



CHARLOTTE
INNOVATION & TECHNOLOGY

Streamlining the City of Charlotte's Street Closure Notification Process

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SERUG 2016

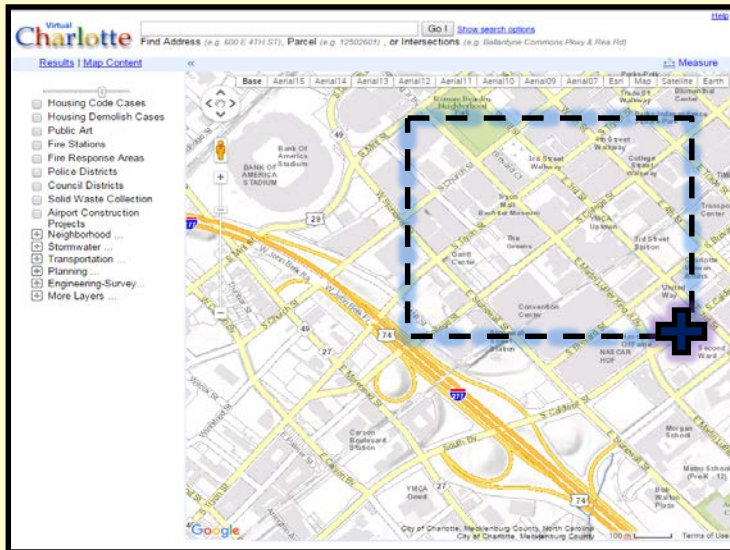


CHARLOTTE
TRANSPORTATION

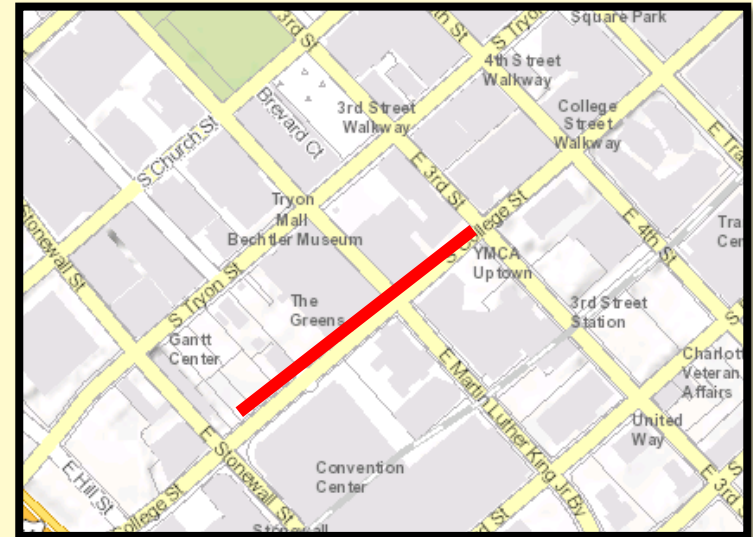
>> STREET USE AND EVENT NOTICE

Previous Work Flow

1. Screen Clip Map Area



2. Save & Draw on the image



3. Manually fill out the Closure Word Template or Street Closure Report

4. Retype the info on the Street Closure Website & add map

5. Repeat all steps in ArcMap or AutoCAD for Public Meetings

Changes were Clearly Needed

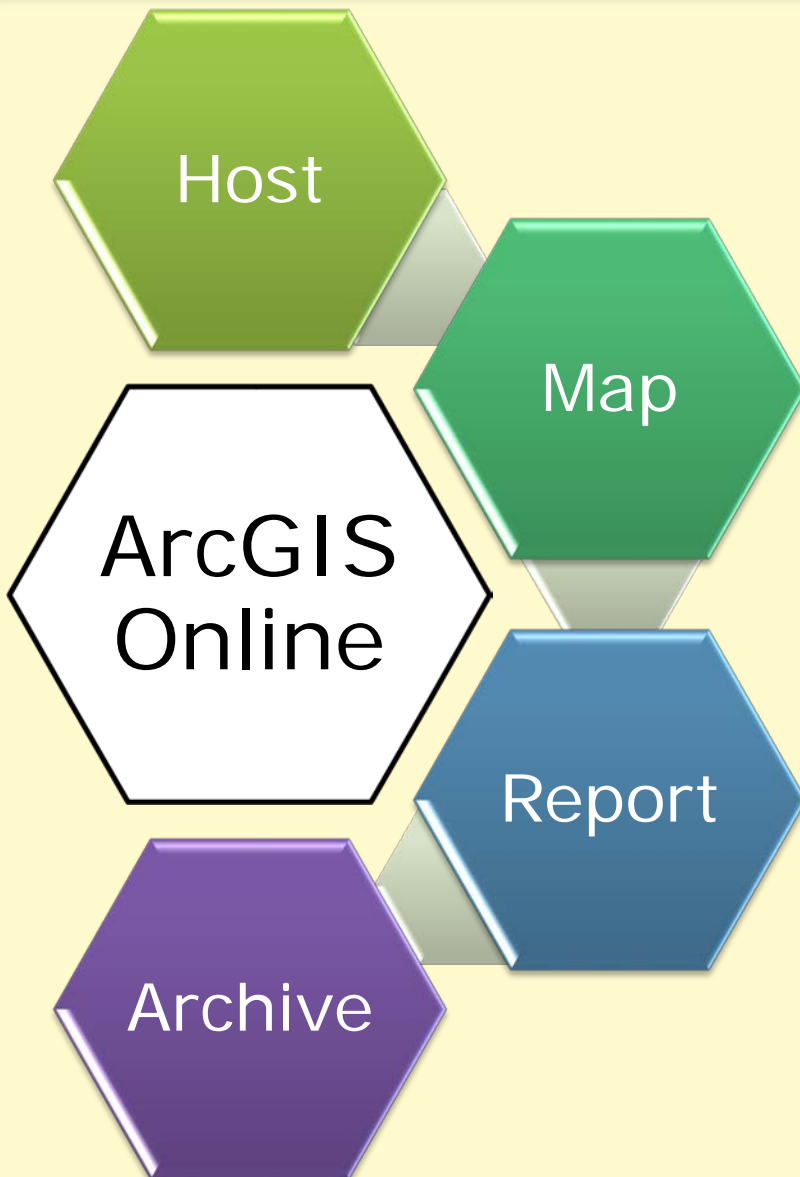
Issues

- Maps & Reports all looked different (basemap, colors, sizes)
- The website & notices do not stay in sync
- No archiving database existed
- Every piece of this multi-staff process was clunky and manual

Needs

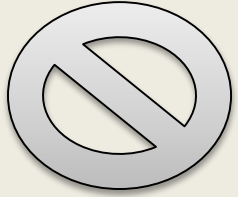
- Provide consistent maps & reports
- Provide lineage of changes
- Provide closure and detours to Waze

Updated Design



- ArcGIS Online provides easy to use editing & templates
- Data can be presented in multiple ways
- Easy to edit in ArcGIS.com Map
- Use of local government data model allows compatibility with Waze

Pursuing a Friendly Solution



