



Managing emergency road closures using Online GIS in Nevada

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State Agency Responsibilities

- NDEM Responsibilities
- NDOT Emergency Management Responsibilities
- Role of NDOT Headquarters
 - Maintain up-to-date maps
 - Manage infrastructure repair



Emergency Ops Center at National Guard



Problem and Need for Web Map

- NDEM Practice Drill
- Challenges
- Mapping Needs
 - Easy to use
 - Easy to recognize information
 - Ability to print reports
- Could not provide mapping needs in-house



EM Staff Requirements

- Simple to use
- Searchable by route and road name
- Mark a begin and end point for closed roads based on:
 - Pair of cross roads
 - Milepost markers along route
- Update previously entered information.
- Run report for all incidents for a defined time period



IT GIS Requirements

- GIS datasets in NDOT's enterprise geodatabase
- EOC Map Service and published map document
- EOC Linear Event table
- LRS Server Object Extension (SOE)



Delivered Product

- Solution Choices
 - Built on top of Rolta's OnPoint WebGIS solution
- Integrated with NDOT's GIS Enterprise
 - Supported test and production servers
 - Used NDOT's base layers with NDOT symbology
- Deployed custom built layers to allow collection of road closure information
- Used secure login access
- On-site training and documentation



Key Map Functions

- Zooms into dynamic segment for milepost search
- Allows for searches using county routes and mileposts.
- Uses database triggers for audit log creation
- Creates HTML road closure reports for Executives
- Creates CSV reports on road closures and mileposts.

Road Closure [X]

Route ID: ★

Start Mile Post ★

End Mile Post ★



Emergency Event

- Southern Nevada Flooding
- Fire at Beatty Waste Facility





Real World Map Implementation

- Road Closures and re-directed Traffic
- Use of web map at EOC



More Information

Attribute Details For

Select Reports

1 features found. Displaying 1 to 1

Attribute	Value
Last Operation	Update
Last Edited On	10/19/2015 3:04:59 PM
Route Id	US95ES
Start Mile Post	1.855
End Mile Post	43.611
Direction	Both Directions
Event Type	Other
Status	Closed



Emergency Closures Workflow

The screenshot shows the Nevada DOT website interface. On the left, there is a search box titled "County Route Mile Post Search". The search criteria are: Route Full: Like, US6; County: Equal, WPI; Co Route: Equal. A "Look Up" button is visible. A green callout box points to the search results area, containing the following text:

- Emergency operator takes call on a road closure from State Highway Patrol by entering abbreviated county "White Pine" and route name "US6".

The main map displays the state of Nevada with county boundaries and major cities. The search results are highlighted in red on the map, corresponding to the search criteria.



ROLTA





Search for route - results

Basic Advanced

Maps Searches

County Route Mile Post Search

- Results highlighted on map.
- Operator can create a road closure

Objectid	Route Full	System Typ	Verified	Split	Created By	Date Creat	Modified B	Date Modif	Co Route I	Route Fu 1	County	Rmid	Lrm Id	Shape Leng	Stlength()
1	1322 US6	US	1	0			H9017DRA	9/12/2013 12:00:00 AM	9WP	US6WP	WP	9	US-9-WP-US6	163,076,066784	163,076,066784071



Identify Road Closure end points

Road Closure

Route ID: US6WP

Start Mile Post: 40.22

End Mile Post: 42.66

Previous Next Cancel

- Operator selects road closure tool
- Operator enters Route name based on County Cumulative LRM, start and end mile post.
- Alternatively, operator can select the route and start and end mile posts interactively on the map



Create an event/set road status

The screenshot shows the Nevada DOT web application interface. A map of Nevada is displayed, showing major highways and geographical features like Great Basin National Park. A road closure event is being created, indicated by a red and green line on the map. A dialog box titled 'Road Closure' is open, showing the following fields:

- Direction: Both Directions
- EOC Event Id (Optional): 125
- Event Desc: Road flooded based on rep
- Event Type: Flooding
- Status: Closed

Buttons for 'Previous', 'Create', and 'Cancel' are visible at the bottom of the dialog box. A green callout box points to the dialog box.

- Operator enters direction, description, event type and status of the road closure as provided by State Highway Patrol



Road Closure Search

County Route Road Closure Search

Event Type: All

Status: All

To Date: [Calendar Icon]

From Date: Greater Than Equal To [Calendar Icon]

Road Name: Like [Text Input]

Co Route I: Equal [Text Input]

