Evacuation Map

Unit 9 Evacuation Map

Unit 8 Evacuation Map

South Central Evacuation Map

Unit 7 Evacuation Map

Unit 6 Evacuation Map

Unit 5 Evacuation Map

Unit 4 Evacuation Map

South Evacuation Map

Unit 3 Evacuation Map

Unit 2 Evacuation Map

Unit 1 Evacuation Map

Notes



# Evacuation Appendix

Evacuations of structures in the City of Boulder can be called for by any public safety official operating on the incident. The Boulder Police Department is responsible for helping to ensure that structures have been evacuated. **ONLY RESIDENCES WITHIN THE CITY OF BOULDER CAN BE USED WITH THIS SYSTEM.** Coordination with Boulder County Dispatch will be necessary for Rocky Mountain Fire Authority, Fourmile Fire District, Boulder Rural Fire District, Sunshine Fire District and Boulder Mountain Fire Authority.

The City of Boulder Police and Fire Communications Center is responsible for Everbridge notifications to residents of the city of Boulder. In order to simplify the calculation of evacuation areas, predetermined areas have been laid out in three two geographic zones within each planning unit.

## Area 1

Area 1 (western edge of each zone) evacuations are the most critical residents to evacuate as there are generally little to no sizeable defensible features and poor access. All Area 1 evacuations should occur before initiating any Area 2 evacuations or notifications.

## Area 2

Area 2 evacuations are generally precautionary to residents as there are generally sizeable city streets that create good defensible features, good access, and plentiful water supplies. No Area 2 evacuations should occur before Area 1 evacuations are complete.

## Unit evacuations (This option should not be used commonly)

The entire unit west of Broadway can be used for evacuations under extreme circumstances. Note that the polygons used for this type of notification will not differentiate the residents closest to the urban interface.

## Messages

Three types of messages should be used to communicate threats to residents.

## Notification

Notifications should be used to advise residents that there is a fire in their area, and that preparations should be made in case evacuation order is given. Notifications should be made to all residents in area 1, and then to Area 2 for each applicable unit.

## Voluntary evacuations

Residents are encouraged to evacuate the area. Voluntary evacuations can be requested for area 1, and then area 2 for each applicable unit. A voluntary evacuation of area 1 will automatically trigger a notification of area 2.

## Mandatory evacuations

Residents are to evacuate the area. Mandatory evacuations in area 1 should automatically trigger voluntary evacuations of area 2, or Mandatory evacuations can be ordered for area 1, then area 2.

### *Example 1:*

#### **A fire burning on the south end of the city:**

A sample message to the City of Boulder Dispatch might consist of “Mandatory evacuation” of Area 1 of Units 1, 2 and 3. This would result in mandatory evacuations of **Area 1** of Unit 1, 2 and 3 and “Voluntary evacuations” of **Area 2** of Unit 1, 2 and 3.