ArcGIS online does not support integrated windows authentication



The web template tries to post a zero size byte request to probe whether the feature service is editable



F5 sees a potential threat and blocks traffic

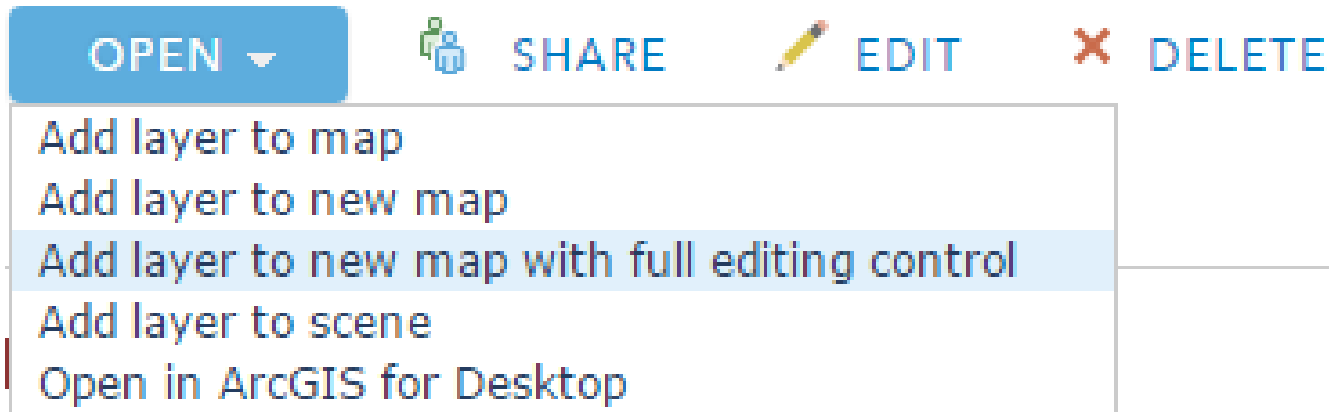


Solution: Move to ArcGIS Online Hosting

Challenges with hosted service

A good solution as long as you are aware that:

- A Hosted service is either fully editable or not editable
 - No finer granularity to allow certain users edit rights while read only for others
- Vulnerability of data integrity
 - Admin can enable editing/disable editing on the fly
 - Anyone in the edit group can change the tables
 - Editors can overwrite each others content
- No ability to set triggers on the database within ArcGIS Online



- Use the option to disable the feature layer editing
 - But this still allows ArcGIS online users in the group to bypass the setting and edit
- Set up Map & Bookmark
 - Starts the edit session immediately after login
 - Type in “[isAdmin=true](#)” to the end of the map URL
“...webmap/viewer.html?layers=<layerid>&webmap=<webmapid>”

Rich Text Editing

Configure Attributes

Check the fields you want to display and edit. Select a field to change its alias, order it, and format it.

