Communicating Road Closures through Mapping Services

South Carolina Department of Transportation

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Hurricane Joaquin

- Early October 2015
- 1000-year flood
- Unprecedented flooding throughout SC

SCDOT Public Information Efforts

Existing Resources

- 511 website and app
- ITS Cameras & Message Boards
- SCDOT Road Conditions webpage
- SCDOT Customer Service Call Center
- SCDOT Facebook page

Existing Resources

- ITS Resources
  - 511 website and app
  - Cameras and Message boards

Advantages:

- Already a familiar source of information for the public and media
- App provided easy access to information
- Message boards provided information to motorists already traveling selected routes

Issues:

- Not integrated with SCDOT Road Closure information
- Primarily provides information on Interstate routes
- Some camera feeds disconnected because of rescue efforts

Existing Resources

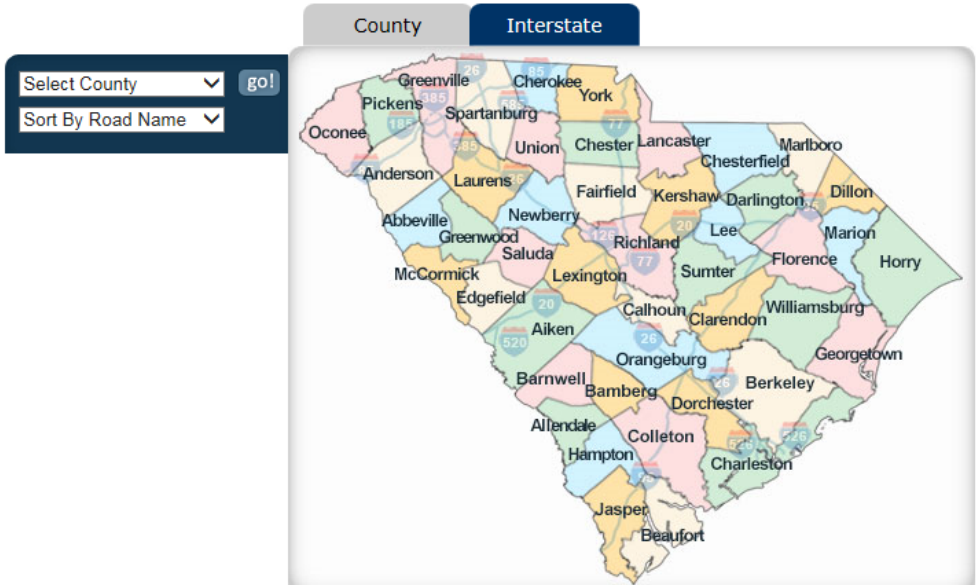
- SCDOT Road Conditions web page
  - http://206.74.144.9/RoadConditions/default.aspx

Road Conditions

To find road conditions use the County selection box or simply click on a County on the searchable map. To view ALL Counties at once, Choose ALL COUNTIES from the dropdown, and click Go.
Map is not visible on small screens.

Emergency conditions are marked with this icon

To view our progress on related Storm Hermine closings, Visit our Road Conditions for Storm Hermine



County	Route	From	To	Route Direction	Road Name	Start Date/End Date	Description
RICHLAND	S-1682	Wildflower Road MP 0	SC - 215 MP 5.18	BOTH	CEDAR CREEK ROAD	04/29/16 - 12/23/16	All Lanes Blocked ROAD CLOSED DUE TO BRIDGE REPLACEMENT.

Existing Resources

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Advantages:

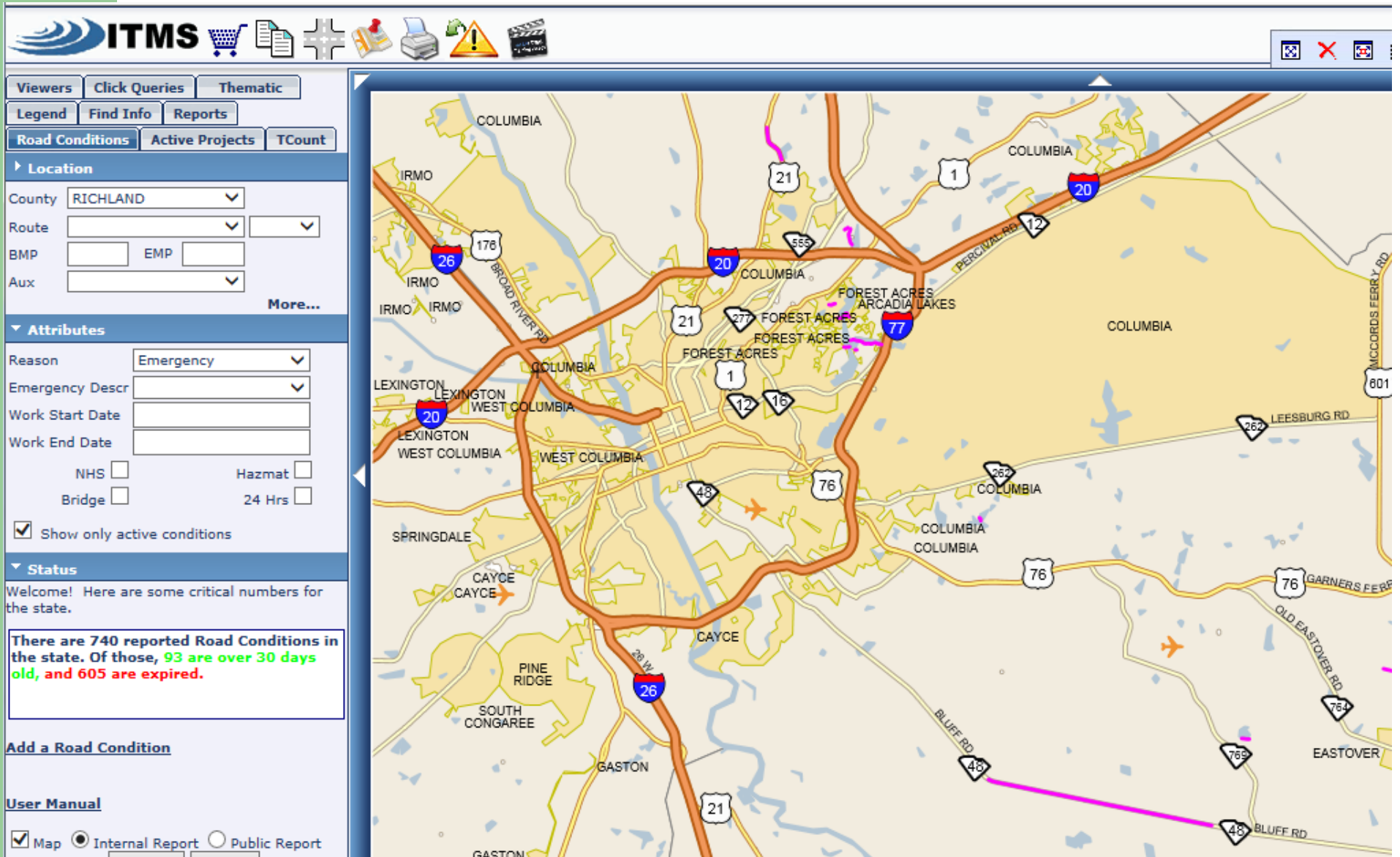
- Provides information on all SCDOT routes
- Frequently updated by maintenance forces through ITMS (Integrated Transportation Management System)