### *Example 2:*

#### **A fire burning on the south end of the city:**

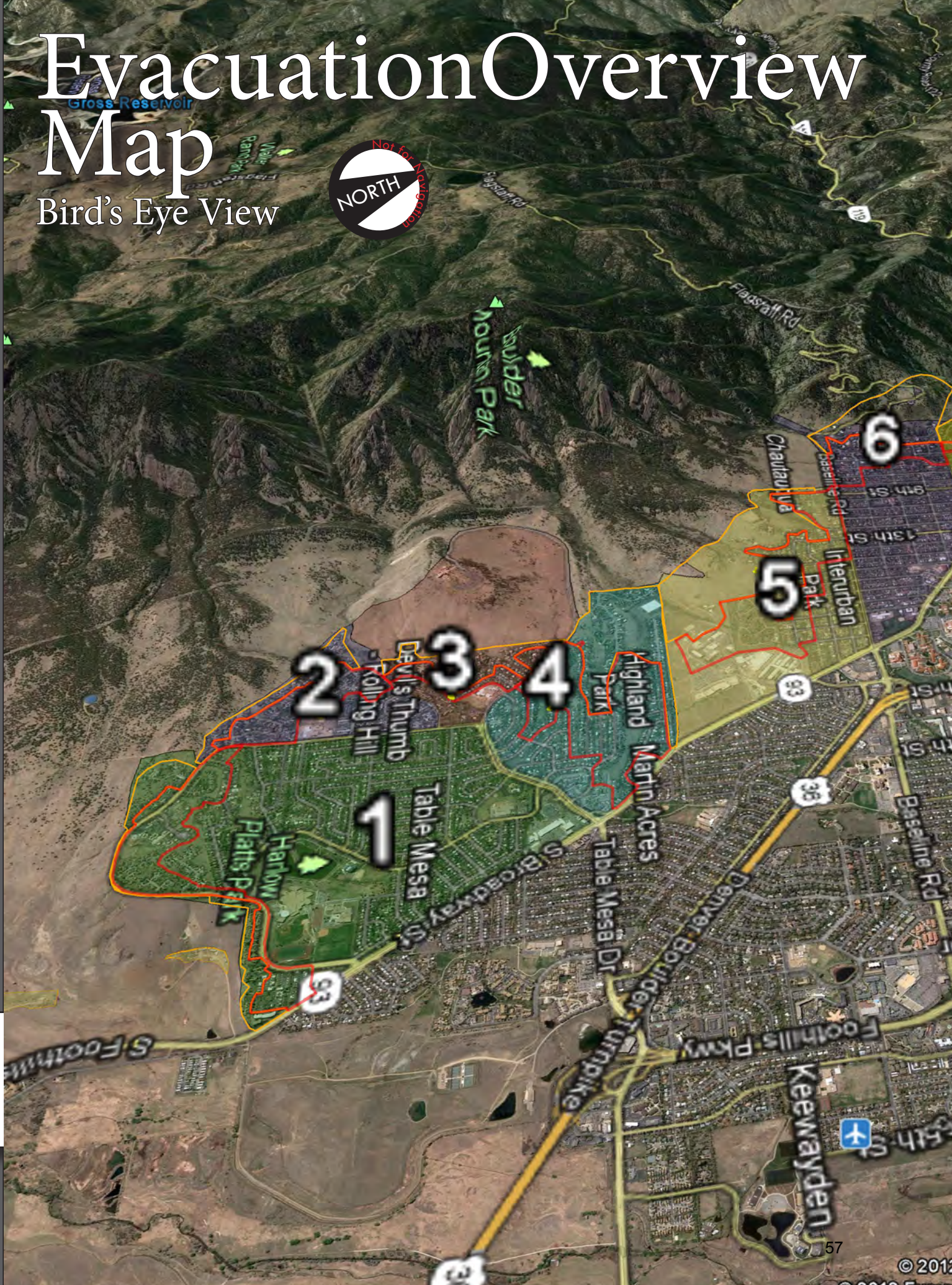
A sample message to the City of Boulder Dispatch might consist of “Voluntary evacuation” for **Area 1** of Unit 2 and “Notification” for Area 1 of Unit 2 and 3.

This would result in a voluntary evacuation of Area 1 of Unit 2, and “Notification” in Area 2 of Unit 2 and “Notification” in Area 1 and 2 of Units 1 and 3.