<input type="checkbox"/> Display	<input type="checkbox"/> Edit	Field Name	Field Alias
<input type="checkbox"/>	<input type="checkbox"/>	{OBJECTID}	OBJECTID
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	{BLOCKNM}	Road Name
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	{INCIDENTNM}	Short Description
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	{LOCDESC}	Location Details
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	{BLOCKTYPE}	Reason
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	{COMMENT_}	Comments
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	{FULLCLOSE}	Full Closure

Editing

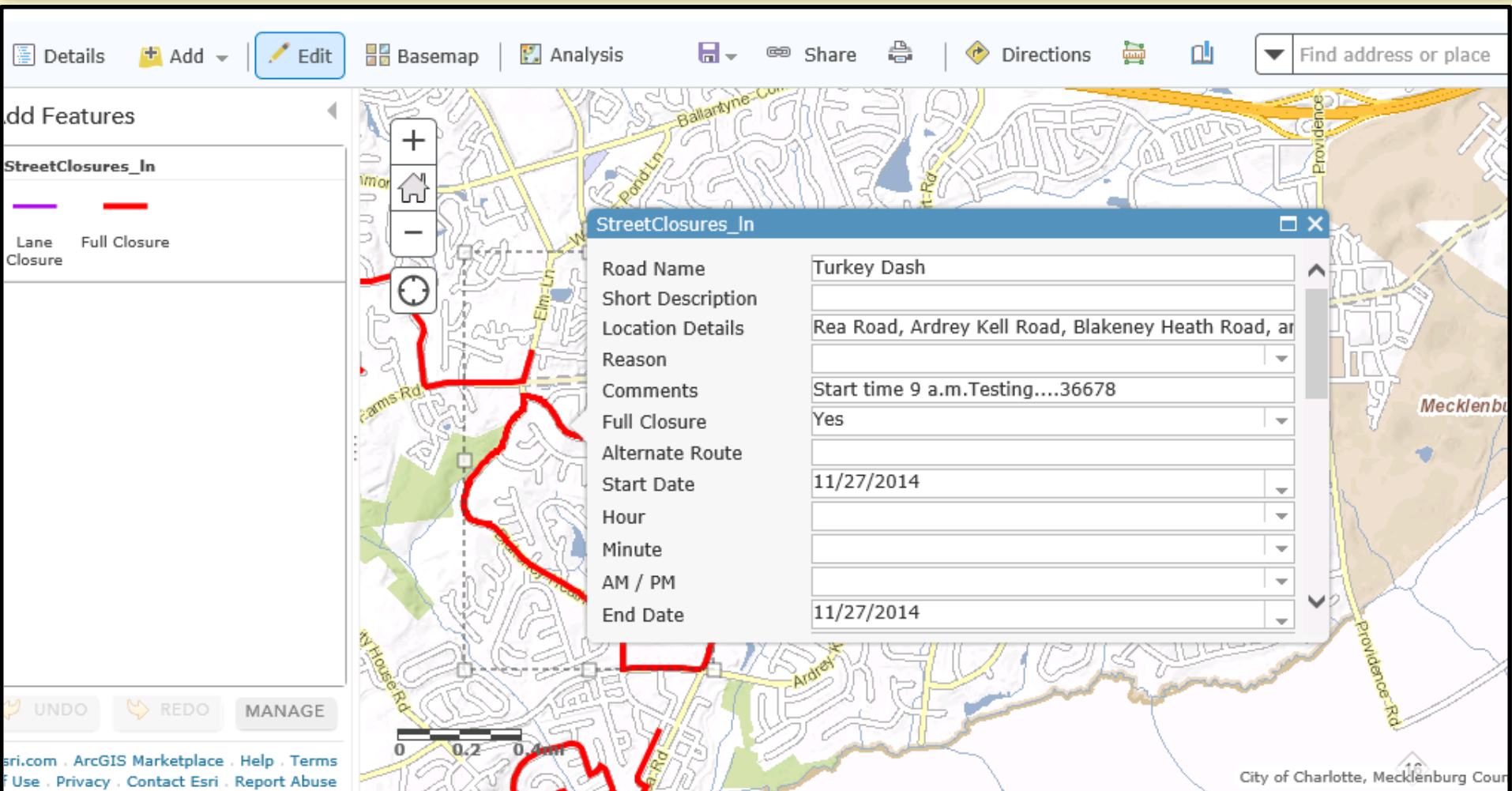
TextBox Type **Rich Text**

Hint

OK

CANCEL

Editing



The screenshot displays the 'StreetClosures_In' web application interface. The top navigation bar includes links for Details, Add, Edit, Basemap, Analysis, Share, Directions, and a search bar. The left sidebar shows the 'Add Features' section with a legend for 'StreetClosures_In' indicating 'Lane Closure' (purple line) and 'Full Closure' (red line). The main map area shows a residential street network with a red line indicating a full closure. A 'StreetClosures_In' form is open over the map, containing the following fields:

StreetClosures_In	
Road Name	Turkey Dash
Short Description	
Location Details	Rea Road, Ardrey Kell Road, Blakeney Heath Road, ar
Reason	
Comments	Start time 9 a.m. Testing.....36678
Full Closure	Yes
Alternate Route	
Start Date	11/27/2014
Hour	
Minute	
AM / PM	
End Date	11/27/2014

At the bottom of the interface, there are links for Esri.com, ArcGIS Marketplace, Help, Terms of Use, Privacy, Contact Esri, and Report Abuse. The bottom right corner of the map area shows the text 'City of Charlotte, Mecklenburg Cour'.



Street Closings



Below is a list of streets that are currently closed for various construction projects, and the dates they are closed. Click "Notify Me" at the top of the page to receive these notices by email.