Issues:

- Not a familiar source of information to the public or media
- No visual mapping of closed routes
- What is the State Road number?
- Where are these mile points and cross roads?
- Is there a detour?

Existing Resources

- SCDOT Call Center – Using Internal ITMS System



Existing Resources

- SCDOT Call Center (Using ITMS information)

Advantages:

- Provided information on all SCDOT routes
- “Real-time” information updated by maintenance forces through ITMS
- Aided motorists in identifying detour routes

Issues:

- Very high call volumes
- Call Center operators not familiar with all areas
- ITMS maps not available to the public

Existing Resources

- SCDOT Facebook Page

Advantages:

- Ability to provide key information in real time to potentially large audience
- Ability to direct viewers to other SCDOT resources
- Allowed followers to “Share” information with their friends
- Provided positive public relations as the efforts of SCDOT were shown

Issues:

- Did not have a large reach prior to the flood
- SCDOT unable to respond to all Comments
- Information can’t be customized to specific motorists

Key Issues with Existing Resources

- Required motorists to seek out SCDOT
- Most resources were previously unfamiliar to the public
- ITS resources limited to Interstates
- Publicly available resources didn’t provide mapping & detour routes
- Many motorists were already lost by the time they searched for SCDOT information

Reaching out to Motorists

- How can SCDOT reach out to the public instead of the public having to seek out SCDOT?
- What resources are the public most familiar with?
- What services do motorists use to plan their routes?
- How can we make sure routing/mapping services don’t send motorists to closed roads?

Coordinating with Mapping Providers

- Identify mapping providers – INRIX, HERE, WAZE/Google
- Find contact people at each organization
- Identify available SCDOT source information
- Identify mapping providers' needs for integration of information into their services
- Determine method for delivering information

SCDOT Source Information

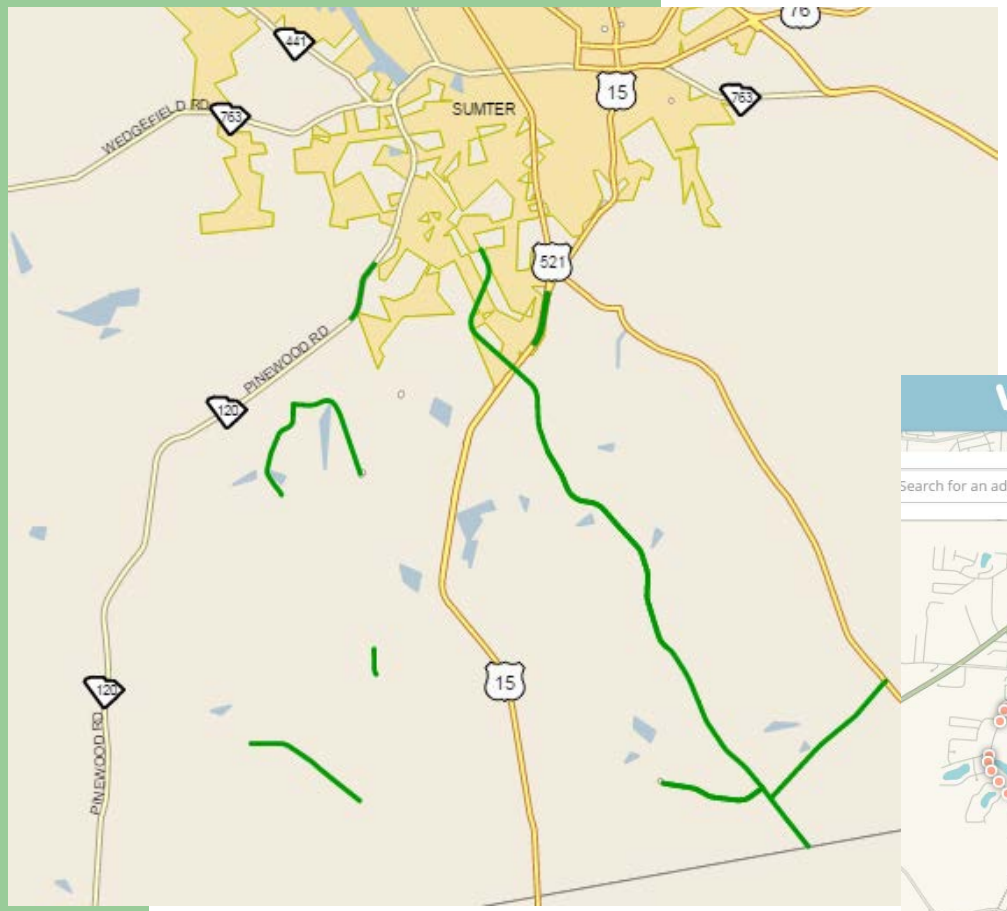
- ITMS (Internal system) – contained most up to date information
- Information was being downloaded into a spreadsheet and then turned into maps by SCDOT GIS Personnel
- ARCGIS maps could be converted into .kml files
- These .kml files were being posted to SCDOT website every 2 hours
- Process was time consuming and labor intensive