From: [Text Input] Miles

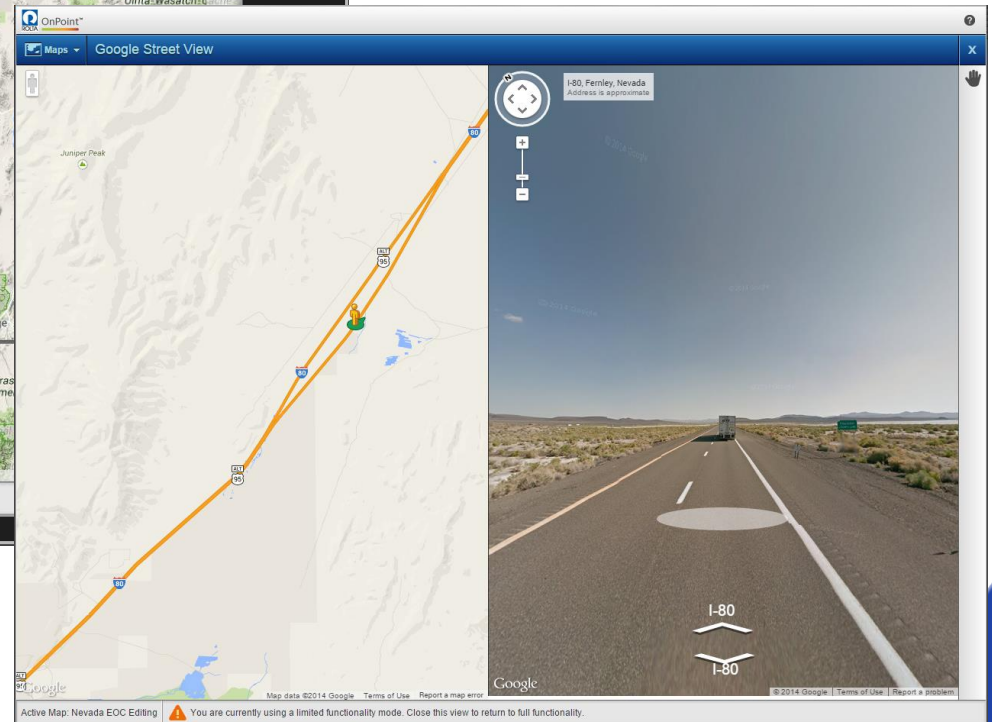
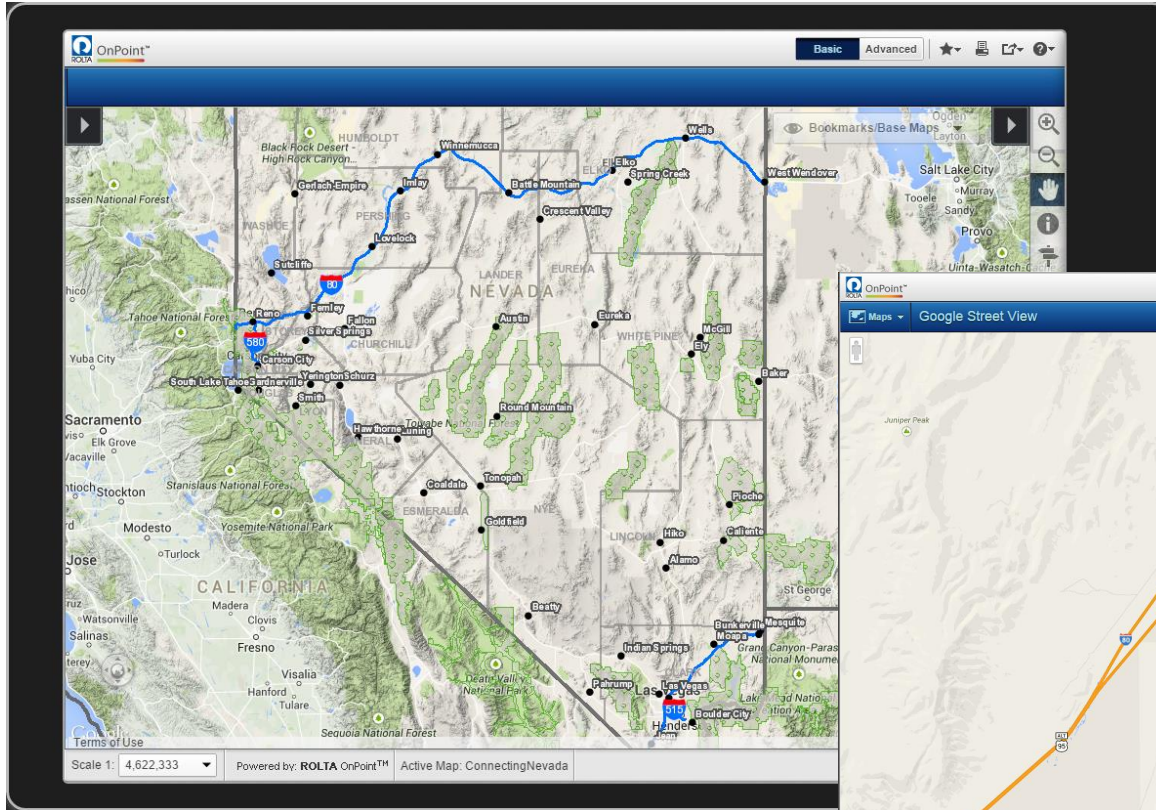
To: [Text Input] Miles

Reset

- Operator can continue working on the same closure or move to a different part of state
- Same or another operator may receive an update from State Highway Patrol for change in status including Opening on Partial/ Single direction or Emergency vehicles only
- Road closure search will allow operator to navigate back to the road closure defined previously



Additional Capabilities





Lessons Learned

- Good communication makes a better product
- Minor fixes after Go Live version
- Mobile interface option for disconnected editing
- Future roadmap:
 - Mobile interface
 - 511 road closures automatically populate



Project Credits

- Chris Joncas, Emergency Management Project Manager
- Paul Laux, Information Technology Project Manager
- Ryan Aglietti, NDOT GIS Manager
- Michael Smallcombe, PE, National Solutions Executive, Transportation, Rolta Americas
- Chris Carr-White, Enterprise Solutions Consultant, Rolta Americas