# Evacuation Overview Map

## Map

Bird's Eye View





INTRODUCTION

NORTH ZONE

NORTH CENTRAL ZONE

SOUTH CENTRAL ZONE

SOUTH ZONE

APPENDIX

7 8 9 10 11 12 13



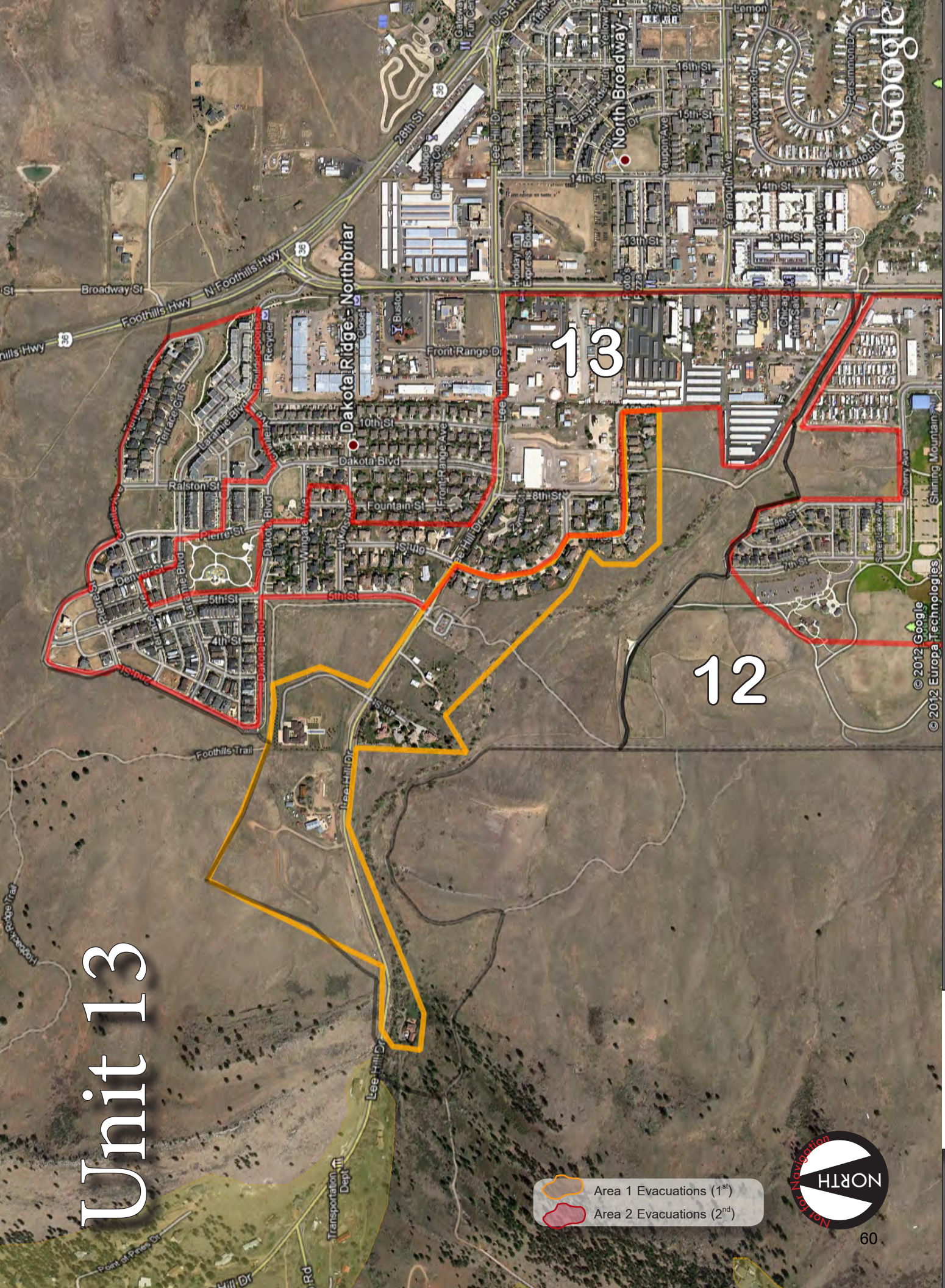
- Area 1 Evacuations (1<sup>st</sup>)
- Area 2 Evacuations (2<sup>nd</sup>)



# North Evacuation Map





# Unit 13



- Area 1 Evacuations (1<sup>st</sup>)
- Area 2 Evacuations (2<sup>nd</sup>)



-  Area 1 Evacuations (1<sup>st</sup>)
-  Area 2 Evacuations (2<sup>nd</sup>)