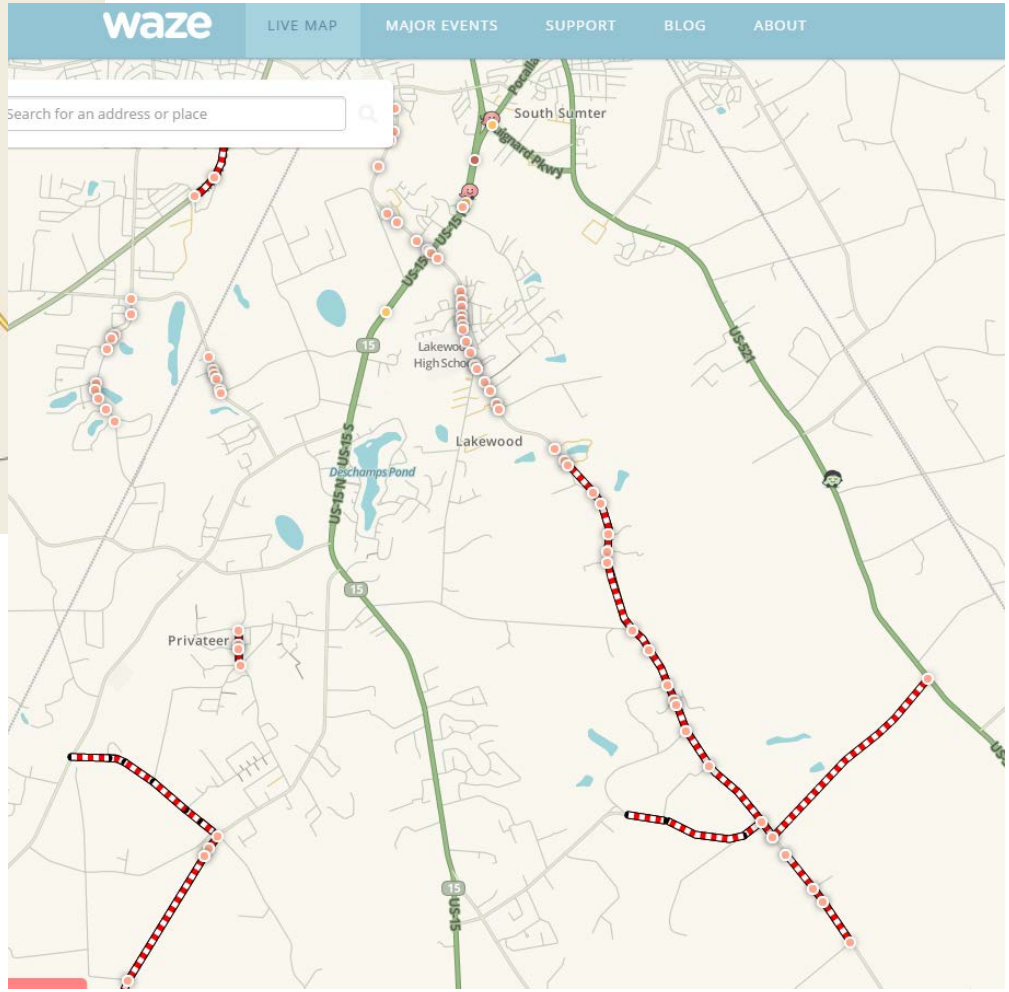
Success – WAZE App

Email Sent Thurs. 10/08/15 at Noon – approximately 2 days after effort to coordinate with mapping providers began

Looks like the Google Team has gotten our closure information into their Waze App. This app is user edited to show closures and incidents and is also referenced to online mapping services. See screenshot comparison of current ITMS near Sumter to the screenshot from Waze. The dots in Waze are information that their random users have reported (closures, etc). The Red and white striped lines are the routes that we sent them and should mirror ITMS. (Or at least ITMS at the time the last KML file was created.)

The Waze site can be accessed at https://www.waze.com/livemap . There is also a Waze app for mobile devices.


SUMTER
WEDGEFIELD RD
PINEWOOD RD
PINEWOOD RD
441
763
763
15
521
15
120
120


waze
LIVE MAP
MAJOR EVENTS
SUPPORT
BLOG
ABOUT
Search for an address or place
South Sumter
Lakewood
Deschamps Pond
Privateer
US-15
US-521