When closures are necessary, we make every effort to coordinate work to minimize impact to motorists, pedestrians and area businesses.

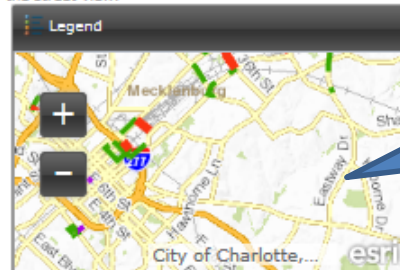
For special event road closures, please download the [Street Use Notice \(SUN\)](#).

For emergency closures from Charlotte Mecklenburg Utilities, click [here](#).

Interactive Street Closure Map

CDOT developed a unified web mapping system for CDOT closures and detours. The following [interactive map](#) contains current Uptown closures and detours, and will be continually updated as situations change.

Full details about each closure (red) and detour (green) can be found by clicking on the map or choosing from the list below. Click [here](#) or on the gray bar below to open the map in a new window. You may have additional options in the basemap gallery to change the street view.



For closures and projects with the North Carolina Department of Transportation (NCDOT), please click [here](#).

Weather and unforeseen circumstances occasionally prevent work from being completed and make it unsafe to reopen lanes or streets as planned. If this occurs, our traffic engineers work with other City staff and contractors to resolve the situation as quickly as possible and reduce further impacts to the traveling public.

Street/Lane Closures

Street Closure: West Third Street - May 6, 2016 to May 9, 2016

West Third Street between South Church Street and South Tryon Street will close on Friday, May 6, 2016 at 9 a.m. and will re-open on Monday, May 9, 2016 at 6 a.m.

[More...](#)

Street Closure: Village Lake Drive - May 6, 2016 to May 9, 2016

Village Lake Drive between Monroe Road and East Independence Boulevard will close on Friday, May 6, 2016 at 9 a.m. and will re-open Monday, May 9, 2016 at 6 a.m.

[More...](#)

Street Closure Website

Link to responsive map viewer with robust search capability

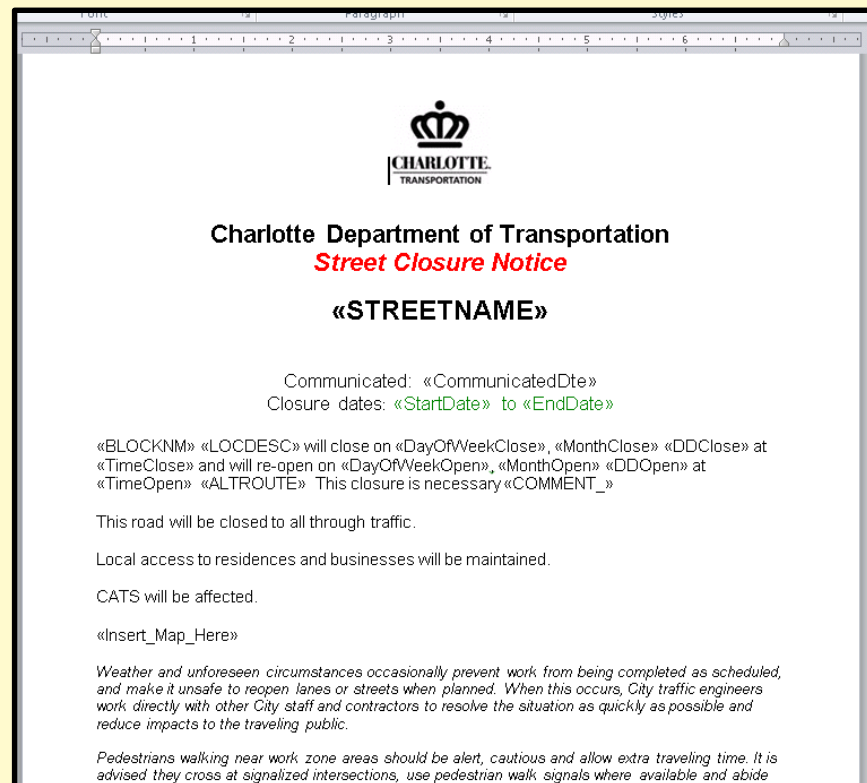
Quick overview of street closing and detour routes

List of street closing and detour routes




Notification Template

- For press release and notification
- Designed by Public Information Specialist
- Previously used Word template, then saved as web page in SharePoint. Also put into the SUN Report



Font Paragraph Styles



Charlotte Department of Transportation
Street Closure Notice

«STREETNAME»

Communicated: «CommunicatedDte»
 Closure dates: «StartDate» to «EndDate»

«BLOCKNM» «LOCDESC» will close on «DayOfWeekClose», «MonthClose» «DDClose» at «TimeClose» and will re-open on «DayOfWeekOpen», «MonthOpen» «DDOpen» at «TimeOpen» «ALTRoute» This closure is necessary «COMMENT_»

This road will be closed to all through traffic.