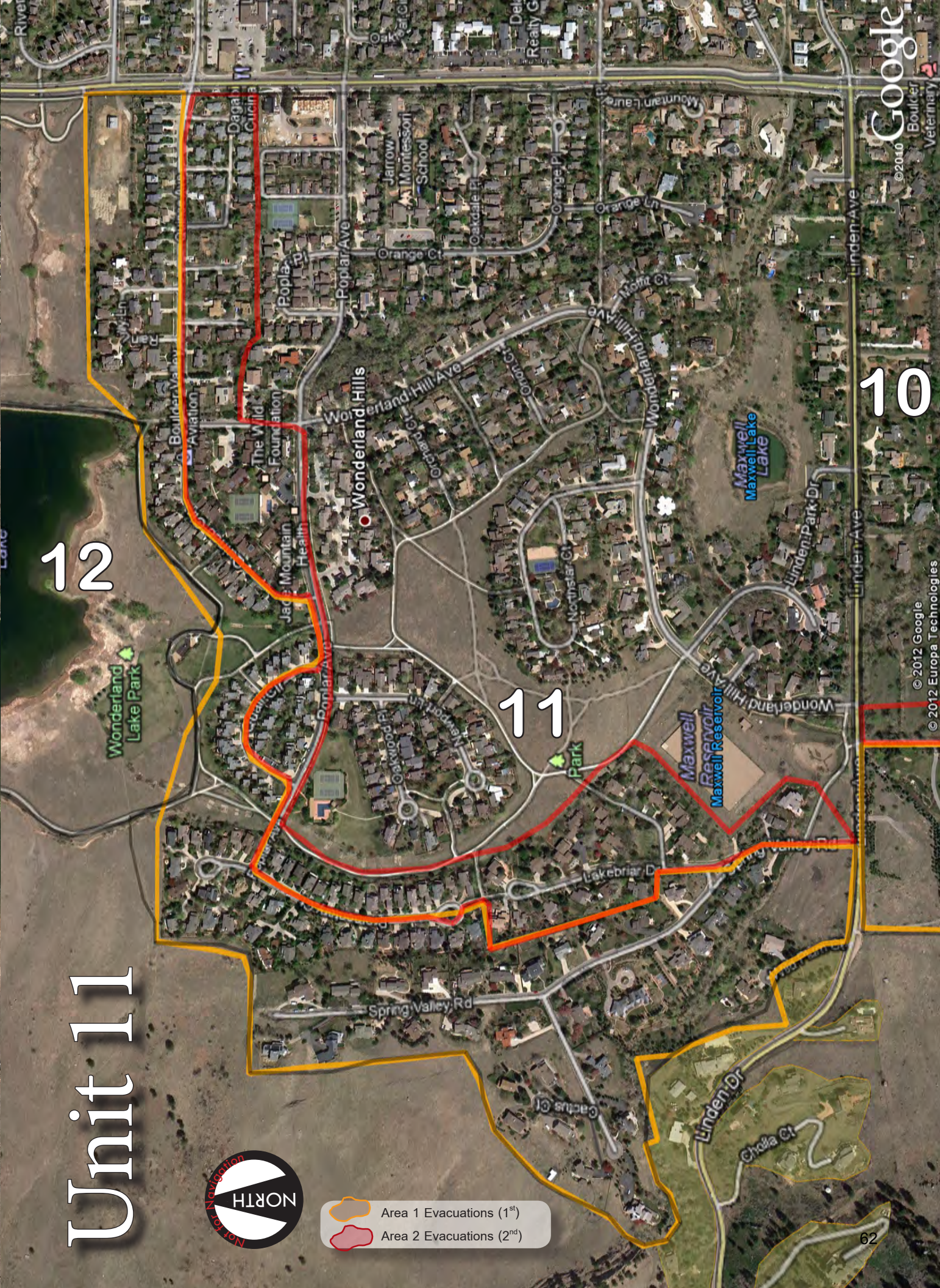
# Unit 12



# Unit 11



-  Area 1 Evacuations (1<sup>st</sup>)
-  Area 2 Evacuations (2<sup>nd</sup>)



10

12

11



- Area 1 Evacuations (1<sup>st</sup>)
- Area 2 Evacuations (2<sup>nd</sup>)

8



9

10

11

# North Central Evacuation Map



-  Area 1 Evacuations (1<sup>st</sup>)
-  Area 2 Evacuations (2<sup>nd</sup>)

# Unit 10

11

10

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INTRODUCTION

NORTH ZONE

NORTH CENTRAL ZONE

SOUTH CENTRAL ZONE

SOUTH ZONE

APPENDIX

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○ Area 1 Evacuations (1<sup>st</sup>)  
○ Area 2 Evacuations (2<sup>nd</sup>)

10

9



8

Unit 9

65

# Unit 8



-  Area 1 Evacuations (1<sup>st</sup>)
-  Area 2 Evacuations (2<sup>nd</sup>)



8

7

# South Central Evacuation Map

3

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6

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4



Area 1 Evacuations (1<sup>st</sup>)



Area 2 Evacuations (2<sup>nd</sup>)