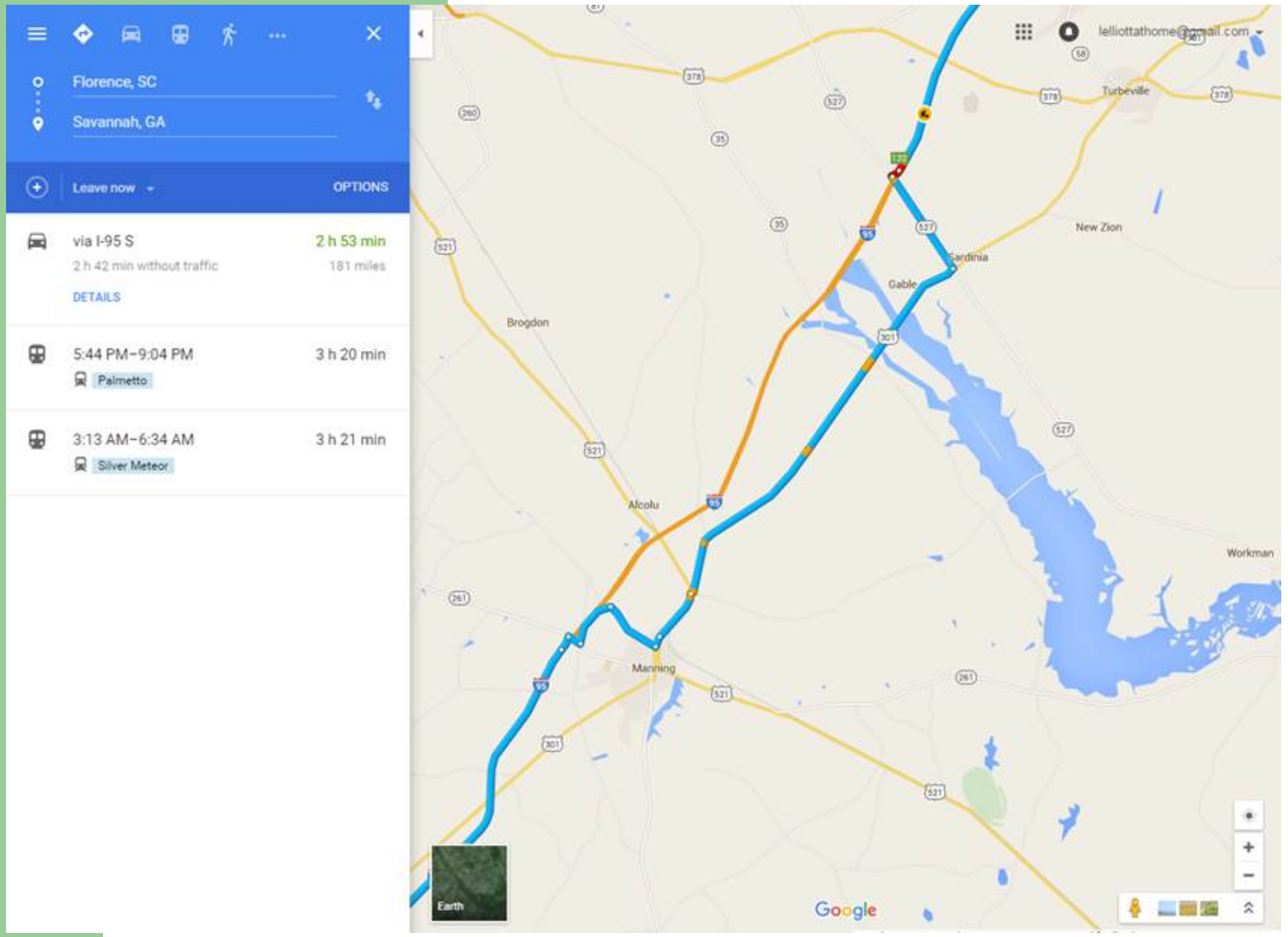
Success – Google Mapping

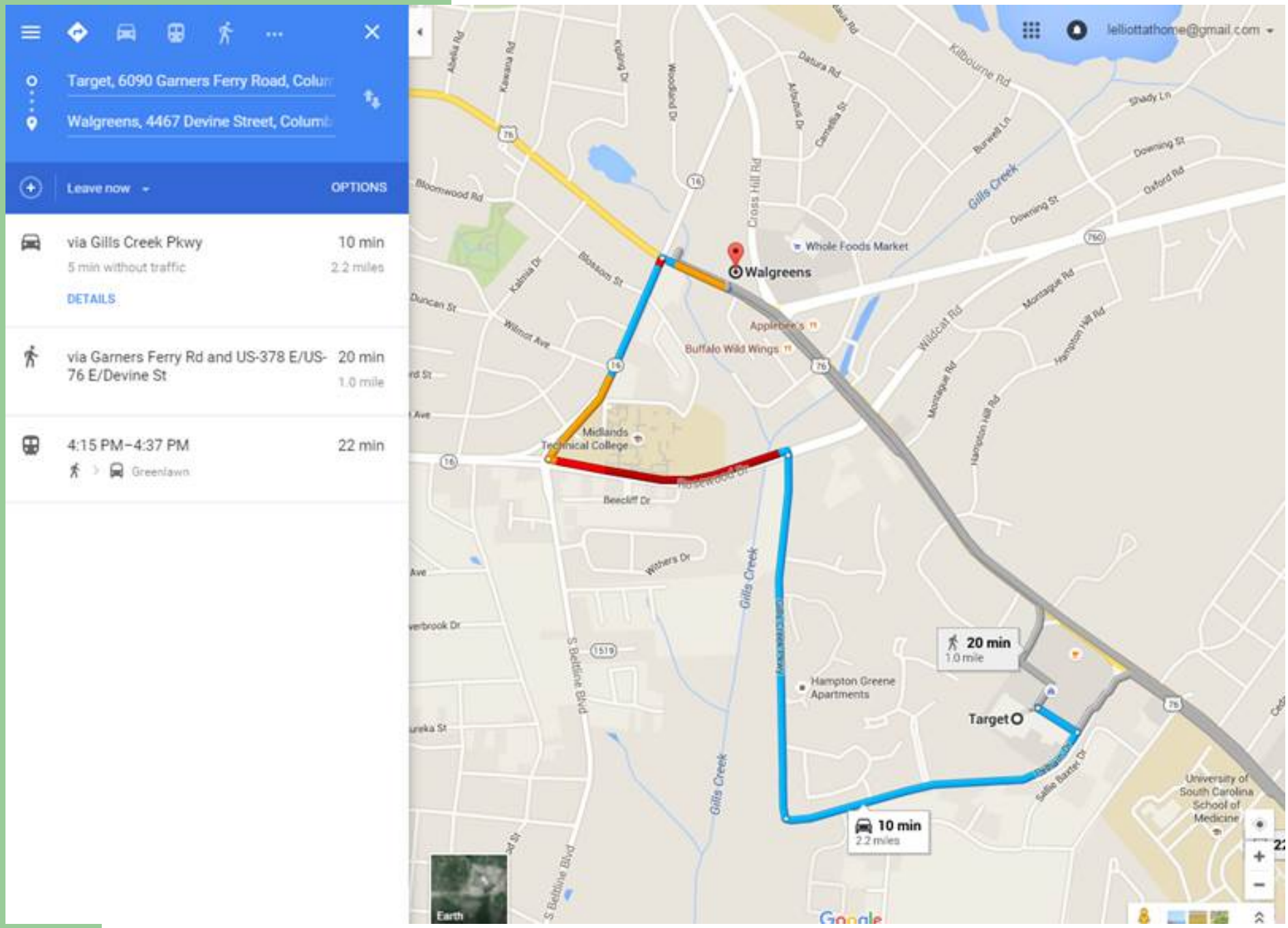
Email Sent Thurs. 10/08/15 at 4:15 PM

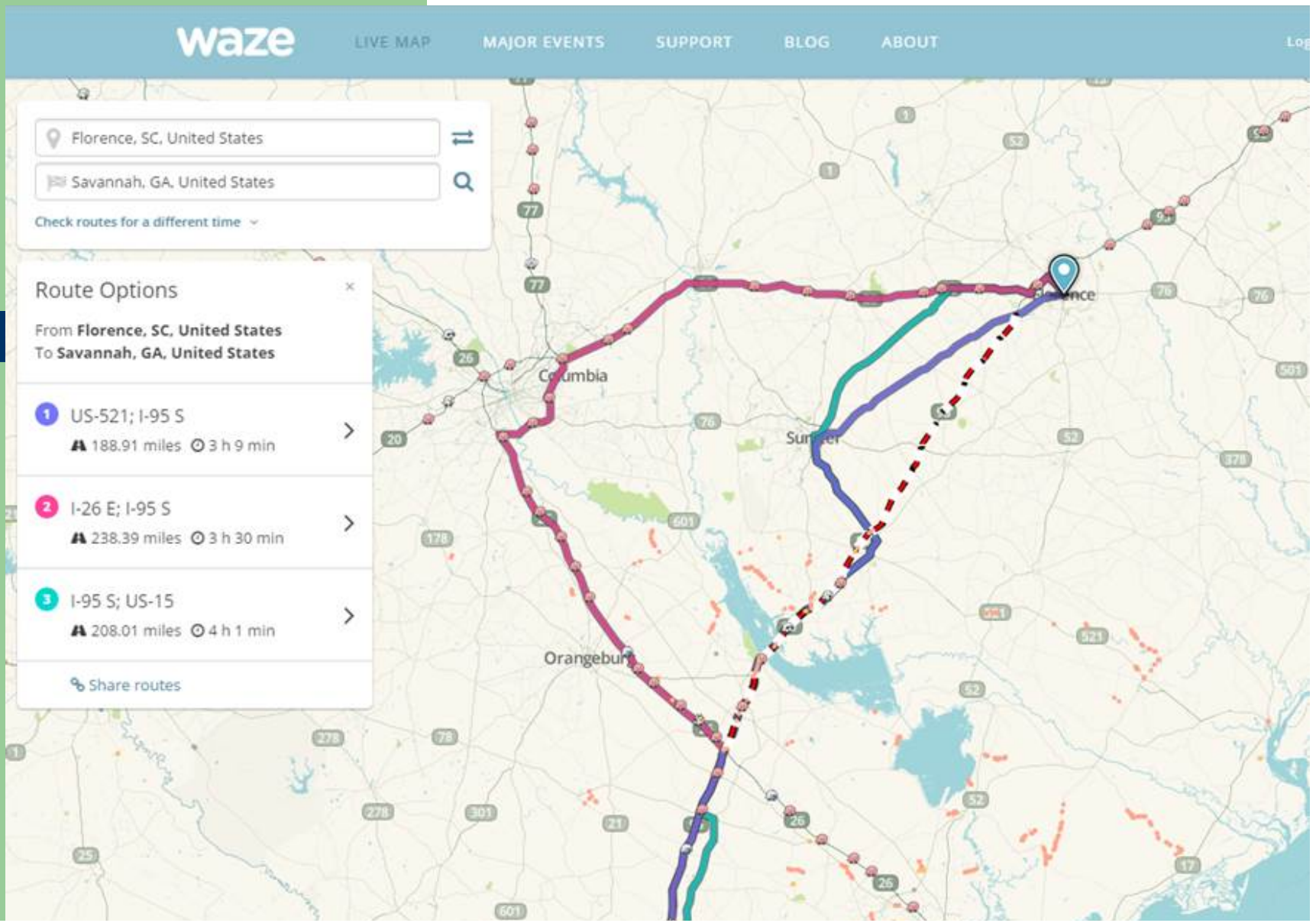
The Google Maps routing app on my phone as well as www.google.com/maps is now routing around our road closures. Not necessarily the routes we have selected, but based on current traffic. So now we have 2 websites and apps that will route around our road closure (Google Maps and Waze)

See below screen shots of routing around I-95 closure as well as routing around Garners Ferry closure.

Detour on I-95 if you try to route from Florence to Savannah, GA (Uses 301 as a detour from Exit 119 to 132). Unfortunately for longer routes (NC to FL) it still gives this route rather than the detour along I-20 to I-26 through Columbia.


Florence, SC
Savannah, GA
Leave now
OPTIONS
via I-95 S
2 h 53 min
2 h 42 min without traffic
181 miles
DETAILS
5:44 PM–9:04 PM
3 h 20 min
Palmetto
3:13 AM–6:34 AM
3 h 21 min
Silver Meteor
lelliottathome@gmail.com
Turbeville
New Zion