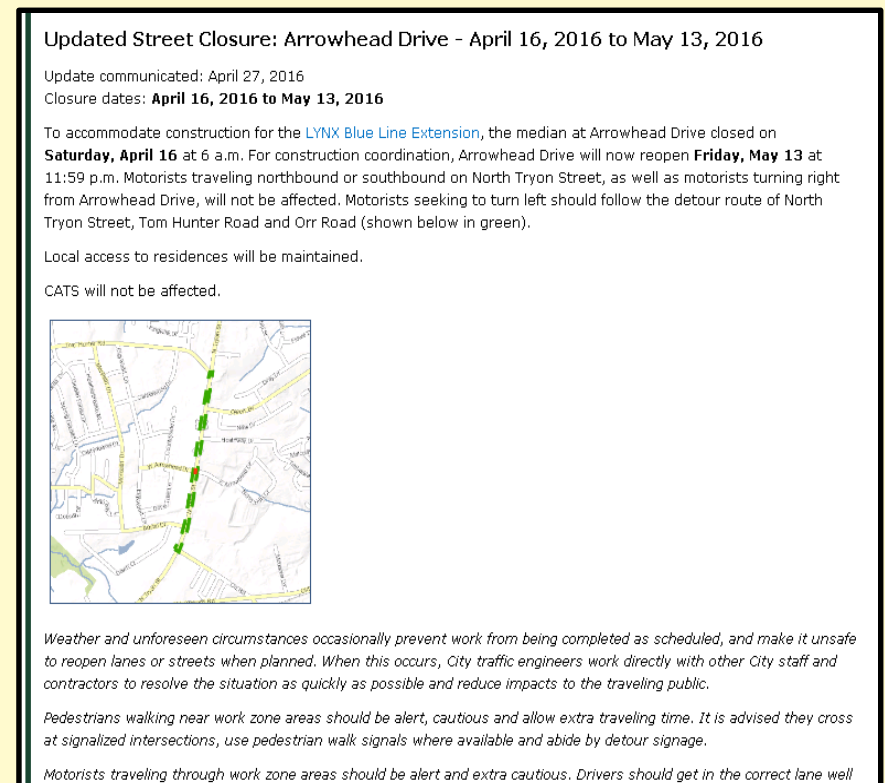
Local access to residences and businesses will be maintained.

CATS will be affected.

«Insert_Map_Here»

Weather and unforeseen circumstances occasionally prevent work from being completed as scheduled, and make it unsafe to reopen lanes or streets when planned. When this occurs, City traffic engineers work directly with other City staff and contractors to resolve the situation as quickly as possible and reduce impacts to the traveling public.

Pedestrians walking near work zone areas should be alert, cautious and allow extra traveling time. It is advised they cross at signalized intersections, use pedestrian walk signals where available and abide




Updated Street Closure: Arrowhead Drive - April 16, 2016 to May 13, 2016

Update communicated: April 27, 2016
 Closure dates: **April 16, 2016 to May 13, 2016**

To accommodate construction for the [LYNX Blue Line Extension](#), the median at Arrowhead Drive closed on **Saturday, April 16** at 6 a.m. For construction coordination, Arrowhead Drive will now reopen **Friday, May 13** at 11:59 p.m. Motorists traveling northbound or southbound on North Tryon Street, as well as motorists turning right from Arrowhead Drive, will not be affected. Motorists seeking to turn left should follow the detour route of North Tryon Street, Tom Hunter Road and Orr Road (shown below in green).

Local access to residences will be maintained.

CATS will not be affected.



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Pedestrians walking near work zone areas should be alert, cautious and allow extra traveling time. It is advised they cross at signalized intersections, use pedestrian walk signals where available and abide by detour signage.

Motorists traveling through work zone areas should be alert and extra cautious. Drivers should get in the correct lane well

Notification Template

- New solution created a new notification page driven off the hosted service.
 - Public Information Officer can see results immediately by clicking on a link on the feature popup, and make revisions as necessary
- A important requirement is to keep a snapshot of the map at the time of notification
 - A interactive embedded map may not work because the hosted service can be cleaned up later or become expired and drop off, so no feature will be shown
 - A static map image needed to be generated

Static Image in Notification

- Needed a jpg/png for each closure
- ArcGIS online can export image via printing, but only available temporarily.
- Must simulate ArcGIS online printing process, then save the image to a persisted location.
- Using Global ID to identify each closure and corresponding snapshot image.

Static Image in Notification

- Editor uses “share” button to create a short URL that records the extent of the map and then saves the URL in a field within the feature service.

Share

Choose who can view this map.

Your map is currently shared with these people.

- ☒ Everyone (public)
- ☒ City of Charlotte
- ☐ Members of these groups:

- ☐ Basemaps
- ☐ Charlotte Featured Maps and Apps
- ☐ Charlotte Internal Maps and Apps
- ☐ Charlotte Public Maps and Apps
- ☐ CharMeck Public Maps and Apps
- ☐ CIP
- ☐ City of Charlotte Open Data: 311 (Open Data)