# Unit 7



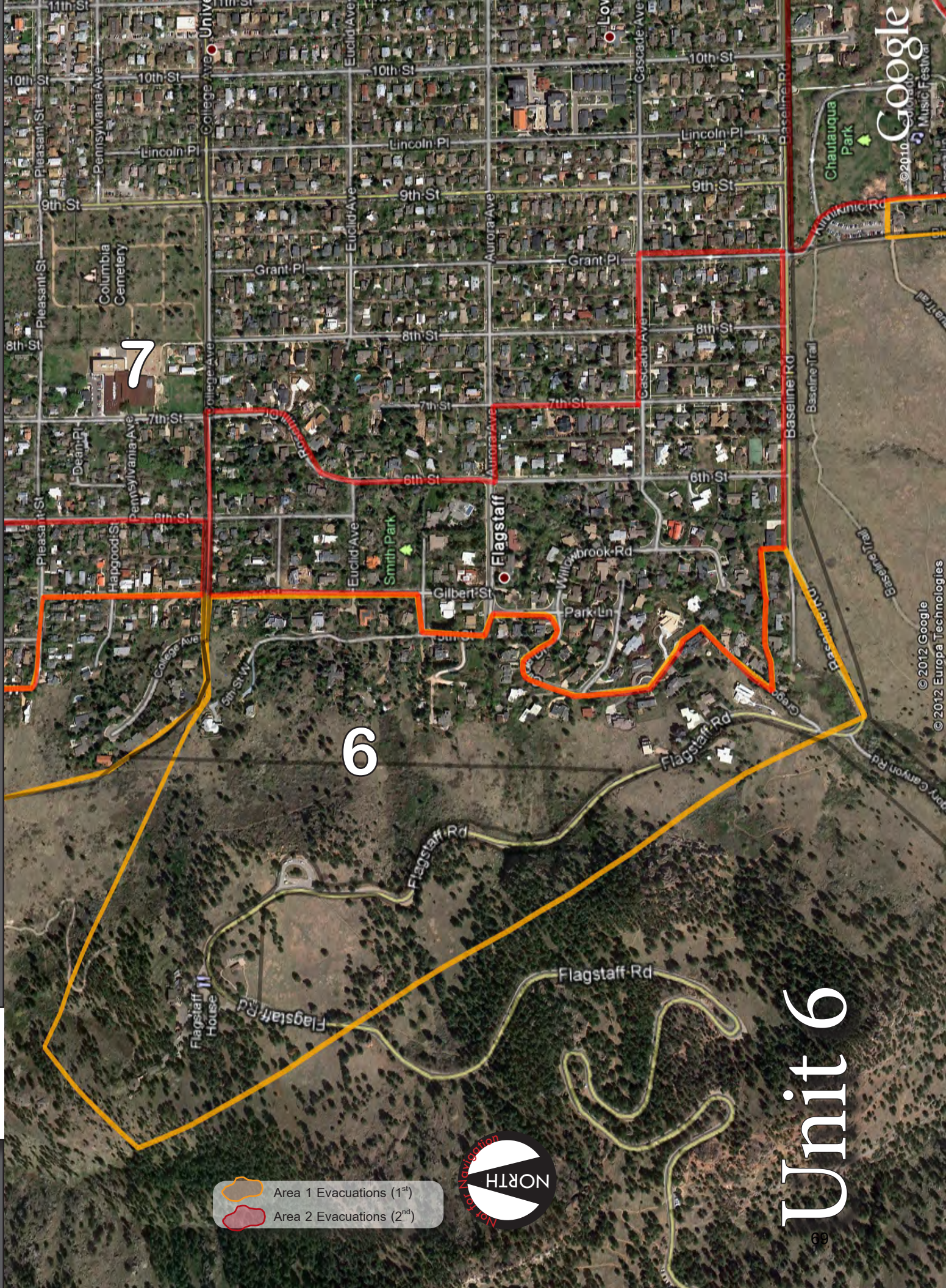
-  Area 1 Evacuations (1<sup>st</sup>)
-  Area 2 Evacuations (2<sup>nd</sup>)





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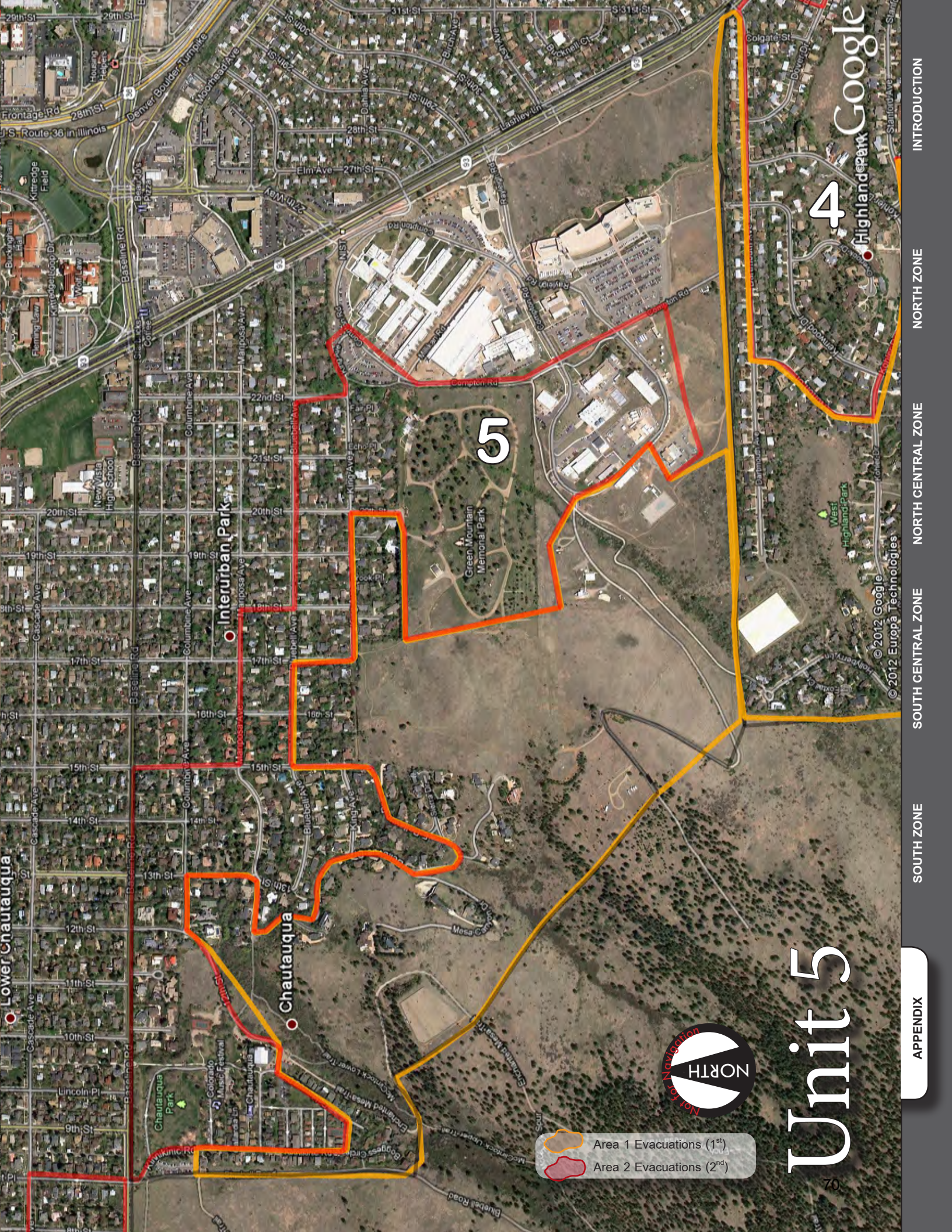
Flagstaff  
© 2012 Google  
© 2012 Europa Technologies