Sardinia
Gable
Brogdon
Alcolu
Manning
Workman
Earth
Google


Target, 6090 Garners Ferry Road, Colum
Walgreens, 4467 Devine Street, Columb
Leave now
OPTIONS
via Gills Creek Pkwy
10 min
5 min without traffic
2.2 miles
DETAILS
via Garners Ferry Rd and US-378 E/US-76 E/Devine St
20 min
1.0 mile
4:15 PM–4:37 PM
22 min
Greenlawn
lelliottathome@gmail.com
Walgreens
Whole Foods Market
Applebee's
Buffalo Wild Wings
Midlands Technical College
Hampton Greene Apartments
Target
20 min
1.0 mile
10 min
2.2 miles
University of South Carolina School of Medicine
Gills Creek
Cross Hill Rd
Kilbourne Rd
Wildcat Rd
Montague Rd
Hampton Hill Rd
Downing St
Oxford Rd
Shady Ln
Burwell Ln
Datura Rd
Kawana Rd
Kipling Dr
Woodland Dr
Bloomwood Rd
Blossom St
Duncan St
Wilmot Ave
Kalmia Dr
Beecliff Dr
Withers Dr
S Beltline Blvd
Saffie Baxter Dr
Earth
Google



Check out the latest Waze routing from Florence to Savannah. It has the SCDOT detour as well as 2 options using just a local detour and then using the Local Traffic Only part of I-95 south of the closure.