Link to this map

<http://arcg.is/1NCgHgP>



- ☒ Share current map extent

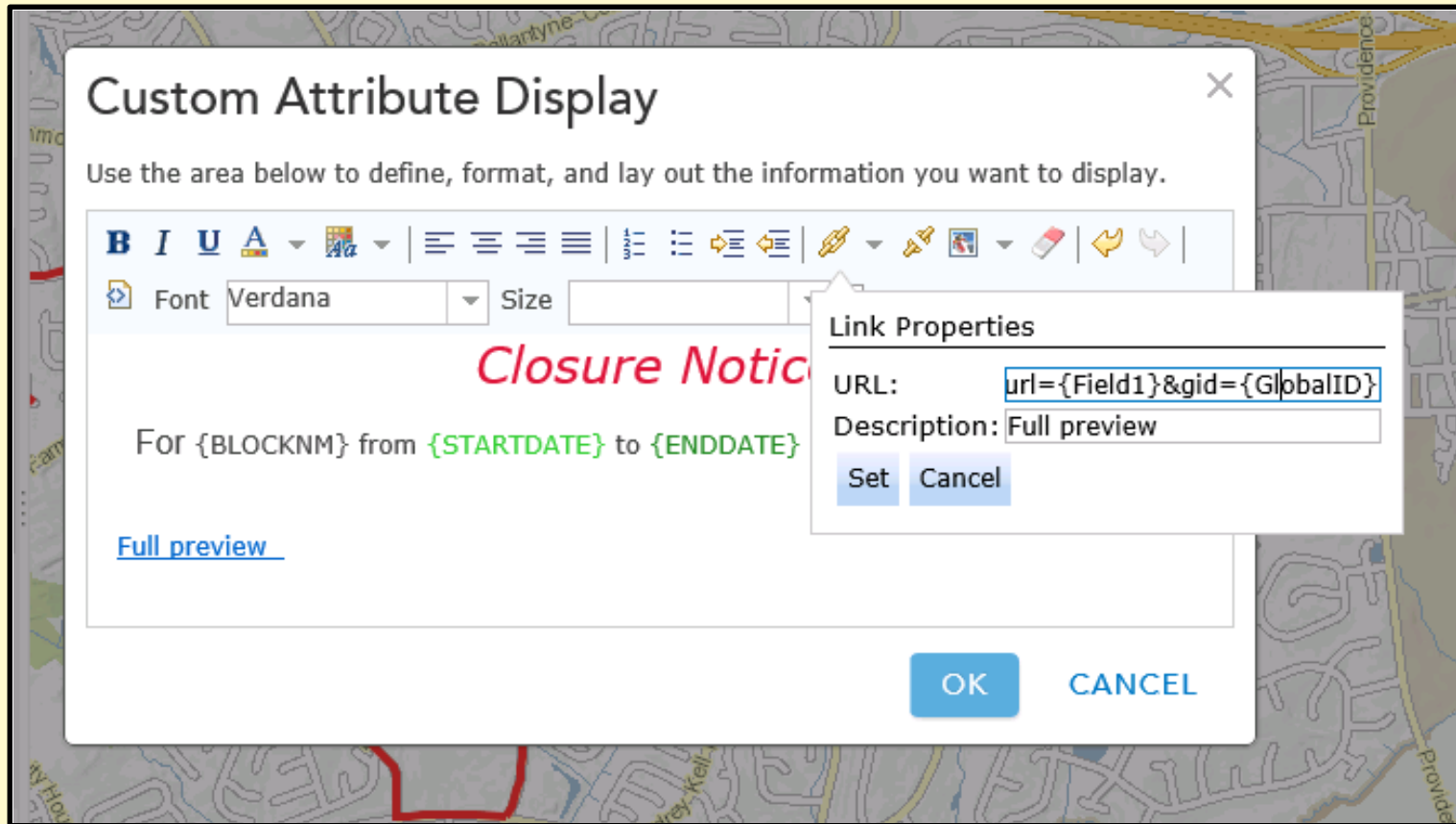
Embed this map

EMBED IN WEBSITE

CREATE A WEB APP

StreetClosures_In	
DIRECTION	
Active	
Hyperlink	http://turkeydashcharlotte.com/
CreateDate	12/22/2015
Creator	[REDACTED]
EditDate	12/22/2015
Editor	[REDACTED] City
CATS Statement	
Field1	http://arcg.is/1NCgHgP
Field2	
Field3	
Field4	
Field5	

Static Image in Notification



In the “preview” web map used by Public Information Specialist, assembling a new URL with the “share” URL and Global ID.



Archiving: Downloading Cloud Data

The hosted feature service can be accessed as a layer in ArcMap.

It can be used as source in GeoProcessing Tool.

The global ID issue preventing a direct truncate append loading process.

Used feature to JSON and JSON to feature GP tool. Replace Global ID type to text in the middle.

Create a load feature class, then compare with existing feature class to generate insert/update action.

Start Date End Date

4 of 5 ? 100% Find | Next



Charlotte Department of Transportation

Street Closure Notice

36th St.