-  Area 1 Evacuations (1<sup>st</sup>)
-  Area 2 Evacuations (2<sup>nd</sup>)



# Unit 6



Lower Chautauqua

Interurban Park



Chautauqua

5

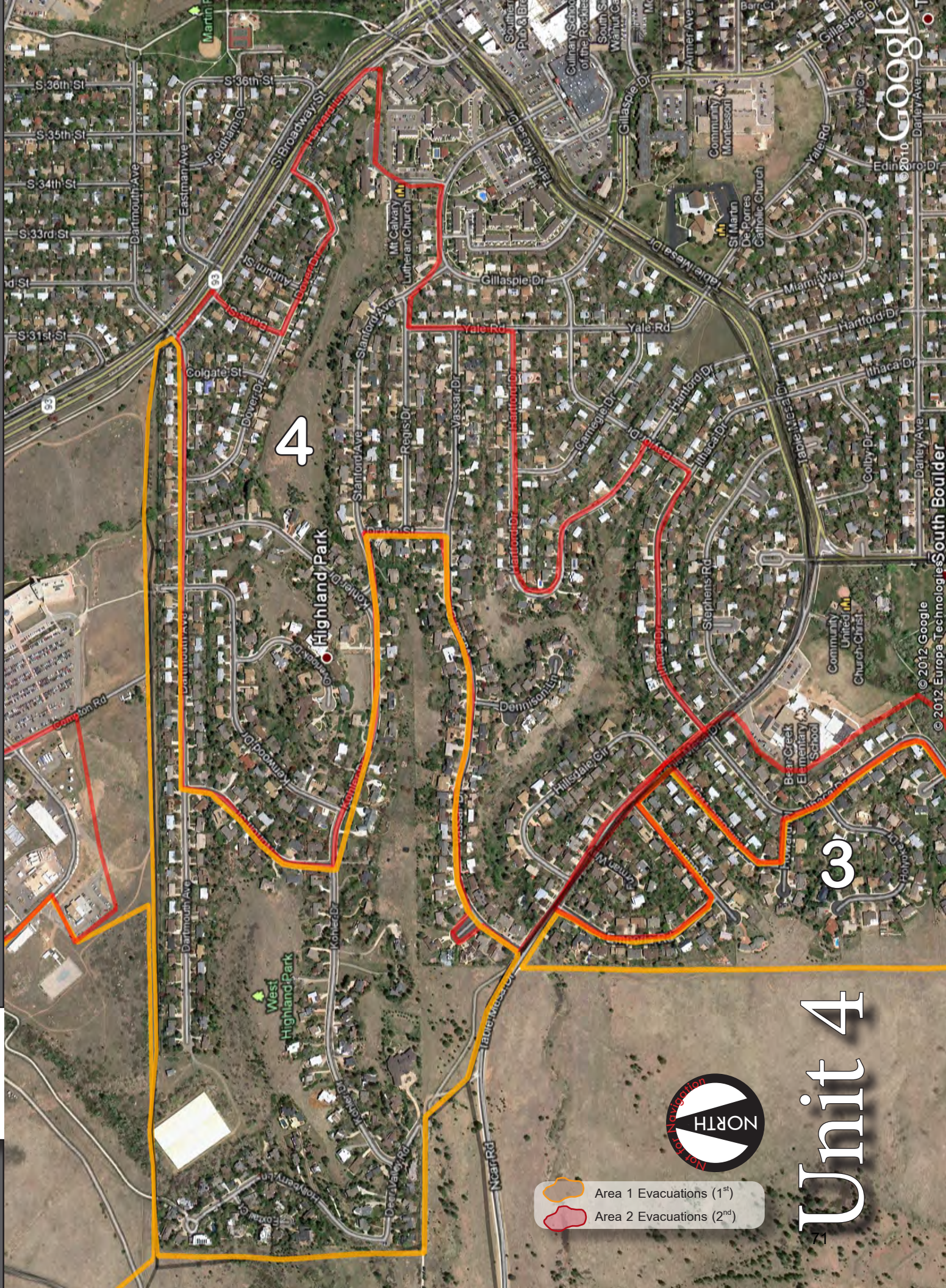
4

Highland Park Google



-  Area 1 Evacuations (1<sup>st</sup>)
-  Area 2 Evacuations (2<sup>nd</sup>)