SCDOT Improvements/Adjustments

- Program was already being developed to provide external access to ITMS - in testing phase
- Worked with programmer to automate creation of .kml files directly from ITMS data
- After several test runs and manual authentication this was determined to be viable
- Resulting .kml files could be loaded onto SCDOT website for public use as well as download by mapping providers for incorporation into their services/apps

Success Timeline

Tues (10/6) Noon – Sent 1st email looking for contacts at mapping providers

Wed (10/7) 2:50 PM – SCDOT loads a .kml file of closures to the SCDOT website for public access and download by mapping providers

Thurs (10/8) Noon – Confirmed SCDOT closures had been incorporated into Google and WAZE

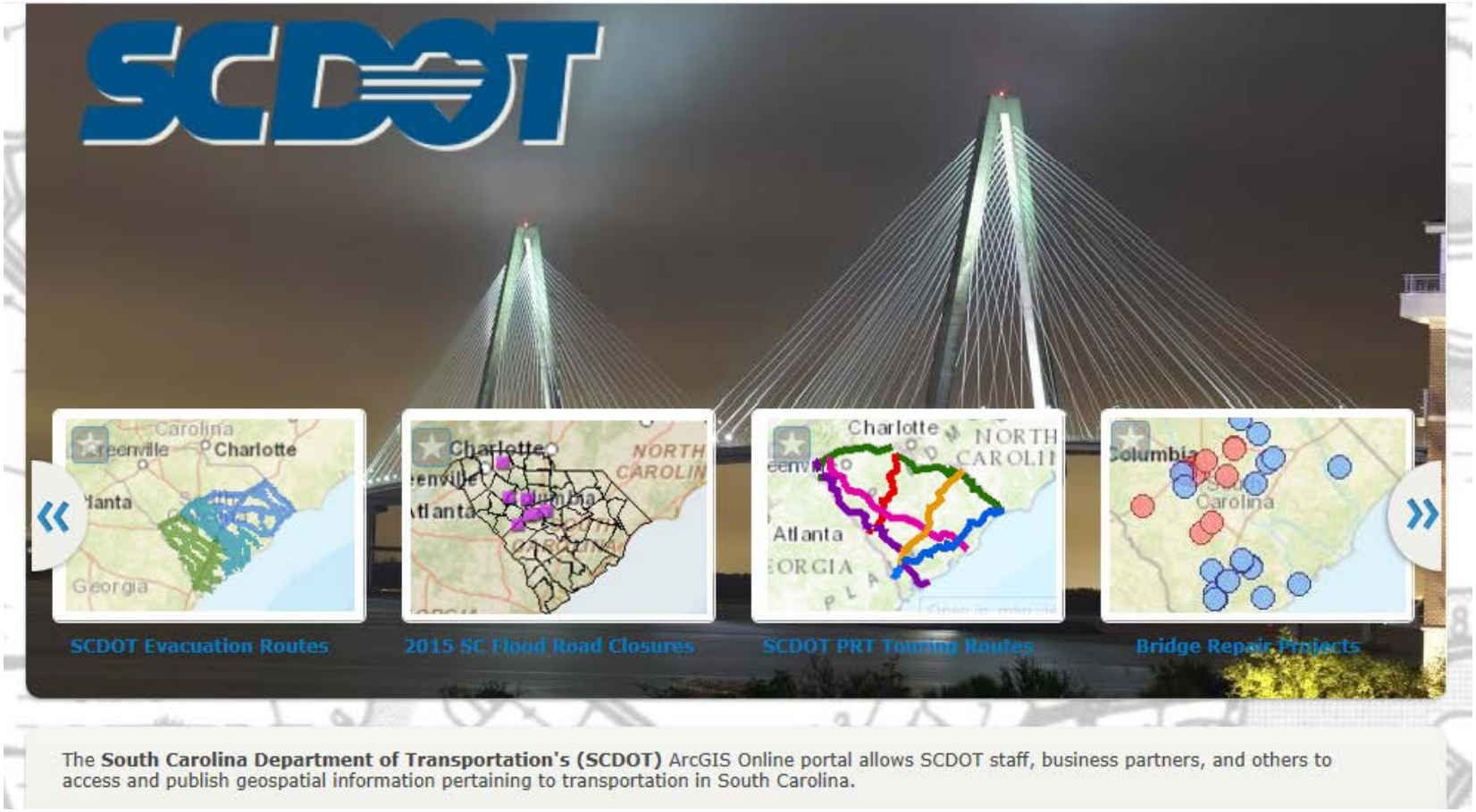
Thurs (10/8) 6:00 PM – Made contact with INRIX

Fri (10/9) 2:30 PM – Made contact with HERE

Sat (10/10) 10:30 AM – informed SCDOT personnel of integration of road closures into mapping services so they could utilize these services to determine detour routes