Communicated: June 9, 2014

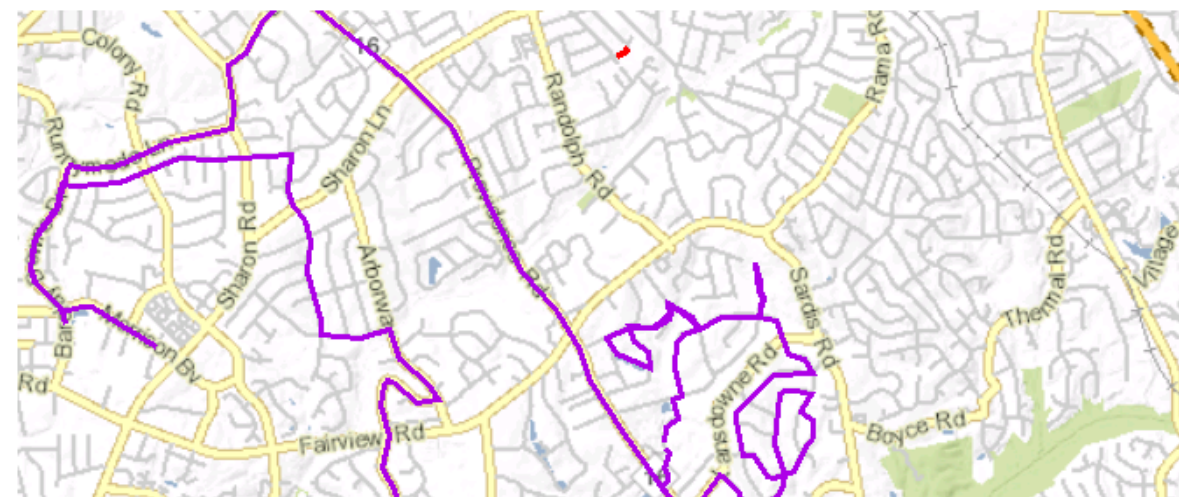
Closure dates: **June 16, 2014 to October 31, 2016**

36th St. between Davidson Street and North Tryon Street will close on Monday, June 16 at and will re-open on Monday, October 31 at During the duration of this closure, motorists can use the detour route of Davidson Street, Jordan Place, Matheson Avenue, and North Tryon Street.. This closure is necessary for LYNX Blue Line Extension..

This road will be closed to all through traffic.

Local access to residences and businesses will be maintained.

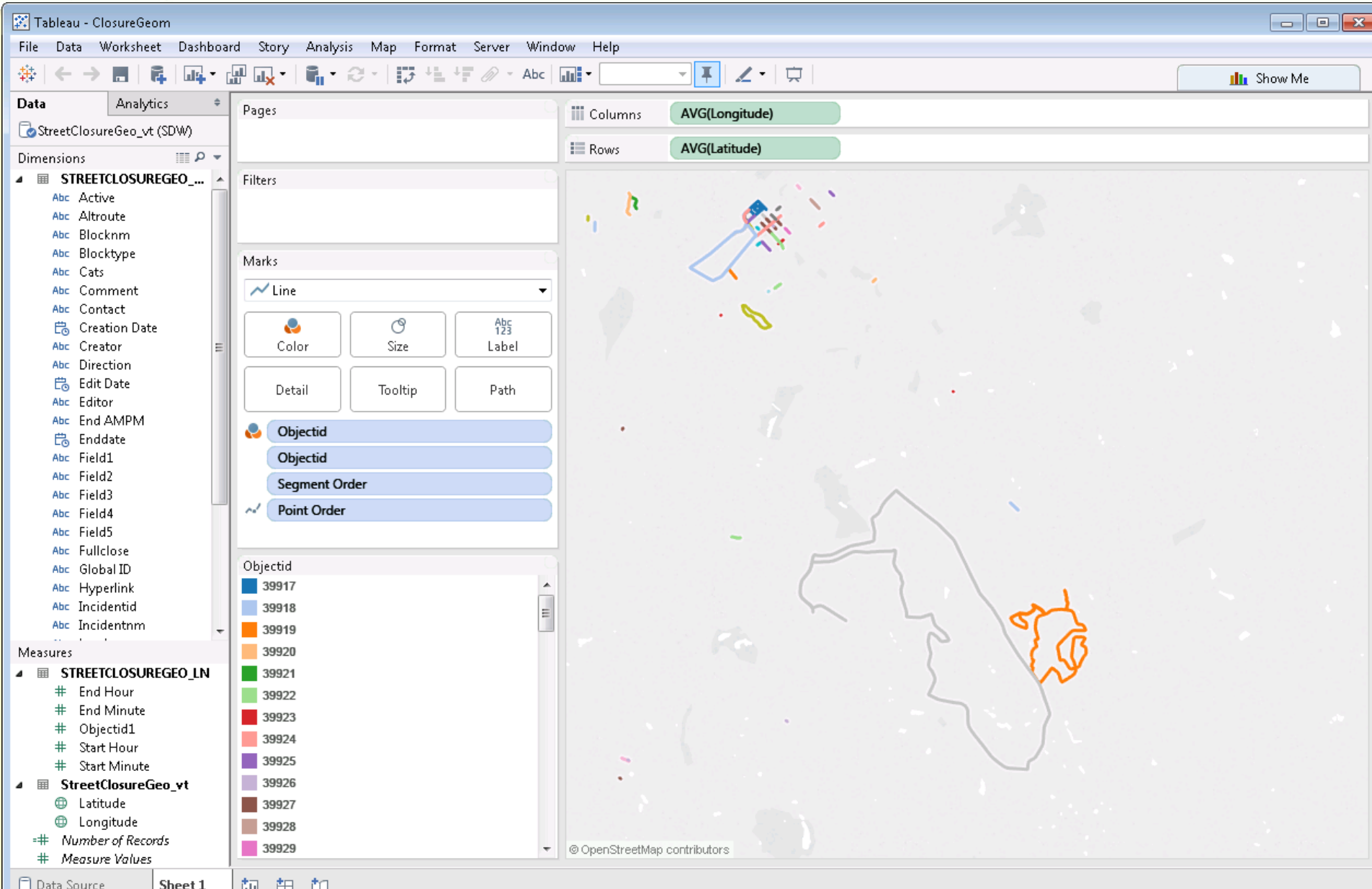
CATS will be affected.