# Unit 5



4

3





-  Area 1 Evacuations (1<sup>st</sup>)
-  Area 2 Evacuations (2<sup>nd</sup>)



# Unit 4



# South Evacuation Map



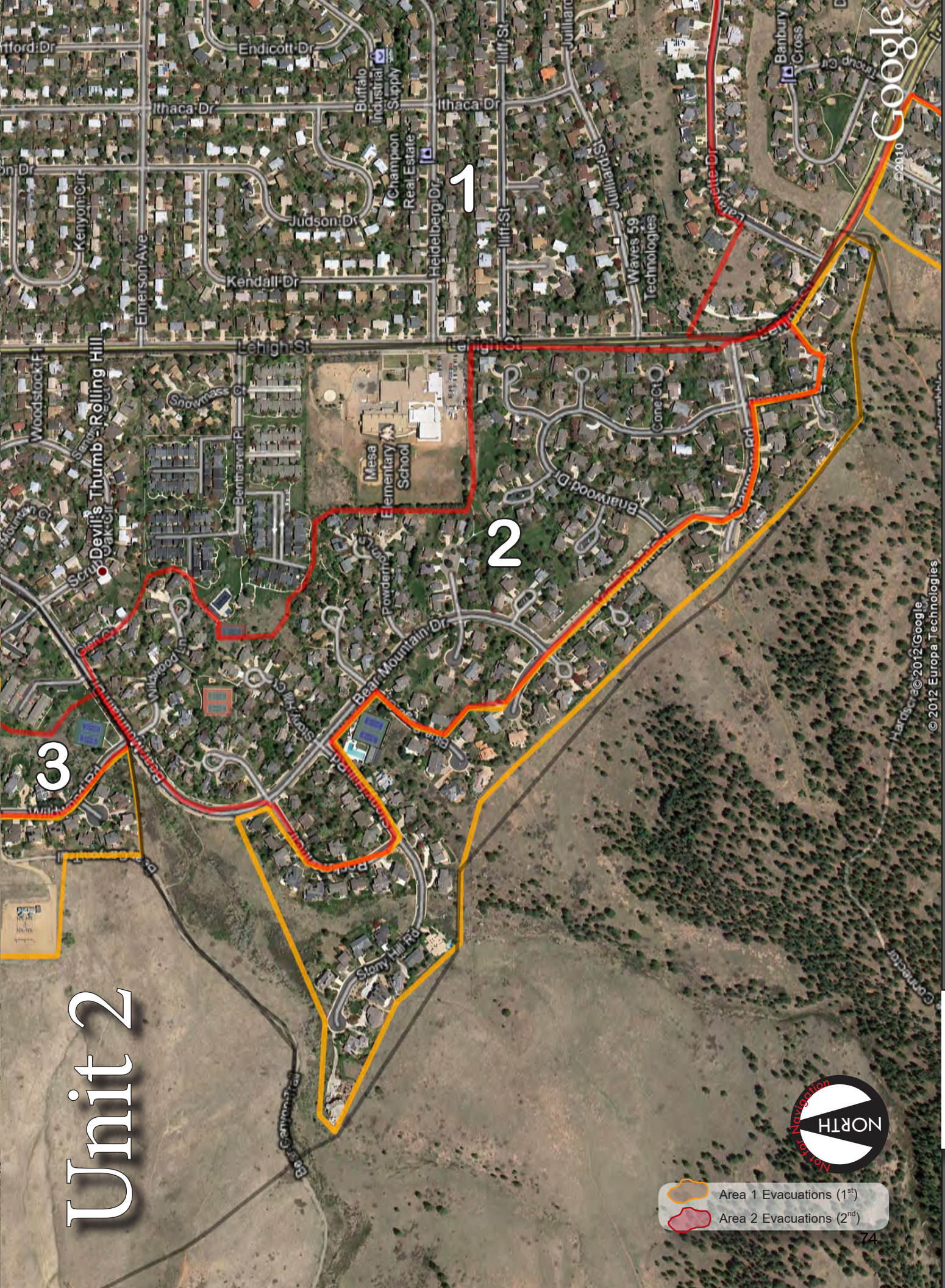
-  Area 1 Evacuations (1<sup>st</sup>)
-  Area 2 Evacuations (2<sup>nd</sup>)