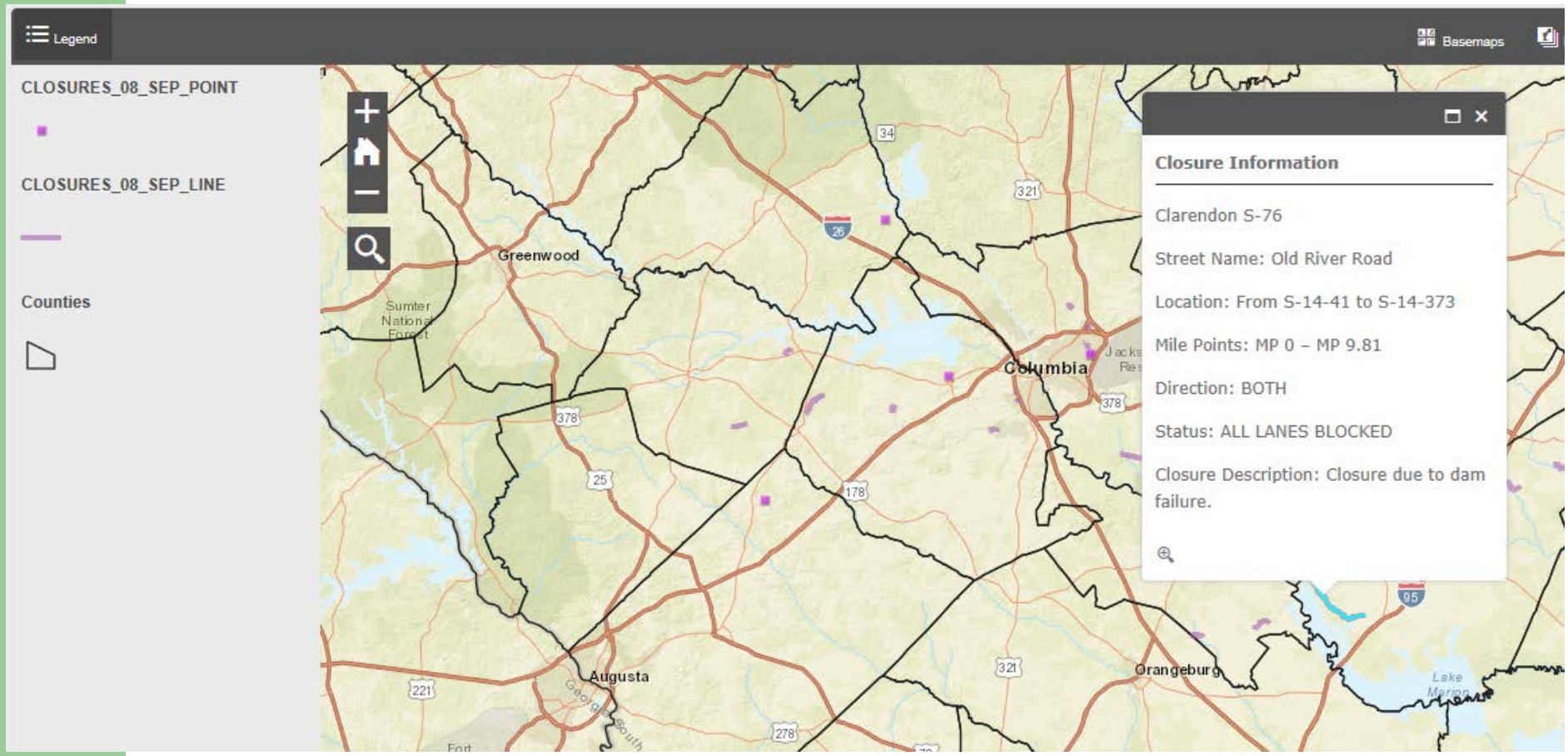
Current SCDOT Resources

http://scdot.maps.arcgis.com/home/index.html



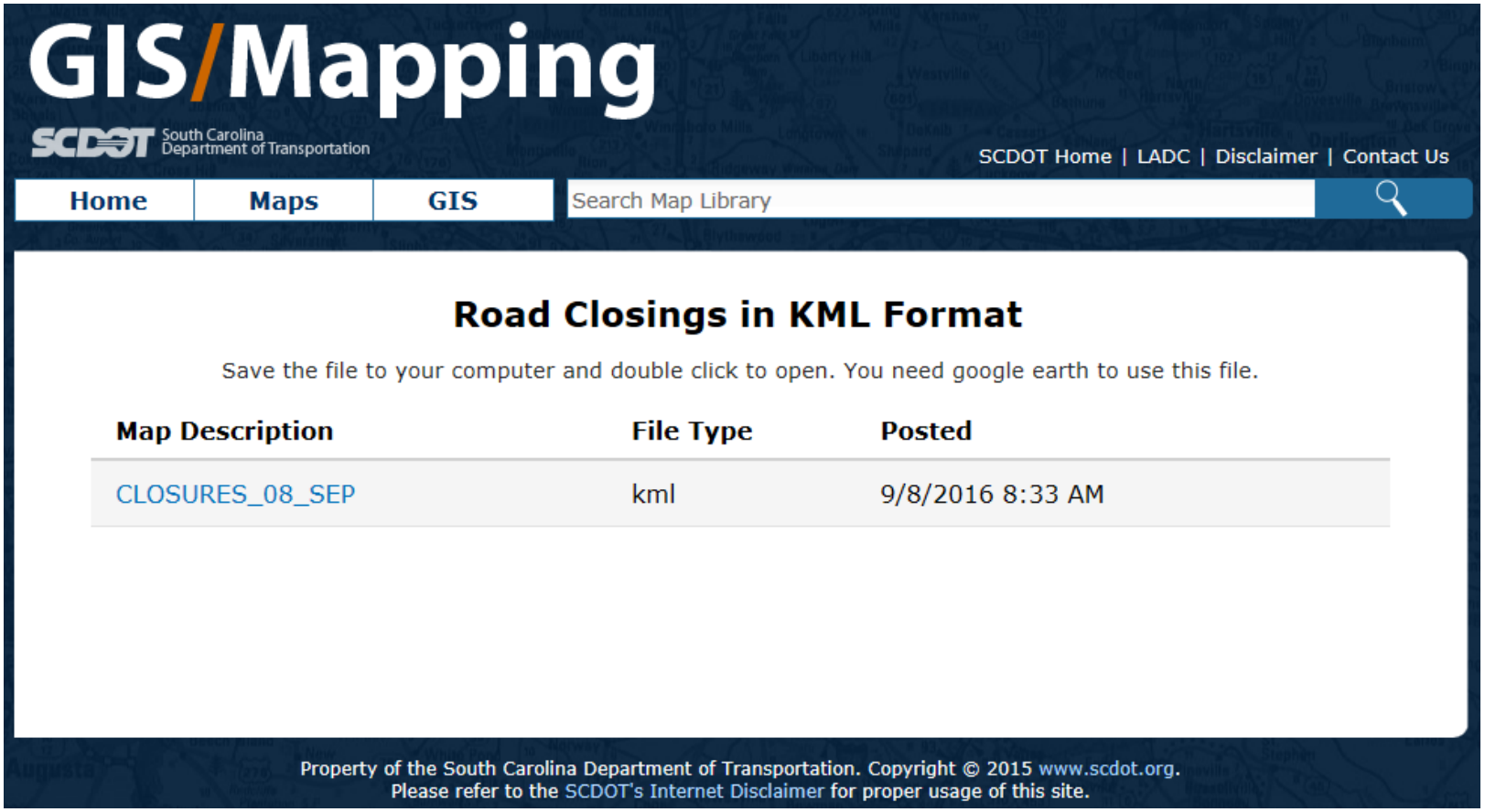
The **South Carolina Department of Transportation's (SCDOT)** ArcGIS Online portal allows SCDOT staff, business partners, and others to access and publish geospatial information pertaining to transportation in South Carolina.