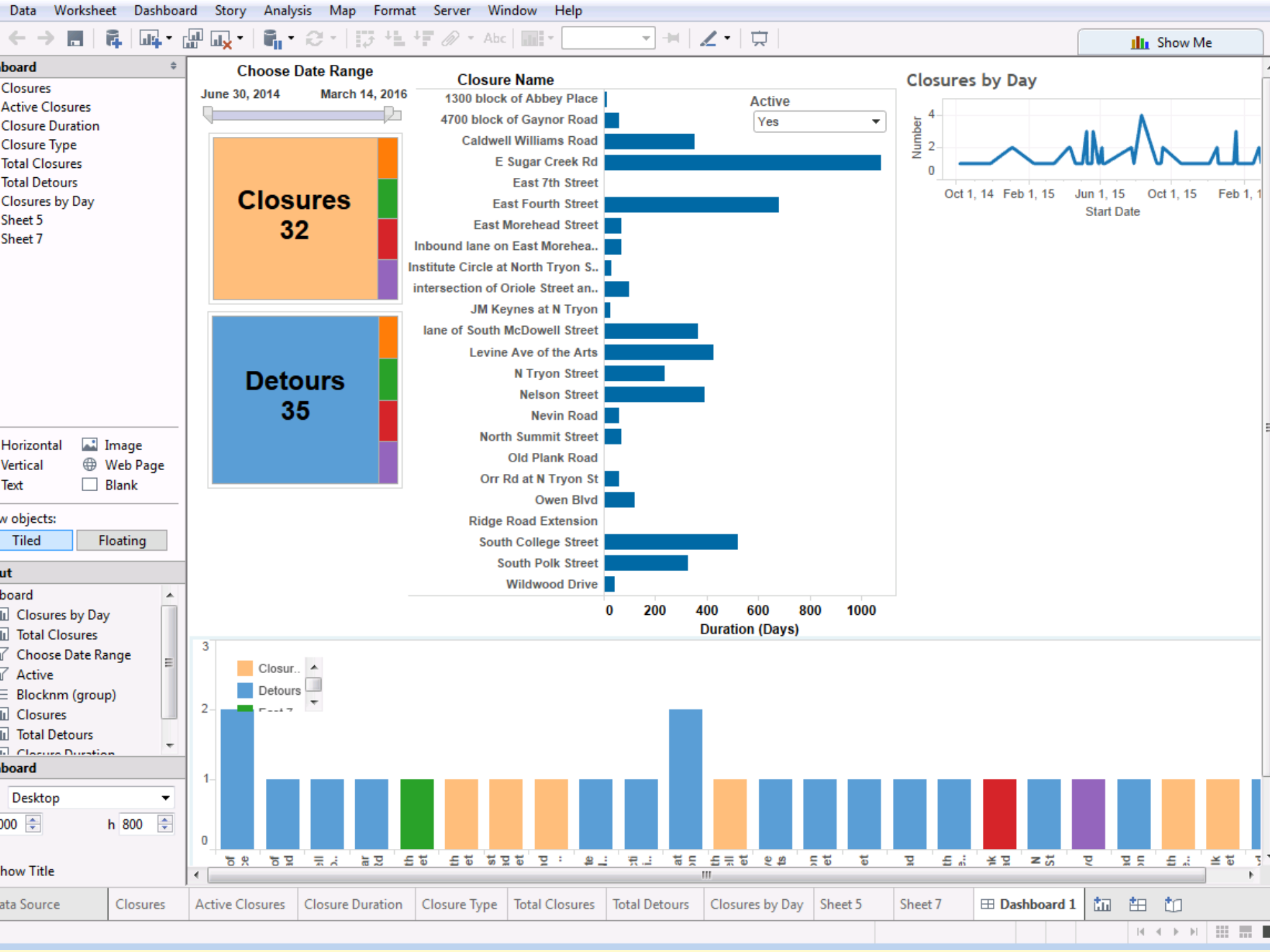


SQL Server Reporting Services Reports (SSRS)

- For ad hoc queries about road closures during a specific window.
- Creating large volumes of reports on demand.
- Uses the image handler created for preview page to embed map.
- Allows input start and end date, any closure that active during that period (regardless of the actual dates of the closure itself) will be returned.

Interactive BI Dashboard





Integration



- Waze is a popular navigation mobile app
- Charlotte Department of Transportation joined the partnership with Waze to provide closure data through Open Charlotte
- Integrating with data feeds that conform to Esri's Transportation Local Government data model

Future Enhancements

Split editing
and viewing
services

Build an
edit
application

Enhanced
reporting
for the
website

Finish the
BI & Trend
Analysis
tools