-  Area 1 Evacuations (1<sup>st</sup>)
-  Area 2 Evacuations (2<sup>nd</sup>)



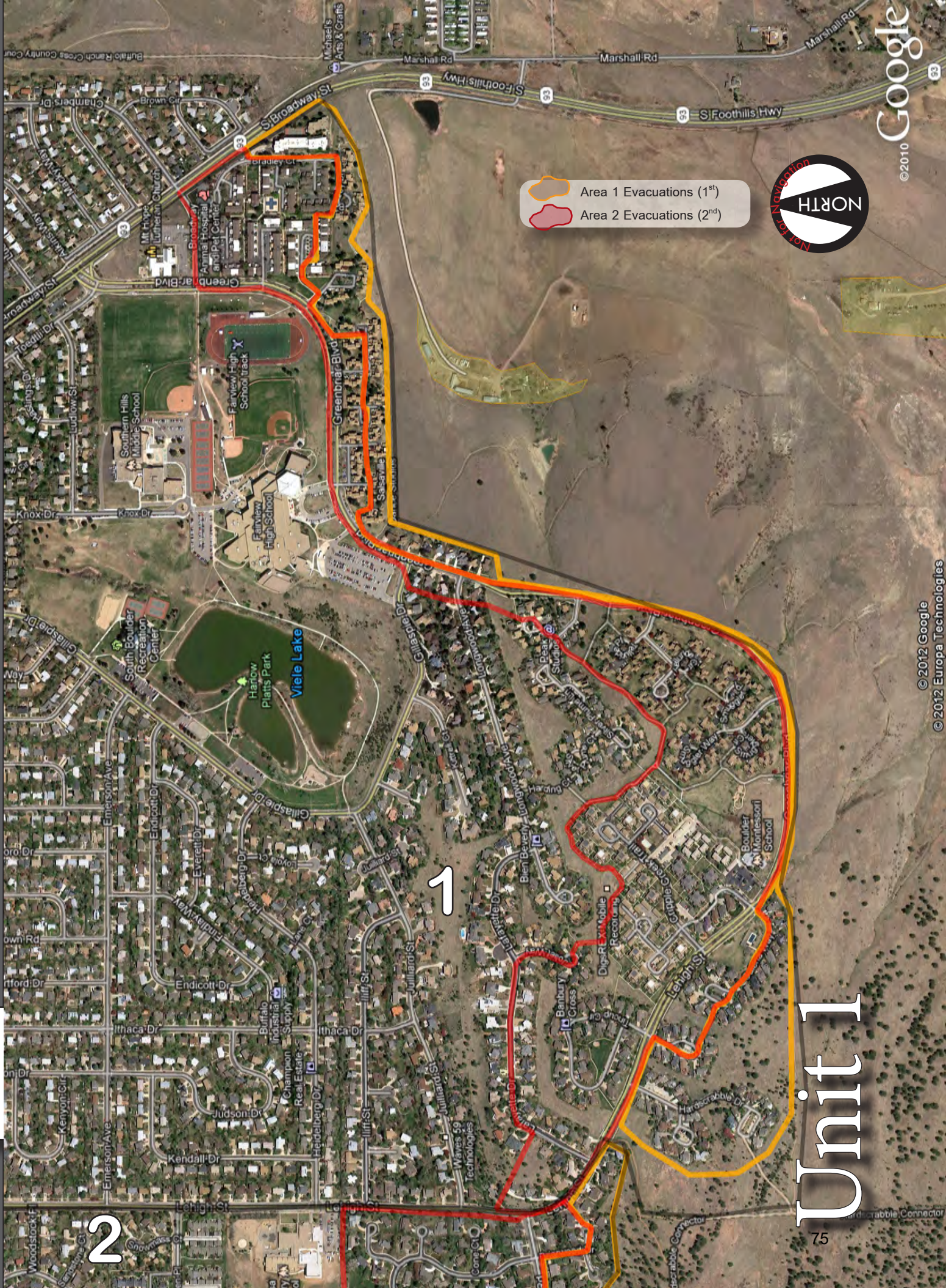
# Unit 3

# Unit 2



- Area 1 Evacuations (1<sup>st</sup>)
- Area 2 Evacuations (2<sup>nd</sup>)





- Area 1 Evacuations (1<sup>st</sup>)
- Area 2 Evacuations (2<sup>nd</sup>)



# Unit 1