Current SCDOT Resources



Current SCDOT Resources

http://info.scdot.org/sites/GIS/SitePages/StormKML.aspx



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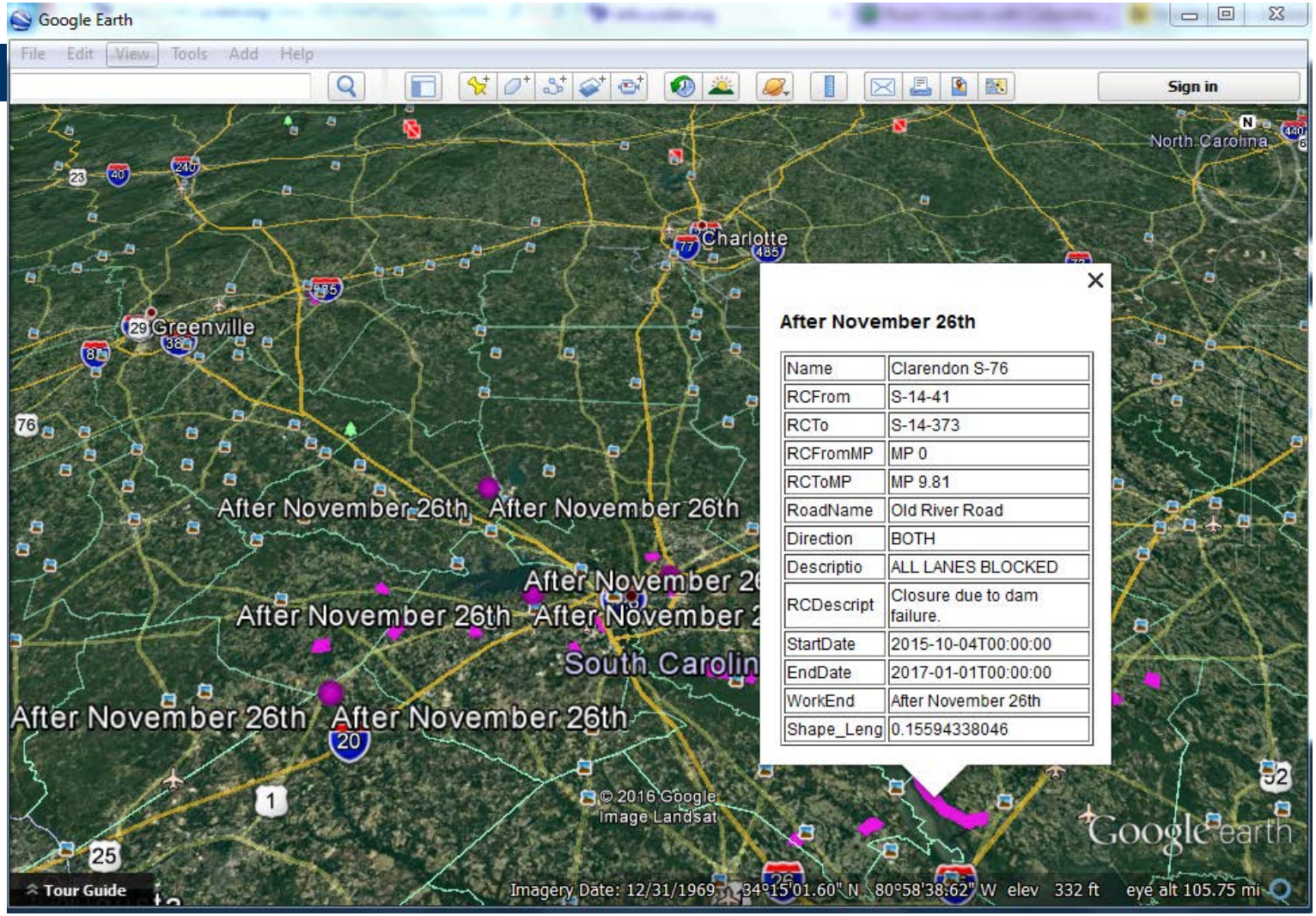

After November 26th

Name	Clarendon S-76
RCFrom	S-14-41
RCTo	S-14-373
RCFromMP	MP 0
RCToMP	MP 9.81
RoadName	Old River Road
Direction	BOTH
Descriptio	ALL LANES BLOCKED
RCDescript	Closure due to dam failure.
StartDate	2015-10-04T00:00:00
EndDate	2017-01-01T00:00:00
WorkEnd	After November 26th
Shape_Leng	0.15594338046

Lessons Learned

- Develop resources BEFORE an emergency
- Provide pertinent information consistently so public sees SCDOT as a key source of information
- Have adequate staff trained in the event of an emergency
- Develop partnerships BEFORE an emergency
- Results depend on the accuracy of data input
- Integration of systems is key to providing accurate information with minimal manpower

Discussion

South Carolina Department...

SCDOT
Oct 8, 2015 at 1:47pm •

SCDOT Puts “Major Routes” Information On-line

The South Carolina Department of Transportation (SCDOT) is providing a “Major Routes” link that shows which primary state routes are open. The information on the link allows motorists to make travel plans either locally or from one region of the state to another.

The recovery process in South Carolina is continuing and ever-changing. Major routes that may be open could possibly be re-closed as flood waters moved downstream. SCDOT will be updating the Major Routes site regularly to reflect these changes.

SCDOT also encourages travelers to use the Road Closure map and list with this Major Routes map. All of this information can be found on the SCDOT web site: www.scdot.org. Simply click on the “Historic Rain Event” icon. A direct link to this information can be found at: http://scdot.maps.arcgis.com/apps/MapTools/index.html?appid=32e7ff184fc54cddbc2c54988a9189b1